5.4.4 Forcing Key Decisions in Civilization IV

In the following two episodes from Civilization IV, the pair is presented with important diplomatic decisions that serve as a major crossroads in the game. In both cases, other computer civilizations approach the pair with diplomatic offers that they must choose to accept or reject. The outcome of the game relates to such key decisions, and choices during these interactions are crucial to success in the game.

The first episode below took place after the pair had been fighting a long, draining war with a nearby civilization. Many of the pair's military forces are now gone, and the production of military goods has been draining the economy. After some early military success, things are beginning to look bad for the pair.

Diplomacy is initiated by the computer civilization. The civilization popped up with a trade offer, offering a peace treaty with concessions (having to give up a technology, Feudalism, to the other civilization), similar to that which is shown below in Figure 67:
Figure 67: Peace treaty with concessions in *Civilization IV*

The pair is offered a peace treaty (left side: what the other civilization offers) in exchange for a peace treaty and concessions (giving up a technology, as represented on the right side). Three options are available:

- "Sounds like a deal!!!" (accept the offer)
- "Care to negotiate?" (edit terms of the offer)
- "It ain't happening." (decline the offer)
By forcing a diplomatic decision to be made, the game forces the pair to begin negotiating. Faced with losing a war, the pair was required to decide whether to accept or reject the offer:

R: "Alright, lets this one" ((Leader popped up for trade))
L: ↑NO.

R: Yeah. Dude they're going to kill us. ((Laughs))
L: ↑Feudalism↑? ((Points to what the pair has on the trade table, Feudalism))
R: Craig, they're gonna kill us.
L: ↑We're giving 'em↑ our crap for ↑nothing dude↑!

A difference in opinion between the two students exists: the right hand student wanted to accept the offer, while the left hand student seemed unwilling to give the other civilization their technology. In Civilization IV technologies can be given to other civilizations without losing the technology; however, it appeared that the pair believed they would lose the technology in the trade.

The representation of the diplomacy screen above lends itself to diplomatic negotiation among teammates. The representation of the computer avatar, with a left and right side (representing sides, containing items to offer in trade) affords negotiation among teammates to create a satisfactory peace treaty.
Conversation between students in this episode focused on the negotiation of acceptable peace terms, using terminology borrowed from the game interface.

The right hand student seemed to grasp the strategic importance of the decision. Realizing that resources were low, he believed that the enemy civilization will end up killing them. While a strong difference of opinion existed, the right hand student interpreted the offer as being of high importance, deeming that the rejection of the computer civilization's diplomatic efforts would ultimately lead to the failure of their civilization.

After some negotiation between students (neither student wanted to give in to the other’s suggested course of action), the right hand student attempted to negotiate the terms of the peace treaty:

R: ((Clicked on 'Can we negotiate')) Give us the city.
π<2707629> (2.0)
L: ↑Tell him to give us Delphi↑. ((Laughs))
R: ((A note from the leader popped up))
((Clicked 'Ok')) "Whaaa ha what?" ((Offer rejected))
π<2714967> (.)

The pair attempted to add the enemy city ‘Delphi’ to the negotiation. As part of the offer, the other civilization would give up one of their cities (transferring ownership to the student’s civilization). However, the enemy
declined the offer: the enemy civilization, currently successful in warfare, did not like the offer and chose not to accept it.

Following, the left hand student relents, allowing the original offer to be chosen (a peace offer with the giving up of a technology) by the right hand student:

L: "Whatever I don't care."
R: "(Clicks to accept the original offer of a peace treaty with concessions)"

The above decision to accept the peace treaty was a major crossroad in the pair's game. This action both ended the unsuccessful warfare and allowed their civilization to produce other items (besides military goods). Had the pair continued fighting, the enemy civilization would have most likely wiped them out.

The diplomatic decision presented by the game was a major decision that largely affected the course of the following game. Had the interaction between civilizations not been initiated by the computer, the war could have easily continued (it is possible that the pair did not know they could strike up a peace treaty with concessions) and the peace treaty might not have even been suggested if left to the peer team to initiate.
The game’s ability to present diplomatic decisions at key intersections in the game is important to learning: it provided the students an exit out of the warfare, and reinforced the complex relationship in the game between military, diplomatic, and technological items. As discussed in the literature, a feature of learning with games is that they allow the simulation of dynamic systems, highlighting the complex relationships between variables. Collaborative activity in the above episode shows learning of this type occurring, which was set up by the diplomatic event (peace offer) created in the game.

Following, a second episode illustrates similar activity, as the pair interacted with another civilization. In the following episode, later in the game play, many civilizations are present on the map, and alliances begin to form:

«<1144743>  (4.0)
L: ((Isabella popped up wanting to talk)) "It can no longer be tolerated we demand that you leave the Egyptians" ((Reading what the leader has to say)) What's our deals with the Egyptians? (.5) †We should probably cancel it because she's right next to us.†
R: Yeah. Let's do that.
«<1176840>  (1.0)

Previously, the pair had fought a long and draining war with a nearby civilization (the Greeks, located adjacent to their civilization on the map).
Learning from previous experience of fighting wars with nearby civilizations, the pair decided to appease the closer civilization (Isabella) and give up all deals with the Egyptians (further away on the map).

In appeasing Isabella, the pair also made enemies with the Egyptians. As gameplay progresses in Civilization IV, this is often inevitable: as civilizations grow, and tensions between them grow as well, alliances often form between the civilizations. With these alliances in the game, often diplomatic interaction forces game players to choose sides (a diplomatic decision has implications among multiple civilizations). This game design further adds to the complexity of managing strategy in the game.

An affordance of these diplomatic decisions is to gauge alliances between other civilizations. Following the previous decision to ally with Isabella and against the Egyptians, the pair explored diplomatic relationships:

L: "(Clicked on 'What do you think of...')"
"(Clicked on 'Alexander')"
L: 'Annoyed.' "(Reading from screen)"
"(Laughs)"

The game offers a way of asking one civilization what they think of another civilization. In this case, the pair asks Isabella what she thinks of their previous enemy, Alexander. It appears that Isabella is 'annoyed' with him. This
information led the pair to think that Isabella might be prone to going to war with Alexander, as shown in the following episode:

R: "See if you can declare war with her.\† Make a trade proposal. "No that's something else."
L: ((Clicked on 'Farewell')) Oops.
R: Click on ((Pointed to Isabella's name)) (.5) Isabella.
R<1205424> (.)
L: [Trade Proposal?] ((Reading from list of options from trade screen of Isabella))
R: [Trade Proposal?] Yeah.
R<1210415> (.)
L: ((Clicks on 'Trade Proposal'))
((Items to be traded for both sides pop up))
R: "Like declare war on her. (.5) Scroll down. 'Alexander'."

The pair was not trying to declare war on Isabella; rather, they were attempting to encourage Isabella to declare war on Alexander. This can be accomplished through a trade, as shown below in Figure 68:
Figure 68: War declaration as a tradable item in Civilization IV

On the left, declaring war with other civilizations is a diplomatic trade option. A civilization can sometimes be bribed into declaring war with other civilizations. The pair attempted to encourage Isabella to declare war on Alexander, a former enemy:

L: For what?
R: Click on that.
L: What?
R: Click on 'What do you want for this'. ((Choice on screen))
L: ((Clicks on 'What do you want for this' option))
R: No what? (Isabella is shaking her hand and her head no)

L: [Gold going up] (Clicked on their gold)
(Closed gold option)

R: [Gold going up] 'Can you trade this for a good friend?' (Points to option on Isabella's trade screen)

L: (Clicked 'Can you trade this for a good friend?')
(Isabella shakes her head no and her hand no) I don't know what we're doing.

R: Ok never mind. Go back to. ↑Try to declare war.↑

L: (Clicked on 'Farewell')

As in Figure 69, one can put an item (such as a war declaration) on the trading table, and then ask the other civilization “What do you want for this?” to prompt a counter-offer:
In the above figure, the other civilization counter-offered a war declaration in trade for three major technologies in the game. However, in the episode, the pair was not able to have Isabella declare war, potentially because they either did not have something she wanted or she did not dislike Alexander enough to declare war on him. Again, as in the preceding episode, the game highlights important relationships between military conquests, technology items and diplomacy. The game also prompts early on for a key decision to be made wherein the pair must decide with which civilization they should become allies.
5.4.5 An Unexpected Battle Loss in Civilization IV

A short episode from Civilization IV presents the loss of a battle in a military engagement that served to motivate students:

R: "Should I attack them?"
L: Which era are you guys in? Oh you guys are in 100 B.C. ((Talking to peer team)) (.5) Yeah attack 'em. ((Talking to R again))
R: ((Clicks on 'Pillage' icon)) Uh sweet.

The right hand student is in control of the mouse, effectively in control of the game. The left hand student checks the peer team's progress, and responds to his teammate giving the go-ahead to attack an enemy military unit.

Following, attention of both students is grabbed as they lose the battle:

R: ((The enemy has turned around and killed the pair's military))
 wondered) (0.5)
No this did not happen.
L: WHAT!
R: If we would leave that would not have happened.
L: He killed all three guys? ((Talking to peer team))
R: ((Pressed 'Enter' to end turn))
 wondered)
Following the loss of the engagement, the students express both surprise and remorse at the loss of their military unit (military units are represented by a group of three military personnel). The loss of the battle draws the attention of the pair and they appear more engaged after the loss of their military unit. Later in game play, the pair strategizes how to be more successful in battle by grouping military forces together.

Failure appeared on the goal level: the students understood the game interface sufficiently to use military units. They did not, however, achieve success in accomplishing their goal (of winning the battle). The failure appeared to add motivation to be successful at the task, prompting new strategies later in their game play.

5.4.6 Repeated Failure at Diplomacy in Making History: The Calm & The Storm

The following sequence of episodes from Making History: The Calm and The Storm demonstrates failure by students to accomplish diplomatic efforts. The pair appeared to understand how to initiate diplomatic efforts and grasped the importance of diplomacy in the game. However, while initial failure appeared to motivate the pair to try again, their repeated failure at diplomacy caused the students to focus their attention elsewhere in the game.
The first episode highlights some of the pair's initial strategy. They had declared war on several countries:

Peer team: So who are you guys joined up with now?
L: Dude, we are all by [ourselves because we declared war] on everyone. ((Clicked on 'Military' icon))
R: [Yeah we're attacking everyone.]
Peer team: Awesome. ((Laughs))
L: Yeah let's see (.5) we're ((Clicked on 'Diplomatic Agreements' icon)) (.5) We have no alliances. ((Laughs))
((Scrolls over combat reports))
R: ((Laughs))

As indicated by the transcript, the students had declared war with several nations in the game. Discussion with peer teams led to the pursuit of diplomatic actions in attempting to form alliances:

L: ((Clicks on 'Select Nation'))
((Selects a nation))
((Clicks on a diplomatic action))
((Confirms the action taken)) OOOH. Both of em. ('Peace offering fails' window pops up)), Do we get to play RollerCoaster Tycoon?
R: Yeah I want to play that that would be fun.

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L: «Clicks on 'Diplomatic Agreements'»,
«Clicks on a nation»
«Clicks on a diplomatic action»
«Confirms the diplomatic action»
«'Treaty Rejected' window popped up»
«Clicks 'Ok' to close window» Alright. Wait are these our allies? «Clicks on a nations flag» "Wait, wait" «Uses the keyboard to go back to the previous screen»
R: No (.5) those are just what they are called. We don't have any allies.
L: «Scrolls to Northeast United States on map»
R<928781> (.)
L: Alright let's find someone in the air. «Zooms out from map»
R: Oh go take that plane.
L: «Clicks on the plane that R suggests»
R<933191>

Several attempts at making alliances with other countries failed. The pair had no difficulty on the operational level (executing alliance attempts) but was rejected on the goal level by the game. Difficulty making alliances caused the pair to focus on other objectives in the game after failing at several attempts.

The following day, the pair began a new scenario by executing a new strategy:

L: No. We need to find out (.5) if we are at war with anyone.
((Clicked on 'Diplomatic' icon))
No current wars. ((Scrolled across map))
Let's get some alliances before we start any wars with anyone. (2.0) Should be alliances with people around us or with people from far away and then take over all these? ((Scrolls around Europe))
Teacher: ((Giving advice to both dyads; telling them to vocalize their strategy))
R: We should make alliances with bigger countries. Like USA and stuff, Russia.
L: Alright.

The pair demonstrated learning, as a behavior change is evident from the previous day. After experiencing difficulty the previous day (attempting to make alliances after declaring war on several countries), the pair considered diplomatic action before creating any wars, as verbalized by the left hand student.

The following episode shows continued attempts to form alliances:

L: ((Scrolled across United States))
((Clicked on 'Mini Map'))
((Zoomed out from map))
((Clicked on 'Diplomatic Agreements'))
((Clicked on a Nation))
((Clicked a Diplomatic action))
((Clicked 'OK' to confirm action))
(('Treaty Rejected' window popped up))
R: Aww, come on! What do we have to get?
L: ((Scrolls around world map)) I don't think we're friends with them man. ((Clicks on 'Mini Map'))

L: ((Clicks on 'Diplomatic' icon))
((Clicked on 'Diplomatic Agreements'))
((Clicked on a Nation))
((Clicked a Diplomatic action))
((Clicked 'OK' to confirm action))
(('Treaty Rejected' window popped up))

L: ((Clicks on 'Diplomatic' icon))
((Clicked on 'Diplomatic Agreements'))
((Clicked on a Nation))
((Clicked a Diplomatic action))
((Clicked 'OK' to confirm action))
(('Treaty Rejected' window popped up))

Alright, we're gonna have to start some wars now.

R: Definitely. It's the only way to uh, (.5) to win this game.
L: ((Scrolls over to Europe))
((Zooms in on Europe))

Then -
((Clicked on 'Military' icon))
R: Stay, stay on this for a second. (.5) Is there like a (.5) what the hell? °
L: ((Opens up instruction manual to game))
R: ((Picks up Game Interface brief booklet))
After renewed motivation to create alliances before going to war (as they gauged diplomacy to be an important aspect of the game) repeated failure led the pair away from attempting to form alliances. The left hand student gave up ("we’re gonna have to start some wars now") and the right hand student agreed ("It’s the only way to win this game").

Focusing on the representation of the game interface, as shown below in Figure 70, the game offered a simple message to reject an alliance offer:
Figure 70: Rejection of an alliance offer in *Making History: The Calm & The Storm*

For each of the alliance attempts, a similar representation is given. The game gives no feedback as to *why* the alliance was rejected; it just says that it was rejected without giving any explanation. Feedback is a necessary component in goal evaluation, which is similarly discussed by Norman's *Gulf of Evaluation* in determining how successful ones' actions were in achieving goals (Norman, 1988). The lack of feedback from the game limits the creation of new strategy for successful future diplomatic alliances.
Following, the pair began to declare war randomly, suggesting the breakdown of the game's purpose. After learning the first day that declaring war on many countries seems to hurt chances of achieving diplomatic success, they declared war on randomly selected countries anyway:

R: ((Has control of mouse))
((Clicks on Spain))
((A warning screen pops up))
((Clicks 'ok'))
((Chuckles))
((War is declared by Spain))
L: What?
R: ((Clicks 'OK')) It's just Spain. Spain sucks.

After being questioned by the left hand student, the right hand student explained his actions for declaring war on Spain, because “they suck”. This form of logic, after some display of knowledge that multiple war declarations hurts diplomacy, illustrates the ‘giving-up’ of attempting to achieve diplomatic success in the game.

A later episode showed a similar pattern:

L: ((Scrolls across map to ocean))
((Clicks on an explosion that represents a battle))
R: We're free to kill them.
L: What's this? ((Navy window pops up))

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R: Holy crap. Wait are they they're not our enemies are they?
L: Yeah.
R: Let’s make friends with them.
L: ((Clicks on ship in ocean))
R: Are they our enemies? (.5) I don't think they are.
L: ((Clicked on 'Diplomatic' icon)) ((Clicked on a nation))
((Clicked on a diplomatic action))
((Confirmed the diplomatic action))
('Treaty Rejected' screen popped up)
R: Geez. (.5) It looks like we have no choice but to attack them.
«<820313> (.)

Again, the pair's diplomatic actions were rejected, so they returned to warfare as an alternative. Later in gameplay, a diplomatic alliance was finally achieved:

R: Try to make friends with Italy. (.5) More to the right. In the green there on the bottom.
L: Here? ((Scrolls around Europe))
R: Yeah.
«<1656460> (.)
L: ((Clicks on Italy))
R: ((Laughs))
L: ((Clicked on 'Diplomatic' icon))
((Clicked on 'Diplomacy Agreements' icon))
((Clicked on a nation))
Discourse between students suggests that after repeated failures with diplomacy, the pair was surprised that an alliance offer was finally accepted. An example alliance formation is presented below, in Figure 71:
The above alliance is representative of all alliances in the game: the same picture is used every time (showing Stalin, Roosevelt and Churchill), and the message says "Alliance Granted: we have joined the X Alliance". As can be seen by discourse in the transcript, confusion exists as to why the alliance was successful.

A final episode shows a later attempt at diplomacy, in a subsequent day after starting a new game scenario:
L: Who are we?
R: Uh, Russia.

「(Clicks on 'Diplomatic' icon)」
「(Clicked on 'Diplomatic Agreements')」
「(Clicked on a Nation)」
「(Clicked a Diplomatic action)」
「(Clicked 'OK' to confirm action)」
「('Treaty Rejected' window popped up)」
L: What?

「(Clicked on 'Mini Map')」
「(Clicked on 'Diplomatic Agreements')」
「(Clicked 'No' when asked to confirm)」
「(Clicks on 'Diplomatic' icon)」
「(Clicked on 'Diplomatic Agreements')」
「(Clicked on a different Nation)」
「(Clicked a Diplomatic action)」
「(Clicked 'OK' to confirm action)」
「('Treaty Rejected' window popped up)」

「(Clicked on 'Mini Map')」
「(Clicks on 'Diplomatic' icon)」
「(Clicked on 'Diplomatic Agreements')」
「(Clicked on a different Nation)」
「(Clicked a Diplomatic action)」
「(Clicked 'OK' to confirm action)」
「('Treaty Rejected' window popped up)」
「(Scrolled over to Russia)」
After several attempts, the pair gave up on attempting diplomacy in the game and moved on to other actions (again, focusing on warfare).

The lack of feedback from the game interface in *Making History: The Calm & The Storm* in making alliance offers (diplomacy) seems to hurt gameplay. Game players are left to fill in the blanks as to why treaties fail or occasionally succeed. The game successfully creates learning about the relationship between diplomacy and warfare, as the experience of warfare without alliances proves to be difficult. However, the pair was unable to create successful alliances for the purpose of teaming up with other countries and combining forces (the one alliance successfully created with Italy was later broken after being deemed useless).

The game purpose seems to break down after continued failure at diplomacy. Following the continued failure at diplomacy, game play was typified by the movement of military forces around the map, as the students seemed to engage and fight whomever was nearby. Without diplomacy in *Making History: The Calm & The Storm*, the focus shifted to military conquest, where students did not appear to be learning as much as those playing other games in the study.
Failure at the operational level (execution of a strategy) would ascribe failure to not learning the game interface; however, failure at the goal level suggests failure in the pair’s strategy. However, shifts in strategy were made by the pair, but the same outcome (failure in alliances) was reached, possibly reinforcing that the game activity should focus on warfare. The lack of feedback as to why the pair failed seemed to negatively impact their experience and purpose for playing the game because the lack of feedback limited the pair’s ability to generate new game strategies.

5.4.7 Repeated Difficulty in Linking Footpaths to Ride Entrance and Exits in RollerCoaster Tycoon 3

In RollerCoaster Tycoon 3, the pair experienced problems connecting footpaths in the park with ride entrances and exits. When a ride is built, the game players must place the ride’s entrance and exit and then connect them to a footpath in the park so that customers can reach the ride. As discussed earlier, the pair frequently had problems completing this action, especially when the footpath and ride entrance (and exit) were at different heights (requiring building vertically inclined paths).
Focus in this episode is placed on the pair's response to failure, as analysis of the game representations and interface was done previously (earlier in this chapter).

In the first episode, the pair built a ride and experienced this problem:

L: Is that cool? ((Places ride near a main path))
R: Yeah. Is the pathway going to be hard to make?
L: "No." ((Places the entrance / exit for the ride))
((Clicks on 'Path' Icon))

L: It shouldn't have been. ((Trying to place path by entrance of ride))
R: It's on a hill ((Laughs))
L: "Well it shouldn't have been."

As conversation shows, the pair had experienced problems making footpaths previously that connect to a ride entrance and exit. Following some struggle, the pair asked a peer team for assistance:

R: We should have stuck with the other one.
L: "I know" ((Laughs)) OOPS ((Clicked on the different path options))
R: We should go back. ((Laughs))

L: How do you get? Do you guys know how to do like inclines for like paths? ((Zoomed in on ride))

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Peer team: Yeah. There's like a I don't know there's like a button for it or something.
L: Oh is that what; it is, a button?
†Thanks for the help.† ((Clicks on a different type of path))
R: ((Laughs))
«2080341> (.5)
R: It's not gonna work. ((Chuckles))
L: Alright, fine we're gonna make it work. (.5) That was a bad spot to put it in. We should of put it in the middle. ((Changes camera view to middle of park where the land is flat)) But we can do more rides.
«2093248>

After failing to fix the problem, the current ride was abandoned and a workaround was presented: to place the ride on flat ground, so that vertically inclined paths were not needed.

Repeatedly in the game, the pair placed a ride in their park, but could not successfully complete it. In most cases, the pair had a clear idea of what they wanted to do (clear goals), but had trouble executing those goals on the game interface. Often, the pair gave up after several minutes, similar to what was done below:

R: There we go. Now go to construction.
L: There is no construction.
R: Right here isn't this construction? ((Points to
the 'Customer' icon)) (.5) Oh what's this the people?
L: "'Customers', 'Operating'" ((Clicks through the different menu options))
R: This little guy with little "thing." ((Points to the 'Maintenance' icon))
L: That's 'Maintenance'.
R: Can you just delete it and put a new one in?
L: ((Clicks on the ride))
((Clicks all over the ride)) Yeah. But I don't think we can delete that "can we?" ((Clicks on 'Delete Objects' icon represented by a trash can))
R: Go to delete and
L: ((Clicks around the ride with the garbage can))
((The ride is not deleting but the ground around it is)) Have you guys deleted a ride yet?
Peer team: Hmm
R<1915703>

Deleting a ride returns some of the ride investment to the game players, and also frees up space in the park to build other attractions. Much time was spent attempting to build rides, typified by several minutes of unsuccessfully linking the ride entrances and exits to a footpath. Similarly, the pair had trouble placing food stands to face a footpath (so customers could reach the stand).

Several console messages appeared stating that customers were 'having trouble reaching a food stand.' This problem was often solved by either deleting the
food stand or by placing footpaths entirely around every side of the stand (so that whichever side the entrance faced, there was a connecting footpath).

The controls in *RollerCoaster Tycoon 3* involving the manual creation of three-dimensional objects in a two-dimensional space (the computer screen) were difficult for students to master. Often vertical space made it difficult to connect the footpath to ride entrances and exits. Also, because attractions could be placed in any direction, facilities such as food stands were difficult to place so that customers on an adjacent footpath could reach the entrance.

Focus in this discussion is not meant to be on the game interface (that is done elsewhere), but rather on the way students’ behavior and discourse react to failures. Repeated failure often appeared as the result of not being able to execute goals properly. The game players’ goals were not rejected, and accordingly, they were persistent in attempting to accomplish their goals. However, their execution of goals led to frustration with controlling the game interface, something they alleviated by occasionally asking peer teams for help. After long periods of frustration, the pair frequently abandoned a task in favor of starting a new task that they felt they could accomplish. Pairs often deleted unfinished rides and followed by starting a very similar task (such as starting to
build a new ride in a different place in the park). This indicated operational level (execution) problems, since goals were maintained.

5.4.8 Summary

Game features that trigger learning have several features: they grab attention; they promote discourse; and they encourage the negotiation of strategy in response to problems presented. In RollerCoaster Tycoon 3, the type of message given by the game resulted in a corresponding behavioral response in the pair. For instance, when given an award, students’ attention was grabbed, the message was read aloud, and often the pair compared their progress with others.

Alternatively, when messages focused on a problem (such as a ride breaking down), attention was usually grabbed, the message was usually read aloud, and was typically followed by the negotiation of a new course of action to deal with the problem. The presentation of the game messages as text sliding down afforded the attentional focus and reading of the message and the specific content of the message afforded different action as a response. Messages that presented ‘problems’ often resulted in the pair attempting to fix the problem, while messages presenting a level of achievement often resulted in checking progress with others.
5.4.8.1 Key Benefits of Artificial Intelligence Used in Civilization IV

Some artificial intelligence (AI) in games aided the learning process. In Civilization IV, the intelligence served two primary purposes in the game: it helped detect problems, and automated repetitive functions in the game. In the detection of problems, game intelligence can encourage the learning process by making suggestions for action. In Civilization IV, the game highlighted some affordances to the pairs, serving to draw attention to them. For instance, when the game detected that the pair had not built a second city after some time, the game highlighted and flashed the 'Build City' icon, prompting its exploration and encouraging its use. Similarly in Civilization IV, some technology choices had the word 'Recommended' after them, suggesting their choice and further exploration of why to choose those technologies (pausing the mouse over the technologies will reveal some of the possibilities of the new technology). This is especially helpful to beginners in a game as they learn to play. Affordances are suggested, but not enforced so that more advanced players can choose not to follow the game's suggestions.

AI also helped gameplay through automation of objects. Again, in Civilization IV, several of the games' objects (workers, explorers, etc.) have automated features (for example, workers can be told to automatically improve
Automation allows for the gamer to offload action to the computer by giving repetitive tasks back to the computer to manage. This avoids the need to assign tasks to every object each turn in the game, allowing attention to be directed elsewhere. This aids the learning process, as time can be spent doing other things (hopefully learning somewhere else in the game).

Additional offloading can be accomplished with the use of summary screens. The Technology Advisor in *Civilization IV* not only aids in goal selection, but is a tool for offloading the memorization of technologies to research. The Technology Advisor is a persistent tool that can be viewed at any time. Students are not burdened with remembering specifics on technologies and their contingencies. As suggested by literature, games can promote resourcefulness rather than the memorization of facts.

Affordances leading to learning can be forced by the game, as done in *Civilization IV* when students are confronted with diplomatic treaties. In the example above on forced decisions, the redirection interrupts game play. The interruption was beneficial to the pair (breaking their focus of fighting a battle), redirecting attention to making use of other game aspects (diplomacy,
technology) to accomplish something they might not accomplish through use of their military.

5.4.8.2 Summary of Types of Failure

Failure manifested in several different ways. Random failures, such as the example from *Civilization IV*, tend to draw attention to the failure and motivate students to address the problem; however, repeated failure often led to the abandonment of a task in favor of starting another task. It appeared that all failures, similar to game cues presented earlier, served to temporarily shift attention (to the failure), and the type of failure could either add or remove motivation to try again.

Among repetitive failures, differences in behavior can be seen depending on whether the failure was on the operational (execution) level, or at the goal level. In *Making History: The Calm & The Storm*, failure was at the goal level. Repetitive failure seemed to manifest differently: when repetitive failure at the goal level occurred, often goals were abandoned (as seen in *Making History: The Calm & The Storm*, where students abandoned diplomacy after failing multiple times without feedback, serving to reinforce that the game activity should be focused on warfare); whereas instances of failure at the operational level did not lead to the abandonment of the goal. In cases of repeated failure on the
operational level, such as in RollerCoaster Tycoon 3 while attempting to build footpaths, students showed their frustration in their inability to control the interface. Failure at the operational level led to workarounds being explored to achieve the goal, such as when students built footpaths entirely around a food stand in RollerCoaster Tycoon 3. The abandonment of a task at the operational level often consisted of deleting an object and starting over, while appearing to maintain the same goal.
5.5 \textbf{CONSISTENT ORGANIZATION, VISUALIZATIONS, AND BEHAVIORS}

Persistent interface items, such as the top-level icons in \textit{RollerCoaster Tycoon 3}, created a consistent means of executing action in the game. Students knew where to look to begin searching for interface items. Similarly, in \textit{Civilization IV}, consistency in the display of pop-up information of objects aided students, as pop-up information of objects (workers, etc.) was always presented in the bottom left corner of the screen using consistent coloring of words (the game colors technologies one color, buildable items another color, etc.).

However, several examples are included that demonstrate otherwise, e.g., how inconsistent organization or behavior of things can cause problems for learning. Following are three examples: two showing problems in consistency of the visual interface, followed by an example showing the benefit of good organization on the interface.

5.5.1 \textit{Finding Pre-made Roller Coaster Designs in RollerCoaster Tycoon 3}

The following episode illustrates a recurring problem when building roller coasters: that of not utilizing pre-made roller coaster designs. In \textit{RollerCoaster Tycoon 3}, an inconsistent representation of building roller coasters is
present in the game: some ride types can be built by clicking on their picture, while clicking the picture of other rides will cause the building of a custom roller coaster.

For instance, below in Figure 72, one can select a 'Merry-Go-Round' by clicking the picture of it:

Figure 72: Selection to build a 'Junior Ride' in RollerCoaster Tycoon 3

Clicking the picture of the Merry-Go-Round selects the ride, and placement of the ride begins, as shown in Figure 73:
This process is the same for both 'Junior Rides' and 'Thrill Rides'. However, when selecting to build a roller coaster, clicking the picture of the roller coaster will cause the custom coaster design menu to appear, as shown in Figure 74 and Figure 75 below:
Clicking a picture of a roller coaster will launch custom roller coaster creation, where the gamer must choose each section of the track, piece by piece, as shown in Figure 75:

Figure 74: Roller coaster selection in *RollerCoaster Tycoon 3*
As noted in the conversation of students in the following transcript, they were surprised that they had to build the coasters one piece at a time:

L: What rides you wanna do?! ((Scrolled through the rides they can create))
R: Do a thrill one.
L: Let's do a rollercoaster. ((Partner's request ignored)) ((Clicks on 'Rollercoaster' icon))
R: Yeah that's what! °I meant.°
L: Which one you wanna do?
R: Suspended swinging roller.
L: ((Scrolls over roller coaster options))
((Clicks on a different roller coaster))
R: Ok do that one.
L: ((Zooms out from ride))
R: We should do it towards. Oh, we actually build it?
L<1732440> (.)
L: Yeah.
R: Oh God.

The pair seemed surprised that they must build the coaster themselves, one piece at a time. It seems that the pair expected pre-made designs to be available.

However, pre-made roller coaster designs are available in the game: when selecting the roller coaster to build, one can click on the little yellow folder icon, which will bring up pre-made roller coaster designs of that type. This can be seen in Figure 76 and Figure 77, respectively:
Figure 76: Accessing pre-designed roller coasters in *RollerCoaster Tycoon 3*

Clicking the folder icon shown above brings up the following screen:
Selecting a track from the list, then clicking the green 'check' icon allows placement, similar to other types of rides, as seen in Figure 78:

Figure 77: Pre-designed roller coaster selection in RollerCoaster Tycoon 3
Figure 78: Placement of a roller coaster design in RollerCoaster Tycoon 3

The small yellow folder icon next to the roller coaster pictures (in the roller coaster selection menu) is missed by the students, and the pair proceeded to build a custom roller coaster:

L: ((Clicked around the grounds of the park in an empty area))
\[<1736044>.\]
L: ((Clicks on the one piece that he already placed and nothing happens))
((Clicks a different piece to build- from the building menu))
((A game prompt appears stating that the two pieces...)}
they are trying to join will not connect together))
Never mind. ((Continues to click on different pieces to connect to their original piece already placed on the park grounds))

R: How do we go up? We should make it really really high.
L: ((The new piece chosen works))
((They continue to click and build pieces in a circular pattern, higher and higher))
R: Oh that's how? ((Laughs)) Oh my God.

R: Okay, go straight across, then dip down.
L: ((Clicks on a new piece that is straight))

R: Yeah, do straight, and then go. ((Laughs))
((Prompt comes up saying that the two pieces do not connect))
L: ((Clicks on another piece to build))
((Another prompt comes up telling them that the piece chosen will not connect))
R: You know people are gonna get sick on this ride.
L: Yes ma'am.

L: That's my goal. ((Clicks on a different piece to build))
((Moved cursor to the ride being built))
Negotiation of the appearance of the roller coaster continued between students. After some time of trying to designing the custom roller coaster, the pair struggled to complete it:

((An outline of where the piece would go started swinging everywhere without L doing anything))
R: "What?" (.5) What happened to the top? ((Points to the top of the ride they are building))
L: No idea. ((Clicked to place a piece but the blue outline is still swinging everywhere))
R: What's going on?
L: ((Clicks on another piece to place))
((A prompt comes up stating that it cannot connect to the other track piece already placed))
((Continues to click on different pieces))
((The same prompt pops up saying that it cannot connect the pieces))
R: Maybe you can't do anymore.
L: "Probably out of money." ((Laughs))
R: "No, we have five thousand dollars."
L: ((Closes building ride menu))

After some struggle of completing the roller coaster, the pair gives up and moves to another task:
L: OK this one is not working out for us. (Clicked on the 'Delete Object' icon instead) So let’s go! *work on this ride.* Should we just delete this ride?<
R: Yeah. [It's gonna cost more.]
L: [And work on it later?] Yeah. No. (Clicked on single trash to delete ride)
((The ride is not deleting))

L: Ok you guys, lets uh...
R: Time to delete.

Following the abandonment of the custom roller coaster, the pair attempted to delete the partially built ride, but struggled to use the 'delete' icons in the game.

L: (Clicking around the ride trying to delete it))
Yeah, lets delete this man. (Clicked on the double trash can to delete more space))
((Prompts keep coming up saying that they cannot delete the ride))

L: (Deleting ride pieces one at a time) What? Why can't we delete it? Delete! OK. I guess we just have to work on it then.

R: Let's put some food places in there, so that people are hungry. (Points to food stands menu)
L: No, well no, we gotta work on our ride, dude.
After manually removing some of the sections of the track, but unable to remove the ride completely, the pair abandoned the task and began working on a new ride.

Several items might be discussed in this episode; however, attention should be paid to the design of the game interface with respect to custom roller coasters. In this case, the representation required to access pre-designed coasters was totally overlooked by the pair for the entire four days of playing the game.

The representation for building roller coasters is as follows:
In the above figure, clicking anywhere else in the list (the picture, text description) will launch custom roller coaster design. The affordance of pre-designed coasters can be easily missed. The game does not draw attention to the folder icons after several missed attempts: the pair missed the icons for the duration of their game play, over several days.

Missing the pre-designed coasters drastically altered the nature of the pair's game play because much time was spent (and much of their profits were wasted) unsuccessfully creating custom roller coasters. While experts might
enjoy custom roller coaster design, novices (such as the students) struggled in their games trying to figure this out. This missed opportunity on the interface might have been corrected with a bit of behavior detection, similar to the way *Civilization IV* flashes underutilized icons (such as the ‘Build City’ icon when Settlers have not been building enough cities).

Additionally, the sequence of actions to build other rides in the game (clicking its picture, and then placing it) would lead game players to think they had executed the proper sequence of actions to build roller coasters. For the other two types of rides (thrill rides and junior rides), clicking the icon will go immediately to placing the entire ride, not pieces of the ride. Based on four days of building custom roller coasters, the pair appeared to believe the only way to build roller coasters in the game was to do it manually, piece by piece.

5.5.2 Creating Pathways to Ride Entrances in *RollerCoaster Tycoon 3*

A sequence of episodes highlights trouble encountered by the pair playing *RollerCoaster Tycoon 3* over their period of gameplay. In *RollerCoaster Tycoon 3*, game players must create level footpaths between their ride entrance and exit, and a footpath in the park. This allows customers to reach and get on and off the rides. In the following sequence, the pair struggled to connect the paths to the
rides, often because they were at a different height (the ride, and its entrance and
exit, are often above the height of the parks' footpaths).

L: Is that cool? ((Places ride near a main path))
R: Yeah. Is the pathway going to be hard to make?
L: "No." ((Places the entrance / exit for the ride))
((Clicks on 'Path' Icon))
π<2039905> (1.0)
R: NO.
L: It shouldn't have been. ((Trying to place path by
entrance of ride))
R: It's on a hill ((Laughs))
L: "Well it shouldn't have been."
π<2047916> (1.0)
R: We should have stuck with the other one.
L: "I know" ((Laughs)) OOPS ((Clicked on the
different path options))

The pair had created a ride, and expected that the ride would be easily
connected with an adjacent footpath. However, they were presented with
something similar to what is presented in Figure 80:
Figure 80: Problems joining ride entrances and exits to an adjacent footpath

The pair continued to struggle with finding a way to fixing the problem.

Following, one team member hints at the solution (footpaths with inclines) but is not able to find a way to accomplish it:

R:  We should go back. ((Laughs))
\#<2061405> (.5)
L:  How do you get? Do you guys know how to do like \textit{inclines} for like \textit{paths}? ((Zoomed in on ride))
Peer team: Yeah. There's like a I don't know there's like a button for it or something.
L:  Oh is that what\textdagger? what\textdagger? it is, \textdagger?a button?\textdagger?
Thanks for the help.\textdagger (Clicks on a different type
The left hand student made use of the peer team as an information source, but did not get much help ("it's a button"). Perhaps the appeal to the peer team was not as direct as before, and the corresponding response by the peer team is less detailed. After struggling for a while, the pair gave up and decided that it would have been better to put the ride on flat ground to avoid the problem:

R: It's not gonna work. ((Chuckles))
L: Alright, fine we're gonna make it work. (.5) That was a bad spot to put it in. We should of put it in the middle. ((Changes camera view to middle of park where the land is flat)) But we can do more rides.

While placement of the ride on level ground would have avoided the interface problem, the pair overlooked a feature of footpath creation that would have allowed them to successfully make inclined paths. In the following figure, path incline options are shown:
Figure 81: Path inclines in *RollerCoaster Tycoon 3*

In order to create a path, the path icon (left side, third button from bottom list) can be clicked, and then clicking on the ground anywhere inside the park will place a path. When making paths, the path menus are apparent (the set of menus in the bottom left corner of Figure 81). However, they are not needed to make regular (flat) footpaths. Any special features of paths need to be accessed from this menu, such as inclines, declines, or special queue paths (a different design of path intended for queue lines). While the other team did not overlook these buttons and were able to figure out how to make inclining paths, the pair
missed the representation presented by the game interface. This led the pair to
explore workarounds, and was followed by the abandonment of the task.

Game designers could have made all path creation accessible only from the
path creation menu; however, they chose to allow users to make flat paths
without having to deal with the path creation menu. For basic, flat paths, this
saves the user one click: they can just click the main ‘path’ icon and start making
paths. However, this leads to learning problems like those previously
encountered: game players seem unaware of the more advanced path creation
abilities, as they are not accustomed to clicking on any of the options of the path
creation menu that appears when making footpaths. Student behavior shows
that the pair was used to clicking the footpath icon to place paths, and did not
conceive of doing it in a different way. This inconsistency in the interface created
problems for the pair.

A subsequent episode demonstrates a different way to create paths by
using an icon found in the ride entrance and exit menus. At the start of the
episode, the pair was placing a ride on a hill, which the right hand student
identified as problematic:

L: It's up though.
R: >Which is going to be a problem.<
L: Not really. ((Places an entrance and an exit by
new ride)
R: Most likely. ((Laughs))
L: Um ((Changes view of camera)) I don't know yet. I will find out. (1.0) ((Zooms in on the new ride))
We'll find out right here. ((Clicks on 'Paths' icon))

Conversation makes evident the anticipation of problems with connecting footpaths to the ride entrance and exit, based on previous experience building rides. Again, as above, the pair ran into trouble making the path the same height as the ride entrance and exit.

R: Yes or a bridge or whatever. (.5) We have to build a bridge.
L: ((Starts placing an Asphalt path near entrance and exit of new ride)) Yeah I know. So (.5) how do we do that?
R: Right there ((Points to 'Paths' editing buttons))
L: 'No I think this' ((Scrolls over path choices))
R: Oh this is it right here. ((Points to 'Queue Path' button)) (.5) No it's not it.

The pair attempted to find a 'bridge building' icon, but failed to do so. They then attempted another strategy, focusing on editing the terrain in the game. In RollerCoaster Tycoon 3, it is possible to dig out the ground (create lower terrain) or build mounds (raised terrain):
L:  Hmmm
R:  ((Points to 'Scenery' icon)) I think it's this button because there's like fences and trees and there should be... (2.0) We can raise the ground right there.
L:  ((Scrolls through icons under 'Scenery' icon)) No. We haven't had too much luck with that. (.5) Alright. (.5) How about (.5) we (3.0) ((Moused over all icons)) I don't know how to do that. (.5) Do you want to try the terrain thing?
R:  (.)
L:  ((Laughs)) Do this one so it goes like up and flat. ((Points to 'Adjust terrain tiles' again)) I think. Or maybe not. (.5)
R:  (.)
L:  ((Clicks on 'Adjust terrain tiles')) ((Clicks on 'Free-form terrain tile shaping' icon))
R:  OH YEAH. (.5) "That's what it was."
L:  ((Clicked on ground and nothing happened))
R:  (1.0) Yeah, that doesn't work.
L: Where does it work? (.5) There's no money. WHAT. What is going on? (.5)

As can be seen in Figure 82, the terrain editing tools can be somewhat difficult to control:

Figure 82: Editing terrain with the terrain editing tools in RollerCoaster Tycoon 3

The pair attempted to edit the terrain near the ride by raising and lowering the ground (which costs considerable money on each attempt), and ended up abandoning this approach to search for a way to create ramps:
L: No ramps.
R: Didn't we like have ramps like just
L: Yeah that's what I thought we did. (.5) I swear we had a ramp. Whatever we're gonna have to do something else then.
R: (hhh) Just go into a (unclear speech)
L: Oh there might be something here. ((Clicked on ride menu)) (4.0) ((Clicked on 'Exit' icon in ride menu)) I'm gonna try the entrance exit thing.
((Changing view of camera))
((Clicked on path leveling icon in ride exit menu))
(2.0) ♪Ooo! What is this? ((Ground under path automatically is leveling to height of ride exit))
R: Oh my goodness.
L: Cool. ((Placed exit by clicking))
π<1588641> (.5)

Next, the pair explored the ride menu, as seen in Figure 83:
After opening the ride menu and clicking on the icon highlighted above (to choose a ride exit), the game representation changes correspondingly, similar to what is shown below in Figure 84). The pair found an option to automatically raise or lower the ground to match the ride’s exit, which was found under the ride menus (accessible from clicking on the icons around the ride displayed in the bottom-right corner of Figure 83):
Following, the process was repeated with the entrance:

R: It's so much nicer. Now we have to go back and do the entrance. (2.0) Oh that one didn't work. Do we have to draw a [path over...]?
L: [Oh yeah] I didn't do that um this thing
((Clicked on 'Choose an entrance for the ride / attraction' icon))
((Clicked the path leveling button on the ride entrance menu, which successfully leveled the terrain to connect path with entrance))
R: Ahh. (2.0) Now open it.
L: Cool. ((Successful))
The pair successfully found a way to create level ground that smoothed the ground so that a footpath could be connected to the ride entrance and exit. Success was achieved after stumbling across an icon: many strategies were tried, as footpath and terrain editing appeared in several different locations in the game (the footpath icon and menus, the terrain editing icons and menus, as well as the ride entrance and exit menus, which were located under the ride menu seen in the bottom-right corner of Figure 83 above).

It seems that in RollerCoaster Tycoon 3, ride options can be changed by accessing many different menus that do not always appear to be related. Often, game players rely on reading pop-up text by mousing-over icons in the game. While many icons are well-designed representations of what they accomplish, many require reading pop-up text, which often is less preferable to gamers than visual information. Additionally, finding the right tool to solve the problem (as above) can be difficult, requiring searching through many different menus and sub-menus to find the correct icon: highlighting the need for better icon organization.

A brief analysis of the game interface shows that the game designers might be aware of the difficulty in using the terrain editing tools. The placement
of a button under the ride entrance and ride exit menus to ‘auto-level’ nearby
ground suggests that leveling the ground may otherwise be a difficult task
(through use of the game’s terrain tools). While related to the ride entrance and
exit, the placement of a terrain editing option seems illogical in the ride entrance
and ride exit menus, when a separate terrain editing menu (in the main menu,
signified by a ‘shovel’ icon) exists.

This seems to be a source of frustration for the game players. They often
resorted to asking peer teams for help after searching through menus on the
game interface, but they did not always get the answers they needed.
Frequently, failure resulted after abandoning a task in favor of starting a new
task.

5.5.3 Unlocking Technologies in Civilization IV

In Civilization IV, technologies take several turns to unlock. The following
episode shows this being understood, serving to reify the turn-based style of the
game and to aid the understanding of unlocking technologies as presented in the
previous example.

R: Sailing. (‘What would you like to research now’
     window popped up)
L: YEAH. Sailing. (Clicked on 'Sailing) "Cuz it’s
     so." Ah then that that shows how many turns there is
"The Research Bar shows what technology you are currently researching and how many turns until research is completed." (Civilization IV Manual, p. 27), as seen in Figure 85:

Figure 85: Research bar in Civilization IV

The above figure shows the research bar, which is always at the top of the screen. In this case 'Theology' is being researched and the technology will be made available in nine turns. The choice, and placement, of a large 'bar' is logical: implying progression (similar to when your computer is installing a program, a bar will fill from left to right). As the bar fills one is temporally closer to unlocking the technology. Discourse shows this idea being readily inferred: the choice of visualization, its persistence (consistency), and understandable behavior aids understanding. Placement is at the top-middle of the screen, and is
persistent: the technology being researched is always visible. The placement and persistence of the bar seems to highlight the important role of technology in the game, and is understood by game players.

5.5.4 Summary

The display of information in Civilization IV is done in a way that is consistent among different objects, so that meaning can more easily be inferred. For example, game designers in Civilization IV made sure that text pop-up information was presented in the same place, using the same terminology and labeling (for instance, each task and technologies have the number of turns until completion in parenthesis following the their name). Even particular game aspects were assigned specific colors, etc. to aid understanding of textual information: such as resources being listed in blue, items requirements listed in red, etc.

Problems in consistency, such as the pre-designed roller coasters in RollerCoaster Tycoon 3, highlight some of the problems for learning caused by an inconsistent interface. Much time was spent by the pair attempting to create custom roller coasters, after failing to discover the pre-made designs in the game. The pair simply carried out a similar sequence of action (clicking the icon) as when building other rides, yet inconsistent results were achieved. This resulted
in an inefficient use of time that could have been spent performing other managerial roles in the game to make money and achieve goals.
5.6 **PLURALITY OF CHANNELS OF INFORMATION TO AID UNDERSTANDING**

To aid in uncertainty reduction, a plurality of information channels can be utilized by the game. When unlocking a technology item in *Civilization IV*, the game plays a sound, shows a pop-up containing images and text, and plays a voice (reading something about the technology). The multiple sources of information made available convey meaning well: the pair does not question what has happened. Students often overlooked the textual events of battle outcomes in *Making History: The Calm & The Storm*, often confused by the meaning. Utilizing multiple channels (audio, visuals) in multiple forms helped aid interpretation. Three episodes are presented below that illustrate the benefit of multiple channels of information, with preference for information placed on visuals over text.

5.6.1 **Movement of a Naval Fleet in Making History: The Calm & The Storm**

In the following episode from *Making History: The Calm & The Storm*, game players attempted to learn the basic game control by giving orders to one of their battleships:

L: (Clicked on a 'Destroyer' ship)
R: Alright go attack someone.
The pair selected a destroyer, and attempted to give it orders; similar to what is shown in the following figure:

![Selection of naval fleet in Making History: The Calm & The Storm](image)

Figure 86: Selection of naval fleet in *Making History: The Calm & The Storm*
Following selection of the fleet (several units can be represented by a single icon: in the above figure, five ships are represented), the students attempted to engage in warfare. The pair did not display why they want to go to war. Perhaps because they are playing a World War II game, they feel they should engage in warfare (warfare is assumed). Following, negotiation between the pair shows the selection of a target for the naval units. The pair was playing as the United States, and was attempting to move a fleet of ships off the coast of Florida, in the Gulf of Mexico. The pair struggled to give the fleet orders:

So where do I... (Clicked under 'Combat Reports')
R: Just go like (.5) attack Britain or something.
L: (Scrolls over to another ship)
R: Attack Cuba.

(Clicked on a ship order) What's disband mean? (A window popped up asking to disband or not to)
R: Break apart.
L: (Clicks 'No')
(Clicks on a different order for the ship)

How do you pick a place for it to go? (Scrolled around the ship chosen)
R: You gotta ah ah um right click.
L: (Zoomed out of map)

(Clicked on a ship in the Gulf of Mexico)
The length of the transcript highlights the pair’s inability to achieve their goal of using the naval fleet. While exploring the interface, one student asked what ‘disband’ means, as it was presented as a button on the screen (under the fleet), which led him to ask his teammate of the meaning of the word. Some early negotiation of selecting a target (Britain) is replaced with a closer target (Cuba), suggesting a closer target would be more easily engaged. The suggestion of Cuba as a target by the non-active player (not controlling the mouse) implies his frustration with moving the naval fleet, as little movement would be necessary to engage them.

Much time was spent trying to move or attack targets. After struggling for a while, the left hand student asked his teammate how to move the ship.
around the map. For some reason, after being informed by his teammate, he continued to struggle to achieve meaningful action. Perhaps the game interface does not make it evident enough how to use the naval fleet, as marked by the erratic mouse movement over the region.

Finally, the selection of a target was achieved:

((Zoomed out from map))
((Scrolls to the Atlantic Ocean))
((Scrolls over to Europe))
((Zooms in on Europe))
(2.0) Oh. (4.0) Let's put that over here.

R: ((Laughs))
L: ((Zooms in on map)) We will just join in this little battle ((Clicks on a naval battle near China already in progress)) (.5) Yeah. ((Clicked 'End Turn'))
R: Is it going like all the way around the world or something?
L: ((The green movement line is going half way around the world)) 'End Turn'. ((laughs))

R<815737> (.)

L: ((Places hands under his chin)) What? ((Clicked on 'End Turn'))

After target selection, the game calculates a path from the current location (near Florida) to the battle site (off the coast of China), which is indicated by a
green line. The pair seemed satisfied and unaware that it will take a long time to reach and join the battle on the other side of the world. The game draws a green line to signify the path of the ships; however the game does not make evident the number of turns required to reach the target (the information is listed textually, however it was not acknowledged by the game players). Figure 87 shows how the information is displayed. Under ‘Naval Group Orders’, orders are listed (Moving To: East China Sea), and underneath that, an arrival estimate is given, however it did not appear to be acknowledged by either student.

Figure 87: Naval fleet movement in *Making History: The Calm & The Storm*
After pressing 'End Turn', the pair waited while orders were executed. A list of 'Combat Reports' appeared while waiting, similar to the following figure:

![Figure 88: Combat reports in Making History: The Calm & The Storm](image)

As can be seen above, the right side of the screen is replaced with an updated list of combat reports after pressing the 'End Turn' button. Game players read this report, which notifies them of a separate battle in the middle of the Atlantic (involving ships not related to the fleet they were previously moving). The menu on the right side of the screen used for ship movement has
been replaced by the 'Turn Summary' with 'Combat Reports', which shifted attention to the new battle:

R: Oh there we go. ((Laughs)) (8.0)
L: *Oh? We've got something going on. ((Clicks on 'Mini Map'))

((Clicks on Europe on the 'Mini Map'))
((Game shows an explosion in the middle of the Atlantic Ocean))
R: *Wait is that us?*
L: ((Clicks on the explosion, which signifies a battle))

((Clicks on the explosion a second time))
((Zoom in on explosion))
<<840163>>

While the course of ensuing action was not followed, it showed how the 'End Turn' course of events can cause redirection away from current tasks each time a turn is ended. The representation of an item of focus (such as the fleet of ships) disappears each time the turn is ended (the object of focus present on the right side of the screen is removed and replaced with the combat reports). This representation shifts attention away from currently engaged tasks. While it seems important in a war game to receive the turn summaries and combat reports, the choice to remove history of work results in the loss of context at the end the each turn.

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Battle outcomes are given through a listing of combat reports at the end of each turn, and are represented by static battle icons on the map (as in the above figure, they appear as an explosion between two units, and are not animated). The textual representation of major battles is often overlooked in episodes from Making History: The Calm & The Storm, as game players seem to prefer visualizations and animations to textual information. Pairs often relied on textual information as a secondary or tertiary source of information, typically for verification purposes of a visual event. Visual events occur after each turn when
the game updates the map; however game players must remember what the map previously looked like in order to comprehend the change. This puts additional cognitive load on the gamers, and can lead to major changes being overlooked.

5.6.2 Burning Down a City in Civilization IV

The following episode occurs after military success was achieved by the pair in fighting an enemy. The pair defeated military forces in an enemy city:

R: Oh that thing is deep in their village isn't it?
L: «Clicks on Unit to 'Pillage' enemy unit) «Units start fighting»
R: Uh oh. «Battle animation shows fighting military units; some are lost) «Pair conquered enemy city) «Window pops up asking whether to burn down the city or install a new governor»

After capturing the city, the pair was presented with the option to burn down the city or keep it as their own, as presented below in Figure 90:
At this point in the game, the pair had only built one city, their capital.

Not having other cities in their civilization, the pair would have benefited from adding the captured city to their empire. The pair briefly negotiated what to do with the captured city, after being prompted by the game:

R: Yeah. We need to keep it.
L: ((Scrolls over install new governor))
R: Hold on. Ok. We need to keep it?
L:  
R: ((Clicks on burn the city to the ground)) No.
L: ((Laughs)) We just earned money from destroying the
barracks.
R: We destroyed three of something.

While it appeared that the right hand student might have wanted to keep the city, the left hand student, having mouse control, decided to destroy it (burns it to the ground). It is unclear whether the students realized that they could have added the city to their civilization since very little negotiation occurred.

In burning down the city (erases the city from the map), the pair missed an opportunity to expand their civilization. Perhaps the game representation did not express clearly that the city could have been added to their civilization, or maybe the left hand student, in an aggressive mood, decided it would be more fun to destroy it.

The sequence of actions and the corresponding game representations between engaging in a battle (*Civilization IV* displays a corresponding animated fight) and capturing an enemy city (the city simply is represented by an updated map, showing the pair’s military standing in the city, and a pop-up asking whether to ‘keep it’) may be a reason for the lack of attention given by the pair. As animated activity serves to draw attention to events in *Civilization IV*, an event such as capturing an enemy city could also be animated to show greater significance.
5.6.3 Confusion on Events in Making History: The Calm & The Storm

In the following transcript, a feeling of confusion existed that may not be conveyed through transcripts as well as when watching the video. The episode occurred after the end of a turn in the game. Both students had difficulty remembering their previous actions, and expressed confusion regarding the state of the military resources they were previously manipulating:

L: We have regained (.5) did we take over?
R: Wait we gained control.

The pair read the 'Turn Summary' available at the end of each turn, as represented in Figure 91:
Several game properties seem have contributed to the confusion. First, the context of work on the right side of the screen is lost (where 'Turn Summary' is located in the above figure). Upon clicking 'End Turn', this context is replaced with the Turn Summary, placing extra cognitive load on game players to remember what they were doing.

A second item of discussion is the way *Making History: The Calm & The Storm* updates the map. While it is difficult to see by screenshots, the game performs a single update of the map after clicking 'End Turn'. Rather than
viewing animations of important battles, etc., the game players are presented with a new map, with key events listed as text in the 'Turn Summary' events on the right side of the screen. Assuming battle names and locations are not memorized; students are required to remember what battles were occurring in the previous turn in order to comprehend changes.

A third item of discussion is the pause after ending the turn. While the computers used in the study were of average speed (not cutting edge), a long pause ensued after clicking 'End Turn' in the game. After clicking 'End Turn', orders are executed (additionally, all moves are calculated for the other nations on the map). This places a heavy computing load on the computer, which acts sluggish during this time. This behavior affords disengagement by game players, as action is not possible on the sluggish computer. Frequently, game players let go of the mouse and looked around the classroom while waiting for the 'End Turn' process to complete (and the next turn to be available).

Returning to the episode, the pair expressed confusion regarding what happened to some of their military units (playing as the U.S.S.R., the pair was engaged in a battle in Romania):

L: Check this out, that's where I sent everyone, I think that was like right (.)5 here or something.

((Moving cursor over continent))
R: "Didn't even know Germany took something from us.

The realization that Germany took something came after reading the 'Turn Summary' screen, which stated a territory had been lost to Germany. When the map updated, apparently the pair did not remember the exact appearance of the map in the previous turn.

Focusing back on the war with Romania, the left hand student appeared confused about what happened with his military forces, as they were not located near their previous location:

L: I just remember I was moving a lot of people over to (unclear speech) because that was a country I had to select. (.5) Look at all (.5) we must have won, cuz look at all the planes. ((Scrolls over continent))
R: Oh, yeah.
L: We'll stop these ((Clicks on a military unit)) ((Clicked on five different military units))

The confusion may stem from the way the game updates the map, moving all units and updating events and replacing the visual map. Had the game showed the movement of units between turns (visually on the map), or battle animations to represent military battles, the pair might not have been as
confused regarding the progression of events and the location of their military forces. Additional channels of information would have been beneficial to learning (for instance, a simple animation drawing attention to the conclusion of a battle).

5.6.4 Summary

Some of the games suffered from the lack of feedback to the game player. Often secondary or tertiary sources of information were not available that could have been presented in a plurality of channels. This would have lowered uncertainty and aided understanding. This caused several things to be overlooked by game players, and created situations of frustration and confusion because meaning was not properly inferred (or was too vague to be useful).

5.6.4.1 Preference for Visual Content Delivery

Students exhibited a preference for visual information. When information was presented via multiple channels, students would usually focus on visual images or animations before taking time to read text. Mouse-overs were used as a secondary source of information when further explanation was needed.

Animated presentation often took precedence over static visuals. Animated characters and sequences in the game often served to draw attention,
such as battle sequences in Civilization IV. Animated sequences were more effective at grabbing attention and creating emotional responses than information presented textually. A comparison of students’ discourse among the two history games shows the effects of the representations: Civilization IV displayed animated battles, while Making History: The Calm & The Storm presented battle outcomes as text at the end of a turn. The battles in Making History: The Calm & The Storm had no animated outcome: an icon would appear to indicate a battle, but would disappear at the conclusion of the battle (at the end of turns when a new map was calculated and displayed, a screen wipe of the previous map occurs). This flipping of the map not only lost historical context, but often resulted in major outcomes being overlooked.
As not to interrupt peer team game play too frequently, cooperative and competitive behaviors between teams resulted only several times per game (these are discussed in following sections). However, discussion with teammates (those with whom they were playing the game) was an ongoing process frequently observed in the video tape. Pairs displayed a similar process in their discussions of items in games, attempting to gain shared meaning of the functionality of game objects. Additionally, pairs frequently negotiated their courses of action and game strategies with one another, as gameplay was performed collaboratively. Three examples will follow that illustrate these activities.

5.7.1 Communicating Interface Functionality in Civilization IV

The following short episode shows further discussion between participants in learning the game interface and the basic functionality of game objects during collaborative game play. In the following transcript, the left hand person is in control of the computer (keyboard / mouse) and the right hand
person is explaining to the left hand person his understanding of some of the game functionality, starting with the turn-based style of the game:

R: "Right click (.5) click (.5) borders expanded." Like if you click on people and you tell them what to do, and you click Enter each time. Craig, what are you doing?

L: Zooming In. ((Zooms in on map)) ((Scrolling around map))

R: Like, click on those people again. ((Points to a group of workers)) (.5) Now tell them where to go. And what to do. (.5) Why did we build a road?

L: ((Clicked on the group of workers that R suggested)) ((Clicked on 'Build Road' icon)) I don't know. ((Scrolls to bottom of map)) So we can get through?

L: ((Clicks on open land)) ((Workers move to new area)) ((The workers start building the road)) ((Laughs)) See, now we can get through.

R: Press Enter.

Initially, the left hand student was on his own train of thought and began to build a road. Following that, the right hand student explained and questioned the left hand student, attempting to gain shared meaning of the basic game control (turn-based style). The right hand student properly infers the process of
playing the game: giving actions to individual objects (the workers, scouts, military units, etc. on the map) and pressing ‘Enter’ to advance the turn in the game. The left hand student appeared somewhat distracted and he focused on the game play rather than his teammate. However, the right hand student redirected the conversation back to his point: describing how the turn-based style of the game works. After several attempts to explain, it appears that his idea has been communicated. Again, basic game control was a major focal point of discussion, illustrated by the right hand student repeatedly redirecting the conversation to the process of game play. Behavior demonstrated the desire for a higher degree of convergence (of creating shared meaning) when learning the game interface and corresponding functionality.

In Civilization IV, after assigning tasks to all characters, a flashing message appears at the bottom of the screen saying “Press <Enter> to end turn...” that prompts players to end their turn while informing them of the turn-based style of the game. Alongside the flashing message, there is a green circle that turns to flashing red after all moves have been completed (when it is time to end the turn), another indicator that can be clicked to end the turn.

Following this, the pair attempted to move workers around the map and direct them to work on a road:
L: ((Clicks on workers))
R: Now click no, on the other guys, above them.
L: No, those are our explorers, those are our scouts. ((Points to the group of workers working on the road))
R: No, click on the other guys. Then press Enter.
L: ((Clicked on the workers))
((Clicked on open land))
((Workers moved to new area))
((Pressed Enter))
((Screen showed road being added after turn ended))
¡Whoa.
»<712088> (.)
R: See then they built their road.
L: Oh Ok I see. ((Clicks on the workers building the road))
»<715747>

After clicking on the workers, the pair instructed them to build a road (the road icon appears in the bottom-middle of the screen: an available action for workers). After ending their turn, the left hand student said “Whoa” after the game animated a road being added to the map. The visual changes represented by the game indicate visual progress, which serves to both inform game players and to add interest to the task at hand, similar to that which is seen below in Figure 92:
Additionally, the representation of the road being built may serve as a visual reminder of past action since the road will be maintained on the map for later reference by the pair while expanding their civilization. Based on the 'Whoa' of the student, it seemed that interest was grabbed with the animated objects and the visual changes to the map shown by the game that indicate progress.
5.7.2 Initial Scenario Selection in Making History: The Calm & The Storm

One of the most important decisions affecting gameplay is the selection of the initial scenario with which to play. Most games, including the three used in this study, involve the selection of a scenario (among many) to begin gameplay. In Making History: The Calm & The Storm, students were able to choose among several periods in World War II and among several nations, as shown in Figure 93 and Figure 94:

![Scenario selection in Making History: The Calm & The Storm](image)

Figure 93: Scenario selection in Making History: The Calm & The Storm

Scenario selection is followed by nation selection, shown below in Figure 94:
The representations for scenario and country selection afford selection from a list (in scenario selection, a list of scenarios on the left side of the screen) and selection from a list of nations (in nation selection, icons representing different nations). Clicking these icons provides textual information about the scenario or country.

Two episodes will follow showing the initial scenario selection in *Making History: The Calm & The Storm* on the first and second day of gameplay:

R: †Is it like fighting?†
L: I don't know. Which one should we do? ((Choices of

---

Figure 94: Nation selection in *Making History: The Calm & The Storm*
Discourse in the first day was focused on determining the purpose of the game and not much care was put into scenario and nation selection. The right hand student comments that the scenarios are “all the same”.

By the second day of gameplay, the style of the conversation changed significantly, and the selection of scenario and nation was done more carefully:

R: Who should we be? ((Choices are up on screen to choose a country))
L: ((Looking through manual for game)) Um. (.5) USSR?
R: Uh they suck.
L: 'Germany?' ((Reading off choices from screen))
   'France?' ((Clicked on France))
   ((A paragraph about France's role in the scenario popped up))
R: 'No France sucks.' ↑Be Germany.↑
L: ((Clicked on Germany))
   ((A paragraph about Germany's role in the scenario popped up)) ↑Oh it didn't find the↑ (.5) ((Clicked on Italy))
   ((Clicked on Japan))
   ((Clicked on United Kingdom)) 'Air power ranking 10'
   ((Reading from choices after clicking France))
   ((Clicked on United States))
   ((Clicked on USSR))
   ((Clicked on Italy))
   ((Clicked on Germany))
R: Germany had the first air [power.]
L: ((Clicked on China)) [Germany.] Let's do Germany.
   ((Chose Germany))
   ((Clicked on game options))
R: Put it on 'Easiest.' ((Reading from screen choices)) ((laughs))
L: ((Clicked on 'Easiest' game difficulty))
   ((Clicked on 'Load Game'))

After frustration in the first day of gameplay, the pair gave more attention to the selection of their initial scenario on the second day (they wished to start a
new game on the second day). Game players verified they were playing the
game on the easiest setting. More discourse and action occurred on the second
day of scenario selection, as students read out loud some of the power rankings
of different nations while negotiating which one to select. One day of playing
the game seemed to change the nature of the selection process, with additional
importance being placed on the selection of an initial scenario. In this game and
many others, the initial scenario selection is of high importance since it provides
a frame for the rest of the gameplay encountered.

5.7.3 Making Money in RollerCoaster Tycoon 3

The following sequence of episodes shows strategy being developed to
make money in *RollerCoaster Tycoon 3*. Students from a business class studying
similar concepts were used to play the game. It was apparent from the
beginning that students understood that their role was to manage a theme park
and make it profitable. All of the participants had either played or heard of the
game prior to the study.

The following sequence of episodes focuses on the goal of making money,
a primary aim of playing *RollerCoaster Tycoon 3*. Game players focused on
feedback from the game in developing a strategy of building rides and setting
The game feedback appeared to be well understood by game players and served the game players well in developing their strategy.

The first episode included some negotiation between students on what rides to build, how to customize them, and how to set the ride price.

L: "Let's just do um... [let's do] (Pulls up the ride list choices menu)
R: [Water?]
L: "No. Let's do some uh..."
R: Thrill rides, Junior Rides? (Reading options from 'Rides' menu)
L: (Clicked on 'Junior Rides') Yeah that's fine. Well there's only the one so
R: The Merry-Go-Round (Laughs)
L: Yeah so we'll do that one like [here] (Clicks on Merry-Go-Round)

Some negotiation between the pair occurred in the selection of a ride to build. Water rides, thrill rides, and junior rides are all different categories of rides to build in the theme park. They are represented by the first three icons on the ride sub-menu located on the left side of the screen. The first-level of menus (icons) are persistent in RollerCoaster Tycoon 3, making them a persistent resource and potential for action; where the second level (sub-menu) of icons appears after clicking on a first-level icon, as seen in Figure 95:

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Figure 95: Ride menu in RollerCoaster Tycoon 3

The pair decided to make a 'Junior Ride' and then selected a 'Merry-Go-Round' from a list of rides that appeared, similar to Figure 96:
Following ride selection, the pair looked for a place to situate the ride. In *RollerCoaster Tycoon 3*, after selecting a ride to build, the ride will turn red when placement conflicts with other items on the map (or when not enough money exists), and will turn blue when placement is satisfactory, as shown below in Figure 97 and Figure 98:
Figure 97: Improper placement of a ride in *RollerCoaster Tycoon 3*

When an object being placed is colored red, clicking the mouse will not achieve an action (of placement), as placement is not possible (as indicated by the game). However, if the object is colored blue, clicking the mouse will place the object in the current location, as shown below in Figure 98 and Figure 99:
Figure 98: Proper placement of a ride in RollerCoaster Tycoon 3

Immediately following ride placement, the game prompts for placement of ride entrances and exits, following the red and blue labeling as above:
Attempting to place the entrance in the current location (shown above) is allowed; however, the entrance will turn red if one attempts to place it over the top of one of the adjacent footpaths (a conflict exists as something is already built in that space).

As can be observed in the above figures, each click will result in new menu visualizations popping up on the screen, creating an affordance for their exploration, discussion, and use. Selection of a ride results in the ride appearing in a blue container in the bottom left side of the screen (more ride options). After
being placed, the ride appeared in the bottom-right corner of the screen
(surrounded by icons for ride options), immediately followed by the appearance
of a new box during entrance and exit placement (options for the ride entrance
and exits). The affordance of sufficient object placement, signified by the blue
and red (acceptable vs. unacceptable placement) appeared to be well understood
by the students.

Following this, the pair placed their ride, followed by its entrance and exit
booths:

(((Places the Merry-Go-Round in a clearing))
R:  [Yeah]
L:  (.)
L:  Is that cool?
R:  Yeah that's good.
L:  <And>
R:  A path. (.5) What's that? Oh the booth to get
in. ((Ride entrance for the Merry-Go-Round appears))
L:  ((Placed entrance to get into ride)) "Yeah."
R:  (.)
L:  ((Placed ride exit))
R:  Exit booth and entering booth. Perfect.
L:  ((Clicked on 'Paths'))
((Successfully connected the path from the entrance /
exit to the main path)) Cool.
At this point, the ride has been built and an entrance and exit have been placed. The pair successfully connected the ride's entrance and exit to an adjacent footpath so customers could get to and from the ride. The process of placement seems to be well understood.

As shown in the above figures, ride placement will create a ride menu in the lower-right corner of the screen. In the above figures, this appears as a picture of the ride, surrounded by icons that can customize the ride. The game representation seems to place this object on the screen in order to encourage ride customization. Selecting a ride later in the game (clicking on any ride) will result in a similar representation appearing in the lower-right corner of the screen, with options for customization appearing: prompting their exploration, discussion, and use as shown in the transcripts.

Following, with the ride still selected, some of the ride options (icons) are explored in the ride menu:

R:  [Is there any]
L:  [Go on the Merry-Go-Round] Yeah I think people are getting on.
R:  [What are] all these things mean? ((Points to the ride options)) Can we change them?
L:  ((Scrolls over the ride options))
((An explanation of each ride icon appears while
scrolling over each icon)
R: 'Test Results, open' Make sure it's open.
L: 'Not assessed yet.' ((Reading ride status. Not yet assessed because it hasn't been tested))
R: Go to.
L: "Vehicles." ((Clicked on the 'Colors' icon for the vehicles of the ride. A selection of colors popped up))
R: All the colors of the ride. Oh that's cool.
   ((Clicked on the 'Colors' icon))
   ((Changed the colors of the vehicles))
L: "That's good."

As seen below in Figure 100, the pair edited some of the ride's options, such as the colors:
Selecting any of the 'ride' icons will result in a blue box extending from the ride menu, as shown above. After the customization of the colors of the Merry-Go-Round, the pair looked at other ride options in the ride menu; similar to what is shown in the lower-right corner of Figure 100 above:

R: Go to this one. ((Point to the 'green flag'))
[Click extension]
L: ['Guest Thoughts'] none. ((Scrolls over the ride options))
((Clicked on 'Guest Thoughts' icon))
R: Make sure it's open.
By default, new rides are closed for business, and students need to click the green flag in order to open the ride. After exploring ride icons, the pair opened it for business. The icon that looks like a green flag (above in Figure 100) controls whether the ride is open or closed.

By making all new rides closed by default, game players are forced to explore and use the ride menu to open the ride. This design decision forces game players to make use of (and encourages exploration of) the ride menu. In the above example, attention is drawn to all of the various ride options under the ride menu, noted by the verbalizing of the icons while exploring and determining their purpose (such as guest thoughts, color options, test results, etc.). Ultimately this helps the game players learn the game interface through the awareness of potential actions for the rides.
By requiring the use of the ride menu to open the ride for business (and make money, a key element of the game), the game draws attention to the ride menu, encouraging its use. Accordingly, the ride menu is explored, and much of the discourse in the transcript focuses on the understanding of the things possible with the icons on the ride menu. Earlier, icons were explored by reading aloud some of the information that appeared when clicking the icons.

Continuing the above episode, more icons were explored and the pair moved on to build other rides. Once the ride is open for business, attention shifted to building more rides relatively quickly:

L: Have we tested it? (Clicks on 'Test Results' icon)
R: 'Excitement Rating'. Low.
L: 'Whatever. It's all good. I don't care as long as people go on it.'
R: 'Oh we got a visitor.'
L: Let's build more rides. (Clicks on 'Rides' icon on left side menu)

The shift of attention to building more rides reinforced the pair's goal of making money. More rides in the park will translate into more dollars being spent by visitors in the theme park. Making a profit on existing rides allows the building of more rides in the future as well.
The next episode in the sequence shows a similar procedure as above in creating a ride; however, in this instance, the pair discovered how to adjust the ride price:

R: Yeah then do a 'Sky Sling', There's no music, oh we pick the music. Yeah.

L: ((Clicks on 'Entrance'))
((Placing the entrance / exit for the ride))
R: Oh good now it's gonna rain.
L: Um ((Clicks on 'Paths' icon)) Ok. ((Clicking on tiles near ride to place the path)) I should do
[where's the other one?]
R: And [where's that other one?] It's right there.
L: It is?
R: Yeah. So just connect there. ((Points to the entrance for the ride))
L: Cool. (hhh) And then lets open it. ((Clicks on green flag icon to open ride))
R: Yeah click on that. Green. †Then pick the music.† Where's that music thing that came up?

The sequence of actions is similar to the earlier episode. This time, the right hand student made it evident that she wanted to select some music for the ride (something discovered under the ride options). Again, the pair explores ride options after opening up the ride for business:

R: 'Finances', 'Maintenance' ((Reading from pop up window))
L: ((Scrolling over the ride option icons))
R: What's this?
L: ((Clicks on 'Test Results' icon))
R: How about this one? ((Points to the 'Colors' icon for the ride)) (.5) "No that's not it."
L: ((Clicks on 'Finances')) "Admission price is going up." ((Moves cursor over to 'price', raises price))
R: ((Laughs))
L: How much money do you want it to go up? †Because

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there's a lot of people coming.
R: Make it like 2 dollars. (Laughs) More?
L: †Suckers.† (Raises the price on the ride)
R: We have to go see if they come in or not.
L: Uh oh they're stopping. (Laughs)
R: (Laughs) Oh they're going in.
<<1630459>>

This time, the pair discovered a 'Finances' icon, which allowed them to set the price of the ride. Of all the icons explored above, the 'Finances' icon is the only one utilized. Perhaps, after initially exploring ride options, the 'Finances' icon is the only icon (and affordance) needed to support their game strategy. In line with making money, the pair raised the price of the ride, attempting to maximize profits. Rather than reading customer thoughts, the pair watched people approaching the ride to see whether they continued to get on the ride. Good game feedback, in the form of watching customers either get on the ride or turn away, confirms that the strategy of raising the ride price was successful as customers continued to pay to get on the ride.

In the next episode, the pair followed a similar strategy in building food stands:

L: Like ((Laughs)) Honestly we just gotta build some more rides so... Is this one open?
R: Yeah.
L: High Flyer? ((Scrolls over ride and name of ride pops up))
R: Hmmm Hmmm. Hit the play button though.
L: Where?
R: Up here. ((Points to the play button on the top left corner of screen)) So we’re making money.
L: †We’re making money†

The ‘play’ button referred to is at the top of the screen. The pair paused their game while building the ride. Game players are allowed to play, pause and fast-forward time in RollerCoaster Tycoon 3, as shown below:

![Figure 101: Time controls in RollerCoaster Tycoon 3](image)

The above figure does not show the mouse pointer, which was over ‘Super Fast Forward’ (the fastest progression of time). The screen shot above is zoomed in on the upper-left corner of the game.
Above, after the students reaffirmed their goal of making money, they proceeded to put food stands in their park. Again, careful attention was paid to setting prices:

R: Let's put some food restaurants in. (Points to 'Stand' icon on left side to build a restaurant)
L: Alright. Well let's get more rides. We need to put more rides but we'll do that to. Um so-
R: Just put um all yeah put um like around like the pathways.
L: ((Clicked on burger stand)) Uh no, no, no, no. ((Placed burger stand in park)) Do do we have to have a path?

R: I think maybe.
L: ((Clicks on 'Paths' icon)) No. ((Attempts to place a path between burger stand and adjacent foot path but it does not work))
R: No?
L: Yeah let's put it where where a ton of people are too. Ok?

R: Wait how much are the burgers? Make sure they're a lot.

The right hand student stated "Make sure they're a lot", referring to the price of burgers at a food stand. The statement supports their objective of
making as much money as possible. Following, the pair continued working on the food stands:

L: No not here.
R: Cuz you know people will buy it.
L: Yeah.

R: Ok well we gotta open it. (Points to the green flag)
L: (Clicks on green flag to open burger stand)
R: Open. Then go to the price.
L: (Clicks on 'Financials' icon) Oh those are extras. (Shows prices of burgers, onions, ketchup, mustard etc)

As shown in Figure 102, the food stands have options for each of the items offered, and the pair was deciding which to include:
After selecting some options, the pair focused on setting prices of food items:

R: Yeah. The biggest burger make like 2 dollars. No make it 3.
L: ((Clicking to change price of burger)) No make it 2.
R: 2!!!!
L: We got a quarter pound burger.
R: You go to like Six Flags and it's like 6 dollars for a burger and people buy 'em. ((Laughs))
L: This isn't Six Flags, ok?
R: Well [it’s not Disney World either. Not Disney World either.] ((Laughing))
L: [†K Jackie†, this isn't †Six Flags.] ((Laughing))
OK, well, Disney World is a little bit better than Six Flags. •
x<522049> (.)
R: Make that like
L: ((Continues to click to change prices)) This is 3 dollars. ((Scrolling through list of menu items for the burger stand))
((Changing the prices at every food stand))
R: Ok. 'Quarter Pounder' ((Reading from 'Product' cost list))
L: [No we'll do three fifty.] ((Laughs))
R: [No that's half]
x<531560> (1.0)
L: ((Clicking and changing the prices on all the food items sold at the burger stand))
R: There and that can be-
L: That should be more
R: Yeah I was gonna say that should be more. And make that three.
L: *Two Seventy* †yeah three.†
x<543400> (1.0)
R: Ok.

Consistent with the game strategy of making money, considerable discourse between students focused on negotiating the prices of the food items with the objective of setting the most appropriate prices.
L: ((Scrolls through food menu items for the burger stand)) That's good.
R: What do these check things mean? 'Check these to add pickles to your standard burger' ((Reading from pop up after scrolling over check box)) No. They have to buy extra for everything. ((Laughs))
L: Ok.

The right hand student seemed intent on charging for everything.

Following, the pair repeated the process to create more food stands increase profits:

L: Yeah let's put in another burger place. Like in front. Ok?
R: Oh go to their ice cream place and open it up first. (1.0) We've got to make their ice cream more expensive.
L: ((Changes price of ice cream)) It's good to go.
R: Uh a single scoop should be two dollars.
L: ((Clicks on ice cream stand))
((Clicks on 'Product' cost list and changes price of single scoop)) How much?
R: Make it one-
L: >A single scoop?< dollar fifty. ((Laughs))
((Changes the price on each item served at the ice cream shop))
R: ((Laughs)) Ok
L: (.)
R: Double [two]
L: [Two]
R: Two twenty five
L: (.5)
R: 'Chocolate single scoop' ((Reading from 'Product' cost window)) A dollar
L: [Seventy five] ((Continuing to change prices on the ice cream shop))
R: [Seventy five] ((Laughs)) It's more if you like that chocolate.
L: Mmm Hmm.
L: (.5)
R: Two dollar or no? Two fifty I guess.
L: ((Clicks the price to two fifty)) That's it.

Careful attention was paid to setting the prices of the food items as high as possible, while maintaining clientele. Similar to building rides, each food stand has an icon in its menu for setting prices and the most attention was given to this item (the financials).

Following, the pair checked their pricing with their clientele by viewing ‘Guest thoughts’ associated with the food stands, similar to what is seen in Figure 103:
R: Ok. What are people's thoughts on these places?
L: ((Clicks on 'Guest Thoughts' icon))
R: There are no thoughts.
«627852> (.)
L: ((Clicks on burger stand to see guest thoughts))
R: No thoughts either.
L: Awesome. Thanks people.
R: Do we have enough people? Go to customers.
L: ((Clicks on the 'Stats' icon for the ice cream and burger stand)) [Zero]
R: [Zero]
L: ↑Awesome.↓
Figure 103: ‘Guest thoughts’ as feedback in *RollerCoaster Tycoon 3*

R: Ok. What are people's thoughts on these places?
L: ((Clicks on 'Guest Thoughts' icon))
R: There are no thoughts.
L: <627852> (.)
R: No thoughts either.
L: Awesome. Thanks people.
R: Do we have enough people? Go to customers.
L: ((Clicks on the 'Stats' icon for the ice cream and burger stand)) [Zero]
R: [Zero]
L: †Awesome. †
R: It is, both of them are open right?
L: Yeah. Let's go get some more rides.

The pair expected instantaneous customer feedback, but since the food stands were recently opened, it took some time to generate feedback. After a while, customer thoughts appear as above in Figure 103. However, the pair decided not to wait, and proceeded to move on in the game and build more rides.

Strategy seemed very clear: the pair was concerned with making money in the game, and this goal is supported by specific game affordances. Focus was on installing new rides and food stands thus far, and the careful selection of ride prices. Other details seemed less important to the pair. In creating rides, the representation of ride options was typically explored; however, most of the conversation and action was spent adjusting the financials in order to maximize profits. It is interesting to see how RollerCoaster Tycoon 3 propagates a main goal of making money through different representations in the game, which are well utilized during game play. Additionally, it is interesting to see how these processes play out in collaborative game play through the negotiation between teammates of prices and options for the attractions.
A final episode illustrates the pair creating a ride along with more careful attention paid to setting the price:

L: Right? ((Scrolls through 'Rides' menu))
R: Yeah.
L: 'Water' (.5) 'Gentle' (.5) 'Thrill' (.5) 'Let's just do thrill rides. More thrill rides.' ((Clicks on 'Thrill Rides'))
   ((Four rides pop up to choose from))
R: Do do a Sky Sling. That looks cool.
L: Where is it?
R: Right there. ((Points to the ride that says 'Sky Sling'))
L: Right here? ((Scrolls cursor over the icon that R pointed at))
R: Hmm Hmm
   »<65691B> (1.0)
R: People are thrown into [the sky]
L: [Whoa ho ho ho] ((Places thrill ride that is rather large in size))
R: ((Laughs))
L: 'Nice.' ((Places ride in an open area))
   »<664189> (.5)
R: You have to make sure that the price on that is expensive.
L: ((Placed the entrance and exit to ride)) Yeah.
   (.5) 'Because they are super expensive.'
   »<675702> (.5)
R: Love how it's right near to the burger and ice cream place. ((Laughs))
Brief negotiation of ride selection occurred: the left hand student read out loud some ride choices, as if to suggest choices to the right person to help pick one. They choose ‘Thrill rides’ followed by a ‘Sky Sling’. Strategy was offered immediately by the right hand student, suggesting setting the price high in order to make money. The right hand student commented on how it was nice that the ride was close to food stands; possibly suggesting that park visitors could spend lots of money in that area of the park, or possibly suggesting that visitors could buy food, and then humorously might throw it up after a ride on the Sky Sling.

Following, the ride paths were enhanced with some scenery items (omitted here for brevity: the full episode can be obtained in Appendix H.1).

Next, the pair focused back on their goal of making a profit:

R: Is this one open? ((Points to a ride))
L: Hmmm Hmmm
«<771528> (.5)
L: Should we open it now?
R: Yeah. (.5) Make sure the price is up.
L: ((Clicks on Sky Swing ride))
  ((Clicks on the green flag to open it for business))
Where were the prices again?
L: ((Clicks on all icons surrounding ride options))
Those are just the colors.
«<793280> (.5)
R: This one (Points to the 'Financial' icon)
L: A lot of people are going. So, that's really good.
R: We got to raise the price though.
L: I don't think there is a price. (Clicks on 'Financial' icon)
(Changes the price of the ride)
R: There's no price for it?
L: No.
R: What's financial or finance?
L: (Clicks on the 'Financial' icon) Oh yeah there we go.

After checking that the ride was open for business, attention shifted to setting the price:

R: Yeah it should be more than a dollar.
1<812536> (1.0)
L: (Clicks at the price to change it)
R: You could, like, seven
L: No way.
R: Not seven? Otherwise it's four. Watch put seven and see if these people go on it?
L: We'll go five. Five fifty, or [six?]
R: [Six]. Go six.
L: Ok.
1<828513> (.)
R: If people don't go on the ride then we will lower it. But I think they will.
1<832673> (.5)
The game provides visual feedback: if a ride price is too high, customers approaching the ride will turn away; however, if the price is appropriate, customers will pay to enter the ride. While each ride has a ‘Customer thoughts’ icon, the pair seemed to prefer watching the visual feedback (watching nearby customers) over reading feedback (textual information), similar to what is seen in Figure 104:

![Image](image_url)

Figure 104: A customer turning away from an expensive ride in *RollerCoaster Tycoon 3*

The pair continued watching customers:
L: Dude, a lot of people are going. So let's start a new ride.
L: Yeah.
R: Are people gonna get on it though?
L: ((Clears throat)) Hmmm Hmmm. ((Pulls up 'Ride' menu)) I think so. Yeah. Uhh (.5) no.
R: Lower it. Oh no people are going on it. Oh look we already made thirty four dollars. (.5) No it's good.
L: I'm just gonna make it a five. ((Clicks price higher)) Honestly.
R: Five?
L: Yeah, honestly I think like that's a better idea. ((Readjusts price on ride))
R: Well all those people just went on it.
L: I know. I still think five's more reasonable.
R: ↑Mmmm,↑↓K...↓
L: Well we can always change it so...
L: Ultimately, the left hand person in control of the mouse decided to lower the price, because he deemed it more reasonable. The right hand student wanted to raise the price a bit, but the left hand student (in control of the mouse) dismissed her by saying “we can always change it”. While some disagreement on price existed, the conversation still focused on setting prices in order to turn a
profit in the game, supporting their goal of making money. It is interesting to see how a potential sense of morality is invoked by the left hand student in not overcharging clientele.

While this sequence of episodes is rather long, a change in strategy can be seen that is well supported by the game representations. Initially, as the pair learned to build rides, focus was on exploring the ride menu and game interface. The design of the game drew attention to the ride menu, encouraging game players to focus on the ride menu in order to accomplish opening the ride. In doing so, the pair explored and discussed many other ride properties, such as changing the ride's color and price. In this case, the game behavior and representations created several social affordances for learning, prompting the exploration and discussion of the purpose of items (to arrive at shared meaning). Those items were then utilized as resources to accomplish game goals.

The latter episodes in the sequence showed a shift in behavior as ride creation focused on the generation of profit. In the final episode, the pair spent the greatest length of time adjusting the ride's price and chose to watch customers for visual feedback to see whether their ride price was appropriate.

In RollerCoaster Tycoon 3, negotiating an appropriate ride price is a key item of strategy, as determined by the customer feedback in the game. Too low
of a price results in little profit being made (rides have operating costs, as well as construction costs, and a profitable ride needs to account for these). Too high a price results in customers not paying to take the ride. Similar to other examples, the pair preferred visual information over textual information as could be seen with the pair's preference of watching customers over reading 'Guest Thoughts' in the ride menu. The game's visual representation of feedback (seen in customer behavior) was utilized as a key variable in the negotiation of strategy by the students (to set prices), and added significantly to the game play.

5.7.4 Summary

The students used several social affordances provided by the game in disclosing information and in negotiating their game strategies. Disclosure of information was frequent while learning how to use and control the game interface. Pairs appeared to disclose information while discovering the interface in order to reach an agreed-upon, shared meaning of the corresponding objects and their functionality.

The negotiation of game strategies by the students was a social norm of forming goals. Students appeared to feel the need to discuss strategy with their teammates before proceeding in the game with action. A social affordance of playing in pairs is this use of the teammate in the co-construction of goals and
strategies. This behavior may be exhibited out of politeness and respect for the teammate as the game is played collaboratively and should be a projection of both teammates' goals.
Students appeared to utilize their social environment in multiple ways. Cooperative work often resulted after a team needed help and did not know how to solve a problem. Pairs would occasionally ask each other questions about how to complete actions within the game. This behavior is illustrated in three examples below.

5.8.1 Peer Teams: A Feedback Mechanism in Civilization IV

Similar to Civilization IV, peer teams can serve as a feedback mechanism. In this case, it appeared that the peer team exchanges information on how to proceed in the game:

L: Alright, I'm just gonna hit 'End Turn' [so then...] ((Clicked on 'End Turn'))
Peer team: [How do you guys figure] out what you're supposed to do?
R: See what happens. ((Laughs))
R: (.5) ((Addresses peer team)) We haven't done anything yet.
L: I just click 'End Turn' ((Clicked on 'End Turn'))
Peer team: That's what we did. ((Laughs))
This episode is very early in gameplay, and highlights learning the turn-based game style. While both pairs appeared to be struggling with what they should do, they took advantage of a social affordance: using peer teams as an information source and to check progress. Even though the pairs are not playing against each other, a little friendly competition seemed to exist between teams in their interactions with each other. However, pairs typically offered information whenever possible to help out their classmates.

5.8.2 Controlling the Camera View in RollerCoaster Tycoon 3

An example from RollerCoaster Tycoon 3 highlights a problem where game players struggle with controlling the camera view and angle on their theme park. Movement of the camera view and angle is actually very simple in RollerCoaster Tycoon 3: all one has to do is move the mouse cursor to an edge of the screen, and the view (camera view) will move in that direction. For instance, moving the mouse to the left edge of the screen will make the camera view move more to the left. However, in the next sequence of four episodes, the pair struggled to figure this out:

L: I wouldn't. Oh, no! (.5) "Gosh." Confusing.  
((Changes camera view))  
((Camera is stuck in the mountain alongside the park))
((Changing angle of camera still stuck in the mountain))

L: ((Zooms out from park)) Not working out for us that well. There we go.
R: Seriously
L: ((Still attempting to get camera view to move to center of park)) Gosh, alright I'm getting out of this one.

L: OK, "I'm getting kind of frustrated" at this folks! ((Clicks on 'Delete Object' icon))
((Camera view keeps changing and the pair cannot get the view that they want))
R: Does it keep popping it back up?
L: ((The camera view of the park keeps going from sky to ground)) Yeah.

R: ((Laughs))
L: ((Zooms in and out))
((Changes camera view from left to right)) OK, well, uh,
R: ((Laughs))
L: I can't get it, here, ((Laughs)) you do it, just try it.
R: ((Takes over control of the mouse))
L: You have to use like use, the um, yeah, that, yeah and you have to like click it to move, and then move the mouse. No, hold, hold that,
R: ((Trying to control the camera view with the advice of L))
((Zooms in and out of park))
L: NO that the middle button and then move it. (.5)
Then you scroll.
L: Are we going to build a path?

Figure 105: Camera view of a mountain in *RollerCoaster Tycoon 3*

In the above transcript, similarly represented in the above figure, the camera view is focused on a mountain on the side of the theme park. The pair struggled to move the camera view back over the center of their theme park. One student
got frustrated and handed the mouse to the other student, hoping that she could figure it out. The game offered no clues about how to move the camera angle. The pair used the mouse to rotate the camera (hold down the middle mouse button) and to zoom in and out (scrolling up and down on the mouse) but could not figure out how to move the camera to the left or right, or up or down.

The next episode in the sequence illustrates continued frustration with controlling the interface as one of the students asks the researcher for help:

R: I am trying to figure out how to get over there.
   (((Talking to researcher, who does not offer help)))
   (((Zooms in and out of camera view)))
   (((Swivels camera view by moving mouse)))
   (((Zooms in on park)))
   (((Swivels the view of the camera)))
   (((Zooms out)))
   (((Zooms in and out)))
   (((Swivels camera view from right to left in a circle)))
   (((Zooms in on park)))
   (((Zoomed in and out on park)))

The researcher did not offer help to the student, who spent a few more minutes in the above episode trying to adjust the camera view. Students attempted to use available social resources, such as the researcher. The teammate, who had been
in the bathroom temporarily, came back to the game hoping that his partner had
figured out how to control the view:

R: We're working on it.
L: Of course.

R: I can't get over there. I spent literally five minutes just trying to get over to the ride. ((Zoomed
camera in on park))
L: Oh no. Wait why are we back to here?
R: ((Swivels view of camera from left to right))

R: ((Laughs)) I can't (.). Because when we left I
guess the mouse moved. ((Clicked on ride that was in
the process of being built))
L: There we go.

R: ((Laughs)) Where did they even go? ((Zooms in on
ride))
L: I don't know.

The pair still could not figure out how to move the camera. However, the
explanation given ("I guess the mouse moved") suggested that bumping the
mouse, when nobody was looking, changed the camera view to its new location.
Somehow, the camera view had shifted from a mountain outside of the park to a
ride on the edge of the park. Students appeared confused as to how it happened, but figured that there had to be a way of moving the camera view in the game.

Finally, a solution was reached, after utilizing the peer team as an information source. Below, the left hand student decided to ask the peer team:

L: Liz, do you know like how to move it so like you can like ((Laughs)) (.5) control it like perfectly so you know where exactly to go? Because we're like moving it and it's not even working. (.5) Like we're trying to get like down here and we're scrolling but it only goes to there. ((Scrolls mouse to zoom in and out))

((Clicked near the point where the camera is swiveling the view, off to the side of the park))
Peer team: Um you can scroll like by moving it to the edge of the screen. Move your mouse to like the edge of [the screen]

R: [Like this way] [That's what I] ((Points to right side of screen all the way to edge))
Peer team: [Yeah just like that way]
L: ((Points the cursor to the edge of the screen and the camera moves right, back over the middle of the park)) OHHHHH.
R: ((Laughs))
L: †What.† No way.

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The left hand student seemed to deliver a very detailed account and question to the other dyad, in hope of a helpful response. The question seemed to work, as the peer team member gave clear instructions and verified that the pair followed them (e.g. “Yeah, like that way” being uttered after following a directive). While surprised that they had missed this, the pair was relieved to be able to control the view of the camera so that it can focus over the top of their park. However, the visual interface in *RollerCoaster Tycoon 3* offered no clues suggesting how to proceed with moving the camera angle. Game designers seemed to assume that game players would figure out how to move the camera without any clues. The pair expressed relief that they could now move the camera:

Peer team: It's easier that way.
L: Yeah it is. Geez. (Now able to view and look around park with camera successfully)
Peer team: Yeah there are some things you just have to...
L: It's like ((Laughing)) I don't know how I didn't get that. ((Continues to scroll to edges of screen to move around camera view))

In this case, a simple interface control limited game play severely for a significant amount of time. This may have been prevented with a small amount
of detection on the game's part (such as detecting a great deal of movement that was not centered on anything of interest, like a mountain, and giving a hint on how to move the camera). While the control seems well designed and functional, the initial learning of the control has the potential for problems as shown above.

Social discourse is just as important in this learning episode. After some struggling, the pair decided to make use of the peer team to solve a problem. It seems that the higher degree of frustration led to the pair asking a very specific, detailed question. Rather than just asking how to move the view, the left hand student gave a longer account of the problem, perhaps to raise the level of immediacy of his problem (encouraging the peer team to lend help after making a more direct appeal to them). The peer team responded accordingly with an answer as well as by giving enough guidance to check that their advice was properly interpreted and carried out.

5.8.3 Borrowing Initial Strategy in Making History: The Calm & The Storm

The following example occurred very early in the first day. While initial focus in game play is often put on exploring the game interface, game players also form initial strategies and goals early on. In the following example, at least two factors are in play: first, students made use of an affordance of peer teams in the awareness of their activity, using the peer team for feedback and following
their example; second, they seem to form an early strategy potentially based on an activity that they assumed they should be fulfilling (possibly based on the fact that they need to start wars in a World War II game). Little direction was given by the researcher to students as to why they were playing the game, and students were left to fill in the blanks. Being presented with a game about World War II, students may have chosen their initial strategies based on their assumption that their activity should be warfare. The following transcript shows the development of initial strategies by following a peer team’s example:

Peer 1: Declare war <on>
Peer 2: Do it (0.5) ha ha declare war.
L: ((Scrolling through map))
Peer 1: OK, we're declaring war on uh (0.5) on Britain here. >READY AND, GO!< We just declared war.
L: How did you [declare war?]
R: [†How did you declare† war?]

Both students appeared interested in the peer team progress and seemed to have been listening to what the other pair was saying. This social awareness mechanism is an affordance of collaborative game play and the pair responded by questioning the peer team. The peer team was used as an information source,
as a means of checking progress, and as an example of potential action (in this case, the pair copied the peer team strategy).

Following, the peer team responded with some information about how they accomplished declaring war:

Peer 2: No idea.
Peer 1: I don't know, we just clicked [International] =
L: Here you can try. ((Mouse control traded from L to R))
Peer 2: [Click the] middle button with like the piece of paper
L: ((Followed the direction of the peer team; clicked on the Diplomacy (middle) button))
Peer 1: = and it gave us the ability to go to war at the very bottom.

Following the other team's direction, the pair found the 'Diplomacy' icon in the upper-right portion of the screen. Under the country name (the nation as which the pair is playing the game), are five icons. These five icons represent the game's major areas of focus and are persistent icons (they remain there on every screen). Therefore, they are a resource for discussion among peer teams, as shown above. The following figure shows the 'Diplomacy' menu:
After gathering information from the peer team about how to declare war, the pair began executing the borrowed strategy:

L: We don't have any "current wars". ((Reading from Diplomacy Screen)) Oh, let's make some negotiations.  
R: Select uh. (.5) Who should we select? ((Clicked on 'Select Nation'))  
L: Let's get uhh...  
R: Bhutan? ((Laughs))  
L: ((List of countries came up for the pair to choose from)) Let's get (. ) Germany.
The representations provided by the game, as well as the terminology presented by the game, create opportunities for discussion and the introduction of terms into the conversation (such as when one reads of 'current wars', or suggests 'let's make some negotiations'). The left hand student read these items aloud to his teammate, potentially because he believed they were relevant to their current goal of declaring war on another country.

The pair successfully found the diplomacy menu with the help of the peer team through the discussion of a persistent resource, leading them to explore diplomatic options. Exploration of the menu continued, looking at options for peace treaties, alliances, and eventually declaring war:

L:  <Propose> (0.5) Should ((Laughs)) we declare war against them?
R:  ((Scrolls over 'Declare War' in the 'Diplomatic' menu choices))

L: <NO NO, CHINA, CHINA> China, cuz they (.5) we need their oil.
R:  Where the hell is China? ((Clicks on 'X' button to
A bit of negotiation occurred, changing the strategy to declare war on China. After clicking ‘Select Nation’, a list of countries appears in the game. Selection of a nation will change the right side of the screen from the ‘Diplomacy’ screen to a screen focusing on diplomatic action with only that nation. Similar to what is shown below in Figure 107, the pair selected China and then clicked ‘Declare War’:
Figure 107: Declaring war on China in *Making History: The Calm & The Storm*

One of the students decided that China is a good choice for war, justifying his choice of China because of their large supply of oil. While it is unclear where he obtained this information (the game does not present this information), his reasoning for declaring war seems clear: the conquest of countries with oil. Coincidentally, the pair was playing as the United States. However, the pair invoked a diplomatic strategy used by the United States of going to war for oil that occurred several decades after the end of World War II.
In the above episode, information that passed between pairs focused on a persistent icon in the game, making it something that could easily be discussed between peer teams. When asking the peer team how to declare war, the peer team did not respond with a description of the items on the sub-menu under diplomacy (such as ‘Select Nation’ under ‘Negotiations’, then picking a country, then clicking ‘Declare War’). The peer team felt it was sufficient to communicate the first step of choosing the ‘Diplomacy’ icon (it is more easily discussed as a persistent resource), followed by a summary of what to do (“it gave us the option to go to war at the very bottom”), allowing the peer team to figure out the rest of the procedure.

5.8.4 Summary

Initial strategy development in Making History: The Calm & The Storm was borrowed from the peer team after observing the peer team declaring war. In RollerCoaster Tycoon 3, the peer team was used as an information resource in getting the camera view off of the side of a mountain. Students appeared to be aware of others around them, and made use of peer teams as an information source. Additionally, students provided information to other teams in need of help.
Students seemed interested in occasionally checking peer team progress in order to gauge their own success. In overhearing the peer teams' games or discussions, major events or achievements would often lead to checking progress with peer teams. Additionally, students would sometimes brag to peer teams after achieving something in the game. Two episodes are presented in this section: one focusing on the checking of peer team progress; followed by an episode involving a teacher checking progress of students.

5.9.1 Peer Teams As a Means of Checking Progress in Civilization IV

In collaborative game play, pairs often tended to check in with peer teams to check their progress. The following episode shows a bit of competition between pairs as they check each other's progress. The left hand student mitigated his intrusion to the peer team game play by flattering their work:

L: "Awesome city." ((Talking to peer team))
R: ((Clicked on 'Military Advisor'))
   ((Military Advisor screen popped up))
L: Which guy are you?
Peer team: Uh1, (mutter name of his Civilization)
\n<2387500> (.)
R: "(Clicked 'Exit' on the 'Military Advisor' screen)
L: Mark's in first place, dude.
R: 'What? '((Laughs))
L: '((Laughs)) He just (.) he's doing good
   "<2392689> ('.)"

Above, the right hand student is in control of the game and the left hand
student leans over to check on the peer team's progress. While the right hand
student appears to be on his own train of thought, the left hand student gets his
attention by informing him that the peer team is doing very well (in first place).
In collaborative game play, social peers can serve as a means of competition by
adding motivation to do well in the game and by providing the affordance of
comparing progress.

The left hand student was the one that decided to check progress of a pair
to his left. Proximity may have played a role, as the left hand pair was sitting
immediately to his left. Additionally, he was not in control of the mouse and
keyboard. Thus, his attention was not as tied to the game as the right hand
student's (who was controlling the mouse, effectively being the game controller).
This may be one of the downsides of collaborative game play with games that
are designed for single users: only one input device (controller) limits the
engagement of the non-controlling game player. However, in this case, attention
of the non-controlling player shifted to the peer team's game, allowing a brief
correction between pairs to check each other's progress.

Returning to the remainder of the episode, another social affordance
appeared: that of the peer team as an information source:

**R:** How did you make money?
((Clicked on 'Technology Advisor' icon))
((Technology tree popped up))
((Clicked on a blue colored technology))
((Clicked on the same blue colored technology))
Peer team: I dunno.
**L:** ((Laughs)) †You have like all these symbols, it's
weird.†
**R:** ((Clicked on a different blue colored Technology))
Peer team: These things?
»<2399033> (.)
**L:** Yeah. No. Like those, and those, uh, what is
that, like bread?
Peer team: Uh...
**R:** ((Clicked on a green colored technology))
**L:** Bread and...
Peer team: I guess.
»<2407776> (.)
**R:** ((Clicked on a different green colored
technology))
((Double clicked on the same green colored technology,
nothing is happening))
**L:** "Alright, Matt let's do something."
While the peer team member is not able to answer questions very well, the interaction results in the accessing the 'Technology Advisor' in the game. Again, green colored technologies are ones that have already been researched, while blue technologies have not yet been researched, as seen in Figure 108:

Figure 108: 'Technology Advisor' in Civilization IV

The 'Technology Advisor' presents a representation of game goals: showing contingencies between technology items, and reinforcing goal formation by game players. The graph of technologies scrolls left and right.
displaying items unlocked already and those which to work towards. The representation of contingencies allows game players to select something in the future they would like to attain and promotes the creation of a strategy (based on the visual contingencies displayed) for its acquisition. For instance, if the pair determines they would like ‘Gunpowder’, they can map out the most efficient way of getting it (based on the graph above, they would need to unlock ‘Theology’, then ‘Paper’, then ‘Education’ to achieve ‘Gunpowder’).

Assuming that the ‘Technology Advisor’ visually supports goal formation; it is interesting how the pair decided to access this screen after checking the peer team’s progress. The ‘Technology Advisor’ visually displays past, present, and future game technologies; and provides a visualization of goals in the game. This reinforces the idea that peer teams can serve as a source of competition: after checking the progress of others, the pair pulled up a visualization of their own goals. The ability to compare progress with others is a social affordance of collaborative and competitive game play, adding motivation to outperform peer teams.
5.9.2 Teacher Reengaging a Bored Student in Making History: The Calm & The Storm

Teacher interaction was very limited in this study. This example is one of a few with teacher presence. In this case, the teacher helped to reengage a student that appeared bored with the game. Prior to the episode, the right hand student did not talk much and often was gazing around the classroom instead of focusing on the game:

L: ((Clicked on a Navy Ship))
((Scrolled over continent))
((Clicked on a country))
((Clicked on an Airplane that brought up the 'Air Force' menu))
((Clicked on a country))
((Scrolled through continent))
((Clicked on an Airplane that brought up the 'Air Force' menu))
((Zoomed out from map))
Teacher: ((Teacher talking to other pair, offering general advice))
L: ((Scrolls over continent))
«1175728> (.)

As stated above, the left hand student is doing most of the interaction with the game, while the right hand student appears disengaged. Following, the teacher checked on the pair:
Teacher: Jordan, how are you guys coming out?
L: ((Scrolls over continent))

R<1180293> (.)
L: Uh (1.0), geez, [it's huge]. ((Zooms out from map))
R: [Holy crap] our country is huge. ((Laughs))
L: ((Scrolls over continent))
Teacher: Are you letting Nick do any of the strategy here, (.5) or are you just doing the whole thing yourself?
L: ((Zooms in on map)) Why is Russia so?
Teacher: Remember two heads are better than one.

The teacher asked the left hand student (Jordan) how they were doing, and then suggested that the right hand student (Nick) become more active in the game play. This was done by suggesting that the left hand student allow the right hand student to become more active in the 'strategy' of the game.

Continuing the episode, the right hand student appeared to change his behavior:

R: ((Gets re-involved)) Look how many planes we have. ((Laughs)) Oh crap.
L: ((Clicked on a country))
(('Alliance' menu came up)) Dude why is it so big?
(('Scrolls across the continent'))
(('Clicked somewhere in Russia'))
(('War & Peace' menu came up))
R: ((Laughs))

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L: ((Began clicking on every plane that was in the country)) Why isn't there an army over here? ((Scrolls over to right side of country))

R: Yeah, there's no point in having all that°

L: Dude, let's just take over the ((Continues to scroll over country))

R: We already pretty much have the world.

L: ((Clicks on an airplane that brings up 'Air Force' menu))

R: What country is that?

L: ((Right clicks on a country that R had a question about))

((Name of country appears once moused over)) China ((Laughs))

R: Attack Japan.

L: We better not start anything with China. ((Scrolls around the continent))

R: Yeah.

While the left hand student remained in control of the game (keyboard and mouse), the right hand student took a much more active role after the suggestion by the teacher, even after the teacher walked away.

Several items relating to the above episode are important to consider. The right hand student appeared bored: potentially the game design is such that
game play is less interesting to watch for the non-mouse-controlling player. Additionally, the structure of the game might be such that collaboration would be less common during collaborative game play (which may be fine, as the game probably was not designed for collaborative game play). Other factors such as the relationship between the two students (prior to the game) or their experience playing the game together might contribute to a lack of collaboration. Whatever the cause, whether game design, social dynamics, or a combination of the two, the teacher identified a disengaged student and reengaged him.

Again, while not a primary focus of this study, teacher involvement is an interesting aspect of game play: teachers may serve in an observational role during game play, helping to add to students' motivations to play and be successful. This may alleviate some of the problems of playing video games in schools, as teachers can assist in raising motivation and filling in some of the game context by aiding strategy development.

From an implementation standpoint, success of games in the classroom will often be contingent upon the teacher's approach to the games because they have a great deal of control over the experience as a whole. The brief interaction with the teacher seems to reengage a bored student rather well, showing how even short interactions with the teacher can support game strategy development.
in a positive manner. While not the central focus of the study, this example highlights an opportunity for future research as well as an important item for stakeholders to consider during implementation.

5.9.3 Summary

Most between-pair collaboration exhibited a bit of friendly competition; however, peer teams always seemed more than willing to help each other out. Peers can provide social affordances, as outlined above, for gathering information as well as a means of checking progress. Peer competition can help add motivation to games, as illustrated in the first example. Additionally, teachers might be able to serve the same purpose, helping keep students engaged in the games by checking progress and encouraging high performance. Teacher assistance was appreciated by students, as mentioned by students during the interview in Making History: The Calm & The Storm. Those playing the other two games (without teacher assistance) mentioned during interviews that they would have preferred to have the help of a teacher, especially early in the game when learning to control the game interface.
5.10 CHAPTER SUMMARY

The affordances provided by the game interface and social setting guided collaborative discourse and resource appropriation in this study. Game representations afforded particular action and communication patterns by students, creating prompts for discussion and negotiation. Likewise, that discourse served as a guide for future behavior. The environment created specific affordances as well. Peer teams served as a resource for gauging progress and for gathering information, helping to guide future game strategies and operations. Following is a summary of hypotheses of how learning is supported by the use of affordances that are based on game representations and the social environment.

5.10.1 Visual Representations Affording Specific Activity

Game representations can create different kinds of affordances. Referencing activity theory (as presented by Kaptelinin & Nardi, 2006, p. 80-83), affordances can be on the level of activity, actions, or operations. The many summary screens in RollerCoaster Tycoon 3 afford the action of management, a main goal of the game. Accordingly, students managed their staff using the
'Staff' screen, which presented a summary-style list of employees and some of their most important properties (i.e., satisfaction, current task, etc.).

Examples in the games occurring at different affordance levels include the use of icons at the action level (actions to achieve a goal), supported by operational level affordances such as the clicking of icons. Feedback channels were used, such as when reading pop-up text upon mousing-over icons. At the higher level of activity, objective screens can communicate the purpose of playing the game, as well as supporting initial strategy and goal development.

In addition to creating affordances, the game representations can shape the nature of discourse in the game. An example from Civilization IV is the types of discussion afforded by two different computer representations of people. A large difference in the kind of conversation existed when dealing with other civilizations (computer avatars) in comparison to dealing with one's workers. The visualization of other civilizations (the talking head, with negotiation and speech options) versus the workers (an icon on the map that can be given tasks to complete) affords two different kinds of action. Discourse with the avatars representing other civilizations appears to be more in depth and interactive: students appeared to be negotiating with another person, not just controlling a computer game interface.
5.10.2 The Persistent Display of Past, Potential Present, and Possible Future Actions

Maintaining context through the display of historical activity was beneficial to learning for several reasons. Historical activity provided a frame of reference to students in the generation of future strategies. In RollerCoaster Tycoon 3 and Civilization IV, the map in the game shows historical activity well through the representation of things previously built, such as operating roller coasters or constructed buildings.

Present and future action is displayed well in Civilization IV, especially when moving characters across the map. Current action is displayed through movement and animation of characters, and future action is displayed by plotting movement for future turns (see examples earlier in the chapter). This representation helps frame discourse between students in movement of their characters. Additionally, the uncovering of the map creates an affordance of discovery: also showing historical context (uncovered portions of the map) and future potentials (map portions still colored black). This creates an affordance for discovery, as seen in discussion between students on where to move their explorers.
A sense of ‘flow’ was created by the display of historical activity and future potentials, as game players had a sense of accomplishment (historical context) as well as a visual future context, which seemed to motivate game players. The representation afforded strategy formation, which often manifested as discussion of strategy between students.

5.10.3 Game Cues Grabbing Attention, Redirecting Focus

Particular visualizations served the purpose of grabbing attention, and occasionally redirected the pair’s focus to a different task. For example, previously unused icons (actions) in Civilization IV would blink after time, suggesting (but not forcing) their use. This affordance was successfully used as students responded by acknowledging the icon and using it. In RollerCoaster Tycoon 3, students were informed by ride failures or staffing problems through the game message console, serving to redirect their attention to the problem. This can lead to the discovery of new game features (for example, in RollerCoaster Tycoon 3, staffing was discovered this way).

The benefit of well designed artificial intelligence is important, as it can detect unused game features or problems, and serve to help correct them by drawing attention to those problems. However, in the examples provided, attention and related actions were not forced by the game; therefore a more
advanced gamer could choose to ignore the suggestions and do something else. These game suggestions seem to most benefit new game players in discovering new game features and considering new strategies that were not thought of previously.

5.10.4 Consistent Organization, Visualizations, and Behaviors

Persistent interface items, such as the top-level icons in *RollerCoaster Tycoon 3*, created a consistent means of executing action in the game. Students knew where to look to begin searching for an item. Similarly, in *Civilization IV*, consistency in the display of pop-up information of objects aided students, as pop-up information of objects (workers, etc.) was always presented in the bottom left corner of the screen, using consistent coloring of words (the game colors technologies one color, buildable items another color, etc.).

Conversely, the terrain tools in *RollerCoaster Tycoon 3* were not as well organized: while a terrain editing tool can be found on the main menu, there were also terrain editing tools found elsewhere (such as in the ride entrance and exit menus). This led to confusion, as items could be found in multiple places. This manifested in *RollerCoaster Tycoon 3* as students spent considerable time looking for things in different menus. Often students had clear goals, and would spend many minutes searching for an item, failing to find what they needed:
similar to Norman’s gulf of execution (Norman, 1988). The *RollerCoaster Tycoon 3* transcripts show a lot of trial-and-error being used by students.

Additionally, roller coasters in *RollerCoaster Tycoon 3* used a similar visualization to other rides, yet yielded different results. Clicking to build a roller coaster launched the design of custom roller coasters rather than pre-made designs (as with other rides and attractions). This inconsistent visualization resulted in the pair missing pre-made roller coaster designs throughout the game.

Consistent displays, such as persistent icons on the screen, provide a frame of reference for collaborative discussion, such as in borrowing strategies from peer teams in the episode from *Making History: The Calm & The Storm*. The persistent diplomatic icon, diplomacy, was mentioned as a reference due to its persistent nature on the interface. This makes it easily referenced in discussions: a social affordance of the object. Consistent display of objects makes them more easily referenced, and therefore more easily discussed.

5.10.5 Plurality of Channels of Information to Aid Understanding

To aid in uncertainty reduction, a plurality of information channels can be utilized by the game. When unlocking a technology item in *Civilization IV*, the game plays a sound, shows a pop-up containing images and text, and plays a
voice (reading something about the technology). The multiple sources of
information made available convey meaning well: the pair does not seem to ever
question what has happened. The textual events of battle outcomes in *Making
History: The Calm & The Storm* (discussed above) were often overlooked or
created confusion. Utilizing multiple channels (audio, visuals) in multiple forms
helped aid interpretation.

5.10.5.1 Preference For Visual Content Delivery

Students exhibited a preference for visualized information, ranked as
follows:

1. Animation-based
2. Static visualization-based
3. Text-based

Often when information was presented via multiple channels (for
example, when a technology was unlocked in *Civilization IV*), students would
glance at the visual images before taking time to read text. Text pop-ups were
used as a secondary source of information when further explanation was needed.
Additionally, animated presentation often took precedence over static visuals.
Animated characters and sequences in the game often served to draw attention,
such as battle sequences in *Civilization IV*. Animated sequences were better at
grabbing attention and creating emotional responses than information presented textually. A difference in student discourse is visible when comparing battles among the two history games: Civilization IV animates battles, while Making History: The Calm & The Storm presented battle outcomes as text at the end of a turn. Additionally, these battles were not visually won or lost: an icon indicated a battle, but would disappear at the conclusion of a battle (which occurred at the end of a turn, when a new map was calculated and updated). This flipping of the map not only lost historical context, but often resulted in battle outcomes being overlooked.

5.10.6 Collaboration Norms: Disclosure and Negotiation

As not to bother peer teams too frequently, cooperative and competitive behaviors between the dyads occurred only several times per game. However, discussion with teammates (the student with which they were playing the game) was an ongoing process.

5.10.6.1 Disclosure and Prompting for Negotiation

Disclosure of information was often the norm when learning how to use and control the game interface. Discussion often focused on communicating a sequence of actions to complete a task. Accordingly, most discussion of how to
use something on the interface occurred frequently at the beginning of game play as the game interface was being learned. Pairs appeared to engage in a process of disclosure and negotiation while discovering the game interface in order to reach an agreed-upon meaning of the corresponding functionality.

5.10.6.2 Negotiation of Strategy and Goals

The negotiation of game strategy was typical in collaborative game play. In forming goals and creating a game strategy, students appeared to feel the need to discuss strategy with their teammates before executing actions in the game to reach those goals. A social affordance of playing in dyads is to make use of teammates in the co-construction of goals and strategies. This behavior may be done out of politeness and respect for the teammate, as the game is being played together and should be a projection of both of their goals. The design of the study to play games collaboratively was intended to elicit this negotiation.

5.10.7 Between-Dyad Cooperation: Awareness, Assistance and Guidance

Students appeared to utilize their social environment in multiple ways. Cooperative work often resulted after a peer team needed help and did not know how to solve a problem. Pairs would occasionally ask each other for assistance in completing actions within the game. In one case, initial strategy development
in *Making History: The Calm & The Storm* was borrowed from the peer team after observing the peer team declaring war. The other pair followed suit, and made use of similar game affordances to achieve the same goal. In *RollerCoaster Tycoon 3*, the peer team was used as an information resource in getting the camera view off of the side of a mountain. Pairs appeared to be aware of the others around them: using others as an information source, and providing other teams information when in need of help.

A similar pattern could be observed when a teacher was present. In one of the games, the teacher would occasionally check progress and offer advice. This assistance appeared to be appreciated, and was mentioned as such by students during the interviews. Students without teacher assistance mentioned in the interviews that they would have preferred to have teacher help, especially early in the game when learning the basic interface control: suggesting that teachers can be a valuable guide in the appropriation of affordances.

5.10.8 Between-Dyad Competition: Checking Performance

Occasionally, students interrupted peer teams to check their progress. Students seemed interested to see how the peer team was doing, in order to gauge their own success. In overhearing the peer team’s game or discussions, major events or achievements would often lead to checking progress with the
other team. Additionally, students would sometimes brag to the other team after achieving something in the games. A bit of friendly competition was observed; however, peer teams always seemed more than willing to help each other out. Perhaps this would be different if the dyads played the game against each other (for example, in a multiplayer game) instead of playing games individually. Often the checking of the progress of the other team was followed by the appropriation of game resources relating to their own progress, suggesting that competition can be a motivation for using game resources that show performance information.
5.11  DISCUSSION AND ABSTRACTION OF FINDINGS

This study has demonstrated the effect that game representations and the social environment have on group behavior and their appropriation of game resources. The findings above are generalized below, offering a more abstract view of the role of game representations on learning. These abstractions can form the basis of offerings for recommendations to game designers in designing games for learning, as well as to educators in supporting their use. Implications for stakeholders are discussed further in Chapter 6.

5.11.1 Information Scaffolding in Gameplay

Proper scaffolding of information improved game play and learning. This was accomplished through several features encountered by students in the game: a plurality of channels of information, artificial intelligence, and the scaffolding of new game resources.

5.11.1.1 Plurality of Channels

A plurality of information channels aided understanding in game play. Students utilized multiple information channels, such as when unlocking a technology item in *Civilization IV*, to infer meaning through the combination of
information from different sources. Pop-up text when pausing over icons, such as in *RollerCoaster Tycoon 3*, provides additional information when needed. This information was designed in a way that scaffolds, allowing more information to be given to novices while allowing experts to ignore it. In the games of this study, novice game players can gather additional information on the purpose of interface objects by pausing over them. Particular icons may already have meaning to more advanced game players, and the additional information is not forced on them. This behavior allows scaffolding of information as required by the level of expertise of the game player.

5.11.1.2 *Artificial Intelligence*

Particularly in *Civilization IV*, certain game features that were underutilized would be detected by artificial intelligence. The game made use of animation (blinking the icon), a tactic to draw attention to the item. This promoted their exploration and use. Similarly, in *Civilization IV*, specific technologies were ‘Recommended’ by the game for research. However, these game recommendations are not forced upon the gamer: the game players can choose whatever they like; therefore maintaining locus of control. Artificial intelligence can accordingly provide the means for scaffolding information by suggesting affordances for appropriation by game players. More advanced game
players can choose to ignore this information, and the visualization of the information is done in a way to not negatively impact their gameplay.

5.11.1.3 Structuring Complexity

The gradual introduction of game features aided understanding. In Civilization IV, there are less potentials for action early in the game: simply one or two objects exist, focusing player effort on learning the movement of game objects, giving tasks to those objects, and the turn-based style of the game. Complexity was introduced slowly to the game, starting with the most basic game controls. Alternatively, Making History: The Calm & The Storm had a fully populated and complex map from the start of the game, and students exhibited behavior indicating they were overwhelmed and did not know where to begin.

Specific activity is possible with every object in games, and appropriation of those affordances is much simpler when new features are slowly introduced to the game. Relating to game design, game designers should be aware of the cognitive load put on novice game players when determining initial strategies and try not to overwhelm them. Additionally, the design of adding new useful items over time can maintain motivated activity by introducing further opportunities for action in the game.
5.11.2 Assisting Gameplay

Results showed that game cues can suggest and lead to the pursuit of action. Often game messages resulted in a corresponding goal selection. Consistent organization, visualizations, and behaviors also assisted learning. Consistent organization and visualization of items created the affordance of discussion among peers, as the object can be easily referenced. Consistent rules in behavior allowed pairs to focus on game play and strategies, rather than focusing on memorizing particular sequences of action. Game behavior rules can also limit affordances at each step, thus easing appropriation.

5.11.2.1 Feedback Mechanisms Assisting Goal Formation

Results showed how game cues triggered new strategy development and gave game players feedback. Cues could come from a game's ability to detect an unused feature, a game message or pop-up, or from watching the behavior of game objects. These feedback mechanisms triggered learning by prompting pairs to take up new tasks. Game design of triggers are important, as they should serve the pursuit of tasks that encourage learning activities. Feedback channels served to reduce uncertainty, thus aiding gamer interpretations: often manifesting through subsequent discussion between students.
5.11.2.2 Cognitive Offloading of Procedures Through Consistent Behavior

Game representations can assist in learning to operationally achieve goals. For example, when building rides in RollerCoaster Tycoon 3, a sequence of actions was afforded by the game. Each step in the process would automatically display new game representations. Specifically, building rides in RollerCoaster Tycoon 3 resulted in the following process: selecting a ride automatically begins the procedure of placing the ride, placing the ride automatically begins the procedure of placing entrances, and placing the entrance automatically begins the procedure of placing the exit. The design of this forced behavior eased the cognitive load of student game players in building predesigned rides, as they were not required to memorize procedures.

Consistent game behaviors (such as the sequence mentioned above) have several effects on game play: first, they reduced the cognitive load of game players, as they were not required to memorize the sequence of actions required; second, they provide an affordance for discussion via a persistent game behavior; and third, they assist appropriation by limiting affordances, presenting a limited number of choices relevant to that step of the process.
5.11.2.3 Social Affordances of Persistent Objects

As mentioned in the results, a social affordance is provided by persistent interface items, as they can be referenced between dyads through gestures (such as pointing), by naming the item, or by describing the item’s location on the interface (i.e., “it’s the third button down”). This property affords its discussion and use. Accordingly, items deemed important for the game should be persistent, so that peers can assist each other in finding and using those items.

5.11.3 Motivating Gameplay

As shown by results, certain game representations and peer behaviors can help maintain motivation. Limiting the number of affordances can assist the choice of tasks and serve to maintain flow. Particular game representations can support motivations by serving game objectives. In addition, the investment of identity of game players assists in maintaining motivation among students engaged in collaborative game play.

5.11.3.1 Maintaining Flow and Aiding Appropriation by Limiting Affordances

As mentioned earlier, forced procedures, such as building a roller coaster in RollerCoaster Tycoon 3, can assist the learning process. Once initiated, game play requires a sequence of related actions, one after another, in order to
complete the process. This has benefits in reducing cognitive load (players are not required to memorize the sequence of building roller coasters, or corresponding operations), and limit potential actions at each step of the process.

After placing a roller coaster in a theme park, the game automatically limits action by converting the mouse cursor into ride entrances and exits, with corresponding movement of the mouse serving to move the entrance or exit. This behavior affords particular action (placement) by limiting the actions possible. Limiting possible actions aids learner effectiveness, as they are not overwhelmed with options, and need less discussion and negotiation to proceed in the game. Additionally, this creates flow, by reducing the often overwhelming array of affordances on the interface and focusing efforts on more specific actions.

5.11.3.2 Supporting Activity with Relevant Action

In RollerCoaster Tycoon 3, game objectives and motivations to play were well supported by affordances in its summary screens. Motivations for playing the game (to manage a theme park) were well supported by action potentials available in the summary screens, each of which afforded management. Students made use of staff summary screens in order to manage their employees, and were not required to make manual adjustments of employee properties.
Alternatively, in *Making History: The Calm & The Storm*, pairs were required to micro-manage their production (output) of individual cities. Manual adjustment of large quantities of information is a repetitive task that breaks flow and hurts motivation to play, as demonstrated in the transcripts.

5.11.3.3 **Supporting Action with Clear Operations**

Similarly, actions should be supported well with operations, as described in Norman's Gulf of Execution (Norman, 1988). Games should be subject to usability tests, focusing on the translation of goals into meaningful action. Poor usability leads to frustration on the operational level, as experienced by students in *RollerCoaster Tycoon 3* attempting to create vertically inclined footpaths to rides.

5.11.3.4 **Identity Investment**

Transcripts showed students occasionally checking progress of peer teams, and occasional bragging upon receiving awards or achieving certain performance levels. Competitive behavior, as discussed in the results, conveys an investment in one's game: expressing a degree of ownership resulting from playing the game. Similarly, results showed how the display of historical context can motivate present and future action. If context motivates present and future

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action, then some sort of identity investment in one’s work (and accomplishments) has probably taken place. Gee (2003) discusses a similar concept in his 36 learning principles, found in Appendix K. Further work is needed to examine the effect of collaborative game play on the degree of identity investment: potentially, more ownership of work is taken when games are played individually, as students are more accountable for their actions and game contexts.
CHAPTER 6:

DISCUSSION AND CONCLUSIONS
This chapter contains six sections. The first section presents a summary of the findings, highlighting major findings from the analysis completed in Chapters 4 and 5. Additionally, results will be discussed in comparison to demographic and interview data, highlighting similarities and differences among findings and results from questioning students at the end of their game play.

The second section considers how to make use of the cognitive and social affordances of video games to create learning opportunities and support educational goals. Focus will be paid to four categories of stakeholders, specifically focusing on:

- Instructional designers (selection)
- Teachers (use)
- Game designers (design)
- Students (better use of game affordances to learn)

The third section compares findings to existing theory, specifically focusing on theories of collaborative learning and activity theory. The Input-Process-Outcome model (Webb & Palinscar, 1996) considers the application of collaborative learning, while the mediational triangle (Cole & Engestrom, 1993) considers the application of activity theory.
The fourth section presents limitations and delimitations of the study, as well as mitigations and opportunities for future work. The chapter concludes with the final two sections that presents the contributions of this work and general conclusions of the study.
6.1 Summary of Findings

This following two research questions were addressed by the study:

1. In what ways does learning take place in the context of collaborative video game play by high school students?

2. In what ways do students make use of the cognitive and social affordances of collaborative gaming for the learning that takes place?

Research Question 1 was addressed in Chapter 4 that examined ways in which learning occurred. Learning was shown to occur at different levels, at different granularities, and could be triggered by different game cues. Research Question 2 was answered in Chapter 5 that examined the use of affordances. Affordances for learning were created and appropriated through use of game representations and social peers: by supporting activity and goal development, by displaying game context (past, present and future), by game cues, and through effective organization and consistent behavior in a plurality of channels. The collaborative learning behaviors manifested these affordances socially through the negotiation of shared meaning and cooperative strategy.
development. Peer teams helped cooperatively as a source of information and feedback, and competitively as a means of checking progress.

Briefly, results from the analysis chapters are revisited before addressing the discussion questions that were outlined in the first chapter.

6.1.1 How Learning Takes Place in Collaborative Video Game Play

An analysis of episodes of learning in the data revealed several properties of learning that emerged while students were engaged in collaborative game play. Learning appeared to occur at different granularities and different levels, and were often triggered by specific game features or cues (both from the game and from social interaction).

A property of learning episodes was that they had a certain granularity: occurring either as a short episode, a sequence of short episodes, or a trend spread over time. Trends were often observed in a moderately used game aspect, typically in a developing strategy whose complexity and use increased over time. Short episodes and sequences of episodes were often consistent with the middle ‘action level’ of affordances and Koschmann’s idea of problematization where pairs discovered a problem and pursued a task, followed by later resolution of the problem (when the task was successfully completed). Cases where tasks were not completed successfully, or appeared to be inhibited by action that did
not move game players towards their goals, were marked as missed opportunities (for learning) and reserved for further analysis in Phase II of analysis (Chapter 5).

Learning appeared at several levels:

(a) learning the physical interface (the high school students in the study seem to have already mastered using a computer interface)

(b) learning to use the game interface (its basic usage and corresponding functionality)

(c) learning advanced strategies required to win the game (behavior in line with achieving goals set forth by both the game and game players)

Learning often appeared as a progression through these levels with more emphasis on the lower levels early in gameplay. However, all three levels appeared simultaneously through gameplay (i.e., strategy was exhibited from the beginning). Some relationships could be observed between these learning levels and the levels outlined by activity theory. The first level of learning the physical interface, and some of the learning of the game interface, is similar to the operational level of affordances in activity theory. The action level and the activity levels in activity theory are likely to occur on the final learning level.
shown above where students develop advanced strategies to win the game.

Perhaps action level affordances focus on a task, involving both learning levels (b) and (c) above, whereas activity level affordances exist primarily on learning level (c) that focused on advanced strategies. However, these advanced strategies would be temporally located on a larger scale, examining what was being accomplished overall during game play (such as motivations to play, focusing on what students feel they are accomplishing through game play as a whole).

Finally, learning often appeared to be triggered by social peers or by particular game features. These factors added motivation and shifted attentional focus to another aspect of the game. Failures often served to draw attention of the pairs and motivated pairs to work on tasks related to the failure. However, there were examples where failures hindered interest and task pursuit when negative conditions existed, such as the lack of feedback or the experience of repetitive failure.

6.1.2 How Students Made Use of Affordances for Learning

The affordances provided by the game interface and social setting guided collaborative discourse and game play in this study. Game representations
afforded particular action and communication patterns by students. Findings are summarized below.

*Visualizations afford particular kinds of activity.* Visualizations should support corresponding game goals and motivations to play. For instance, the staffing summary screen of *RollerCoaster Tycoon 3* supports motivation to play the game, affording managing of a theme park. This visualization supports related activity of managing staff, a major component of running theme parks. The presentation of a summary of staff and major properties creates the affordance of management. Additionally, while selecting game scenarios in *Making History: The Calm & The Storm*, game visualizations reinforced to students that their activity was war, not diplomacy: perhaps partially explaining their later choices to focus on making war.

*Affordances can be temporally located in the present or future, drawing from historical context and guiding present and future activity.* For example, in *Civilization IV*, the visualization of movement on the map and uncovering of new areas generates a history of where one has been and where one can go in the future: marked by a future path on the map.

*Game features can trigger learning; accordingly, particular game representations can afford the redirection of attention to focus on new tasks.* For example, in
Civilization IV, artificial intelligence detected unused icons and flashed them in a way to draw attention, causing students to explore them and use them.

Consistent organization and behavior aided learning by creating readily understood affordances. Several examples of inconsistent organization and behavior hurt gameplay in RollerCoaster Tycoon 3, such as when students created footpaths and edited terrain. When organization of the information presented to game players is not clear and consistent, these operational level affordances can cause confusion and detract from learning.

Similarly, a plurality of channels of information creates operational level affordances focusing on the game players' understanding. A plurality of channels of information can reduce uncertainty by providing additional feedback. In several games, the lack of additional information representations may have resulted in students overlooking or misunderstanding game events or representations. For example, in Making History: The Calm & The Storm, major battle events (listed textually) were often overlooked or confusing to game players. Representations with which they were previously working (military icons on a map) would disappear after battles ended. Proper feedback aids the creation of goals (action level affordances) in the game.
Collaborative play resulted in the use of disclosure and negotiation between students to achieve shared meaning of game objects and to co-create game strategies. Disclosure often resulted in the discussion of objects' meaning, especially when learning interface functionality. Negotiation was often used in strategy development to select goals and appropriate resources in the game.

Cooperative play between dyads utilized the peer teams as information resources. An affordance of the study configuration was that peer teams could be used in cooperative play, helping each other in times of need (such as in solving frustrating interface problems in RollerCoaster Tycoon 3).

Competitive play occasionally emerged. A social affordance of peer teams was the using of peer teams for comparatively checking progress. Pairs in all games occasionally exhibited this behavior, checking the success of peer teams in order to gauge their own progress. Often students followed the checking of peer team progress with action that used corresponding game performance visualizations (such as summary screens that show goals, achievements, etc.).

6.1.2.1 Summary of Affordance Use

Affordances are defined as potentials for action that reside in the relationship between actor and environment; accordingly, the design of game representations with affordances to assist the learning process can streamline
and improve learning as a whole. The above summary of findings suggests the ways in which learning occurs with games and describes both game representations and social peers as resources to supporting that process.

Game designers can create games that follow the discussion of representational affordances discussed above, while teachers and educators might focus on ways to make use of affordances that utilize benefits afforded by the social environment. For instance, game designers might focus on incorporating a plurality of channels of information into their games, and teachers might encourage students to ask each other questions while playing games. This topic is discussed in greater depth in the following section that discusses implications for selection, use, and design of video games for learning.

Each of the above hypotheses provides an opportunity for future work: to clarify these initial findings through theoretical sampling, and to further investigate the role of social and cognitive affordances on the learning process.

6.1.3 Comparison of Findings with Demographic and Interview Data

Information gathered from the demographics forms and the interview transcripts are briefly discussed in comparison to the analytic findings that emerged from the video tape analysis. The demographic forms were distributed on the last day of game play and were completed individually by students.
Following collection of the demographic forms, a group interview was conducted. The demographics form and corresponding results are available in Appendix C. The interview transcripts are available in Appendix J.

First, a disclaimer: interview questions and demographics forms were created before analytic conclusions could be drawn. Therefore, interview questions and the demographic information collected do not always address concerns relevant to the findings. Many of the questions address topics not analyzed in the inductive analysis. For instance, game visualizations were discussed very little during interviews.

However, questions were generally broad in scope, encouraging the students to respond with answers on their terms: things that were significant to them in their experience playing the game. The specific experiences they mentioned were interesting in that regard because students appeared to bring up the most obvious and important things from their point of view. In many instances, answers to interview questions were often quite specific rather than providing more generalized impressions and analyses of the game. Students typically noted specific issues that they had encountered (such as “we struggled to defend Michigan from Canada”). Accordingly, the inductively generated
hypotheses of the analysis chapters remain the primary focus of this study, with this interview information serving as a supplement.

6.1.3.1 Summary of Interview and Demographic Data

Both the left hand and right hand pairs are part of this discussion. While data analysis focused on the right hand pair only, the left hand pair should also be considered in the discussion because they were subjected to the same treatment.

Briefly, some demographics on the dyads: all six pairs (two pairs per game, three games) have mixed interests and favorite subjects. For Civilization IV, none had played the game before, although three of the four students commented that they had played similar games in the past. All four were male. In Making History: The Calm & The Storm, none had played the game before, but two had played a similar game, Risk. There were three male and one female student. Finally, in RollerCoaster Tycoon 3, all four students had previously played the game. There were three female and one male student.

Of the pairs analyzed in the study (right hand side), the pairs from Civilization IV and Making History: The Calm & The Storm were comprised of two males, while RollerCoaster Tycoon 3 had one male and one female. The pair from RollerCoaster Tycoon 3 appeared to be the most verbal of the three pairs analyzed.
Based on memory and data collection notes, the other mixed gender pair (left pair from *Making History: The Calm & The Storm*) seemed more verbose than the homogenous pairs as well.

During interviews, groups repeated much of the same information listed on their demographics forms. As a whole, students reported that the games were fun and interesting; however, certain parts of the game were difficult to learn or use. Specifically, students listed game ‘controls’ as being somewhat difficult and suggested that a teacher could help make the learning more efficient and effective by demonstrating proper use. Comments corresponded to the level of learning described in the analysis; specifically, the level of learning how to use the interface and its corresponding functionality. Students did not express difficulty in the other two levels: using the computer interface, and developing strategies.

Teacher presence was not a significant portion of the study, except during *Making History: The Calm & The Storm* there was occasional teacher presence. In this case, the teacher did not know the game well, so he therefore offered general tips that correlated with the period (World War II) along with some strategies for warfare. Students responded in the interviews that this was very helpful to them in generating their game strategies. While this may be due to the presence of the
teacher in the room during the interview (the teacher was present because he
moved his study hall to the computer lab in order to assist in the study), students
added themselves that additional teacher presence would be useful. While this
may seem to be due to the teacher’s presence, students of the other two games
(without a teacher’s presence) mentioned this as well.

Generally, most students said they had fun, enjoyed the game, and
thought it was relatively accurate (to history, or to business, depending on the
game). Other more specific comments included: the appreciation of the
complexity of Civilization IV; a few students mentioned that they were sometimes
confused or bored in Making History: The Calm & The Storm; and all the students
playing RollerCoaster Tycoon 3 said it was fun, while a few mentioned the
difficulty of learning some of the controls. With respect to collaborative game
play, most of the students said they preferred controlling the game interface
(being in charge of the mouse and keyboard input devices). However, students
mentioned that they still enjoyed playing collaboratively because collaboration
encouraged discussion and helped ease the learning of the interface (controls).

6.1.3.2 Relationship to Inductively Generated Hypotheses

As mentioned by students in the interviews, the pairs seemed to have the
most difficulty learning to control the game interface and learning its
corresponding functionality. Other levels of learning (using the computer or forming strategies) were not mentioned as being difficult.

Teacher assistance was mentioned by students as a resource for dealing with the interface because teachers could help mitigate the problems encountered by pairs initially learning how to play the game and use the interface. This could be an opportunity for future studies, as the game situation for this study had limited teacher presence. This would require some investment on the teachers’ part, as teachers would have to know how to play the game in order to be of assistance in teaching how to use its interface. Additionally, students might have to be encouraged to make their troubles evident to a teacher walking by in order to receive help.

The mention of confusion and boredom in Making History: The Calm & The Storm supports the findings of the study regarding the preference of visualizations and animations over textually displayed information, as well as the benefits of displaying both past, present, and potential future actions. This may be a property of game types, e.g., Making History: The Calm & The Storm was specifically developed for educational use, while the other two games are commercial games (COTS: commercial off-the-shelf) designed for both fun and education. Game designers of serious games for educational use would probably
argue that the game was used in a manner not intended: that the game was
designed to be more historically accurate and integrated as part of a curriculum,
involving higher levels of teacher presence to be effective. This may be true.
Nonetheless, the game might benefit from incorporating some of the findings of
this study into the game play. Regardless, the intent is not to be critical of any of
the games; rather, the intent is to make suggestions on how to better create and
use affordances (provided by visual representations, social peers, the
environment, etc.) to improve the learning process.

One of the most interesting aspects that became visible when comparing
the results of the study with interview data is that of students' descriptions of
their activity and purpose. Some of the early interview questions asked students
questions that were very open-ended, asking students "what they feel they
accomplished" by playing the game. These questions were often very difficult
for students to answer. Interview transcripts illustrate the brevity and
shallowness of student answers; however, the nonverbal behavior of students
during the interviews showed the researcher that students were struggling to put
their experience into words.

Expected answers to the question of "what was accomplished" were
detailed explanations of what students felt their activity was while playing the
game. The activity level of affordances examines overall purpose and motivations to play. Students appeared to struggle to verbalize these and much more insight was gained through the hybrid methodology developed for this study. This suggests that the developed methodology works well to gain insight into player motivations and, at the same time, that students have difficulty translating their experience while gaming into words. Perhaps a major implication of this will be the future inability to pass knowledge along orally as done previously in human history. Experiences might need to be encountered first hand for optimal learning and might not be communicated easily (transferred) among teachers and students in absence of the virtual environment.
6.2 IMPLICATIONS FOR SELECTION AND USE OF VIDEO GAMES FOR LEARNING

The goal of instructional designers is to create valuable learning experiences that meet educational standards. Much of the role of the instructional designer is in selection of the games, choosing a game that meets their specific criteria. Following, it is discussed how teachers might have a role in the actual experiences of students playing games, serving specific functions and helping to encourage specific affordances that lead to learning. Recommendations are then offered to game designers, suggesting ways that affordances can be leveraged to create powerful learning experiences. Finally, a discussion of how students might have better used game affordances to learn is presented.

6.2.1 IMPLICATIONS FOR GAME SELECTION: INSTRUCTIONAL DESIGNERS

Instructional designers have the challenge of game selection. Game selection is of utmost importance: it will determine what kind of learning is possible. Game choice must be done carefully to ensure that game play supports the learning of information in accordance with learning standards. It goes without saying that game ratings should be examined as well, such as ESRB
ratings (maturity level of game) to ensure that levels of violence, foul language, etc. are appropriate to the target population.

Ideally, game designers will include instructional designers as part of the design process in order to help make sure that games meet specific learning objectives. However, most instructional designers probably will not have this option and will be faced with the selection of an already made game for use in their curriculum.

Games should be selected through a careful process, as is done when selecting textbooks for a class. Each game presents an experience that should suit its application as an integral component of a designed curriculum. Game selection should carefully attempt to project the implications of game use by focusing on possible experiences and action potentials involved in the gameplay. A large responsibility is placed on the instructional designer, as it is their role to make sure topics being taught in the game appropriately support learning standards.

6.2.1.1 COTS vs. 'Serious' Games

Briefly, the selection of a 'Serious' or educational game, in comparison to a COTS (commercial-off-the-shelf) game must be considered by educators. In this study, two history games were chosen: Civilization IV (a COTS game) and
Making History: The Calm & The Storm (a ‘Serious’ game developed for educational purposes).

A large difference can be seen in the design of the games: commercial games focus on entertainment purposes and are supported with large budgets to create aesthetic and functional visualizations, as well as engaging game play. Commercial games may not incorporate the desired scope of educational content, since the goal is to be fun and immersive. However, educational games, such as Making History: The Calm & The Storm often have higher fidelity in order to serve as a simulation, aiming to be accurate with historical events, etc. In balancing tradeoffs, game designers must often decide whether to emphasize fun or reality, as can be seen in these respective games. Making History: The Calm & The Storm was designed to be integrated with curriculum, where Civilization IV was not designed expressly for this purpose.

Additionally, educational games, having been designed to be played in educational contexts, may not illicit their full potentials when not fully integrated into a curriculum (such as their use in this study). This may explain the differences seen between pairs playing the game and corresponding levels of motivation and immersion in the game. This study, while providing clues, did not seek to define the optimum balance of seriousness and fun for future game
design. Nonetheless, while games are designed for different purposes, good educational games should also be able to achieve flow and fun regardless of the context for which they were developed.

6.2.1.2 Process of Selection

As mentioned, a difficult selection process exists for educators, as the careful linking of game objectives with educational standards needs to be completed. As mentioned in the literature, there is often a digital divide between students and some of their elder teachers: students being digital natives (growing up with games) while many of their teachers are digital immigrants. Therefore, instructional designers should make use of digital natives as part of the game selection process in order to fully evaluate games and grasp their outcomes.

After selecting a few candidate choices, instructional designers might try the games out with the assistance of students. It is encouraged that teachers play the game; however, students (digital natives) may be able to play the games in ways that teachers cannot. Teachers and instructional designers are experts in curriculum design and must ensure that content meets educational standards. The use of students (or other digital natives) to explain the full potentials of a game might improve and ease the game selection process.
Accordingly, instructional designers might form questions about the games to ask students in order to verify that games meet educational standards and that they are fun to play. Additionally, games might be introduced on a smaller scale to gauge their effectiveness before full implementation occurs and radical changes to a curriculum are made. Study halls, after school sessions, or extra credit are candidates for initial trials of games to aid in the selection and evaluation processes. However, as curriculum integration was not part of the study, future work is needed to gain additional insights into game selection by instructional designers, and issues related to deployment as part of school curriculums.

6.2.2 Implications for Game Use: Teacher Role

Teachers, while not a significant part of this study, can have a very important role in the successful implementation of games in the classroom. During interviews, students expressed that teachers could significantly help them in learning the game interface and thus improving the learning process as a whole. A few students offered samples: what was learned “in the first two days” might have been accomplished “in the first 15 minutes” with teacher assistance. While further research is needed to understand the degree of
effectiveness of teacher help, it seems obvious that teachers can help students learn if they are familiar with the game material and game interface.

Teachers can encourage some of the social affordances outlined above to streamline the learning process. For instance, teachers could encourage peer teams to frequently discuss their understanding of the interface with each other. Frequent discussions among peers could help students resolve particular interface problems they encounter, rather than continuing to struggle. For example, the pair playing *RollerCoaster Tycoon 3* might have found pre-designed roller coasters with some guidance from peer teams. Teachers can help "break the ice" by initiating discussions among teams, thus helping to lower students' feelings of bothering other teams when asking them questions.

Teachers can improve the functions of peer teams by organizing teams so they are physically close together and can easily reference each other's work. Teachers can use spatial organization in order to improve the learning process by making the use of peer teams easier. Peer teams can more easily reference each other's work when computers (game interfaces) are located spatially close to each other. Student pairs in *Civilization IV* and *Making History: The Calm & The Storm* were spatially close to each other and could lean-over to point at each other's screens. Pairs playing *RollerCoaster Tycoon 3* were slightly more spread
out, and between-pair collaboration had to be more verbally explicit since students could not as easily see what the other pair was doing.

Teachers can provide an additional source of information if they themselves can serve as a more-experienced peer. Teachers could serve the same role as game artificial intelligence by making recommendations in strategy as well as by alleviating the frustration of lingering interface problems. Teachers could make additional information sources such as game manuals, game walkthroughs, or online content focusing on game play available to students. Teachers could also encourage the use of web sites with game information, or encourage participation in online communities related to the game (assuming the web site content is appropriate).

6.2.3 Implications for Game Design: Game Designers

Game designers are in charge of creating valuable learning experiences through game design. Many of the above considerations related to the display of game representations could be used to aid games designers; however, much more than what is presented above is required for successful game design. Game design already involves the management of many tradeoffs: balancing realism with fun, balancing narrative with activity, balancing learning with motivation, etc.
Game design is already a balancing act; however, frequent inspections of game representations might help create well-understood affordances that optimally support learning. Affordances might be examined across the three levels of activity, checking that all levels (activity, actions, and operations) are well supported. Norman's 'gulf of execution' highlights traditional usability: verifying that goals can be translated into achievable actions. Game representations can also be tested for their ability to support the bridging between the activity and action levels, verifying that game motivations (to play) can be translated and supported by game activity. This would involve testing that game representations afford the kinds of action to support the overall learning goals of the game: taking a top-down approach to link pedagogy with game play. Additionally, game testing can highlight problem areas where additional feedback is needed to generate meaningful strategies and actions.

Game designers should be aware of social affordances such as discussion and negotiation of items. Similar to findings of collaborative software use (see section 2.2.3 on representational guidance in the literature review; focusing on findings from Suthers & Hundhausen, 2003), game items deemed important for discussion between students should be made persistent and visible. Even items located in sub-menus (not visually persistent, but always accessible) can yield
themselves to being discussed. Peer teams can talk about those items, as they exist on both of their game interfaces. However, the design of game-specific features (such as game objects that only appear occasionally) will limit their ability to be discussed, as they are not always available to everyone. Affordances that are vital to learning in the game should be always available so that students playing separate games are able to discuss those items (through the direct questioning of peers, the use of teachers, and discussions on game web sites).

Game players demonstrated a preference for visual activity over textually presented information. Animations were best at grabbing the attention of game players. Game designers should be aware of the affordances created by the visualization choice, and present information accordingly. Animations seemed to best afford attention grabbing, followed by static visualizations, followed by text. However, the use of text as a secondary or tertiary source of information was often used to reduce uncertainty; for example, when students paused their cursor over icons to read tool-tips. The persistent display of both icon and text will require take too much screen space (and become annoying once students learn the functionality). Support for mouse-overs (extra text is supplied when pausing over an icon) is a means of scaffolding by providing extra information.
when needed by novices, while not forcing it upon experienced game players that already understand the interface.

Game designers should carefully design the methods by which game events grab attention and force their acknowledgement. For instance, *RollerCoaster Tycoon 3* presents messages on the game console in a way that allows students to continue their current work without forcing interruption. *Civilization IV* forces technologies to be acknowledged: game players are presented with a large pop-up that must be clicked on ('Continue') to get back to the working context. Game designers should make use of these affordances carefully: in order to maximize learning, particular information presentations should force acknowledgement, while others should not force acknowledgement to avoid the loss of context (presented in a way that does not distract game players from their current work). Further research could be conducted to examine the proper balance of these properties to fully understand the role of forced context shifts on learning and motivation.

### 6.2.4 How Students Could Have Made Better Use of Game Affordances

This question is somewhat unfair: an obvious answer would be to have students pay better attention to things in the game. However, this places blame on students when inefficient learning or missed opportunities occur without
considering that some faults may exist in the game design or the gaming environment.

Based on the findings, discussion will be directed toward the three levels of affordances: the operational level, focusing on how students might have executed actions more efficiently; at the goal level, focusing on how students might have better developed their goals; and the activity level, focusing on how students might improve their motivations for playing. The primary focus is on the operational and goal level, as motivations may be difficult to link to specific recommendations.

First, at the operational level, students might more carefully have paid attention to game representations to infer their meaning and purpose. However, some of the blame of poorly executed goals should be placed in the design of the game interface. Of the episodes represented in the analysis, students were often misled by interface items that were not well organized (such as the terrain tools of RollerCoaster Tycoon 3), or those suffering from the lack of a plurality of information channels (such as in Making History: The Calm & The Storm, as battle outcomes were presented textually). However, no game is perfect and will have its associated shortcomings. The purpose here is not to be overly critical of the
games used in this study; rather, to offer explanation of how learning might occur more efficiently.

One way that students can mitigate problems encountered in game play is to make use of the social environment by engaging in dialogue to ensure that lingering problems do not persist. For example, if students playing a game cannot figure out an interface control, they could ask for help from a peer team or teacher. Often students attempted to find things through trial and error, resulting in the wasting of time and sometimes their abandonment of a task. In an episode from RollerCoaster Tycoon 3, when the pair failed to find predesigned roller coasters, the awareness of peer teams (keeping track of what other groups were doing) might have helped the pair realize that pre-designed roller coasters were available. Too much time was spent by the pair designing custom roller coasters, something they did not want to do (as indicated by the transcripts). This always ended in frustration as the pair deleted their incomplete rides. Students were penalized monetarily when they built incomplete rides and moved to other tasks, and would have benefited from sticking with tasks until their completion. However, blame should not be placed on students for moving on to other tasks when their current task seemed unachievable.
Focusing on the goal level, students might more carefully pay attention to game scenario selection and objective screens. Most of the episodes showed students breezing through scenario selection without taking time to understand the scenario they were choosing. One student said something like “Whatever, they’re all the same” when talking to his teammate and picking a scenario. This may be due to the ‘boring’ nature of picking scenarios: text is presented on the screen, requiring students to read. Students often do not want to read when playing games, and appeared anxious to begin gameplay. Scenario selection screens might utilize information forms that are more visual or animated (containing less text). However, students would benefit in their goal formation and motivation to play if they understood why they were playing; taking a little more time to understand would be beneficial.

Students could have made better use of game affordances to support goal formation if they had paid attention to examining particular game behaviors, asking why the game was behaving as it was. For instance, game intelligence was very helpful in drawing attention to important items, such as the flashing icons in Civilization IV. While cognitive processes may have existed that questioned certain game behaviors, it did not appear that students (as witnessed in students’ behavior) often questioned game behaviors. Asking the question “Why does the
game recommending that I do this?” might aid understanding of some of the rules of the game, which could further aid the development of game strategies. However, this may be a potential side effect of games, as students can become very immersed in what they are doing, acting in ways that are direct responses to what is perceived. However, occasionally stepping back and asking why could help students learn game structure and form goals.

While game players appeared to get excited and focus on specific game activities, the exploration of new controls and interfaces could assist goal formation and student game play. For instance, many summary screens in RollerCoaster Tycoon 3 were never explored by game players in the game. This may have added motivation to play and achieve goals in different areas of the game that they were not previously aware of: serving to promote learning and the use of affordances at the goal and activity level.
First, findings in comparison to theories of collaborative learning are explored. Following, activity theory is explored in greater detail, as it exhibits a high level of applicability in examining the ways in which mediation occurs between students and the game, as well as between each other.

6.3.1 Collaborative Learning

Many similarities in behavior can be seen in the students of this study in comparison to theories on collaborative learning. Webb and Palinscar (1996) were mentioned in the literature review, providing a meta-analysis of collaborative learning theories in their Input-Process-Output model. Figure 109 represents this model (reproduced below; earlier presented as Figure 8 in the literature review) and is referenced to discuss similarities with findings of this study.
**Input Characteristics**
- Reward Structures
  - Group
  - Individual
- Group Composition
  - Ability
  - Ethnic background, race, socioeconomic status
  - Sex
- Group Size
- Preparation for Group Work
  - Prosocial norms
  - Helping behavior and explanation
**Structuring Group Interaction**
- Role specialization
- Reciprocal questioning
- Explanation prompts
- Controversy
**Discussion of Group Functioning**
**Structuring Teacher’s Role**
- Scaffolding
- Co-constructing norms

**Group Processes**
- Conflict and Controversy
- Co-construction of ideas
- Giving and receiving help
- Socioemotional processes

**Internal Mediating Processes**
- Sociocognitive conflict
- Internalization of social processes
- Goal structures and motivation

**Outcomes**
- Achievement and conceptual development
- Socioemotional variables

Figure 109: Input-Process-Outcome model of group processes in the classroom, adapted from Webb and Palincsar (1996)
6.3.1.1 Group Input Characteristics

An experimental, positivistic study would be better at presenting relationships between input characteristics mentioned above, and how exactly they manifest in game play in educational contexts. Similarities are mentioned with the current study; however, the small sample size used limits the generalizability of this discussion. All items referenced in this section provide areas of future work to further validate and explain findings.

Game play involved playing a game collaboratively (in pairs) that was designed for individual play. The pairs shared the individually designed reward structure of the game, perhaps reducing the feeling of individual accomplishment. This is one of the tradeoffs of collaborative play: ownership and feelings of accomplishment might be diminished when compared to individual game play, something to address in further research.

Teams were identical in size. Two dyads (teams of two) were used for each game. Sample size did not vary between games, and no claims were generated concerning population or group composition. However, some of the non-analyzed pairs played individually for two days of the game play (a teammate was absent). Future work could explore differences in game play when playing alone or collaboratively. From observations and notes, students
playing alone were less verbal in their strategy (it did not need to be negotiated), and played the game faster (in the history games, they advanced their turn faster, spanning more time in the game), probably because items did not need to be grounded or negotiated with teammates.

Groups were relatively homogenous, with similar age, apparent similarities in socio-economic background, abilities, and race. Gender was the only main observable, varying characteristic. Dyads comprised of mixed gender individuals seemed to have higher levels of discourse, but the small sample size limits the generalizability of this claim.

Findings were in agreement with this input characteristic: students exhibited some collaborative norms in game play, exhibited through disclosure of information to teammates, and the negotiation of game strategies. Similarly, the idea of 'explanation prompts' as described by Webb & Palinscar (1996), students often uttered their understanding to each other, in effort of verifying that shared meaning was reached with their teammates. Teammates seemed to make use of socio-cognitive conflict in this way: prompting teammates to initiate discussion if a difference of understanding existed.

Again, since teachers were not very involved in the study, future work is needed to gauge the role of teachers in aiding the collaborative learning being
done. Interview data suggested teachers could be used to assist in reaching shared meaning of basic interface controls, as described already in the summary of interview data. Further work is needed to show the impact this has on learning. Additionally, teachers might not become too involved, as they could take away from the feeling of accomplishment by students (figuring out things themselves), and because results showed that occasional failure can be used as a means of motivating students.

6.3.1.2 Group Processes and Internal Mediating Processes

Group processes observed in this study were in agreement with those presented by Webb & Palinscar. All pairs exhibited similar patterns in co-constructing shared meaning of game functionality, as well as in negotiating game strategies while playing collaboratively. This makes sense, as a joint effort should be a projection of both teammates' goals for the game: similar to the idea of 'projected identity' mentioned by Gee (2003). Gee's "36 Learning Principles are in Appendix K)."

Findings similar to what is described by Webb & Palinscar in Figure 109, group processes and internal mediating processes were observed in group behavior. One of the findings supported this relationship: how students often initiated the gaining of shared meaning by offering their understanding to peers.
utilizing socio-cognitive conflict to initiate discussion. This resulted in a collaboration norm: teammates were expected to correct or modify their peer’s understandings when prompted if their understanding was different. Several times the lack of response by peers indicated agreement in understanding, as a correction was not needed. At other times, teammates would respond with their understanding, even if not much was contributed, serving to acknowledge their teammate’s request for explanation.

6.3.1.3 Outcomes

Outcomes of collaborative game play are to learn while playing games. Results showed how specific games’ representations created affordances for motivation and goal development. Similarly, collaborative learning outcomes discuss achievement, and conceptual development. Literature shows learning with games can support learning on the meta-cognitive level such as relationships between concepts, and promote motivational and identity development. Accordingly, the concept of learning presented in the findings shows a wide domain of possibilities for ‘learning’: spread across time (such as trends), and at multiple levels (anywhere between learning to use the computer interface and the creation of strategies to accomplish goals and motivations).
6.3.2 Comparisons Among Findings and Activity Theory

Activity theory presents an interesting model of examining the mediational role of video games among students playing games in educational contexts, and is discussed in this section.

6.3.2.1 A Brief History of the Evolution of Activity Theory

Originally, the focus of activity theory was on the link between subject and object (Leontiev, 1978). This subject-object relationship was mediated by a tool; as represented by the top half of Figure 111 below. Later, Engeström expanded the concept of activity by adding community: linking activity between subject, object and community, as shown in Figure 110:

![Diagram of Activity Theory](image)

Figure 110: The expansion of activity theory by Engeström (community)

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Additionally, a clarification of the object was done: stressing the motivational purpose of the object, in reaching some outcome (thus engaging in the 'motivated activity' discussed by Leontiev).

These relationships are mediated: tools (mediating artifact) mediate between subject and object (as described by Leontiev); rules mediate between subject and community; and division of labor (roles) mediate between community and object. Figure 111 shows all relationships, with focus on this study's use of games in educational settings:

**Mediating artifact (tool):** video game interface: mouse, keyboard, screen, icons (affordances)

Subject: student

Rules: rules of games, computer use, behavior

Community: peer students and teachers

Object—Outcome: gaming to win

Division of labor (roles): roles of student game players

Figure 111: Educational gaming using activity theory's mediational triangle (Cole & Engestrom, 1993, p. 8)
Several of the different mediational roles of tools, rules and roles; exploring relationships between subject, community and object are analyzed below. As gaming was done collaboratively, with between-pair interaction, the discussion of the expanded mediational triangle is useful. Similarities are discussed among activity theory and results found in this study.

6.3.2.2 Mediation By Tool on Subject and Object: What tools does the subject use to satisfy the objective?

**Tool:** game interface; computer interface (affordances)

**Subject:** student

**Rules:** rules of games, behavior

**Community:** peer students and teachers

**Object—Outcome:** gaming to win

**Roles:** roles of student gamers

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**Figure 112:** Mediation between students and object by game

In general, students appeared to be engaged in the motivated activity of playing a game. In transcripts, the video game interface demonstrated its
important role on the amount and quality of student interactions. The game interface provided an object of reference by students in discussing their game activity. Particular game representations, such as persistent items on the interface or specific cues for action, provided students items of reference in their discussions. Additionally, particular game objects were used as resources (tools) in accomplishing goals in the game. As students were engaged in collaborative game play, the nature of their interactions focused on the discussion, and the making use of, the tools provided by the game.

6.3.2.3 Mediation By Rules on Subject and Community: How do the rules mediate the way the subject relates to the community?

Tool: game interface; computer interface (affordances)

Subject: student

Rules: rules of games, behavior

Community: peer students and teachers

Object—Outcome: gaming to win

Roles: roles of student gamers

Figure 113: Mediation between subject and community by rules

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In this study, pairs played the video games collaboratively. They had available another team (a separate pair playing the same game), and sometimes a teacher was available. Since play was done collaboratively, the ‘community’ that is examined is comprised of teachers, peer teams, and teammates. Several ‘rules’ that might have mediated these relationships are social norms for classroom behavior and norms for collaborative game play.

The norms of classroom behavior and their relationship to the use of games were outside the focus of this study, and provide an interesting area for future work. Comparisons between in-school and out-of-school game play might show differences among gamer behavior.

Norms of collaborative game play were examined in this study. Results showed the use of peer teams for information sources, as well as a means of checking progress. Teammates were shown to be used to discuss the meaning of interface items, as well as in negotiating game strategies.

Activity theory assumes that preconceived norms exist in behavior while engaging in collaborative gameplay. Our ethnomethodologically-informed approach helped reveal some of these rules by examining patterns in social affordances provided by peers in game play. However, further investigation into
norms of collaborative game play is needed; only a few are mentioned in this study.

6.3.2.4 Mediation By Roles on Community and Object: How do the roles affect the way the community satisfies the objective?

![Diagram of mediation between community and object by roles (division of labor)]

This study did not attempt to integrate games into a larger curriculum, and did not use them as part of instruction. Students were pulled from class or study halls to participate, thus limiting the affect of the community on their motivations and goals. However, peer teams and teammates had a role in the community.
As students played in pairs, only one person was able to control the game (typically one person had control of both keyboard and mouse). Therefore, roles emerged in the playing of the game: for instance, the person controlling the mouse often had to verify teammate agreement in game strategy. The non-mouse-controlling student often took an information-gathering role, presenting information to his teammate (in control of the game) to aid understanding. This slight specialization of teammates showed students assuming roles to fulfill game needs. Assuming the object of the game was to win (succeed in game play), these roles helped fulfill that purpose.

An expansion of the concept of community to include peer teams and teachers reveals roles that they can serve in motivated activity (the object to play and win the game). By serving as information sources the community can aid game play. This was witnessed in this study: as pairs made use of each other when help was needed; and when teachers stepped in briefly to assist in motivating students. Interview data suggested the possible positive role of teachers: being integrated as part of the community in active game play, they can serve roles to aid learning (such as figuring out the interface, etc.).
6.3.2.5 Mediation By Roles on Subject and Object: How does the division of labor (roles) affect the way the subject meets the objective?

![Diagram of mediation between subject and object by roles (division of labor)]

**Tool:** game interface; computer interface (affordances)

**Subject:** student

**Rules:** rules of games, behavior

**Community:** peer students and teachers

**Object—Outcome:** gaming to win

**Roles:** roles of student gamers

Figure 115: Mediation between subject and object by roles (division of labor)

Briefly, specialization of game roles can be an interesting area of study. This was outside of the aims of this study, but was an item of discussion in the literature review. Referring to the literature on MMORPGs, games can create specialized game play among game players. For instance, guild formation in *World of Warcraft* involves groups of specialized characters. Game design of *World of Warcraft* creates tasks that are not achievable alone: groups must be formed, involving characters of different abilities, in order to achieve success.
Examples include guilds in *World of Warcraft* needing a 'healer' to stand behind groups while engaged in difficult battles and restore health of teammates. Use of other characters for blocking, striking, and other coordinated group activities shows the role of specialization in particular games. Game designs can involve specialization within the game (to serve roles, as in *World of Warcraft*) as well as outside the game: i.e., friends passing the game controllers based on who was better at a given task.

6.3.2.6 *Mediation By Tool on Community and Object: How do the tools used affect the way the community meets objectives?*

![Diagram](image)

**Tool:** game interface; computer interface (affordances)

**Subject:** student

**Rules:** rules of games, behavior

**Community:** peer students and teachers

**Object—Outcome:** gaming to win

**Roles:** roles of student gamers

Figure 116: Mediation between community and object by tool
As mentioned previously, game tools (visualizations, behaviors, etc.) can provide a means of reference between students and teachers. Therefore, they are resources for discussion (a social affordance). This was explored in this study: students often used game specific terminology ("click on the X button") to explain to teammates and peer teams how to accomplish actions in the game. As suggested by activity theory, the community (peer teams and teachers) can reference persistent game items (tools) in explaining how to achieve goals or tasks. Persistent game items do not require specific knowledge of game scenarios, making them more easily discussed; however, scenario-specific items (such as a game feature that only becomes available in specific scenarios) makes their discussion and reference by community members more difficult.
6.3.2.7 Mediation By Tool on Subject and Community: How does the tool affect the way the subject relates to the community?

```
Tool: game interface; computer interface (affordances)

Subject: student

Community: peer students and teachers

Object—Outcome: gaming to win

Rules: rules of games, behavior

Roles: roles of student gamers
```

Figure 117: Mediation between subject and community by tool

Future work could examine the ways in which games (the tool) fit into curriculum, and how it affects the nature of learning in schools. Much literature suggests the potential benefits of games for learning, but less literature discusses the social impacts of implementing games in classrooms. Future work could explore the nature of changes in student discourse (between both peers and teachers) and behavior. Some work has been done, such studies by Squire (2005) explaining how using games (promoting the learning of complex relationships) can create more thoughtful conversations on behalf of students.
6.3.2.8 Mediation By Roles on Subject and Community: How do roles affect the way the subject relates to their community?

![Figure 118: Mediation between subject and community by roles (division of labor)](image)

Not much specialization among students was encountered in this study: games were played in a collaborative, cooperative manner, without much specialization. However, literature on MMOGs suggests that role specialization (such as in World of Warcraft) creates a feeling of belonging among game players. Authors hypothesize this social interaction can be a huge source of motivation to play. Guilds in World of Warcraft often coordinate game play, as guilds require their specialized characters in order to be successful in the game. This raises the
sense of agency of one's role while playing the game (knowing that other game players are relying on you); seeming to add motivation to play and a sense of belonging to the community. Other studies are blossoming in this area, such as those by Steinkuehler (2004), examining these roles in social (multiplayer) game play.

6.3.2.9 Summary

The mediational triangle presented by activity theory seems to have high relevance to the analysis of games. Particular findings showed high convergence with ideas presented in activity theory. Other areas that were not as well addressed by this study provide opportunities for future work, and are discussed in more detail in the following section. Candidates include further investigation of how games fit into curriculums, and how role specialization can be used to add motivation to play.
6.4 DELIMITATIONS, LIMITATIONS AND ATTEMPTED MITIGATIONS, AND OPPORTUNITIES FOR FUTURE WORK

Some important limitations and delimitations regarding the applicability and generalizability of the research are discussed, along with the researcher’s attempts to try and mitigate those limitations. Opportunities for future work follow.

6.4.1 Limitations and Attempted Mitigations

The study takes a qualitative approach to accomplish inductive inquiry. Therefore, there are limitations to the generalizability of this study. Statistical sampling was not used, so there is no quantitative basis for claiming that the results of this study are applicable elsewhere.

A cost benefit analysis was not performed to determine whether there are costs that outweigh the gains for students and teachers.

Of the three games chosen, similarities exist (God-game, simulation-based genre: top-down management of a situation). Similarly, since a comprehensive list of games and their features was not completed, the learning situations described among the three chosen games may or may not apply in other games.
The design of the study pulled students from either appropriate classes relevant to the games used, or from study halls (when the former was not possible due to school constraints; but still required a relevant class to have been taken) to play games. Research was not done to determine how games could fit as part of a larger school curriculum. This was not possible to mitigate, as constraints at the study sites did not allow for the integration of games with curriculum. A brief discussion of some implications for instructional designers addressed some potential implications with curriculum integration; however, further research is needed to derive empirical evidence on issues related to classroom integration.

The obtrusiveness of the study may have affected students while they were playing the video games, as students knew they were part of a study. In addition to the distribution and collection of consent and student assent forms, the data collection environment consisted of placing video cameras behind the students in order that the students and their computer screens are visible. Students wore clip-on microphones, and the researcher sat behind students, taking handwritten notes during data collection. The researcher attempted to remain as quiet as possible while collecting notes and video tape, in order to
minimize his presence and to minimize the number of times that students’ attention was broken from the game they were playing.

A potential limitation of the study is due to the “halo bias” of games. Students asked to participate in the study were often excited to do so, perhaps because they enjoyed playing games. Eventual game integration and long term exposure to games in schools may result in students less eager to play games. Mitigation of this was not possible; however, the researcher attempted to be as calm as possible while interacting with students before data collection, to try and avoid an overly-excited environment (avoiding the hype of playing games). However, it should be noted that teachers, upon integrating and using games in their curriculum, should make full use of the hype associated with playing games in order to maximize learning potentials.

Student incentives may have influenced their game play. Gift cards were given to participants for their willingness to participate, and students appeared eager to play games as an alternative to their typical classes. Accordingly, students may have biased their behavior in attempt to please the researcher. Students might have assumed that the researcher desired a positive response to games, and acted accordingly. Again, mitigation was attempted by professional researcher behavior during data collection, and avoiding the buildup of games.
6.4.1.1 Limitations and Mitigations Encountered During Data Analysis

As noted by Duranti (2006), transcripts involve abstraction of data. First, videotape recorded the actual situation, highlighting particular features of interactions and behavior while diminishing others. Accordingly, in the generation of transcripts during analysis, further highlighting of certain features while reducing other features probably occurred. As discussed by Duranti (2006), it must be remembered during analysis that two levels of abstraction from the original situation have occurred, and neither abstraction should be considered a substitute for another. In other words, gathered video tape is not an identical substitute for the original interaction, and neither are the transcripts. The researcher was mindful of this while creating and analyzing video transcripts.

Another limitation of the study lies in the fact that the researcher did all of the coding and transcription of video transcripts, and no inter-coder reliability measures were taken. However, the dissertation chair mitigated this, during meetings that reviewed and discussed the transcripts. Advice was given by the dissertation chair to remove most of the subjective interpretations from transcripts, to keep them as objective as possible. Further guidance resulted in the addition of transcript footnotes for additional information when needed,
when transcripts were not clear or could benefit from some subjective
interpretation. These footnotes provide additional information from the game
manual as well as additional observations from the researcher.

As discussed above, the analysis software, Transana, has associated
limitations. Features and limitations of the software were discussed in Chapter
3; however, most of the software limitations were mitigated through
workarounds that were available, although many were time consuming.

6.4.2 Delimitations

This study focuses on students in Chicago-area high schools in an upper-
middle class area, and may not be a truly representative sample of all high school
students. Further study of other socioeconomic and demographic areas would
improve the generalizability of the findings.

Only three games were involved in this study. There was no attempt to
represent the whole of the gaming industry. Many other games could be used in
the classroom for educational purposes, and results from this study may not
apply to other kinds of games. Additional insights can be gained by studying
other games.
6.4.3 Opportunities for Future Work

As stated by Marshall McLuhan, “the medium is the message”. An editing glitch changed the phrase to “the medium is the massage”, causing an expanded view noting how the medium can massage our senses. In this process, certain sensory properties are magnified by the medium while others are minimized. This study follows suit by examining learning using the gaming medium, and explains how that learning was accomplished. Although games as a whole are not a perfect treatment for learning, based on the medium alone, they can provide a different ‘kind’ of learning in comparison to other traditional, formal learning activities. Every video game is unique, and must be considered on its own merit.

Many opportunities for future work were presented already in this chapter, and do not need to be explained again here. In this section, opportunities previously discussed are kept brief.

Other opportunities for future work include completing the grounded theory process on the gathered data, doing the grounded theory method of theoretical sampling to deductively test all emergent hypotheses. Analysis of video used the right-side pairs; and the left side remains available for further research. However, deductive testing on other data collected from a separate
school, potentially involving a study design using a game that has been integrated as part of the curriculum, would be a better candidate to increase the generalizability of the findings.

Future work focusing on the role of the teacher is needed. Limited teacher interaction was recorded by this study, and students indicated in the interviews that teachers could improve the learning process, especially in understanding the use of the game interface. Teachers demonstrated their help in offering strategy guidance to students as well. Alternatively, findings suggested that students could benefit from occasional failure. The role of the teacher (and the amount of appropriate assistance) needs further investigation.

Additional work is needed to examine how games meet educational standards. While outside of the focus of this study, future work needs to show convergence of learning outcomes with games and existing teaching standards. Without this information, games will face an uphill battle working their way into classrooms. Initial benefits of games for learning have been explored, but further work on their integration with existing teaching standards and curriculums is needed.
6.5  **CONTRIBUTIONS OF THE STUDY**

The study contributed several important findings with regard to how learning takes place as students play video games. Insights into the learning process of a new generation during video game play have emerged. Additionally, specific findings on the use of affordances and their impacts on learning have been found.

6.5.1  **A Better Understanding of the Learning Process with Games**

Literature suggests that kids today learn differently, and that games can be a powerful learning tool. However, the learning process itself had not been well documented. Findings of this study describe how learning takes place while playing games, through the inductive generalizations created in the analysis. Several of the most frequently occurring patterns of learning were documented and generalized, and suggest ways in which games can be designed to promote learning.

6.5.2  **Game Affordances for Learning**

After finding and describing instances of learning, analysis focused on students' use of game affordances for learning, with detailed discussions and
generalizations of game features and representations that promoted that learning. A major contribution of the study is how the findings can support future game design through the use of affordances that aid the learning process.

Additionally, methods employed to analyze the situation support a wide variety of affordances, not only describing the game interface, but the learning environment as a whole. While integration into school curriculums will enable further hypotheses to be made, the study design allowed for the inductive creation of hypotheses regarding the arrangement of the social environment and use of peers, in addition to those found regarding the game interface. Additionally, how the interplay among peers and the game interface creates opportunities for learning was discussed. Similar to previous research (Suthers & Hundhausen, 2003), the study showed that game representations and collaborative play resulted in unique interactions that shed light on the tripartite interplay of the game representations, individuals and their peers. This situation is representative of those that will be encountered in classrooms, potentially with teachers serving the role of a more capable peer.

6.5.3 Secondary Contributions

Several secondary contributions of the study are discussed below. These contributions occurred as a side effect of studying the research question, but are
still very interesting and can serve as both contributions and ideas worthy of further investigation.

6.5.3.1 A Hybrid Method of Studying Actual Use of Games

During meetings with the dissertation chair, a hybrid method was developed to study actual uses of video games in educational settings. This 'hybrid' method proved to be very useful at describing a situation that game players themselves were not able to verbalize well.

As mentioned previously, learning with games, although powerful, may make the dissemination of knowledge in absence of the tool (game) more difficult than with other mediums. While oral communication has traditionally been effective, learning with games may mark a transition where oral knowledge transfer is less effective (in absence of the game context). As witnessed during interviews, students expressed difficulty in stating what they had accomplished during game play, while the inductive generalizations showed that a significant change had occurred. While this disparity creates the need for more testing, the repeated occurrence of significant learning shows that there may indeed be trouble in communicating to others what is learned while playing games in an immersive environment.
The method developed, drawing from various qualitative, inductive methods, created an emergent approach to data analysis that avoids researcher preconceptions and allows the gathered data to speak in a more ‘direct’ manner. The blend of ethnomethodological and grounded theory influences was very effective in eliciting findings that conveyed what was occurring; as participant’s self-reports might not always provide significant insight into their experience.

6.5.3.2 Pedagogical Issues

Of slightly less significance were some pedagogical findings related to the implementation of games in the classroom. Again, while further classroom integration is needed to study actual classroom issues, several findings suggest specific teacher roles and game deployment setups that can be useful for educators.

Specifically, teachers were discussed during interviews as having potential to help students avoid pitfalls in games, especially when learning to learn to control the game interface. It was interesting to note that students did not mention that they needed help with game strategy development, which suggests that students felt that portion of game play was under control. This gives further evidence that games are a good match to student’s complex
thinking skills, which may have been partially developed during experiences playing video games outside of school.

Other findings related to game implementation in the classroom might be that of spatial arrangement: grouping students in a way that they can easily help each other. In addition, certain findings were reported regarding collaborative game play, insofar that it can elicit certain behavior among students (such as increased verbosity). These findings can influence future classroom integration.

6.5.3.3 Broadening the Idea of Affordances

Affordances, defined as potentials for action, provided the study with an abstract concept that covered many of the relationships being studied. Initial descriptions of both cognitive and social affordances served to broaden the idea of affordances, in that they can provide potentials for both social and cognitive actions. Specifically, an object may have several affordances that manifest in a cognitive action or social action.

Later in analysis, the concept of an affordance was further broadened in line with activity theory. Activity theory discusses how affordances occur at different levels (Kaptelinin & Nardi, 2006). Their thoughts on affordances helped to broaden the concept of affordances sought after during analysis. The three levels (activity level, action level, and operational level) all revealed very useful
insights during analysis that helped broaden the analysis of action potentials.

Classification of affordances on the three levels helped reveal issues related to usability (the interplay among the action and operational level, analyzing ways in which learned interface interactions were efficient or not useful for learning), as well as motivational actions (the interplay among the activity and action level, focusing on how student's motivations for playing resulted in corresponding behaviors aimed at goal achievement in the games). The interplay among levels of affordances was useful in analysis and an interesting area for further exploration.

6.5.3.4 Learning Outside of Classrooms

While the study focused on learning within classrooms, most of the findings can apply to learning with games outside of the classroom as well. While many teachers may be hesitant to use games, proactive parents might be able to use the findings presented in this study to help select a game to be used by their children for learning. Parents might also play games collaboratively with their children, and enjoy the time spent learning together.
6.5.3.5 Collaborative Game Play

Further work comparing collaborative and individual game play is needed. Collaborative play may have reduced the feeling of being able to act independently within games, therefore lowering individual identity investment. Playing in teams forces group, rather than personal, decisions to be made regarding strategy and personal investments of identity (such as students customizing virtual characters or objects in accordance with their own wants and needs). However, the collaborative play done in this study has several associated benefits for game play and learning.

The students of this study had various amounts of previous game playing experience, and were asked during interviews to comment on their experience of playing the games in pairs (collaboratively). Most students responded positively, commenting that the collaborative play resulted in their increased verbosity with teammates (as consistent with findings, suggesting that students tended to disclose information to teammates and negotiated strategies when choosing a course of action). Students commented that collaborative play forced them to be verbal and discuss strategies with their teammates, which affected overall gameplay positively through the increased discussion of strategy.
Collaborative play, in addition to increased verbosity and strategy discussion, served to assist student game play through between-dyad collaboration. Peer teams assisted game play by providing a source of competition as well as serving as a source of information when teams were in need of help.
6.6 CONCLUSION

Results of this study showed the usefulness of broad conceptualizations of definitions of learning and affordances. Learning was shown to occur across several granularities and levels, while both cognitive and social affordances are present across several levels of activity. Appropriation of affordances was affected significantly by the representations themselves as well as by the environment.

The study shows the importance of game representations in achieving learning, through the potentials for action and discourse they provided. Guidelines for game selection, design, and use have been offered based on these findings. Future work is needed to further investigate the roles that games play as part of an integrated curriculum, and how exactly teachers can play a role in the learning that takes place. Considerable effort lies ahead in integrating games with existing educational practices. However, the opportunities for learning afforded by games demonstrate the need for continuing this effort in order to ensure that the benefits offered by games are harnessed in contemporary classrooms.
A wealth of existing literature suggests that kids today are undergoing a radical change in the way that they learn, preferring the active problem solving and immersive environments provided by games they play outside of school. In a recent survey conducted in the United States, only 3% of elementary school students said they do not play games of any kind (Project Tomorrow, 2008). Educators need to be prepared for this transformation and be ready to teach in ways that fully engage tomorrow’s students. Games have the ability to transform learning for kids, changing learning from something thought of as a chore to something that is enjoyable.

In order to be prepared, an understanding of the process of how learning actually occurs is required by educators and game designers. This is the sort of work initiated by this dissertation. Additionally, the understanding of this new learning process is required in order to continue developing new games that better support that process. Traditional instruction is slowly losing potential to fully engage students on a level of which they are capable. Continued research into specific game designs will further push the envelope in games’ ability to create optimal instances of learning and teach in new ways that were previously not possible.
REFERENCES


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APPENDIX A1:

INFORMED CONSENT FORM
INFORMED CONSENT FORM

Dissertation studying the roles of video games in the learning process

Matthew Sharritt

Primary Investigator

(808) 783-6614

I am a doctoral student at the University of Hawaii in the Communication and Information Sciences Department. As part of my dissertation, I am doing a research study to examine the uses of video games in an educational context, and their role in the learning process. The purposes of this research study are to (a) examine the ways students collaboratively learn when playing video games, and (b) look for themes about how video games are used in an educational setting. Your child’s participation will help me determine what makes video games effective or ineffective as a learning tool.

If your child participates he/she will spend a total of approximately 3 hours during their study halls over the course of a week. Your child will play a video game on a computer in the school’s computer lab, under direct supervision of the teacher. Students will work in groups of two, and their actions and conversations will be videotaped. I will analyze the videotapes later. Your child
will have the choice of a $10 gift card, valid at either Jamba Juice (beverages / smoothies) or Portillos restaurant for participating in this study.

I will not use your child’s name or any personally identifiable information when I write reports to summarize my study. Thus, people who read about my study will not know the identity or name of your child. Notes, pictures and video gathered during this research study will be used for data analysis and research purposes, solely for the research of the primary investigator. Notes and video will not be distributed publicly; however pictures of students playing the video games will be used by the researcher to demonstrate and explain the research and research environment. The primary investigator will keep the video tape for further research related to the topic after the completion of the study, but the video tape will only be used for research purposes and will never be shown publicly.

<table>
<thead>
<tr>
<th>Name of Game:</th>
<th>Brief Description of Game:</th>
<th>Game web site:</th>
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<tbody>
<tr>
<td><strong>RollerCoaster Tycoon 3 (Atari)</strong>&lt;br&gt;ESRB rating: E (Everyone)</td>
<td>Game player can build a virtual theme park; building rides and managing attractions within the park</td>
<td><a href="http://www.atari.com/rollercoastertycoon/">http://www.atari.com/rollercoastertycoon/</a></td>
</tr>
<tr>
<td><strong>Making History: The Calm &amp; The Storm (Muzzy Lane Software)</strong>&lt;br&gt;ESRB rating: E (Everyone)</td>
<td>Game player takes the role of a country in World War II and can play scenarios from that country; managing resources, etc.</td>
<td><a href="http://www.making-history.com/edu/index.php">http://www.making-history.com/edu/index.php</a></td>
</tr>
<tr>
<td>Sid Meier's Civilization IV (2K Games)</td>
<td>Game player can play an ancient civilization (Greeks, Romans, etc) and make dynamic decisions affecting their success compared to other civilizations</td>
<td><a href="http://www.2kgames.com/civ4/home.htm">http://www.2kgames.com/civ4/home.htm</a></td>
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Participation of your child is voluntary, and refusal to participate will not result in any loss of benefits to which the participant is otherwise entitled. Participants may at any time withdraw from the test with no penalty or loss of benefits to which the subject is otherwise entitled. At the point of withdrawal, all information gathered from the participant will be destroyed.

Study participants, their parents or legal guardians, as well as the hosting school are entitled to see the final research and report upon request. For additional information about the research project, procedures, and/or results, please contact me, the primary investigator, Matthew Sharritt, at (808) 783-6614.

If you have any questions regarding your rights as a research participant, please contact the UH Committee on Human Studies, at (808) 956-5007.
Parent or Legal Guardian of Participant:

☐ I have read and understand the above information, and agree to allow my child to participate in this research project, and give permission to the researcher to keep the acquired notes and video tape including pictures of students playing video games so that the researcher can analyze the data and produce research findings.

(Please check this box and sign below if you agree)

__________________________________________  _______________________________________
Your Name (print)                          Name of Child (print)

__________________________________________  ________________
Your Signature                            Date
APPENDIX A2:

STUDENT ASSENT FORM
STUDENT ASSENT FORM

Dissertation studying the roles of video games in the learning process

Matthew Sharritt

Primary Investigator

(808) 783-6614

I am a doctoral student at the University of Hawaii in the Communication and Information Sciences Department. As part of my dissertation, I am doing a research study to examine the uses of video games in an educational context, and their role in the learning process. The purposes of this research study are to (a) examine the ways students collaboratively learn when playing video games, and (b) look for themes about how video games are used in an educational setting. Your participation will help me determine what makes video games effective or ineffective as a learning tool.

If you participate, you will spend a total of approximately 3 hours during your study halls over the course of a week. Your will play a video game on a computer in the school’s computer lab, under direct supervision of a teacher. You will work in groups of two, and your actions and conversations will be videotaped. I will analyze the videotapes later. Your will have the choice of a
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Study participants, their parents or legal guardians, as well as the hosting school are entitled to see the final research and report upon request. For additional information about the research project, procedures, and/or results, please contact me, the primary investigator, Matthew Sharritt, at (808) 783-6614.

If you have any questions regarding your rights as a research participant, please contact the UH Committee on Human Studies, at (808) 956-5007.
Participant:

☐ I have read and understand the above information, and agree to participate in this research project, and give permission to the researcher to keep the acquired notes and video tape including pictures of me playing video games so that the researcher can analyze the data and produce research findings.

(Please check this box and sign below if you agree)

________________________________________  ________________________________________
Your Name (print)                            Name of Consenting Parent (print)

________________________________________  ________________
Your Signature                                Date
APPENDIX B:

RESEARCH QUESTIONS ASSOCIATED WITH THE ARTICLE: "R&D CHALLENGES IN GAMES FOR LEARNING"\textsuperscript{113} FROM THE FEDERATION OF AMERICAN SCIENTISTS

B.1.1 Research Challenges in the Design of Games for Learning:

1. Understanding the features of challenges that are crucial for motivation and learning
   a. Why are challenges motivating?
   b. How do we add 'purpose' / usefulness to what's being learned?
   c. What features of challenges add motivation?
   d. How can we best structure challenges in terms of difficulty?
   e. How can we implement challenges across task / domain types and learner characteristics?

2. Understanding how stories / scenarios contribute to motivation and learning
   a. How do stories / scenarios contribute to motivation?
   b. leads to guidelines for developing compelling stories;
   c. leads to mechanisms to assess the appropriateness of a story for learning;
   d. leads to effective techniques to support rich, highly interactive exploratory learning processes.

3. Understanding the impact of immersion and engagement on learner motivation
a. Does effectiveness of training environments correspond to how much immersion is felt by trainees? To what degree is this true?

b. Different people experience different amounts of immersion and engagement. Are some people predisposed to have a higher degree of immersion?

c. What features of games lead to higher immersion levels?

4. Understanding how to link gaming features to goal orientation

a. What kind of impact does goal setting have on instructional design?

b. What kind of impact does goal setting have on task demands?

c. How does score keeping affect goal orientation?

d. Of performance-oriented and mastery-oriented learners, which ones get the most (learning) out of games? What kinds of games?

5. Understanding the features of game playing that contribute to development of higher-level thinking skills

a. How well do these learned skills transfer back to the real world? (from one domain to the other?)

b. What features of games support high-level thinking skills? Why do these features work?

c. What are some guidelines to implement the above research into games, so they support specific learning objectives?
6. Understanding how games can be integrated into classrooms and formal learning environments to support learning goals

a. What games support what instructional strategies and scaffolding for learners? (What learning outcomes are met?)

b. Educational games are expensive and hard to make, and it's difficult to compete with commercial games (in terms of graphics, game play, etc). How could we make the market for educational games known to commercial game makers as a potential market for making / selling games?

c. How does gameplay support learning? How can it be used in an educational game?

d. In what settings are educational games the most appropriate form of learning? What are some instructional strategies that make them more effective?

e. What kind of educational outcomes (such as higher-order skills) are needed by today's new economy, and how do games support these better than traditional instruction?
B.1.2 Research Challenges in Adapting Simulations to Learning Environments:

7. Understanding the degree of authenticity / fidelity needed to support learning
   a. How high does the fidelity NEED to be so knowledge can be transferred? (Too authentic = too boring, since it does not extend reality / fun?) (Or, more authentic = more interesting, since knowledge acquisition promises applicability in the real world?)
   b. In terms of cognitive and physical fidelity: how authentic does a simulation need to be so that training can be generalized to the real world?
   c. What techniques enhance authenticity / fidelity for what specific learning situations / tasks, for what kind of learner characteristics?

8. Designing dynamically constructed narratives
   a. How could we construct a dynamic game narrative where the players' decisions affect the direction / outcome of the game?
   b. How can dynamic narratives be designed so that learning objectives (and plot sequences) are still met?

9. Designing simulated actors with specific skills, knowledge, or personalities
a. How can we design actors / avatars with the above displayed behaviors? (Some has been done, but we need more research on this)

b. How can we design in emotional sensitivity into avatars?

c. See my proposal: how can we design avatars that respond to / generate emotion (make us cry)?

d. How can we design avatars that elicit emotional responses from game players?

e. How do humans interact with simulated actors? (this would inform design process)

f. What kind of personalities could be programmed into simulated actors / avatars to support specific learning goals?

10. Incorporating educational scaffolding

a. When / how is it appropriate to build scaffolding into educational games?

b. How should the scaffolding structure be in a game? How much / how many cues, hints, etc should we build them up with, and when / how to take them away? Should gameplay be interrupted when adding / removing them? (Engagement / immersion is not enough on its own: learners need to be able to learn and generalize that knowledge to other domains)
11. Reporting and use of assessment and learner modeling data

a. How can we integrate feedback and guidance into educational games (without a negative effect on the motivational features of the game)?

B.1.3 AREAS OF RESEARCH RELATED TO EDUCATIONAL GAMING THAT WERE NOT SPECIFICALLY MENTIONED BY FAS:

12. Group learning processes / tasks in educational MMOGs

a. How do group tasks affect learning in an online educational environment?

b. Does online group membership increase motivation to learn and play the game?

c. Can simulated actors / avatars in a MMOG help fill the place of the teacher?

d. Can multiple teachers / classes increase the domain of knowledge available to students in educational MMOGs?

e. Can group tasks / problems teach and motivate in ways that individual tasks cannot?

f. What are the social affordances of objects in MMOGs? Of other players?
g. How can personal identity management play a role in the creation of one's own social affordances, as well as in the perceived usefulness of other players?

B.1.4 **Educational Game Design is a Multidisciplinary Effort Between**

**The Fields of:**

- game design and development
- education
- psychology
- cognitive science
- communication
- human-computer interaction
- software engineering and design
- information science
- ... many more

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APPENDIX C1:

STUDENT DEMOGRAPHICS FORM
Group (leave blank: to be filled in by researcher) __________

1. Please check the name of the game you have played this week:

- Making History: The Calm & The Storm
- Sid Meier's Civilization IV
- RollerCoaster Tycoon

2. Have you played this game before?  Yes  No
   
   If 'yes', describe your experience with the game:

3. Have you played games anything like this before?  Yes  No
   
   If 'yes', describe your experience with similar games (any game you think is alike):

4. Optional: Are you male or female (check one):

   Male  Female

5. List your favorite three subjects or classes at school:

6. If you had to guess your future career, what would it be?

   If you plan to attend college, what major(s) are you considering?

7. What is your opinion of the game you played this week? Any other comments can go here.
APPENDIX C2:

STUDENT DEMOGRAPHICS FORM RESULTS

716
LG-L = Left group, left person; RG-R = Right group, right person; etc.

C2.1 Civilization IV

Game: Civ 4

Game experience:

LG-L: No
LG-R: No
RG-L: No
RG-R: No

Game genre experience:

LG-L: Yes: RollerCoaster Tycoon - building parks and making decisions to keep the people happy and the park a success
LG-R: Yes: Rome: Total War - for a little bit
RG-L: Yes: Age of Empires, battling against other empires to be the best; Age of Mythology, same idea but 'Greek Era'; SimCity, building cities and growing
RG-R: No

Gender:

717
3 favorite subjects / classes:

LG-L: Physics / Spanish / American Government

LG-R: Sociology / Chemistry / English

RG-L: Social Sciences / Music / Astronomy

RG-R: Sociology / Psychology / Math classes

Intended future career:

LG-L: Business

LG-R: some type of career involving business with something else, like engineering

RG-L: Computer field

RG-R: Insurance Agent

6a. Intended college major:

LG-L: Business, finance

LG-R: Criminal Justice, Business

RG-L: Graphic Communications
RG-R: Insurance

Opinion of game / misc. comments:

LG-L: Fun, I like the different cultures and societies

LG-R: It's really in depth. It takes a while to learn, but once you learn how to play, it's easy.

RG-L: Very fun game. I'm considering purchasing it maybe, or a game similar.

RG-R: It was fun, would have been easier if I knew how to play, but it was still fun.

C2.2  MAKING HISTORY: THE CALM & THE STORM

Game: Making History

Game experience:

LG-L: No

LG-R: No

RG-L: No

RG-R: No

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Game genre experience:

LG-L: No

LG-R: Yes: Risk (computer game)

RG-L: No

RG-R: Yes: Risk, great game

Gender:

LG-L: F

LG-R: M

RG-L: M

RG-R: M

3 favorite subjects / classes:

LG-L: Government / English / Science

LG-R: English / Art related classes / Social studies

RG-L: Ceramics / Photography / Cooking

RG-R: Social Studies / Gym / Biology

Intended future career:

LG-L: A doctor or in the medical field. Or a lawyer.

LG-R: Graphic / Advertisement designer

RG-L: Something w/ the Arts
RG-R: Professor of History or entrepreneur

6a. Intended college major:

LG-L: Pre-med / nutrition or poli-science / pre-law

LG-R: Cartooning / general animation

RG-L: Not sure

RG-R: Economics or History

Opinion of game / misc. comments:

LG-L: It was confusing but showed how important diplomatic relations are.

LG-R: Confusing, but satisfying. Taking over Mexico was fun, but losing the U.S. to Canada was not.

RG-L: After playing it for two days you get the hang of how it works but at first it's slightly confusing. Overall, I liked how you could learn about certain time periods of history

RG-R: It is kind of boring and difficult to play
C2.3 **RollerCoaster Tycoon 3**

Game: RCT3

Game experience:

LG-L: Yes: I played this game often about a year ago. But I had a different version.

LG-R: Yes: I have played RollerCoaster Tycoon I

RG-L: Yes: Played at cousin's house, I liked the game

RG-R: Yes: It was a lot different than the game I'm use to playing and at times it was hard to figure the stuff out

Game genre experience:

LG-L: Yes: I have played different versions of The Sims and Zoo Tycoon.

LG-R: Yes: RollerCoaster Tycoon I; Zoo Tycoon- it has animals similar to the animals in RCT 3

RG-L: Yes: Sims, they were almost exact. They were fun.

RG-R: Yes: Sims

Gender:

LG-L: F

LG-R: F

RG-L: M
RG-R: F

3 favorite subjects / classes:

LG-L: Business / Biology / US History
LG-R: Biology / English / Math
RG-L: History / Geology / Business Management
RG-R: Math / Marketing / Yearbook

Intended future career:

LG-L: Something in Business or Social Work
LG-R: Dentist
RG-L: Something in Business or Sales
RG-R: Fashion & Sales / Marketing

6a. Intended college major:

LG-L: Business
LG-R: Biology
RG-L: Business
RG-R: Marketing & Sales

Opinion of game / misc. comments:

LG-L: I really like playing games like these but they can be very addictive.
LG-R: It was fun! It took a while to get used to the game & how to play, but once that was under control its lots of fun

RG-L: I liked it. At times there were confusing parts but after a little while I grasped it.

RG-R: I really enjoyed it I just wish it was easier to do. Like all of the land was flat and it told you where everything was.
APPENDIX C3:

STUDENT DEMOGRAPHICS FORM RESULTS (TABULATED)

725
<table>
<thead>
<tr>
<th>Question / Response</th>
<th>Civilization IV:</th>
<th>Lg-L</th>
<th>Lg-R</th>
<th>Rg-L</th>
<th>Rg-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Game played</td>
<td>Civ IV</td>
<td>Civ IV</td>
<td>Civ IV</td>
<td>Civ IV</td>
<td>Civ IV</td>
</tr>
<tr>
<td>2. Played this game before?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>2a. If so, describe experience:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Played similar games before?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td></td>
</tr>
<tr>
<td>3a. If so, describe experience:</td>
<td>RollerCoaster Tycoon - building parks and making decisions to keep the people happy and the park a success</td>
<td>Rome: Total War - for a little bit</td>
<td>Age of Empires, battling against other empires to be the best; Age of Mythology, same idea but 'Greek Era'; SimCity, building cities and growing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Gender:</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td>M</td>
<td></td>
</tr>
<tr>
<td>5a. Favorite subject 1</td>
<td>Physics</td>
<td>Sociology</td>
<td>Social Sciences</td>
<td>Sociology</td>
<td></td>
</tr>
<tr>
<td>5a. Favorite subject 2</td>
<td>Spanish</td>
<td>Chemistry</td>
<td>Music</td>
<td>Psychology</td>
<td></td>
</tr>
<tr>
<td>5a. Favorite subject 3</td>
<td>American Government</td>
<td>English</td>
<td>Astronomy</td>
<td>Math classes</td>
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</table>
6a. Future career guess:

<table>
<thead>
<tr>
<th>Business</th>
<th>some type of career involving business with something else, like engineering</th>
<th>Computer field</th>
<th>Insurance agent</th>
</tr>
</thead>
</table>

6b. Future college major guess:

| Business, finance | Criminal justice, business | Graphic communications | Insurance |

7. Opinion / additional comments:

| Fun, I like the different cultures and societies | It's really in depth. It takes a while to learn, but once you learn how to play, it's easy. | Very fun game. I'm considering purchasing it maybe, or a game similar. | It was fun, would have been easier if I knew how to play, but it was still fun. |

---

**Making History: The Calm & The Storm:**

<table>
<thead>
<tr>
<th>Question / Response</th>
<th>Lg-L</th>
<th>Lg-R</th>
<th>Rg-L</th>
<th>Rg-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Game played</td>
<td>MH</td>
<td>MH</td>
<td>MH</td>
<td>MH</td>
</tr>
<tr>
<td>2. Played this game before?</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>2a. If so, describe experience:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Played</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
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</tbody>
</table>

727
<table>
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<tr>
<th>similar games before?</th>
<th>Risk (computer game)</th>
<th>Risk, great game</th>
</tr>
</thead>
<tbody>
<tr>
<td>3a. If so, describe experience:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Gender:</td>
<td>F M M M</td>
<td></td>
</tr>
<tr>
<td>5a. Favorite subject 1</td>
<td>Government English</td>
<td>Ceramics Social Studies</td>
</tr>
<tr>
<td>5a. Favorite subject 2</td>
<td>English Art related classes</td>
<td>Photography Gym</td>
</tr>
<tr>
<td>5a. Favorite subject 3</td>
<td>Science Social Studies Cooking Biology</td>
<td></td>
</tr>
<tr>
<td>6a. Future career guess:</td>
<td>A doctor or in the medical field. Or a lawyer.</td>
<td>Graphic / Advertisement designer</td>
</tr>
<tr>
<td>6b. Future college major guess:</td>
<td>Pre-med / nutrition or poli-science / pre-law</td>
<td>Cartooning / general animation</td>
</tr>
<tr>
<td>7. Opinion / additional comments:</td>
<td>It was confusing but showed how important diplomatic relations are.</td>
<td>Confusing, but satisfying. Taking over Mexico was fun, but losing the U.S. to Canada was not.</td>
</tr>
</tbody>
</table>
Overall, I liked how you could learn about certain time periods of history.

<table>
<thead>
<tr>
<th>Question / Response</th>
<th>Lg-L</th>
<th>Lg-R</th>
<th>Rg-L</th>
<th>Rg-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Game played</td>
<td>RCT3</td>
<td>RCT3</td>
<td>RCT3</td>
<td>RCT3</td>
</tr>
<tr>
<td>2. Played this game before?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>2a. If so, describe experience:</td>
<td>I played this game often about a year ago. But I had a different version.</td>
<td>I have played RollerCoaster Tycoon I</td>
<td>Played at cousin's house, I liked the game</td>
<td>It was a lot different than the game I'm use to playing and at times it was hard to figure the stuff out</td>
</tr>
<tr>
<td>3. Played similar games before?</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>3a. If so, describe experience:</td>
<td>I have played different versions of The Sims and Zoo Tycoon.</td>
<td>RollerCoaster Tycoon I; Zoo Tycoon- it has animals similar to the animals in RCT 3</td>
<td>Sims, they were almost exact. They were fun.</td>
<td>Sims</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------------------------------------------------</td>
<td>---------------------------------------------------------------------</td>
<td>----------------------------------</td>
<td>-----</td>
</tr>
<tr>
<td>4. Gender:</td>
<td>F</td>
<td>F</td>
<td>M</td>
<td>F</td>
</tr>
<tr>
<td>5a. Favorite subject 1</td>
<td>Business</td>
<td>Biology</td>
<td>History</td>
<td>Math</td>
</tr>
<tr>
<td>5a. Favorite subject 2</td>
<td>Biology</td>
<td>English</td>
<td>Geology</td>
<td>Marketing</td>
</tr>
<tr>
<td>5a. Favorite subject 3</td>
<td>US History</td>
<td>Math</td>
<td>Business</td>
<td>Yearbook</td>
</tr>
<tr>
<td>6a. Future career guess:</td>
<td>Something in Business or Social Work</td>
<td>Dentist</td>
<td>Something in Business or Sales</td>
<td>Fashion &amp; Sales / Marketing</td>
</tr>
<tr>
<td>6b. Future college major guess:</td>
<td>Business</td>
<td>Biology</td>
<td>Business</td>
<td>Marketing &amp; Sales</td>
</tr>
<tr>
<td>7. Opinion / additional comments:</td>
<td>I really like playing games like these but they can be very addictive.</td>
<td>It was fun! It took a while to get used to the game &amp; how to play, but once that was under control it's lots of fun</td>
<td>I liked it. At times there were confusing parts but after a little while I grasped it.</td>
<td>I really enjoyed it I just wish it was easier to do. Like all of the land was flat and it told you where everything was.</td>
</tr>
</tbody>
</table>
APPENDIX D:

UNIVERSITY OF HAWAI' I COMMITTEE ON HUMAN STUDIES (IRB): CONSENT FOR STUDY
The University of Hawai'i Committee on Human Studies gave their approval for the project, and aided in the construction of parent consent and student assent forms (Appendix A1 and Appendix A2). The primary investigator (researcher) has all signed consent and assent forms for each participating student and their parents.

The project is filed as University of Hawai'i Committee on Human Studies application #15225. Approval was granted on April 30, 2007 for a period of one year. The approval letter has been included for reference below.
MEMORANDUM

May 9, 2007

TO: Matthew Sharritt
Principal Investigator
Communication & Information Science

FROM: William H. Dendle
Executive Secretary

SUBJECT: CHS #15225- “Students' Use of Social and Cognitive Arousal in Game Play
Within Educational Contexts: Implications for Learning”

Your project identified above was reviewed by the Chair of the Committee on Human Studies
through Expedited Review procedures. The project qualifies for expedited review by CFR 46.110 and
21 CFR 56.110, Category (7) of the DHHS list of expedited review categories.

This project was approved on April 30, 2007 for one year. If in the active development of your
project you intend to change the involvement of humans from plans indicated in the materials
presented for review, prior approval must be received from the CHS before proceeding. If unanticipated
problems arise involving the risks to subjects or others, a report must be made promptly to the CHS,
either to its Chairperson or to this office. This is required in order that (1) updating of protective
measures for humans involved may be accomplished, and (2) prompt report to DHHS and FDA may be
made by the University if required.

In accordance with the University policy, you are expected to maintain, as an essential part of
your project records, all records pertaining to the involvement of humans in this project,
including any summaries of information conveyed, data, complaints, correspondence, and any
executed forms. These records must be retained for at least three years from the
expiration/termination date of this study.

The CHS approval period for this project will expire on April 30, 2008. If your project continues
beyond this date, you must submit a continuation application to the CHS at least four weeks prior
to the expiration of this study.

We wish you success in this endeavor and are ready to assist you and your project personnel at
any time.

Enclosed is your certification for this project.

Enclosures
APPENDIX E:

DATA COLLECTION NOTES
Filming began on Thursday, May 10 at Wheaton-Warrenville South High School.

E.1.1 Day 1

Thursday, May 10

Started with 3 male, upperclassmen (one more will join tomorrow).

Groups: 1 + 2 (1 left, 2 right) group of two seemed to be very verbal, and advance faster. Solo person was slower and quieter.

Teacher: was 'hands-off', inactive. Doesn't seem to bother students (they're engrossed in the game). Teacher left for lunch about halfway through the period.

First 10-15 minutes: consisted of learning the interface, buttons

Note: thank God for clip-on mics- students are in a study hall and by nature are quiet- without the clip-on mics it would be very difficult to hear them.

Note: Students needed almost no technical support or help playing the game. Will informally ask them about their gaming experience at the end of Day 1 filming.

Solo guy- said he never played Civ 4, and ended up dying / losing the game at the end of the period.

Group of 2: one guy had played Civ 2 before, other hadn't. They saved their game to continue on Day 2.

Gaming experience- all have played games before, only one has played Civ 2 (much different than Civ 4, but similar genre)
Friday, May 11

Same 3 from day before came early to start playing the game. New guy (4th) came about 5 minutes later and joined in with the solo guy (left group).

All consent / assent forms collected (4 each)

Gift incentives: 3 want Portillos / 1 Jamba Juice

New guy: his teammate explained to him how to play the game (from prior day’s experience).

As seen in the pilot study- one person takes control of the mouse, the other points and suggests what to do

- L team: R person
- R team: L person

At around 20 minutes: L team traded spots, so L guy (new) could control game. Seems that he got sick of watching! Wants to try out game. R guy (now L guy) explained game to help new guy learn how to play. Interesting!

Seems to be a dominant / submissive thing - dominant one takes the controls, submissive gestures & makes recommendations

- probably different than 2-player games (Xbox, etc)

Between-group collaboration is minimal. Maybe 1x or 2x per session. An occasional quick glance to check other team’s progress. Seem to be engrossed in their own game.

- Would multiplayer be different? Playing against each other?

Note: bring 2nd camera power cord... one camera almost died!

Towards end- new guy still getting tips / instructions from teammate!
L group told R group how to join units together (@45-50 min)

R group: R guy took the controls

Kids are so into the game - didn't leave for their lunch! (ran late to lunch period by a bit)

R group told L group how to make new cities

- 2nd city - takes game to the next level

E.1.3 Day 3

Monday, May 14

kids showed up; teacher didn't

mics hopefully fixed (went to RadioShack for new one)

R group: still on first game (1000 AD)!

today I set out the game booklets / manuals on the table for kids, they got used fast!

Note: computer CiviS are getting bigger as well; competition is increasing

@20 mins: teacher stopped by for 30 sec, to make sure kids were here (attendance), asked how they were doing (polite). I updated him. He said they were doing well, and then left.

Religions spreading across CiviS - borders encroaching on each other

Game choices: kids chose to delegate over investigate (decisions) as to not interrupt game play

game interface has been conquered - all about game strategy now
seem to be learning that when attacking other Civs, they (others) have the "home town advantage" in battles

- newly conquered cities are weak, easily re-taken

as with world civs, lots of 'map' (globe) unknown

learning of how to do trades / negotiations: diplomacy has big effect of avoiding / creating wars

E.1.4 Day 4

Tuesday, May 15

(last day) groups wanted to start a new scenario in the future- to see the limits / features of the game (have been playing ancient civs all along)

- see what game could do - on last day
- seems like it'd be beneficial to play > 4 days, so game gets more advanced

teacher stopped by @ 10 min; checked up on students. I thanked him for his help.

Groups made it up to about 1500 AD / 1900 AD in game, not too advanced yet

- ~40% of map uncovered (globe)
- ~50% by end of day 4

seemed that groups can easily take cities over now. seem to be really good at the game.

students reported that the game interface was hard at first, but they picked it up.

- interview @ 35-45 min of day 4 tape
- students said they liked being in control of the game interface (mouse etc.), but being in groups of 2 was good for reflection and collaboration purposes
• groups: inexperienced / inexperienced; experienced / inexperienced

gift cards: 3 Portillos / 1 Jamba Juice- will leave in teacher's mailbox the following day.
E.2 MAKING HISTORY: THE CALM & THE STORM

Filming began on Thursday, May 10 at Wheaton-Warrenville South High School.

E.2.1 Day 1

Thursday, May 10

L group: 1 male, 1 female  
R group: 2 male

students wanted to attack others as much as possible.

teacher was feeding them some history as they played the game, but they wanted to 're-write' it (L group)

L group: female not engaged in game until attacks were initiated. she left to go to vending machine and returned.

game interface: students learn to click on items on the map, then how to make them do stuff

- first: how to start wars / fighting (less focus on politics / economy)
  - this may be good at teaching how to play the game (first time)
  - next game: might focus more on economy / politics, in order to boost military success (less successful without paying attention to them)

E.2.2 Day 2

Friday, May 11

R group: same composition. L group: one new person (L side).
L group: returning student explained game to new student quickly and left for the library (this took about 10 minutes, per the request of the teacher). New person played solo- and seemed a bit lost from the 'brief' directions on how to play (much different than the explanation to Civ 4's new student)

R group: started a new scenario (scratched Day 1 scenario)
- chose to be middle war (WWII) as the Germans
  - seemed more advanced today, wanted to form alliances before making military moves.
- ended up declaring war on almost everybody (big war going)

@ 40 min: a huge war going. seems like a lot to manage & keep track of! Was it hard?

Gift cards: 1 Jamba Juice / 1 Portillos / 2 don't care

---

E.2.3 Day 3

Monday, May 14

Groups: same configuration as Day 1

L group: @ war w/ Mexico (playing game as U.S.)
- lots of work w/ forming alliances

R group: playing as USSR

both groups: most of gameplay on military strategy - alliances and fighting

@ 30 min: 2nd class came in to lab to use computers (a bit noisy on video...)

L group: invaded Mexico - then Canada invaded them (U.S.)

R group: expanding USSR into E. Europe, middle-east
teacher (Dad): good comments, but doesn't understand the game too well- better understanding of game by teacher would be helpful for more pertinent advice.

@40 mins: L group, L player left for bathroom. R player requested teacher help, as Canada was infiltrating the U.S.

E.2.4 Day 4

Tuesday, May 15

Groups were same config. as day 1. Continued their saved games.

L group (U.S.) - invaded Mexico, Canada invaded U.S. and took Northern states away

R group (USSR) - expanding...

L group, L student (female) - seemed a bit bored, but liked playing game w/ teammate (male)?

L group: Canada took 12 states already! losing the battle...

R group: R guy seems disengaged.

• seems that the ones NOT in control get bored

L group getting killed by Canada...

Extra (5th) person not present today (from day 2), thus cannot fill out survey or participate in interview.
E.3 ROLLERCOASTER TYCOON 3

Filming began on Wednesday, May 30 at Naperville Central High School. Filming took place over two days, as two periods per day were used.

E.3.1 Day 1

Wednesday, May 30

R & L groups: all have had some experience w/ game (this is good: fulfills all experienced / inexperienced combinations)

L group: 'normal' park (Vanilla hills)
  • 2 girls

R group: water park
  • 1 girl / 1 guy
(fulfills all gender combinations)

R group: learning interface - how to build custom coasters

L group: using pre-made rides- learning how to 'open' them for business
  • figured out how to raise prices (good value message)

@ 20 mins: R group restarted their game (Normal RCT, not a water ride 'soaked expansion') L group: figured out how to hire / fire staff, garbage, mechanics, etc.
  • seem to have a good understanding of interface by 30 mins
  • re-affirmed game goals (attendance)
  • get 'financial aspects' of game - already took out loans
Interesting: L group- 2 mouses - one can use laptop trackpad, other person use external mouse- both can control the mouse pointer

E.3.2 Day 2

Wednesday, May 30

Gift cards: all 4 want Portillos

L & R groups: questions on how to move map / screen

L group: looked at customer feedback: need more 'thrill' rides

• added animals too

R group: got 'tidiest' & 'safest' park awards

• learning / building non-rollercoaster stuff (bathrooms, balloons, etc) & deleting some attractions

@ 15-20 mins: R group made 'entrepreneur' level. @ 20 mins, L group made entrepreneur.

L group: efficient at adding food stands & setting initial prices.

R group: wants to fire an employee (bored employee)

@ 25 mins: R group PC rebooted itself mysteriously! R group had to restart their game after computer rebooted. :(  

L group: @ 30 mins- interface seems to be mastered (know it better than me)

• pulled up financials, took out a huge loan to build more stuff
• used pre-built coaster (takes too long to make custom ones)
PC went very slow when adding coaster and placing it, had to wait for enough income to build and place it ($15,000). PC showed its age.

R group: engineering a custom rollercoaster

- seems a bit difficult - game is 'touchy' and mouse control is hard

R group: mentioned upon leaving at end of period, "I can't believe its 4th period already, it seems like we just got here."

- seems that game is engaging and immersive as they lost track of time

Groups kept asking each other how much money they had, what level they were at (competitive)

---

**E.3.3 Day 3**

*Thursday, May 31*

PA announcements at beginning (annoying & loud for 5 mins)

R group: couldn’t find park they saved from day 2
L group: picked up original park (from day 1 - large and making $$ now)

both groups seem to have the controls figured out

Teacher presence doesn’t seem to matter much - teams of 2 - peer collaboration seems to be enough help.

- teacher presence might help raise competition?

L group: more into management (setting prices, making money).
R group: more into making coasters, seem a bit behind L group.

- L group: 'performance-oriented' learners?
R group: wasting lots of time building custom rollercoasters

  - more attention to detail though
    - 'mastery-oriented' learners?

L group: middle approval rating; R group higher approval rating

E.3.4  Day 4

Thursday, May 31

Teachers came in during breaks to check up on students (not on tape)

  - how are you guys doing?
  - are you profiting?
  - need a pass? (hall pass to get out of study hall period to keep participating for day 4)

L group, R person: missing for first 20 mins

  - L person: very quiet without partner
    - when partner came back, got the partner up to speed on what she missed, explained was building a pool.

Interview conducted, went well. Students offered it was "better than class!" and seemed to enjoy participating in the study.
APPENDIX F:

INITIAL CODING OF VIDEO AND DISCOVERY OF LEARNING EPISODES (ANALYTIC MEMOS)
F.1 **CIVILIZATION IV, RIGHT GROUP**

F.1.1 *Day 1*

- negotiating scenario
- determining objectives

- suggestion for pursuit (L, in control)
  (R doesn't respond: seems to be OK with strategy)

- attempting to build home city / R person suggested where to build, it worked (success)

- R asks what buttons are, L explain turn-taking style of game (learning style of game)

- peer team collaboration to check progress: see if city built

(lots of peer discussion on purpose of things: what is this? oh, it probably does this. Example: what's this? it's our explorer. He discovers stuff (uncovers map). Follow up is discussion of where to send him (strategize on which part of map to uncover first) / shows learning of feature of game: explorers and their purpose
- what are these?
- what does this do? (often followed by mousing over buttons after clicking the thing)

--players ask out loud to get peer feedback, if they understand what is going on. this is an opportunity for teachers to help: explaining what a thing does to clear confusion and increase advancement speed of game players
- seems that a good game offers much of this info: dialog when first item of a type is built, etc.

- 'press Enter': shows turn-based game has been learned, player wants to advance, picking technologies to research
non-active player: offers explanation of how game works "you click people and tell them what to do, then hit enter, then they do it" 

(active player takes in info and agrees)

"we should get more guys to do some stuff" -- implies knowledge of game goal of expanding a civilization. Explores city boundary, population, statistics, etc.

first avatar interaction: slightly confusing, but found out it's another civ. hesitant to declare war, as its early / weak civ.

(this seems to manifest later: players aware of building a military force to deal with Greeks)

(this might be a feature of a 'good' game: raises awareness of aspects of game which player must address in order to win, by drawing attention to it)

2nd avatar interaction: surprised players; reminded them of 'diplomatic' aspect of game.

- non-active player got mad: saw some options that were not selected, wanted to try and trade with other civ. (active mouse controller just picked some stuff too quickly to get back to main part of game).

- non-active player expressed disappointment in not being able to interact / try trading with other Civ, which becomes a new game goal of group for future

- non-active player then requests for active player to click on other Civs and interact with them (pursuit of task was done)

(this invokes a higher period of activity for non-active player: seems to take a more demanding / aggressive role in game direction. "do this, do that..." (press enter...))

Question raised: I don't know what the roads are for (players guess at purpose)

player explores controls, figures out 'turns' required to build stuff
map interface discovered: figure out map, location, and presence of nearby computer civilizations. (this encourages expansion of territory before other civ takes it) 

sailing; interface is learned: showed how many turns until item is complete (green bar at top) 

"we have money?" "no." player guesses their mine is a source of money. try to devote more resources to gathering it (civ workers) 

- source of comment: personal experience? seems that players 'assume' money is an important aspect of a civilization, and want to maximize it. 
- luckily the game has this feature. this shows importance for game to model the real world (simulation) 

"I'm so confused" is replaced by refocusing attention on another aspect of the game 

- avoids losing momentum (frustration) by maintaining 'flow' and immersion 

game progress shown: game directs attention to progress: important to see how one is doing at game 

peer (group) progress checked. tips offered between groups, progress offered (money, civilians, etc). (seems good to check status, as game offered earlier) 

advancement seems more important- game objectives are checked. peers and game re-engage players to be the best they can, get ahead in the game 
(mouse controls traded at this point) 

non-active player wants to declare war on other civs (to advance themselves). Civs selected and diplomatic actions taken (diplomacy becomes an important aspect of game, for success) 

game objectives consulted... peer progress checked again. Prompts questioning of peer team: "how did you make money?", etc. 

- prompts re-engagement, desire to win at the game
game interface: choices offered also can be seen from 'the big picture' in order to see consequences of player choices.

- this allows players to see how their choices might play out to advance their civilization, and allows players feedback to align their goals with potentials in the game
- also allows players to see what the game offers (see way down the road) (however, this isn't forced: players can choose not to see this every time)

non-active player: "wait, you should have chose X, because it enables Y" (shows consequences of actions)

(time almost up: declared war on other civ, game pace sped up)
(game suggests improvements: detects things that need improvement and bring attention to them. this helps raise awareness of game aspects that are not being addressed as much)
- often handled by narrative design: "the people of X city would feel better if they were more protected with an archer", etc.

Overall:
- lots of exploration (of controls, game functions / features, map)
- game was confusing at first; very complex and a lot to take in
- game maintained interest without losing team, by introducing structure of game, objectives, and interface at a reasonable pace
  - most important aspect (turn-taking) introduced immediately "Press Enter to end turn"
- group objectives evolve with gameplay: through good feedback, and adding on to objectives (they don't get replaced, just expanded / built on)

**F.1.2 Day 2**

fighting enemy (lost)

(much repetition from first day, focus more on learning to fight other civs)

first successful fight (archers) / learned how to fight other civs
- sending waves of soldiers, win some, loose some battles
(goals shift to conquest of other land / civs)

«<340397>» sending armies / trying to group armies together
«<358671>»
- shows development of military complexity

«<382360>» learned about group vs. group fighting, want to improve military units to win fights «<415125>»

«<470701>» weak unit vs. more advanced: learned that military advancements are extremely important (barbarians vs. archers: archers easily defeated the barbarians) -- so goals redefined to advance military technology «<488480>»

«<567489>» automate feature employed: learned to delegate to AI of game, so each turn don't have to tell every character what to do «<620017>»
- workers: automatic improvements; explorers: automatic exploration

«<863717>» learn of military enhancements: attempt to improve armies features to better defeat enemy (want to wait for more units to arrive to defeat other army - shows more complex understanding of warfare) «<908738>»

«<1072084>» amassed units attack: more successful at beating opponent. ask peer team about combining forces; attempting to create a more powerful army. «<1143524>»

«<1154272>» developed a complex goal set: represented well in the software. look at big-picture to figure out what to research next, to best help their civ. «<1196718>»
- good game interface: complex goals supported visually, and correlate to users' mental models (external cognition?)

«<1207094>» bigger battle: lost units, but won the battle «<1247653>»
- further enhances warfare learning: rewarded players for learning how to amass armies of warriors to overwhelm enemy

«<1494673>» took an enemy village - won the battle, pillaged the city (destroyed it rather than keeping it) «<1524320>»

752
- opportunity for learning missed: may not have realized that they could have kept the city and expanded their empire, possibly because they still haven't learned how to build more than one city yet
  (this might benefit from a 'big picture' type of screen showing the consequences of both actions)

»<2862604> learn from peer how to join military units »<2888917>
»<2908481> join »<2913134>

»<2958636> learn how to build a 2nd city! »<2980203>
  - via mouseover, highlighted icon by game

»<3061523> 2nd city founded »<3075885>
  - 2nd set of things being built
  - want more settlers to make more cities
  - shows learning has taken place

»<3226640> game ties diplomacy in: civ they are attacking wants to try and make a peace treaty with them (asked for a city as tribute, was rejected by other civ), war continues... »<3279977>

Overall:
  - game focus shifted from learning basic controls to learning how to engage / fight other civs
  - reinforces goal of advancing faster than other civs, so military is more advanced and more likely to win
  - don't understand why enemy cities have so many units in them (multiple military units were defeated, and after defeat more units appear in city)
  - learn to automate workers; join & enhance military units, found and create cities

**F.1.3 Day 3**

»<42912> players want to build another city: to expand civ (shows learning)
  - requires settlers, as stated by players
»<67520>

(using automate workers, other functions learned earlier: becoming efficient at game)
Something unclear: chose to look up in game manual (affordance taken up: use the game manual to figure out things not made clear enough by the interface)
- a good idea to have game manuals handy for students while playing the game; they use them
(lost interest in manual [game grabbed non-active player's interest]: question not answered)

(meantwhile a city was captured by enemy: shifted goals to reclaim it)
- realized it wasn't protected well enough
"tell them to fortify it" shows learning: protect a city

(building up civ: trying to produce military & expand borders, progress. some new advancements uncovered.)

(trying to build boats. earlier in day, saw that other civ had a boat in the water, so they want one too. other civs competing and unveiling items are a way to help create goals for player in game)

seems that non-active player is more conservative- don't want to waste the resources they've built up. active player wants thrill of battle and just goes for it.

lost battle, in attacking city: don't notice they have multiple units, and a home-field advantage (missed opportunity?)
- are more cautious attacking cities in future

other civ gets war elephants. realize they're screwed and back away from enemy city, then get whooped by elephants and horses.
- other civ's more advanced technology easily kills their military units
- learning strategy: need advanced units to win

Diplomacy: recognized that they are going to lose the war, and are more willing to make a peace treaty (cancelled current war, and tributed some technology to enemy)
Other civs appear and negotiate as they are discovered in game. Advancing trade / negotiation skills.

Overall:
- While players have discovered how to build more cities, they don’t seem to realize (and take up) doing so, which will increase production for their civ. (missed learning opportunity)
- Not much new learning from previous day (day 2); however advance skills as game develops (war, trading, production)

F.1.4 Day 4
(last day of play)

“I think we should start over. I think we should like start in the future”
(while game is loading)
(expresses desire to see advanced features of game)

Settler: move to another empty place on map to settle, found city (learning has taken place: seemed to be a missed opportunity from day before)
- speed rate of development

Example of unlocked items: excites player, learns of new features unlocked in game; further develops / enhances strategy

Alliances first presented by game: one civ demands that deals cancelled with another civ (have to choose sides)
- Decide to agree, since demanding civ is nearby and want to keep them happy (avoid war with them, being conquered)
(learning diplomacy, politics)

Peer team: “our people are mad”
Response: our people are mad too"
- Leads to opening overview of civ map
(interface confusing: many icons that haven’t been learned yet)
- mouseovers help learn icons
Player then determines source of unhappiness for the civilization's people (too crowded)
(LEARNING EPISODE)

New feature uncovered: how to zoom out, see civ on a globe
- tells peer team (cool graphics feature of game)
- adds to game (immersion, interest). Not much purpose, but seems to excite the game player (shows good graphics and effects are helpful at adding to game)

New feature uncovered: how to zoom out, see civ on a globe
- tells peer team (cool graphics feature of game)
- adds to game (immersion, interest). Not much purpose, but seems to excite the game player (shows good graphics and effects are helpful at adding to game)

.controls traded
Goal expressed as trading: "need to make it less crowded"
- new mouse controller pulls up overview screen, reads "starvation"
- shows new goal, reason for civ unhappiness: need more food
(beginning of learning episode)

(trade proposals with other civs, attempt to gain food)
redirec workers to make improvements that help gather food: build farms
- worker options: use mouseover of icons to see what actions help gather food
(problem solved)
- workers moved out of town to reduce crowdedness

(workers build farms: help food supply)
- problem resolved

"do barracks, cuz it's shorter"
- last ditch effort to do something before time is up

"is there like a fast forward button?" "declare war on ..."
- time running out...
Eventually like all the land will be occupied
- learning of civ advancement: parallels history
(efforts to declare war on everyone)
"Keep pressing enter, I want to see the future"

at end, after ending game: messing around with game, player edits the world, adding features / advanced stuff to the map

Overall:
- higher speed of game play and higher engagement (last day). Seem to want to make a lot of progress on game while they can; realized a limited amount of time left to do things in game
- game controls are second nature already
- game strategy constantly developing and expanding
- as game develops, strategy and interest continually enhanced. Players could have probably played game for several more days (while maintaining interest)
F.2 MAKING HISTORY: THE CALM & THE STORM, RIGHT GROUP

F.2.1 Day 1

choosing / negotiating a game scenario: unsure which to choose. then unsure which country to choose. ended up choosing the U.S.

(beginning marked by mousing around map, clicking on buttons, things, etc. to see what they do)

"What do we gotta do?" "I dunno" - try fighting others? (assuming it's a war game)

"I'm just gonna hit 'end turn' to see what happens" - unclear game objectives. asked peer team, they did the same thing.

Peer team: declaring war (grabbed interest). "How do you declare war?" Explanation given by peers how to start wars. This shifts goals- picking countries to declare war (picked China)

- this hints that the game has unclear objectives. Scaffolding / gradual learning seems unpresent.

Still on China: attempting to make demands on resources and diplomatic actions. China rejects the treaty; "How do we bomb them?" - following this, attempt made to move troops to China to attack. Long way to move troops, so gave up. Attacked Mexico next due to close proximity: easier to move troops across the border. This caused other countries to declare war on them.

Summary of actions: war declarations. Objectives still unclear- just randomly attacking stuff.
at this point, basically just learned how to move military stuff around (and hit 'end turn'). objectives of game still not clear.

war focus turns to diplomatic focus: wars expand and other countries form alliances to declare war on them.
- realize they have no alliances
- realize diplomatic importance of game
- attempt to make treaties with other countries
(treaties / diplomacy not easily achieved, so switch back to military focus)

Canada attacks (angry from careless attack on them). Canada takes Michigan. This focuses all attention on military action against Canada (reclaiming states taken by Canada). Much of the rest of the session (day) focuses on this.
- perhaps this is poor game design. While it shows the consequences of military action (can lose resources, land, etc.), it is quite boring and somewhat unrealistic (Canada taking over the U.S.). Game does not offer suggestions on what to do to improve the situation (treaties, boost production, attack this, put X resource somewhere, etc.). A huge range of possibilities exists, but no suggestions on what to do. In real life, many options exist as well, but often there are channels of information to base decisions (public opinion, communication with other countries, etc.)
(focus back to military aggression: China & Mexico)

(selecting random countries to bomb / attack; attempt and fail at treaties), give up and declare war on more people

discovered that Canada occupies Michigan. Focus is shifted to this battle: raises engagement of peer (non-active mouser)

- much time wasted trying to learn how to move & use airplanes
interface reminds players of another battle they had initiated and were losing.

back to Canada war: losing more states. learned how to use airplanes to bomb enemy. continuing war with Canada: moving military around, fighting. Can click on battles to see strengths of both sides and anticipate who will win. (game saved) after save game, viewing chart of points: shows relative strengths of countries, sort of shows how well teams are doing - doesn't really tell how well one is doing, much is based on the power of the country they started with. checked with peers to see what country they chose: attempting to compare what they accomplished (didn't learn much).

Overall impressions:
- very little peer interaction of meaning in this game. Most of effort was on military goals, which were not very successful.
- Scaffolding not evident in this game: players appeared to fail at almost everything they attempted.
- Very little reward structure, and game goals were not clear. Maybe because the game is 'too' realistic, trying to simulate WWII as it really was. However, this results in a very boring game since objectives are unclear and reward structure is almost non-existent.

F.2.2 Day 2

booklets: discover potentials for action that were unknown

careful selection of new scenario, potentially because of frustration w/ game on Day 1 ("put it on easiest" - referring to difficulty)

right away, focus on military: "we have tanks..."; "attack them, they're weak"
learning from day 1: check wars / diplomacy before starting military campaigns

- trying to set up alliances first before war (start with US & Russia (most powerful)) (attempting diplomacy w/ US & Russia; both rejected) (try alliances w/ nearby countries; rejected)

because computer rejected every effort at treaties / diplomacy, both decide "we're gonna have to start some wars now" peer replies: "definitely. it's... the only way to win this game"

- failure of game? constant rejection leads to alternative course of action. diplomacy in this game almost NEVER works!
  - game vs. simulation: while this may be accurate (treaties probably would have been rejected in real life), it negatively impacts the gameplay, immersion, fun level in game
  - this could be an opportunity for a teacher to step in: help make treaties / diplomacy that could actually work. However, left to their own devices, students quickly lose interest in diplomacy and resort back to military & warfare (even though they realize diplomacy is very important to their success)

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discovery of production: "see, we can make like armies and stuff"

- scrolling through an overwhelming list of things: "should we build some planes?"
- list is huge, little direction as to what to do

War declared on Spain, for no apparent reason. "Just on Spain. Spain sucks." (warfare beginning to be random: just fight whoever is nearby)

"should we bomb this country here?" (small adjacent country) reply: "Oh definitely" (seems only fun aspect of game is dropping bombs on others)
active player asks about production: in order to boost / build more armies. scans through production screen (somewhat overwhelming) and exits out without changing anything

(computer fights back: alliances form against them - some enemies combine forces)
- computer is able to use diplomacy, but game player cannot. not fair!

Game player wants to create more planes. very difficult to figure out. Have to change the orders of individual factories, figure out if there are resources available, and see how long it takes to complete based on the production power of the factory chosen.

try to make friends with another country: diplomatic treaties rejected again. resort to military again. (repeats again later in game- treaties keep getting rejected)

attack / declare war on another country: causes many other countries to get mad and declare war back on them
(players figure out nobody will want to be allies with them now)
(attempt treaty w/ US: rejected)

attempt alliance w/ Italy: alliance forms! (first successful alliance)
- encourages attempting other alliances; but they fail (even Japan)

(lots of time wasted fighting nearby countries, not much being learned. some geography maybe. but just wearing themselves out fighting battles with adjacent countries... some initial success due to large military power, but slowly weakening themselves and beginning to lose territories.)
- a problem similar to what really happened in WWII: Germany spread themselves too thin after taking over too large of a territory
- too many battles at once: production cannot keep up / replenish resources
- an exponential problem: as territories are lost, so are sources of production and natural resources
--- Is this lesson conveyed to game players? Answer: we cannot tell. They end up losing, but do they ask/figure out why?

Overall:
- many faults with game: may be too realistic, simulation-like; hurts gameplay and intuitiveness of controls
- game would benefit from additional help, to make up for unclear style of game. Teachers could help explain; forcing students to play tutorial might help.
  - often tutorials are a waste of time since students are not actually playing, and are being forced to memorize controls (they should be able to scaffold and learn as they go in a game). However, in this game, since the design is so bad, it might be worth doing.
- most of effort goes to coordinating battles with nearby countries. like a chess game, keep gaining & losing territories. what is being learned from this? not much... maybe some geography.
- game easily becomes a losing military campaign. much time gets wasted NOT learning, but fighting losing back-and-forth military battles with nearby countries.

F.2.3 Day 3

(selecting new scenario, USSR)

«112177> looking over map: exploring initial territory and resources, other countries nearby «137550>

«138797> attempt to make treaties at beginning
- learned from previous days, easier to do diplomacy before pissing the world off by declaring war on everyone
- computer keeps rejecting all attempted treaties
«199470>
Missed opportunity: no suggestions on successful diplomacy. Teacher could help, but game would be much better if clues were given on how to achieve success (sort of like getting a "No" answer from someone without a reason)
«254236>
Resort to aggression / military tactics (again) - only somewhat interesting aspect of the game! Nothing else to do, since
diplomacy never works, and production aspect is too overwhelming to control

Interesting: non-active player is TOTALLY disengaged. Where is he?
- had to ask a few minutes into game: "Which country are we again?"
- engagement very low: doesn't show signs of attachment to the scenario they are working on together. Seems to care less about what is happening (little ownership)
(can't blame him, it's even boring to watch!)

(more attempts at diplomacy made. Computer / other countries reject them all, of course)

"click on that" said by non-active player - attempts at boosting military production from a factory.
- game offers little feedback, and complicated interface. difficult to determine if something gets changed, and what the effect is.
- too much micro-management of production is required to get any decent results

"here, you play for a while"
- good at getting non-engaged player back
- but shows how boring game is, players get sick of playing it

Resort to befriending Italy: it works again! (only successful diplomacy)
- "ha ha, what!"
- "finally..."
- check to see the enemies of their ally, help them fight

(other alliance attempts, fail with no feedback)

Teacher check-up: some general advice on warfare (not game specific)
- good advice to apply to game (not specific to game, but should apply based on logic)
  - invasion strategies, military suggestions
- asks 2nd (non-mouse-controller) student to get re-engaged in game and help out: "two heads are better than one" (this actually works, helps re-energize & re-engage him)

Game (finally) comes to players with an alliance offer, offers potential for an alliance
- taken up.
- war expands, but so do alliances

Game (finally) comes to players with an alliance offer, offers potential for an alliance
- taken up.
- war expands, but so do alliances

Battles: forces represented by numbers (example: 103 vs. 60)
- many battles are not going as successful as they'd like

"Should we just declare war with Italy?"
Re: "They're our allies"
"They're gonna get taken over by Germany"
"They're not helping us at all"
(end up trying to declare war on Italy, an ally)
- probably out of boredom, nothing else interesting to do
- cannot figure out how to cancel alliance

Italy: break alliance & war declared

(focus turns to S. Asia, taking over countries there)

"territory regained" is listed after ending a turn
- player cannot even remember where the territory is located
- no animation or attention grabbers when territories are gained / lost; battles won / lost (text doesn't really cut it- could be much more dramatic & engaging)
(game saved: seems to show players not totally dissatisfied with performance for the day)

Overall:
- too much micro-management required to get production to do anything relevant
- too difficult to figure out diplomacy (interface learned easily; strategy for success cannot be learned by players)
- some aspects of game (trade) never discovered
- because game moves so slow and so much time is wasted on military campaigns and micro-management, pace of learning doesn't necessarily fall off (like Day 3 of Civ 4)
- boring, slow pace. Low level of collaborative activity. Only positive, encouraging talk is when a territory is conquered.

**F.2.4 Day 4**

(last day)

trouble loading game: have to load game, and select the country you were playing to get it to load properly
- an interface problem? it should just load the saved game...

(return to military conquest)

"Weren't we fighting someone over here?"
Reply: "Yeah, Romania, the purple country"
(focus returns to conquest of Romania)
- boosting production
- sending units over to fight

(look around map, find a new country to attack in East)

Turn-based game: doesn't show stuff happening: just reports it
- text tells changes
- "We took control of this"
- "we lost control of this"
(game interface would benefit from actually showing stuff happen)
However, still successful at redirecting attention to battles: redirect troops to areas needing help
«<638999> (focus on conquest of new lands)
«<709174> "in two turns we'll have more people"
- shows learning: production interface used to determine when backup will be available
«<736286>

«<966579> Conquest of Scandinavia: rather easy, USSR conquering territory without much trouble
- much less resistance than SW front
- might be learning relative strengths of countries in WWII
«<988105>
«<1072239> lost W/SW territory to Germans; gained NW territory from Scandinavia »<1088465>

(having trouble fighting off German conquest)

«<139284> losing militarily to Germany: resort back to diplomacy
- peace with concessions to Germans
- realize they'll be beat, so resort to other means
«<1432695> (peace fails because of Italy alliance: so break off alliance)
(back to fighting Germany)
(start random battles with other nearby countries)

«<1679990> "How do you declare war on the world"
- seem to want to speed up game and test limits as in Civ 4
«<1694009> (near end: start declaring war on everybody)
(liberated a country: gave it back to the conquered people)

Overall:
- still seems a pointless back-and-forth territory battle
- diplomacy not really even used: just focus on military movement and battles
  - many game features not found or used
- some learning about strengths of WWII countries, based on which are easier to take over (or loose territory to)
- more learning about WWII (and a more complex game strategy) would probably take place if other aspects of game were utilized more
- game incentives / resources: randomly found / rewarded, not for doing anything (stupid design)
F.3 ROLLERCOASTER TYCOON 3, RIGHT GROUP

F.3.1 Day 1

»<12934> start of game: objectives listed. read goals to each other »<32599>
»<32747> pause game to build stuff: play / pause / fast forward figured out quickly »<42729>
(learning game controls)
(objectives thrown around: "we need to do X... lets figure out how to do X." objectives often tried for around 30 seconds, followed by lost interest and attempting a new objective)

»<153792> decide to build a path: easily figured out, as icons (HCI) on interface are clear (path icon looks like a footpath) »<195631>
(not completed: new objective found, group moved on)

»<204790> building first ride (water ride): mouse over icons and easily found rides, water rides, and started trying to build one »<278746>
(gave up after a few attempts, exited and changed to a different scenario to build normal rollercoasters)

»<356928> agree to build rides: but choose to make custom coasters (instead of pre-built ones)- ask peer team how to create them »<440755>
(confused: cannot figure out view controls to center screen where they want- can swivel around, but haven't figured out how to move L/R/up/down
- mouse control traded: explained to peer how to improperly move the view around »<515190>
»<620010>
building a ride: decide which ride to build. much of collaboration is deciding which ride they want to build. Much of discussion is on how / what they want to build and how it'll
look, which suggests game might be best played individually (not a whole lot of peer problem solving / strategy)

building a path to the ride: attempting to connect a path to the ride to allow people to get on it
- interrupted by nighttime: cannot see screen well enough to build the path
- mistakes in path lead to discovery and use of 'delete' icon
- fail to connect path, so attempt to flatten terrain to get path level with ride (doesn't work)
- after a few minutes: give up on ride, want to start over

discovery of other area of park: leads to view control problem again. cannot seem to move view away from a fixed location (cannot figure out interface affordance of moving mouse to the edge of screen to go in that direction)
- leads to abandonment of level, choosing new scenario without mountains

(check with peer team: see what scenario they picked; hopefully less problematic)

glance at goals
decide on objectives: build a small ride by entrance, leave room for managerial operations
park management / staff: editing park staff names, hiring people, etc.
- examine a staff member, see their emotions, try to edit their properties (pay) to improve mood
- check that other staff is happy

(seems like this group has ADD: decide to do one thing, discover another, and forget to do the first item...)

change mind—decide to build some rides. create a ride successfully and add path to ride (quickly)
- shows it's good to start on beginner level: much easier to figure out than more advanced levels

explore icons around new ride: explore ride options. change color, make sure the ride is open for business (default is not open yet)
decide to build second ride: this time repetition helps: know how to place ride, add entrance, and footpath, and make it open for business (much faster than first ride). Explored options (price, music) that were not discovered when making first ride.

Game notifies player of broken ride: draws attention to ride. Maintenance called, and price raised after observing long queue line.

Building a rollercoaster: select a ride and don't realize that pre-made designs can be used. Group begins making coaster piece-by-piece, which takes lots of time and is somewhat difficult to learn.
- Non-active mouser asks "Oh we actually have to build it ourselves?" and active mouser replies "Yeah". (This isn't true: may be a failure of the game interface)
- End up not completing coaster. Give up and try to delete it (piece by piece).

Overall:
- This group seems to have ADD: does the game lend itself to this behavior? Often bounced around from idea to idea without completing many of them.
- Game seems to be a good example of good and bad interface design. Some options are evident and easily discovered while others are not, appear hidden. (Path icon is good; pre-made coasters are poor)
- Collaboration less important in this game: could be played individually. While good for my study (talk out-loud) it seems that much of discussion is on how to customize things rather than on actual learning (discovering interface, completing game goals, etc.)

F.3.2 Day 2

(struggling with interface: cannot move view)

771
explanation to peer: cannot move camera over to ride
learned how to move camera: change view by moving mouse to edge of screen. when teammate arrives, confusion continues. ask peer team, which explain to move mouse to edge of screen. movement of camera finally figured out!
- learning from peers: helpful to have them available for questions. in this case, a lingering interface control problem has been solved.

frustration with custom coaster building interface: doesn't give enough feedback to correct problems. "cannot place track there" isn't helpful enough, and 'auto-complete' function isn't working (supposed to help finish the track (loop the end of the track to the beginning)
- a missed opportunity for learning (gave up)
- might be a teacher opportunity
- pre-built coasters not easily discovered in interface (poor interface design)

(move on to other stuff; forget about incomplete ride and move on with game)
creating food stands, setting prices, attempting to make money (here, options on food figured out using mouse-overs: good interface design)
building ride & path, customizing / setting price
- price is set by watching whether people get on ride

game message: problem with entrance to food. draws attention to food stand (good game intelligence)
- fixed problem (learned to put path in front of entrance) /
learning episode?

choose to delete food stand: interface design confusion
- not clear how to delete it. many options tried. ask peer team how to do it
- end up giving up
- missed opportunity: don't realize how to make food stands face the direction they want

missed opportunity: add 2nd food stand: give up on modifying first one, so build a 2nd one with a path in front of the entrance
- missed opportunity: don't realize food stand direction can be changed
- accomplish making a food stand, but force themselves to follow false rules

Explanation of missed opportunity: seem to think direction of entrance can be flipped around

Removed staff: missed opportunity
- cannot figure out how to fire unhappy employees
- give up, leave them unhappy and figure out other stuff to do

List of attractions draws attention to closed / broken rides. Focus back on incomplete rollercoaster from before: how to get rid of it?

Missed opportunity: how to use delete function to remove coaster
- might be solved if a teacher helped explain how to delete stuff

(computer shuts itself off)
(new game started after reboot)
- some discussion of strategy: deal with employees after park is created, how to design food courts, etc.

Due to confusion on big coasters, decide to make thrill rides (avoid making custom coasters)

path problem: "Is the pathway gonna be hard to make?"
Answer: "No"
- after trouble ("Are you sure?")
reply: "Oops!"
(follows by asking peer team how to join path to elevated ride)
- insufficient response to help them, so give up and make a different ride
(fall back down slippery slope of trying to create a custom ride)
 discover how to delete rides
 - go back and delete other rides they couldn't complete
 - strategy doesn't work on the other ride: still don't understand very well how to delete (teacher opportunity)

(back down slippery slope of trying to make a custom ride)
 - failure (again): try to delete (again), but fail

Delete issues (missed learning opportunity): want to delete a structure
 - end up manually deleting it piece by piece (time consuming)

Back down path of trying to create a custom coaster....
 - manage to complete the ride, but cannot get path up the hill to connect it (missed opportunity for learning to build paths vertically

Overall:
 - often questions are raised as to the purpose or use of things in the game. Typically the peer offers their understanding of how something works, whether they feel the hypothesis is valid or not (doesn't matter how assured they are). It seems that often an idea is tossed around, expected to be corrected: if the peer disagrees, it is expected that they will correct or add on to the definition initially proposed.
   - might consult a different source (peer team) if confusion remains
 - much time was wasted failing to
   - make custom coasters
   - build paths on unlevel ground
   - deleting objects
(These may have been prevented with a little teacher guidance: missed learning opportunities)
F.3.3 Day 3

(loud announcements at start of period)

(player attempts to load game from day 2, but fails)
(new game started on same level as day 2)

«<142046>

«<154085> decide to build custom rollercoaster, based on success from previous day & auto-complete feature
- started by manually deleting each piece of tower on hill (same as day before)
- play with 'auto-complete' feature to finish coaster; determine it has to be close in order to work
«<855380>

continue by placing entrance / exits: «<1012641> but cannot connect a footpath to the custom coaster
- try adding a transport ride (doesn't work either)
  - a misinterpretation of the purpose of transport rides
  (missed opportunity: teacher might be able to clarify)
- look for an elevator-like contraption (fail)
- try to raise surrounding terrain to make a path
  - expensive
- end up giving up and building other rides
  - missed opportunity: a little time from a teacher or peer could have helped this repeat problem
«<1543490>

«<1860364> (missed opportunity)
Players notice a problem with a ride: entrance / exits not properly made (no way to get in or out)
- try to delete the ride (changing entrance / exit / footpaths too hard)
- give up trying to delete the ride, since problem figuring out how to delete stuff
«<1915713>

Interface problem: want to change park entrance fee and cannot figure out how to change the price (cannot click / modify it)
- opportunity for interface improvement: a pop-up or something telling the user that the price cannot be modified, or explain a way to change it (after hovering over the price)
«<2047943>

(building a custom ride)
figure out that cannot pass boundaries of park
figure out auto-complete ride needs to be close to work properly
cannot figure out how to add entrance and exit (not enough room before entrance for the exit)
realize the problem, but cannot delete the entrance in order to re-place it (try the delete / trash can, when they need to use the customize ride icons)
end up giving up (again) and start a new ride
(HIGHLIGHTS ANOTHER MISSED OPPORTUNITY THAT PERPETUATES WITHOUT EXTERNAL HELP FROM A TEACHER OR PEER)

(go back to making a thrill ride (no customization)
however, path doesn't connect properly (another missed opportunity that perpetuates: learning to create paths)

(delete path and re-create it: strategy works, connects paths properly (learning takes place: learn a strategy to connect paths with ride entrances / exits. however, not very efficient, still not totally fixed)

(focus on setting prices, getting rides fixed for a while)

Overall:
many of the same problems plaguing the group from previous days are hurting their progress again today (day 3). a little help from a peer or teacher might help them out a lot
problems building custom coasters (don't realize pre-made ones exist)
problems with elevated footpaths
problems deleting objects
not much new learning: same strategies, pitfalls, etc. as previous day
problems that perpetuate: new strategies tried, not always successful. might be an interface problem, but could overcome with some support from peers or teachers

F.3.4 Day 4

(last day)

first few minutes: girl playing solo
- she is able to try stuff out that can't be done while playing
  with male teammate (he dominates control of game)
  «<373022>
Upon return, she reports findings: Found out how to add entrance
// exit, and gives mouse control back
- doesn't seem to remember how to do entrance / exits though

«<61678> Explanation of how to fix ride entrance / exits
- non-active player figures out controls necessary, but cannot
  figure out how to move an already placed entrance
- active player ends up just deleting whole ride (problem
  unresolved)
«<685496>

«<721012> Game feedback leads students to another aspect of game:
messages suggest more mechanics are needed, so focus shifts to
staffing
- interface serves dual purpose: feedback, and redirect to other
  aspect of game
(game status messages very useful for multiple purposes)
«<871485>

«<916904> Game people getting stuck: flaw of game? Path is
created in a way that tons of people are stuck between rides and
cannot escape
- path problem
- end up deleting ride to attempt fixing problem (seem to not
  realize it's a path problem)
- ride gets deleted but people still stuck on path leading to
  nowhere (same learning opportunity is missed yet again)
«<1048903>
(delete another ride with entrance & path difficulties)

«<1376685> "it's up though" - realizing when building entrance /
  exits to ride, that a vertical path will be needed
- begin search through icons for a solution
- try terrain editing (doesn't help)
- find a button that levels ground to path (learning occurs;
  however still missed opportunity on making vertical paths)
«<1624413>

«<1743513> "Do that terrain thing again" (referring to entrance /
  path leveling)

777
- "That's what we should have done for the mountain thing" (a previous ride that they struggled with)

- terrain drop off causes path creation havoc
  - cannot get path to go down a hill
  - give up (missed learning opportunity again, same problem)

- building a bathroom: built it, but didn't notice or remember to open it
  - might be a missed affordance (interface might be improved)
  - players thought they were successful but were not (no feedback or indication otherwise) (besides tiny little red flag that they missed on the bathroom options)

- animal park: don't realize it's a self sustaining ride, keep trying to add animals and animal keepers to it, but don't need to

Overall:
- girl player plays while guy teammate is gone: try to fix stuff that he doesn't pay attention to (when playing together, guy player dominates and sort of does what he wants)
- many of the same missed learning opportunities from previous days get repeated again: paths, deleting, etc.
  - learning may have taken a better path had this group started on an easier level initially
- some game feedback isn't good enough: missed affordances and false affordances perceived by players
  - again, a more experienced peer or teacher could help, but seems like an interface flaw
APPENDIX G:

JEFFERSONIAN TRANSCRIPT NOTATION
<table>
<thead>
<tr>
<th>Symbol</th>
<th>Name</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>[text]</td>
<td>Brackets</td>
<td>Indicates the start and end points of overlapping speech.</td>
</tr>
<tr>
<td>-</td>
<td>Equal Sign</td>
<td>Indicates the break and subsequent continuation of a single utterance.</td>
</tr>
<tr>
<td>(# of seconds)</td>
<td>Timed Pause</td>
<td>A number in parenthesis indicates the time, in seconds, of a pause in speech.</td>
</tr>
<tr>
<td>( )</td>
<td>Micropause</td>
<td>A brief pause, usually less than .2 seconds.</td>
</tr>
<tr>
<td>. or ↓</td>
<td>Period or Down Arrow</td>
<td>Indicates falling pitch or intonation.</td>
</tr>
<tr>
<td>? or ↑</td>
<td>Question Mark or Up Arrow</td>
<td>Indicates rising pitch or intonation.</td>
</tr>
<tr>
<td>,</td>
<td>Comma</td>
<td>Indicates a temporary rise or fall in intonation.</td>
</tr>
<tr>
<td>-</td>
<td>Hyphen</td>
<td>Indicates an abrupt halt or interruption in utterance.</td>
</tr>
<tr>
<td>&gt;text&lt;</td>
<td>Greater than/Less than symbols</td>
<td>Indicates that the enclosed speech was delivered more rapidly than usual for the speaker.</td>
</tr>
<tr>
<td>&lt;text&gt;</td>
<td>Less than/Greater than symbols</td>
<td>Indicates that the enclosed speech was delivered more slowly than usual for the speaker.</td>
</tr>
<tr>
<td>°</td>
<td>Degree symbol</td>
<td>Indicates whisper, reduced volume, or quiet speech.</td>
</tr>
<tr>
<td>ALL CAPS</td>
<td>Capitalized text</td>
<td>Indicates shouted or increased volume in speech.</td>
</tr>
<tr>
<td><strong>underline</strong></td>
<td>Underlined speech</td>
<td>Indicates the speaker is emphasizing or stressing the speech.</td>
</tr>
<tr>
<td>--------------</td>
<td>-------------------</td>
<td>-------------------------------------------------------------</td>
</tr>
<tr>
<td>::::</td>
<td>Colon or Colons</td>
<td>Indicates prolongation of sound.</td>
</tr>
<tr>
<td>(hhh)</td>
<td></td>
<td>Audible exhalation.</td>
</tr>
<tr>
<td>— or (.hhh)</td>
<td>High Dot</td>
<td>Audible inhalation.</td>
</tr>
<tr>
<td>(text)</td>
<td>Parenthesis</td>
<td>Speech which is unclear or in doubt in the transcript.</td>
</tr>
<tr>
<td>((italic text))</td>
<td>Double Parenthesis</td>
<td>Annotation of non-verbal activity.</td>
</tr>
</tbody>
</table>

**Table 7: Jeffersonian Transcript Notation, adapted from the Transana™ web site (Transana, 2008)**

Time Stamps will take the following form:

\[ x<1624413> \]

The number in the brackets <> represents a time, in milliseconds, in the original video data (Transana refers to these as episodes).

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Adapted from:


APPENDIX H:

TRANSCRIPTS AND NOTES OF SELECTED LEARNING EPISODES
H.1 ADVANCED STRATEGIZING / GOAL ACHIEVEMENT

Collection: Learning > Level: Advanced Strategizing / Goal Achievement

Collection Comment:
Collection of episodes that show learning through strategizing; attempting to achieve goals

Collection Notes:
Description of Category
Represented here are episodes which illustrate more advanced forms of strategizing in order to achieve goals within a game. Learning is represented as a change in behavior which aims to accomplish some goals, set forth by the game as well as the gamers themselves.

Clip: MH D1 R – peer team declares war; choose to follow example
Collection: Learning > Level: Advanced Strategizing / Goal Achievement
Time: 0:05:17.4 - 0:06:34.6 (Length: 0:01:17.2)
Clip Transcript:

Peer 1: Declare war <on>
Peer 2: Do it (0.5) ha ha declare war.
L: ((Scrolling through map))
\[<322092> .(.)
Peer 1: OK, we're declaring war on uh (0.5) on Britain here. >READY AND, GO!< We just declared war.
\[<327828> .(.)
L: \[How did you declare war?\]
R: \[How did you declare war?\]
Peer 2: No idea.
Peer 1: I don't know, we just clicked [International] = ;
L: Here you can try. ((Mouse control traded from L to R))
Peer 2: [Click the] middle button with like the piece of paper
L: ((Followed the direction of the peer team; clicked on the Diplomacy (middle) button));
Peer 1: = and it gave us the ability to go to war at the very bottom.
\[<338392> .(.)
L: We don't have any "current wars". ((Reading from Diplomacy

783
Screen) Oh, let's make some negotiations.

R<344269> (.5)
R: Select uh. (.5) Who should we select? ((Clicked on 'Select Nation'))
L: Let's get ;uhh;
R: Bhutan? ((Laughs))
L: ((List of countries came up for the pair to choose from)) Let's get (. ) Germany.

R<354186> (1.0)
R: ((The pair selects Germany, which brings up a new menu of diplomatic options with Germany))
((Mouses over 'Diplomatic Relations' buttons)),
L: <Propose> (0.5) Should ((Laughs)) we declare war against them?
R: ((Scrolls over 'Declare War' in the 'Diplomatic' menu choices))

L: >NO NO, CHINA, CHINA< China, cuz they (.5) we need their oil.

R<364237> (1.0)
R: Where the hell is China? ((Clicks on 'X' button to return to previous screen))
((Clicks 'Select Nation', then clicks China)) (1.0) So like, declare war against [China?] ((Laughs))
((Clicked on 'Declare War' button))
L: [Yeah I] don't know why. ((Laughs))
R: Cuz we need their oil. ((Laughs))
L: ((Confirmed war against China))

Footnotes:
1. "In the Diplomatic panel, you can propose treaties and review alliances. As the game progresses, you can declare war, demand surrender, or beg for peace." (Making History Manual, p. 25)

2. "Major diplomatic and combat events appear here. See what treaties have been signed, wars have been declared, and regions are in conflict." (Making History Manual, p. 12)

3. "You can use the Select Nation and Select Alliance buttons to propose or modify your diplomatic agreements. To individual nations you can propose various treaties. To an alliance you can only propose or demand peace." (Making History Manual, p. 27)

4. "Your allies are countries you've agreed to defend and vice versa. If you attack a nation, your allies are expected to join your fight. If your allies attack a nation, you are expected to join them. When other nations want to join your alliance, their membership must be approved by all major allies (all playable nations)." (Making History Manual, p. 25)
Clip Keywords:
- Control: L control
- Control: R control
- granularity: short episode
- Transana Users: sharritt

Clip Notes:
Observations
- Peer team: declaring war (grabbed interest). "How do you declare war?" Explanation given by peers how to start wars. This shifts goals- picking countries to declare war (picked China)
- Peer team progress is used as a guide of what the pair should do. Seems like something interesting to try, so the pair does it.

Clip: MH D3 R - teacher reengages disengaged / bored student
Collection: Learning > Level: Advanced Strategizing / Goal Achievement
File: D:/My Documents/Dissertation/Data/video/MakingHistory-Day3-R/MakingHistory-Day3-R 2007_05_15_06_29_45.avi
Time: 0:18:26.9 - 0:20:32.1 (Length: 0:02:05.2)
Clip Transcript:

L: ((Clicked on a Navy Ship))
((Scrolled over continent))
((Clicked on a country))
((Clicked on an Airplane that brought up the 'Air Force' menu));
((Clicked on a country))
((Scrolled through continent))
((Clicked on an Airplane that brought up the 'Air Force' menu));
((Zoomed out from map))
Teacher: ((Teacher talking to other pair, offering general advice))
L: ((Scrolls over continent))
 MLS<1175728> (.)
Teacher: Jordan, how are you guys coming out?
L: ((Scrolls over continent))
 MLS<1180293> (.)
L: Uh (1.0) , geez, [it's huge]. ((Zooms out from map))
R: [Holy crap] our country is huge. ((Laughs))
L: ((Scrolls over continent))
Teacher: Are you letting Nick do any of the strategy here, (.5) or; are you just doing the whole thing yourself?
L: ((Zooms in on map)) Why is Russia so;
Teacher: Remember two heads are better than one.
 MLS<1191678> (.5)
R: ((Gets re-involved)) Look how many planes we have.; ((Laughs)) Oh crap.
L: «Clicked on a country)}
{{'Alliance' menu came up)}z Dude why is it so big? {{Scrolls across the continent})
{{Clicked somewhere in Russia})
{{'War & Peace' menu came up})3
R: {{Laughs})
L: {{Began clicking on every plane that was in the country)} Why isn't there an army over here? {{Scrolls over to right side of country})
R: Yeah, there's no point in having all that'}
L: Dude, Let's just take over the {{Continues to scroll over country})
R: We already pretty much have the world.
R:{{Laughs})
L: {{Clicks on an airplane that brings up 'Air Force' menu))1
R: What country is that?
L: {{Right clicks on a country that R had a question about})
{{Name of country appears once moused over)) China {{Laughs})
R: Attack Japan.
L: We better not start anything with China. {{Scrolls around the continent})
R: Yeah.

Footnotes:
1. "Fighting in squadrons, air units can attack land and air forces, cities, ships, and resource producers. They can also patrol and perform reconnaissance over land and water, both crucial to unfogging regions (In MAKING HISTORY, military forces are fogged. You can see your forces and your allies' forces, but most of the world lies in shadow. As you can only see enemy forces under the following circumstances, you do not know when an attack might come). Air units cannot control regions. Some unique air unit capabilities are: fighters and bombers." (Making History Manual, p. 17, 23)

2. "Your allies are countries you’ve agreed to defend and vice versa. If you attack a nation, your allies are expected to join your fight. If your allies attack a nation, you are expected to join them. When other nations want to join the alliance, their membership must be approved by all major allies (all playable nations)." (Making History Manual, p. 25)

3. "Depending on the nation you play, you might hunger for war or wish to preserve the peace. Regardless of your preference, you will almost surely be asked to fight." (Making History Manual, p. 25)

Clip Keywords:
   Control : L control
granularity: short episode
Transana Users: sharritt

Clip Notes:
Observations
- Teacher check-up: some general advice on warfare (not game specific)
- Good advice to apply to game (not specific to game, but should apply based on logic)
- Invasion strategies, military suggestions
- Asks 2nd (non-mouse-controller) student to get re-engaged in game and help out: "two heads are better than one" (this actually works, helps re-energize & re-engage him)
- Shows how teacher involvement can reengage students

Collection: Learning > Level: Advanced Strategizing / Goal Achievement > Civ4 D1/2 R - visually supported game goals (sequence)
Collection Comment:
sequence of using 'advisor' to see game goals

Clip: Civ4 D1 R - visually supporting game goals
Collection: Learning > Level: Advanced Strategizing / Goal Achievement > Civ4 D1/2 R - visually supported game goals (sequence)
File: D:/My Documents/Dissertation/Data/video/Civ4-Day1-R/Civ4-Day1-R 2007_05_10_17_26_19.avi
Time: 0:43:17.6 - 0:44:07.7 (Length: 0:00:50.1)
Clip Transcript:
((Window pops up in game, explaining the new technology item the pair unlocked))
((A description of the new technology item is listed; as well as new items that can be built))
R: ((Clicks on one of the items that can be built, then exits back to pop-up))
((Clicks 'Continue' to proceed in game))
((List of future / researchable items appears, prompting pair what they would like to research next))
R: ((Clicks first button called 'Let's see the big picture' which pulls up the 'Technology Advisor'))
R: ((Mouses over the different items to be researched next))
L: !Iron working. Can remove jungle! ((laughs))
R: ((Scrolls through the 'Technology Advisor' from left to right according to advancement))
R: "Build a Winery"? ((Surprised))

787
"So much stuff." 'Electricity'? ((Scrolls through the 'Technology Advisor' at all the different technologies listed))
R: ((Clicks on 'Electricity'))

Slow down" ((Moused over a few of the different technologies in the 'Technology Advisor'))
R: ((Clicked on the keyboard))

((Scrolled to the end of the technology list))
R: Let's go with uh = ((Game gives them a list of technology items to work on next))
L: Robotics? ('Robotics' was listed last on the technology list)

"Pottery." ('Pottery' chosen as next technological advancement))
R: ((Game moves the view to a character needing a task for the turn))
L: You can get like into the (.) you can get advanced in this game.

Footnotes:
1. The 'Technology Advisor' allows implications of decisions to be viewed by displaying a tree of technology items along with their contingencies. The 'Technology Advisor' displays all 80 technologies available to the gamer (including those available later in the game) from left to right. The technologies on the left are less advanced than the ones further to the right.

2. "'Build a Winery' provides access to the wine resource. It can be built only in a space with that resource." (Civilization IV Manual, p. 75)

3. A technology will appear on your list only when you have learned the necessary prerequisite technologies.

4. "Pottery allows your workers to construct cottages, which increase the commerce in their space. Pottery also allows you to build granaries in your cities." (Civilization IV Manual, p. 71)

Clip Keywords:
  Control : R control
  granularity : sequence of episodes
  Transana Users : sharritt

Clip Notes:
Observations
- Game interface: choices offered also can be seen from 'the big picture' in order to see consequences of player choices.
A feature of Civ 4 is to provide a visual layout of game goals, masked as 'technology advisor'. There are advisors for other important aspects of game, such as a 'military advisor', etc. These give players the feeling of being in control (like a dictator / president) of their Civilization, while visually laying out the goals / unlockables of the game.

- See Civ 4 / R / Day 2 for later manifestation of this: use the technology advisor to pick course of civilization.

Relates To
1 of 2
Relates to Civ4 D2 R - visually supported game goals (continued)

Clip: Civ4 D2 R - visually supported game goals (continued)
Collection: Learning > Level: Advanced Strategizing / Goal
Achievement > Civ4 D1/2 R - visually supported game goals (sequence)
File: D:/My Documents/Dissertation/Data/video/Civ4-Day2-R/Civ4-Day2-R
2007_05_11_19_45_35.avi
Time: 0:19:14.3 - 0:19:56.7 (Length: 0:00:42.4)
Clip Transcript:

L: What should we (.) 'Code of Law'? ((Scrolling through the list of technologies that can be researched next))
L: ((Some technology items have the word 'Recommended' after them))
((The game pops up a suggestion menu with categories for what the pair should probably work on next))
R: Hold on. Look for other kind (.5) click on 'Let's see the big picture' (('Let's see the big picture' pulls up the 'Technology Advisor'))
≡<1159936> (1.0)
R: What do we need? ((Looking at the 'Technology Advisor' screen))
≡<1164032> (.5)
R: Hold on.
L: ((Laughs))
R: Like, what stuff do we have that we (.5) Mining leads to Masonry?
L: ((Mouses-over different technologies listed in the 'Technology Advisor'))
≡<1171711> (1.0)
R: ((Looks over to peer team's screen))
L: I think the green ones are the ones we have. ((Scrolls through 'Technology Advisor' screen from left to right))
≡<1182120> (.)
L: We should probably get this. Says it leads to Monarchy. ((Mouses over 'Monotheism'))
L: ((Monotheism is not colored green))
≡<1185752> (.)
R: 'Monotheism'?
L: Yeah.
R: Really? {{(Laughs)}}
L: Oops. {{(Didn't click on 'Monotheism' from 'Technology Advisor' screen wrong menu popped up)}}
={{1190680}} {{(.)}}
L: Alright {{(Clicks 'Monotheism')}}, now I think we can get other guys. {{(Scrolls across map)}}
={{1196318}}

Footnotes:
1. "'Code of Law' enables caste system." (Civilization IV: Tech Tree & Specifications Charts)
2. The game suggests what technology items the gamers should research next.
3. The 'Technology Advisor' allows implications of decisions to be viewed by displaying a tree of technology items along with their contingencies. The 'Technology Advisor' displays all 80 technologies available to the gamer (including those available later in the game) from left to right. The technologies on the left are less advanced than the ones further to the right.
4. Green boxes are unlocked items; blue boxes have not yet been researched yet.
5. "'Monotheism' allows Judaism" and "enables organized religion". (Civilization IV: Tech Tree & Specifications Charts)

Clip Keywords:
Control : L control
granularity : sequence of episodes
Transana Users : sharritt

Clip Notes:
Observations
- Developed a complex goal set: represented well in the software. Looked at big-picture to figure out what to research next, to best help their civ.
- Good game interface: complex goals supported visually, and correlate to users' mental models (external cognition?)
- Continued support for positive aspects of visually supporting game goals. Was learned on D1, more advanced understanding and use on D2

Relates To
2 of 2
Relates to Civ4 D1 R - visually supporting game goals
Collection: Learning > Level: Advanced Strategizing / Goal Achievement > Civ4 D2 R - sending waves of soldiers to win battle (sequence)

Clip: Civ4 D2 R - sending soldiers to battle other civ
Collection: Learning > Level: Advanced Strategizing / Goal Achievement > Civ4 D2 R - sending waves of soldiers to win battle (sequence)
File: D:/My Documents/Dissertation/Data/video/Civ4-Day2-R/Civ4-Day2-R 2007_05_11_19_45_35.avi
Time: 0:04:22.0 - 0:05:40.4 (Length: 0:01:18.4)
Clip Transcript:

R: No send the other guys into the oh ,wait are those warriors too?,
((Points to warriors on screen))
L: >Yeah, Yeah, Yeah.<
R: Send them down.
L: ((Scrolls across map to different locations))
((Takes a turn by clicking on the soldiers that R pointed out))
((Clicks on a different location and ends his turn))
«<268159> (2.0)
L: ¡Whoa! ((Clicked on warriors in enemy territory))
((Clicked on enemy warriors fighting began))
R: Uh oh. That's not good. ((The pair's warriors are dying from battle))
«<284433> (.5)
L: ((Moves warriors to another location on enemy territory))
L: ((Clicks on promotion icons for military))
R: "Uh yeah they have more people now." We need more archers.
L: Where's our barracks? (1.0) ((Scrolls over map)) "What is this thing?" ((Moves mouse over to an active ring but no one is in it))
«<307049> (.5)
R: There. Barracks?
L: ((Clicks on undeveloped barracks where building has not been finished))
R: "It needs to be built I think." (1.0) Tell them to make improvements. Improvements. Down here.
((Points to Improvement icon at bottom of screen))
«<327697> (2.0)
R: Ah send them down. ((Points to group of warriors at top of map))
L: ((Clicks on the group of warriors that R suggests to move))
L: ((Moves the warriors four spots to the South where R suggested))
L: ((Ends turn))
«<339460>
Footnotes:
1. "Promotions are special abilities awarded to units that are victorious in battle. In addition, some units begin the game with one or more special abilities." (Civilization IV Manual, p. 136)

2. When a character is active, a ring will appear around them with circular arrows.

Clip Keywords:
Control : L control
granularity : sequence of episodes
Transana Users : sharritt

Clip Notes:
Observations
- Sending waves of soldiers, win some, loose some battles
(goals shift to conquest of other land / civs)

Relates To
1 of 4
2. Civ4 D2 R- grouping / amassing military
3. Civ4 D2 R- multiple units better at winning battle
4. Civ4 D2 R-won battle / took enemy civ's city

Clip: Civ4 D2 R - grouping / amassing military
Collection: Learning > Level: Advanced Strategizing / Goal
Achievement > Civ4 D2 R - sending waves of soldiers to win battle (sequence)
File: D:/My Documents/Dissertation/Data/video/Civ4-Day2-R/Civ4-Day2-R
2007_05_11_19_45_35.avi
Time: 0:05:40.4 - 0:05:58.7 (Length: 0:00:18.3)

Clip Transcript:

R: Those are our archers send them in. ((Points to archers on screen))

((Points to where L should send them))
L: I know I'm trying. ((Scrolls around the map to different locations))

((Clicks on group of archers, right-clicks on map tiles to move them))

«344917> (.5)
R: We, we can group them altogether?
L: I, I think that that all these people, horses are in the way.

((Clicks on each group))

«353517> (.5)
R: ((Laughs)) Well tell (unclear speech) people back.

«358618>
Clip Keywords:
- Control : L control
- granularity : sequence of episodes
- Transana Users : sharritt

Clip Notes:

Observations
- Sending armies / trying to group armies together

Relates To
- 2 of 4

1. Civ4 D2 R- sending soldiers to battle other civ
2. Civ4 D2 R- multiple units better at winning battle
3. Civ4 D2 R- won battle / took enemy civ's city

Clip: Civ4 D2 R - multiple units better at winning battle

Collection: Learning > Level: Advanced Strategizing / Goal Achievement > Civ4 D2 R - sending waves of soldiers to win battle

(file)

File: D:/My Documents/Dissertation/Data/video/Civ4-Day2-R/Civ4-Day2-R-2007_05_11_19_45_35.avi
Time: 0:17:52.1 - 0:19:03.5 (Length: 0:01:11.4)

Clip Transcript:

L: Should we attack them? (Clicked on own warriors)
   (Clicked on enemies warriors; fighting began)
R: "Aren't they both there at the same time or no?" Oh no. (Laughs)
L: Yeah dude. (The pair's warriors defeated the enemy warriors)
R: Promote him to be king. (Points to one of their warriors) Did it do anything? "No."
L: Yeah. (Clicks on warrior that R suggested but the Promotion icon is not available for the chosen character): I think after a while they like get the other guys back. You can only attack one section.
R: Yeah.
L: [ (Looks over at peer team screen) ]
R: [ (Looks over at peer team screen) ]
L: Can you combine forces?
Peer team: Yeah.
L: How do you do that?
Peer team: Well uh (I'm not sure you can put them together but you like
L: I mean can you like attack them with each other?
Peer team: Um I think so.
L: Ok I don't know if we can do that or not.

793
R: What is that thing? ((Points to an icon option for the character chosen))
L: ((Moused over icon that R was pointing to))
((Clicks on icon to move warrior))
R: Isn't that like move all (.5) see the 'order the selected unit to move to another tile' ((Reading from the screen prompt)) (.5) and then put them altogether or something?
L: ((Clicks on different characters))
<1126378> (1.0)
L: What's the span though? ((Clicks on 'Go To Mode' icon))?
<1134786> (.5)
R: "What does that do?"
<1142620>

Footnotes:
1. "Promotions are special abilities awarded to units that are victorious in battle. In addition, some units begin the game with one or more special abilities." (Civilization IV Manual, p. 136)

2. "Go to Mode icon orders the unit to move to a square." (Civilization IV Manual, p. 38)

3. Referring to the icon just clicked, labeled 'Go to Mode'.

Clip Keywords:
  Control : L control
  granularity : sequence of episodes
  Transana Users : sharritt

Clip Notes:
Observations
- Amassed units attack: more successful at beating opponent. Asks peer team about combining forces; attempting to create a more powerful army.

Relates To
3 of 4

1. Civ4 D2 R - sending soldiers to battle other civ
2. Civ4 D2 R - grouping / amassing military
4. Civ4 D2 R - won battle / took enemy civ's city

Clip: Civ4 D2 R - won battle / took enemy civ's city
Collection: Learning > Level: Advanced Strategizing / Goal Achievement > Civ4 D2 R - sending waves of soldiers to win battle (sequence)
File: D:/My Documents/Dissertation/Data/video/Civ4-Day2-R/Civ4-Day2-R 2007_05_11_19_45_35.avi
Time: 0:24:54.7 - 0:25:24.3 (Length: 0:00:29.6)
Clip Transcript:
794
L: "Pair moves amassed military forces into Greek city"
R: Oh that thing is deep in their village isn't it? Uh huh. "Enemy was killed by military"
"Military takes conquered city"

R: "Yeah. We need to keep it. "Given the choice to keep the city or to burn it to the ground)" Hold on. Ok. We need to keep it?
L: "(Clicks on burn the city to the ground)" No. "(Laughs)" We just earned money from destroying the barracks.
R: We destroyed three of something.

Clip Keywords:
Control : L control
granularity : sequence of episodes
Transana Users : sharritt

Clip Notes:
Observations
- Took an enemy village - won the battle, pillaged the city (destroyed it rather than keeping it).
Relates To
4 of 4
1. Civ4 D2 R - sending soldiers to battle other civ
2. Civ4 D2 R - grouping / amassing military
3. Civ4 D2 R - multiple units better at winning battle

Collection: Learning > Level: Advanced Strategizing / Goal Achievement > Civ4 D4 R - unhappy population (sequence)
Collection Comment:
identification of problem, later resolved

Clip: Civ4-Day4-R - problem identified
Collection: Learning > Level: Advanced Strategizing / Goal Achievement > Civ4 D4 R - unhappy population (sequence)
File: D:/My Documents/Dissertation/Data/video/Civ4-Day4-R/Civ4-Day4-R_2007_05_15_20_45_49.avi
Time: 0:23:46.0 - 0:24:24.7 (Length: 0:00:38.7)
Clip Transcript:
Peer team: Our people are mad.
L: "Our people are mad too it, it doesn't make sense."
R: "Click, click on our city."
L: What do all these symbols mean? "(Double clicked on a city)"

795
"City screen popped up with many new symbols placed on the city map)"
"Clicked on 'Happiness' Display and a window popped up, informing that people are unhappy due to the city being overcrowded)"
(1.0) Oh it's too crowded. (4.0)
"Clicked on the 'Happiness Display' icon again and same message came up 'it is too crowded')"
It's too crowded. ((Laugs)) What does that mean like?
(1460727) (.)
R: "Too many people." Make more cottages or something.
(1464214)

Footnote:
1. "The city screen is where most city management takes place. The City Screen also tells you how happy your city is. Further, if a city is unhappy, an "Unhappy City" icon will appear next to the city's name on the Main Screen. Unhappiness is caused by a number of factors, including overpopulation and war." (Civilization IV Manual, p. 146-149)

Clip Keywords:
- Control : L control
- granularity : sequence of episodes
- Transana Users : sharritt

Clip Notes:
Observations
- Leads to opening overview of civ map
(interface confusing: many icons that haven't been learned yet)
- Mouseovers help learn icons.
- Player then determines source of unhappiness for the civilization's people (too crowded).

Relates To
1 of 5

2. Civ4-Day4-R - crowding identified as problem
3. Civ4-Day4-R - trade proposals attempted to resolve
4. Civ4-Day4-R - move out workers to try and resolve
5. Civ4-Day4-R - build farms for more food (problem resolved)

Clip: Civ4-Day4-R - crowding identified as problem
Collection: Learning > Level: Advanced Strategizing / Goal Achievement > Civ4 D4 R - unhappy population (sequence)
File: D:/My Documents/Dissertation/Data/video/Civ4-Day4-R/Civ4-Day4-R 2007_05_15 20 45 49.avi
Time: 0:25:42.3 - 0:26:22.0 (Length: 0:00:39.7)
Clip Transcript:
R: ((Scrolls around map))
"Clicks on a military group"

L: We need to figure we need like (.5) to make it less crowded somehow. (Points at screen to area where it is too crowded) I don't, I don't know what that means.

R: (Clicked on City screen)

((Clicked on 'Food Bar'))

((Message came up stating 'Starvation')) Starvation?

L: WHAT? ((Laughs)) We need more food.

R: ((Clicks on the keyboard to get back to the main game screen))

L: (5.0) ((Looks over at peer team's screen)) Get more food.

Footnote:
1. "The Food Bar will usually show the number of turns needed for the city to increase in size; moving the mouse over the Food Bar will show the exact amount of food stored at the moment and the amount of food needed to be grown." (Civilization IV Manual, p. 147)

Clip Keywords:
- Control : R control
- granularity : sequence of episodes
- Transana Users : sharritt

Clip Notes:
Observations
- Controls are traded in the middle of episode.
- Goal expressed as trading: "need to make it less crowded"
- New mouse controller pulls up overview screen, reads "starvation"
- Shows new goal, reason for civ unhappiness: need more food

Relates To
2 of 5

1. Civ4-Day4-R - problem identified
3. Civ4-Day4-R - trade proposals attempted to resolve
4. Civ4-Day4-R - move out workers to try and resolve
5. Civ4-Day4-R - build farms for more food (problem resolved)

Clip: Civ4-Day4-R - trade proposals attempted to resolve
Collection: Learning > Level: Advanced Strategizing / Goal Achievement > Civ4 D4 R - unhappy population (sequence)
File: D:/My Documents/Dissertation/Data/video/Civ4-Day4-R/Civ4-Day4-R 2007_05_15_20_45_49.avi
Time: 0:26:22.0 - 0:27:18.1 (Length: 0:00:56.1)
Clip Transcript:

((A leader appears with a trade offer))
L: Look at all the resources we have.
R: "I know."((Clicks on accepting trade offer))
L: Just give her gold dude, we have so much gold. ((Points to gold resources on right side of screen)) Look how much gold we have compared to her. ((Points out that the leader, they are trading with, has little gold))
R: We need like, she doesn't have anything good. (( Scrolls through what the leader has to offer for trade))
R: ((Clicks 'Farewell' to current trader))
L: Look at all these workers we have.
R: ((Another leader pops up to trade))
L: That's probably why it's too crowded.
R: ((Places cursor over tradable items from leader))
((Moves cursor over tradable items from leader, as well as own items for trade))
L: There's twenty gold.
R: ((Clicks 'Farewell' without trading anything))
L: ((Tells peer team)) Our people are starving.

Footnotes:
1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now." (Civilization IV Manual, p. 101)

Clip Keywords:
Control : R control
   granularity : sequence of episodes
Transana Users : sharritt

Clip Notes:
Observations
- Trade proposals with other civs, attempt to gain food.

Related To

798
1. Civ4-Day4-R - problem identified
2. Civ4-Day4-R - crowding identified as problem
4. Civ4-Day4-R - move out workers to try and resolve
5. Civ4-Day4-R - build farms for more food (problem resolved)

Clip: Civ4-Day4-R - move out workers to try and resolve

Collection: Learning > Level: Advanced Strategizing / Goal
Achievement > Civ4 D4 R - unhappy population (sequence)
File: D:/My Documents/Dissertation/Data/video/Civ4-Day4-R/Civ4-Day4-R 2007_05_15_20_45_49.avi
Time: 0:27:18.1 - 0:29:52.1 (Length: 0:02:34.0)

Clip Transcript:

L: Look at all those workers. (.5) Just keep doing improvements. (.5)
Whoa.
R: ((Clicks on workers, selects icon to do more improvements))
((Clicks on military to move))
L: (3.0) Wait go over, the, click on him, go over the thing I want to
see what it says.
R: ((Scrolls over building icons at bottom of screen))
L: ((Points to 'Delete Unit' icon)) Cost one gold, 'builds
workshops', 'minus food' ((Describing what is eating up the food
supply)) We need something that is plus food. What, what's that?
((Points to 'Sentry' icon)) Here's plus food. You know like most
farms.
R: ((Clicked on City screen scrolling through City Build Menu)))
L: ((Clicks on 'Worker' icon))
R: We don't have Civil Service now.
L: We don't?
R: That's what it says we don't have Civil Service.
((Clicked on City screen scrolling through City Build Menu)))
L: ((Clicks on 'Worker' icon))
R: We don't have Civil Service.
L: (5.0)
R: ((Scrolls over 'Unit Action' Box))
L: (2.0)
R: What? ((Scrolls to top of map))
L: (2.0)
R: (Clicks on group of workers moves them to the other side of the
city)
L: How come they can move just when ever now? ((Laughs))
R: I don't know.
L: (.)
R: (Scrollled over 'Unit Action' Box)
L: >Wait, wait what's that? ((Points to an icon on the City Build
Menu

R: "Let's build a cottage." (Clicks on 'Pillage' icon)
L: "No it wasn't a cottage." (3.0) Maybe if you build more roads it will be less crowded.

Footnotes:
1. Building icons are only offered when selecting a worker. Workers can build things such as cottages, farms, workshops, etc.

2. "Delete Unit icon deletes the unit from play." (Civilization IV Manual, p. 38)

3. "Sentry icon keeps unit inactive until an enemy unit enters an adjacent square." (Civilization IV Manual, p. 39)

4. "The City screen is where most management takes place for the city selected." (Civilization IV Manual, p. 146)

5. With improved roads, units can move further per turn than before.

6. "When a unit is 'active', this displays its available 'action icons'. Roll your cursor over an action icon to learn more about it; click on an icon to order the unit to perform the action." (Civilization IV Manual, p. 26)

7. "Pillage is when the unit destroys an improvement in the space it occupies. If there is more than one improvement in the space, the unit will destroy the most valuable." (Civilization IV Manual, p. 39)

Clip Keywords:
- Control : R control
- granularity : sequence of episodes
- Transana Users : sharritt

Clip Notes:
Observations
- Redirect workers to make improvements that help gather food: build farms.

- Worker options: use mouseover of icons to see what actions help gather food (problem solved).

- Workers moved out of town to reduce crowding.

Relates To
4 of 5
1. Civ4-Day4-R - problem identified
2. Civ4-Day4-R - crowding identified as problem
3. Civ4-Day4-R - trade proposals attempted to resolve
5. Civ4-Day4-R - build farms for more food (problem resolved)

Clip: Civ4-Day4-R - build farms for more food (problem resolved)

Collection: Learning > Level: Advanced Strategizing / Goal
Achievement > Civ4 D4 R - unhappy population (sequence)
File: D:/My Documents/Dissertation/Data/video/Civ4-Day4-R/Civ4-Day4-R 2007_05_15_20_45_49.avi
Time: 0:29:52.1 - 0:31:34.2 (Length: 0:01:42.2)

Clip Transcript:

R: "What do we want at the market?" (Civil Market window popped up)
L: "I don't know." (.5) (What would you like to research now? window popped up) Yes. Commerce. Paper(.5)
R: (Clicked on 'Paper')
L: Alright now build some farms.
R: (Clicked on 'Skip Turn')
L: <1830241> (.5)
L: How many towns do you guys have?
Peer team: Um (.5) like five.
R: (Clicks on the highlighted 'Promote Unit' icon)
L: <1839873> (.5)
L: Yeah build, build uh
R: (Scrolled over 'City Build Menu' icons)
(R scrolled over a 'City Build Menu' icon 'Plantation')
L: >ahh build to increase food.<
R: (Clicked on 'Chop Down A Forest' icon)
(Clicked on a group of workers)
L: <1867714> (2.0)
L: Hit farm. (Points to 'Farm' icon on screen)
R: (Continues to try to move selected military to a new spot but it does not work)
(Scrolls over the 'Farm' icon but does not click it)
L: (Yawns)
R: <1878900> (.5)
R: (Drama has been unlocked on the Technology Advisor)
(The game asks 'What would you like to research next?' from a list of new technologies from the Technology Advisor)
R: (Clicks on 'Philosophy')
L: The cottages, the cottages look different. (Puts hands over mouth)
R: <1885931> (.5)
R: (Continues to have workers build in different locations)
(Clicks on 'Go To Mode' icon)
L: We're in the 1800's.

Footnotes:
1. Civic market increases the wealth of a city.

2. The research window gives options for what should be researched next. The game also provides recommendations for two of the items offered by putting the word 'Recommended' after the technology name to be researched.

3. "Paper' enables map trading." (Civilization IV: Tech Tree & Specifications Charts)

4. "Some promotions are available only to certain unit types; some require that the unit possess other promotions before they are available. There is no limit to the number of promotions a unit can receive." Sometimes the game will offer suggestions by highlighting icons in blue. (Civilization IV Manual, p. 43-44)

5. "City build screen where most of the management for a city takes place." (Civilization IV Manual, p. 146)

6. "Building a plantation will increase food production. Plantations provide access to bananas, dyes, incense, silk, spices, and sugar resources and can be built only in those spaces." (Civilization IV Manual, p. 75)

7. "The Chop Down A Forest icon instructs the workers to remove the forest." (Civilization IV Manual, p. 75)

8. "The worker builds a farm improvement in the space. Farms improve the food output of a space. Farm improvements must be built adjacent to 'fresh water sources': rivers, oases, or lakes." (Civilization IV Manual, p. 74)

9. "Drama is a technology that can be unlocked. Drama can produce theatre, globe theatre, and can adjust culture rate." (Civilization IV: Tech Tree & Specifications Charts)

10. Once the gamer has completed their last research technology then the game prompts them to do more research in order to unlock other technologies. The game will place the word 'Recommended' next to the technologies that the game suggests should be done next.

11. "Philosophy enables pacifism" (opposition to war or violence as a means of settling disputes). (Civilization IV: Tech Tree &
Specifications Charts

12. "The 'Go To Mode' icon orders the unit to move to a square that you select." (Civilization IV Manual, p. 38)

Clip Keywords:
- Control: R control
- Granularity: sequence of episodes
- Transana Users: sharritt

Clip Notes:
Observations
- Workers build farms: help food supply.

- Problem resolved

Relates To
5 of 5

1. Civ4-Day4-R - problem identified
2. Civ4-Day4-R - crowding identified as problem
3. Civ4-Day4-R - trade proposals attempted to resolve
4. Civ4-Day4-R - move out workers to try and resolve

Collection: Learning > Level: Advanced Strategizing / Goal
Achievement > RCT3 - D1/2 R - configuring ride & setting prices (sequence)
Collection Comment:
setting ride prices to win at game / make money

Clip: RCT3 D1 R - first successful ride created & configured
Collection: Learning > Level: Advanced Strategizing / Goal
Achievement > RCT3 - D1/2 R - configuring ride & setting prices (sequence)
2007_05_23_12_51_26.avi
Time: 0:23:10.8 - 0:24:38.0 (Length: 0:01:27.2)
Clip Transcript:

L: Let's just do um; (.5) [let's do] ((Pulls up the ride list choices menu));
R: [Water?]
L: No. Let's do some uh-
R: Thrill rides, Junior Rides? (Reading options from 'Rides' menu)
L: (Clicked on 'Junior Rides') Yeah that's fine. Well there's only the one so
R: The Merry-Go-Round (Laughs)
L: Yeah so we'll do that one like [here] (Clicks on Merry-Go-Round) (Places the Merry-Go-Round in a clearing)
R: [Yeah]
L: Is that cool?
R: Yeah that's good.
L: <And>
R: A path. (.5) What's that? Oh the booth to get in. (Ride entrance for the Merry-Go-Round appears)
L: (Placed entrance to get into ride) "Yeah."
L: (Placed ride exit)
R: Exit booth and entering booth. Perfect.
L: (Clicked on 'Paths') (Successfully connected the path from the entrance / exit to the main path) Cool.
R: [Is there any]
L: [Go on the Merry-Go-Round] Yeah I think people are getting on.
R: [What are] all these things mean? (Points to the ride options) Can we change them?
L: (Scrolls over the ride options) (An explanation of what each ride option appears as the group scrolls over each option)
R: 'Test Results, open' Make sure it's open.
L: 'Not assessed yet.' (Reading ride status. Not yet assessed because it hasn't been tested)
R: Go to.
L: 'Vehicles.' (Clicked on the 'Colors' icon for the vehicles of the ride. A selection of colors popped up)
R: All the colors of the ride. Oh that's cool. (Clicked on the 'Colors' icon) (Changed the colors of the vehicles)
L: "That's good."<1455555> (.)
R: Go to this one. ([Click extension] [Point to the 'green flag']) [Guest Thoughts] none. (Scrolls over the ride options) (Clicked on 'Guest Thoughts' icon)
L: Make sure it's open.
R: (Continues to scroll over ride options menu) 'Maintenance'. (Reads from the pop up of the icon he just scrolled over)
R: Go the flag
L: ((Clicks on the flag and changes it to green)) [It is open.]
R: [Then hit] the green. There. Yeah see now it's open.

L: Have we tested it? ((Clicks on 'Test Results' icon))
R: 'Excitement Rating'. Low.
L: "Whatever. It's all good. I don't care as long as people go on it."
R: Oh we got a visitor.
L: Let's build more rides. ((Clicks on 'Rides' icon on left side menu))

Footnotes:
1. The Ride Menu lists all of the different rides that are available to be built. As gameplay progresses, more rides are researched and become available. Some rides can be custom built, where each piece of the ride is manually assembled.

2. Junior rides are rides for children. All of these rides have pre-made designs and can be placed anywhere in the park.

3. Entrances need to be built for each ride so that the customers can get on the rides. This option is located in the ride option menu and appears once a ride has been placed in the park.

4. Footpaths need to be made from the main pathway to the entrance and exit of each ride. Paths guide the customers to the ride's entrance and exit. Without a path, customers can not get on to the rides.

5. When a ride is placed, ride option icons appear around the central ride icon. One icon consists of a green and red flag. The green flag, once clicked, opens the ride for business. Clicking the red flag closes the ride down.

6. An icon labeled 'Guest Thoughts' shows the thoughts of people on the ride. Reading the thoughts of the guests on the ride can help determine whether to raise prices, fix broken down rides, or schedule more frequent inspections for rides.

7. The 'Maintenance' icon shows how frequently a ride is scheduled for inspection. The gamer can change the frequency. It shows the last time the ride broke down and what failed when it broke down.

8. The gamer can check to see if the ride has been tested. Testing gives specific features of the ride, such as maximum speed, G forces, excitement rating, etc. Testing can be done by clicking an orange flag (between the green / red flags to open / close the ride). In this
case, testing was not completed by the gamers.

**Clip Keywords:**
- Control: L control
- granularity: sequence of episodes
- Transana Users: sharritt

**Clip Comment:**
First ride created, opened, path constructed

**Clip Notes:**

**Observations**
- Change mind - decide to build some rides. create a ride successfully and add path to ride (quickly)
- Shows it's good to start on beginner level: much easier to figure out than more advanced levels
- Explore icons around new ride: explore ride options. change color, make sure the ride is open for business (default is not open yet)

**Clip: RCT3 D1 R - second ride created, first time setting price**

**Collection:** Learning > Level: Advanced Strategizing / Goal Achievement > RCT3 - D1/2 R - configuring ride & setting prices (sequence)

**File:** D:/My Documents/Dissertation/Data/video/RCT3-Day1-R/RCT3-Day1-R 2007_05_23_12_51_26.avi

**Time:** 0:24:38.0 - 0:27:12.1  (Length: 0:02:34.1)

**Clip Transcript:**

L: Let's do †um ((Pulls up 'Ride' menu)) nº
((Scrolling through 'Ride' list))
R: You should put another one right here. ((Points to top of screen in a clear location)) Or no?
L: No we don't have any more junior rides. ((Clicks on 'Rides' icon and then 'Junior Rides'))

R: We need to get rid of all these trees. I don't like all of these trees. I say we keep those bushes but get rid of the trees. ((Points to the bushes and trees around courtyard area of park))
L: How do we get rid of them?
R: "I don't know.*
L: ((Clicks on the 'Delete Object' icon))
R: "There. (.5) Yeah.*
L: ((Successfully deleting the bushes and trees by clicking on the trees that are highlighted after L clicks on them)) †[We lose]†
R: [I just think there's too much]

L: †We lose money.†

806
R: We do?
L: I think so [watch].
R: We could put rides there.
L: Watch. Yeah we lost money every time we do it so we're not doing it anymore.
R: Alright, put in rides first.

L: Ride, Ride! 'Thrill Rides'? (Pulls up 'ride' menu)
R: Yeah do Thrill Rides like over here. (Points to the left of the screen where the terrain is clear)
L: (Clicks on 'Thrill Rides')
(Three different rides appear - chooses 'Chair swing') Ok Let's do Chair swing. (Places the Chair swing ride in an open area)
R: Yeah then do a 'Sky Sling', There's no music, oh we pick the music. Yeah.

L: Clicks on 'Entrance'
(Places the entrance / exit for the ride)
R: Oh good now it's gonna rain.
L: NO! (A Windows Update for the computer popped up and booted them out of their current game)
(Clicked on 'restart later')
R: Restart later. You're interrupting our game.
L: I know. Um paths now?
R: Yeah.

L: Clicked on 'Paths' icon
(Clicking on tiles near ride to place the path) (.5) I should do [where's the other one?]
R: And [where's that other one?] It's right there.
L: It is?
R: Yeah. So just connect there. (Points to the entrance for the ride)
L: Cool. (hhh) And then lets open it. (Clicks on green flag icon to open ride)
R: Yeah click on that. Green. Then pick the music. Where's that music thing that came up? 9

L: (Placed an additional path piece)
R: Oh you just put something.
L: Oops. (Clicked on trash can icon, then clicked on new path tile and removed it)

L: 'Finances', 'Maintenance' (Reading from pop up window)
R: (Scrolling over the ride option icons)
L: What's this?
R: (Clicks on 'Test Results' icon)
R: How about this one? ((Points to the 'Colors' icon for the ride)) (5.0)

L: "No that's not it."

R: ((Laughs))

L: How much money do you want it to go up? (Because there's a lot of people coming.)

R: Make it like 2 dollars. ((Laugh)) More?

R: ((Laugh))

L: "Suckers." ((Raises the price on the ride))

R: We have to go see if they come in or not.

L: Uh oh they're stopping. ((Laughs))

R: ((Laugh)) Oh they're going in.

Footnotes:
1. The Ride menu displays all of the rides that are available at this time.
2. Junior rides are rides for children.
3. Delete icons appear as a garbage can (delete single item) and a double garbage can (delete multiple items). The gamers try to delete the trees using the 'delete multiple' button.
4. When the gamer clicks on a bush or tree to delete it, a minus sign appears and they lose money.
5. Every ride must have an entrance /exit in order to have the customers be able to get to and from the ride.
6. The paths icon allows the gamer to create a path from the main park path to their new ride. This will allow for the customers to get to the new ride.
7. Referring to the other entrance where a path needs to be made.
8. When a ride is selected, icons pop up around the ride icon. One icon that pops is a green / red flag. Clicking on the green flag opens the ride for business. Clicking on the red flag closes the ride down.
9. A customizable ride option is setting the music (to be played) on the ride.
10. The 'Test Results' icon displays ride properties (speed, G forces, ratings, etc.) after the first test is conducted on the ride.
11. 'Colors' icon can change the color (paint) of the ride.

Clip Keywords:
- Control : L control
- granularity : sequence of episodes
- Transana Users : sharritt

Clip Comment:
Learned how to repeat procedure to build a ride; but set prices this time

Clip Notes:
Observations
- Decide to build second ride: this time repetition helps: know how to place ride, add entrance, and footpath, and make it open for business (much faster than first ride).
- Explored options (price, music) that were not discovered when making first ride.

Clip: RCT3 D2 R - adding rides / food stands, setting prices
Collection: Learning > Level: Advanced Strategizing / Goal
Achievement > RCT3 - D1/2 R - configuring ride & setting prices (sequence)
Time: 0:05:41.1 - 0:10:41.4  (Length: 0:05:00.3)

Clip Transcript:

L: "Um." (.5) Let's open it (laughs)
R: (laughs) Construction.
L: ((Scrolling over 'Ride' menu))
R: ((Clicks on 'Construction' icon)) Ok here we go. Now.
L: <356667> (.)
R: Look we need uh, hey where did it go ((Points to screen))
L: Let's come back (.5) into the
R: You need to go that way. ((Points to far left of screen where ride was before camera view changed)) You can't even see it any more!
((We're building a spiraling ride that went up in the air))
((The view of the ride being built does not allow them to see the pieces that they are trying to add to the existing pieces that they already placed in the park))
L: ((Clicking on pieces of ride to be placed))
R: We can't place a track piece anywhere.
L: Where can we place it?  ((Continues to click on different track pieces; same error message pops up)}
R: Oh [there we can do it.]
L: [Can we connect it?]
R: You should do it somewhere over this way so we can um (.5) "why is it going that way." What happened to the thing that went underground?
L: Alright, ¡I'm like, it's just going, like out of control, like I'm not even like touching it, I'm not even gonna. ((Laughs))
R: ((Laughs))
L: Ok [now.]
R: [There now] you can.
L: Oh we can't put any pieces. (.5) ((Error message popped up saying that they couldn't place any more track)) Why can't we put any pieces?
R: I don't know.
L: ((Clicking on different icons in the build menu)) NO. ((Error message is still coming up stating that they cannot place anymore pieces)) [What is going] on-
R: [Should we be] playing it just so we can make money or no?
L: Yeah. (.5 Let's get more rides dude let's just forget this ride. We're not even opening it. ((Laughs))
R: ((Laughs))
L: Like ((Laughs)) Honestly we just gotta build some more rides so...
R: Is this one open?
L: Yeah.
R: High Flyer? ((Scrolls over ride and name of ride pops up))
L: Hmmm Hmmm. Hit the play button though.
R: Where?
L: Up here. ((Points to the play button on the top left corner of screen)) So we're making money.
R: We're making money!
L: Let's put some food restaurants in. ((Points to 'Stand' icon on left side to build a restaurant))
R: Alright. ¡Well let's get more rides.↑ We need to put more rides but we'll do that to. Um so-
L: ((Clicked on burger stand)) Uh no, no, no ,no, no. ((Placed burger stand in park)) Do do we have to have a path?
R: ((Clicks on 'Paths' icon))↑ No. ((Attempts to place a path between burger stand and adjacent foot path but it does not work))
R: No?
L: Yeah let's put it where where a ton of people are too. Ok?

R: Wait how much are the burgers? Make sure they're a lot.
L: No not here.
R: Cuz you know people will buy it.
L: Yeah.

R: Ok well we gotta open it. ((Points to the green flag))
L: ((Clicks on green flag to open burger stand))
R: Open. Then go to the price.
L: ((Clicks on 'Financials' icon)) Oh those are extras. ((Shows prices of burgers, onions, ketchup, mustard etc))

R: Yeah. The biggest burger make like 2 dollars. No make it 3.
L: ((Clicking to change price of burger)) No make it 2.
R: 2!!
L: We got a quarter pound burger.

R: You go to like Six Flags and it's like 6 dollars for a burger and people buy 'em. ((Laughing))
L: This isn't Six Flags, ok?
R: Well it's not Disney World either. Not Disney World either. ((Laughing))
L: [I'm Jackie, this isn't Six Flags. ([Laughing]) OK, well, Disney World is a little bit better than Six Flags. *

R: Make that like
L: ((Continues to click to change prices)) This is 3 dollars. ((Scrolling through list of menu items for the burger stand))
((Changing the prices at every food stand))
R: Ok. 'Quarter Pounder' ((Reading from 'Product' cost list))
L: [No we'll do three fifty.] ((Laughs))
R: [No that's half]

R: There and that can be-
L: That should be more
R: Yeah I was gonna say that should be more. And make that three.
L: "Two Seventy" [yeah three.]

R: Ok.
L: ((Scrolls through food menu items for the burger stand)) That's good.
R: What do these check things mean? 'Check these to add pickles to your standard burger' ((Reading from pop up after scrolling over check box)) No. They have to buy extra for everything. ((Laughs))
L: Ok.
L: Yeah let's put in another burger place. Like in front. Ok?
R: Oh go to their ice cream place and open it up first. (1.0) We've got to make their ice cream more expensive.
L: ((Changes price of ice cream)) It's good to go.
R: Uh a single scoop should be two dollars.
L: ((Clicks on ice cream stand))
((Clicks on 'Product' cost list and changes price of single scoop)) How much?
R: Make it one-
L: Gosh ((Computer booted them out of their game again for updates clicked restart later))
R: One seventy five.
L: >A single scoop< dollar fifty. ((Laughs))
((Changes the price on each item served at the ice cream shop))
R: ((Laughs))Ok
L: Double [two]
R: Two twenty five
L: [Two]
R: 'Chocolate single scoop' ((Reading from 'Product' cost window)) A dollar
L: [Seventy five] ((Continuing to change prices on the ice cream shop))
R: [Seventy five] ((Laughs)) It's more if you like that chocolate.
L: Mmm Hmm.
R: Two dollar or no? Two fifty I guess.
L: ((Clicks the price to two fifty)) That's it.
R: Ok. What are people's thoughts on these places?
L: ((Clicks on 'Guest Thoughts' icon))
R: There are no thoughts.
L: ((Clicks on burger stand to see guest thoughts))
R: No thoughts either.
L: Awesome. Thanks people.
R: Do we have enough people? Go to customers.
L: ((Clicks on the 'Stats' icon for the ice cream and burger stand))
[Zero]
R: [Zero]
L: 'Awesome.'
R: It is, both of them are open right?
L: Yeah. Let's go get some more rides.
Footnotes:
1. The ride menu shows all of the types of rides that are available to build.

2. The construction icon allows the gamer to construct a custom roller coaster, piece by piece, instead of placing a pre-designed ride in the park.

3. At the top left of the screen there are buttons to play, pause, and fast-forward time. At any point in play gamers can pause time until they want to resume business, or fast-forward the game play to speed up time (to watch the park / profits change over time).

4. The path icon is needed in order to connect rides to footpaths in the park. The paths allow the customers to enter and exit the rides.

5. When the green flag is clicked it will open the ride for business. When the red flag is clicked it will close the ride.

6. The financials icon displays what the ride is making per hour, any losses, and total income from the ride.

7. The gamer can change the prices on all food items for any food stand previously built (a selection box at the bottom, which propagates price / menu changes to all food stands of that type).

8. The 'Guest thoughts' icon displays the thoughts of the customers. Viewing the thoughts provides information on customers' thoughts and can influence the adjustment of the attraction's price or options.

9. The stats menu shows specific stats of the ride or stand in graph format.

Clip Keywords:
- Control : L control
- granularity : sequence of episodes
- Transana Users : sharritt

Clip Notes:
Observations
- Move on to other stuff; forget about incomplete ride and move on with game

- Creating food stands, setting prices, attempting to make money

- Options on food figured out using mouse-overs: good interface design.
**Clip: RCT3 D2 R - adding ride, setting price, watching people to set price**

**Collection:** Learning > Level: Advanced Strategizing / Goal
**Achievement:** RCT3 - D1/2 R - configuring ride & setting prices

**File:** D:/My Documents/Dissertation/Data/video/RCT3-Day2-R/RCT3-Day2-R 2007_05_23_16_04_12.avi

**Time:** 0:10:41.4 - 0:14:32.2  (Length: 0:03:50.8)

**Clip Transcript:**

L: Right? ((Scrolls through 'Rides' menu))
R: Yeah.
L: 'Water' (.5) 'Gentle' (.5) 'Thrill' (.5) Let's just do thrill rides. More thrill rides. ((Clicks on 'Thrill Rides'))
(R: Four rides pop up to choose from)
R: Do do a Sky Sling. That looks cool.
L: Where is it?
R: Right there. ((Points to the ride that says 'Sky Sling'))
L: Right here? ((Scrolls cursor over the icon that R pointed at))
R: Hmm Hmm

((656918) 1.0)
R: People are thrown into [the sky]
L: [Whoa ho ho ho] ((Places thrill ride that is rather large in size))
R: ((Laughs))
L: "Nice." ((Places ride in an open area))

((664189) .5)
R: You have to make sure that the price on that is expensive.
L: ((Placed the entrance and exit to ride)) Yeah. (.5) Because they are super expensive.

((675702) .5)
R: Love how it's right near to the burger and ice cream place.

((Laughs))
L: ((Clicked on 'Paths' icon))
(Started building a path from new ride to main pathway))<Yes.>!

((681574) 1.5)
R: Then connect it. Yeah do that.
L: ((Continues to place the path from the entrance / exit to the main path))

((Connects the two paths))

((695262) .5)
R: Can you put benches in here and stuff?
L: ((Continuing to place paths)) Hmm Hmm.
R: We should put some benches. 'Scenery'.
L: ((Scrolls over left menu bar where the names of the icons pop up))
What's mix master? ((Scrolled over 'Fireworks'))
R: "I don't know."

((721193) .5)
"Don't want that." Yeah. And marble bench. Yeah, it's a dollar, perfect.

Why don't you go off the screen and see if it's clicked. Yeah it's clicked.

Alright, well. ((Places benches all over pathway))

Is this one open? ((Points to a ride))

Hmmm Hmm

((Clicks off the screen))

Should we open it now?

(((Clicks on Sky Swing ride)))

Where were the prices again?

Is it operating? Mode. Hmmmm.

((Clicks on all icons surrounding ride options)) Those are just the colors.

This one ((Points to the 'Financial' icon))

A lot of people are going. So, that's really good.

We got to raise the price though.

I don't think there is a price. ((Clicks on 'Financial' icon))

((Changes the price of the ride))

There's no price for it?

No.

What's financial or finance?

((Clicks on the 'Financial' icon)) Oh yeah there we go.

Yeah it should be more than a dollar.

((Clicks at the price to change it))

You could, like, seven

No way.

Not seven? Otherwise it's four. Watch put seven and see if these people go on it?

We'll go five. Five fifty, or [six?] [Six]. Go six.

Ok.

If people don't go on the ride then we will lower it. But I think they will.

Dude, a lot of people are going. So let's start a new ride.

Yeah.

Are people gonna get on it though?
R: Lower it. Oh no people are going on it. Oh look we already made thirty four dollars. (.5) No it's good.
L: I'm just gonna make it a five. «Clicks price higher) Honestly.
R: Five?
L: Yeah, honestly I think like that's a better idea. «Readjusts price on ride)
R: Well all those people just went on it.
L: I know. I still think five's more reasonable.
R: I Mmmm, I K...
L: Well we can always change it so...

Footnotes:
1. The ride menu shows all of the types of rides that are available to the gamer to build.

2. Thrill rides are pre-designed rides and typically less expensive than roller coasters.

3. Every ride must have an entrance and exit in order to have the customers get to and from the ride.

4. Footpaths need to be connected to the entrance and exit of each ride. Paths guide customers to the ride's entrance. Without a path the customers cannot get on the rides.

5. It is possible to have a fireworks show in your park. Fireworks can help attract customers.

6. It is possible to add garbage cans, signs, path lights, etc. to the park.

7. When a ride is placed, ride options / icons appear around the ride icon. A green and red flag icon appear. The green flag, once clicked, opens the ride for business. The red flag, once clicked, closes the ride down.

8. The financials icon displays what the ride is making per hour, any losses, and total income from ride.

Clip Keywords:
  Control : L control
  granularity : sequence of episodes
  Transana Users : sharritt

Clip Notes:

816
Observations
- Building ride & path, customizing / setting price
- Price is set by watching whether people get on ride

Summary
Control : L control 12
Control : R control 6
Transana Users : sharritt 17
granularity : sequence of episodes 15
granularity : short episode 2

Clips: 17  Total Time: 0:27:35.7
H.2 DISCOVERY OF INTERFACE / TESTING FUNCTIONALITY

Collection: Learning > Level: Discovery of Interface / Testing Functionality

Collection Comment:
Early learning marked by discovery of interface and hypothesis testing (trying out / trial & error)

Collection Notes:
Description of Category
Episodes in this section mark the discovery of the game interface and basic controls. Functionality of objects in the interface are learned in order to accomplish the learning of basic gameplay as well as more advanced functionality / properties of game components.

Clip: Civ 4 D1 R - exploring the interface
Collection: Learning > Level: Discovery of Interface / Testing Functionality
File: D:/My Documents/Dissertation/Data/video/Civ4-Day1-R/Civ4-Day1-R 2007_05_10_17_26_19.avi
Time: 0:06:36.0 - 0:09:23.1 (Length: 0:02:47.1)

Clip Transcript:
R: "What are these things?" ((Points to 'Advisor Buttons'))
L: I don't know I think that just tells us what we have. ((Clicked on 'Financial Advisor' icon))
R: Zero.
L: ((Laughs)) Cuz we suck. ((Clicks on 'Religion Advisor')) (.5) We have no religions founded yet? ((Exits out of 'Religion Advisor'))
R: (unclear speech) Is that what it is behind you?
L: Yeah. (.5) Alright, now ((Scrolls to a different part of the map))
R=425567> (.)
R: What are these guys doing?
R=427343> (.5)
L: They're like;
R: They're like digging, or mining.
L: ((Points with finger to the group of workers who are mining)) Yeah they're mining.
R=431019> (.)
R: What are those two doing?
L: ((Scrolling over map))
These are like, our explorer guys. The scouts. We have to do some exploring to find some stuff. (Scrolls to another part of the map)

(The map shows that the scouts can move three turns to the left).

(Clicks on a part of the map) (2.0) "Where should we go, like over here? (Scrolls map to upper left of screen) (.5) No we should go this way." (Gestures with cursor to lower-right of map)

L: (Clicked on scouts again)

(Clicked on a group of scouts again)

(Clicked on non discovered land again, nothing is happening)

(Clicked on 'Skip Turn' icon in the Unit Action Box)

R: Press enter. (Advances turn)

L: Uh there we go. (Scrolls map to left side of continent)

(Clicked on a group of workers)

R: Do you how do you tell them what they're gonna do and then press enter when they do it?

L: Yeah. (Clicked on 'Details Box')

(Clicked on both lit up 'City Management' icon's)

R: Why is there dogs barking? (Laughs) (.5) Turn on Citizen Automation. (Clicked on 'City Management' icon that was lit up)

Turn on citizen automation? (Reading from pop up 'Turn on Citizen Automation')

(Clicked on groups of civilians)

(Clicked all over the map on different items)

(Clicked on group of workers)

(Scrolled map South)

(Clicked on a different area of the continent)

(Two turns showed up in order to move the workers to the new area)

(Scrolled map back up to left corner)

(Clicked on a different open area of the continent)

(Clicking several times around on continent nothing is happening)

(Clicked on a different group of workers)

(Game popped up showing it would take two turns to move the current selected group of workers to new area)

(Scrolling over icons in 'Unit Action Box')

(As L scrolls over icons the names are popping up on screen)

(Scrolls over same icons a second time)

R: Try to send them down further this way. (Pointed to an open area in the southern part of the map)
L: {{Clicks on open area where R pointed to}}
{{Clicks on group of workers}}
{{Game shows it will take two turns to move the workers to the new spot that R suggested}}
R: Let's see if we can explore more.
L: {{Clicked on group of workers}}
{{Clicked on open area where R suggested}}
{{Game popped up three turns for this move}}
{{Clicked to have workers build a road}}
R: And then (1.0) press enter. Press enter for them.
L: {{Clicked on workers again}}
{{Game indicated four turns it to move the workers to where R suggested}}
R: Like when you're on them press Enter. Where did they go?

((Clicks on workers again))
((Game indicated four turns it to move the workers to where R suggested))
R: I told those guys to build a road. ((Laughs)) Have them go do something. (.5)
((Clicked on workers again))
((Game indicated that it would take four turns to move the group to where L clicked))
((Scrolls up on map))
((Clicks on some wild animals on the map))
We should collect those as food. We should go this way. ((Scrolls to undiscovered land))
((Clicked in the undiscovered land area))
((Game indicated it would take four turns to move workers to that area))

Footnotes:
1. "These buttons allow you to access the various advisor and information screens which help you manage your growing empire:
   Domestic Advisor
   Finance Advisor
   Civic Advisor
   Foreign Advisor
   Military Advisor
   Technology Tree
   Religion Advisor
   Victory Screen
   Palace Screen"
   (Civilization IV Manual, p. 27)

2. "You can see how all of your money is being spent." (Civilization IV Manual, p. 53)
3. "This screen displays your civilization's current religious status - which cities have which religions, the percentage of population in each city which follow each religion, and so forth. On this screen you can adopt or change your "state religion"." (Civilization IV Manual, p. 78)

4. The game shows how many turns a move will take by numbered circles along a pathway to the new location. You can then see how many turns it will take and decide if you would like to move or not.

5. By pressing Enter you will end your turn.

6. "The Details Box displays how many xps the currently-active unit has, and how many are needed for the next promotion." (Civilization IV Manual, p. 26)

7. Below the Draft button are the two hurry production options. The button on the left requires the Slavery civic and sacrifices some of the city's population to complete production. The button on the right requires the Universal Suffrage civic and requires the expenditure of gold to hurry production. Each of these buttons will be lit up only if the appropriate civics are being employed; otherwise they are grayed-out and cannot be used.

8. "Clicking the Citizen Automation button gives the governor permission to manage the city's population points as it sees best." (Civilization IV Manual, p. 153)

9. "When a unit is "active," the Unit Action Box displays its available "action icons"." (Civilization IV Manual, p. 26)

10. Undiscovered land is black on the map. Once land is discovered it appears on the map.

Clip Keywords:
- Control : L control
- Conversation : Questioning Interface
- granularity : short episode
- Transana Users : sharritt

Clip Notes:
Observations
- Lots of peer discussion on purpose of things: what is this? oh, it probably does this. Example: what's this? it's our explorer. He discovers stuff (uncovers map). Follow up is discussion of where to send him (strategize on which part of map to uncover first) / shows learning of feature of game: explorers and their purpose

- What are these?
- What does this do? (often followed by mousing over buttons after clicking the thing)

-- Players ask out loud to get peer feedback, if they understand what is going on. This is an opportunity for teachers to help: explaining what a thing does to clear confusion and increase advancement speed of game players

- Seems that a good game offers much of this info: dialog when first item of a type is built, etc.

Clip: Civ 4 D1 R - Explanation of basic game control
Collection: Learning > Level: Discovery of Interface / Testing Functionality
File: D:/My Documents/Dissertation/Data/video/Civ4-Day1-R/Civ4-Day1-R 2007_05_10_17_26_19.avi
Time: 0:11:01.0 - 0:11:56.4 (Length: 0:00:55.4)
Clip Transcript:

R: "Right click (.5) click (.5) borders expanded." Like if you click on people and you tell them what to do, and you click Enter each time. Craig, what are you doing?
L: Zooming In. ((Zooms in on map))
((Scrolling around map))
"<672751> .5)
R: Like, click on those people again. ((Points to a group of workers)) (.5) Now tell them where to go. And what to do. (.5) Why did we build a road?
L: ((Clicked on the group of workers that R suggested))
((Clicked on 'Build Road' icon) I don't know. ((Scrolls to bottom of map)) So we can get through?
((Clicks on open land))
((Workers move to new area))
((The workers start building the road))
((Laughs)) See, now we can get through.
"<695504> ,
R: Press Enter.
L: ((Clicks on workers))
R: Now click no, on the other guys, above them.
L: No, those are our explorers, those are our scouts.1 ((Points to the group of workers working on the road))
R: No, click on the other guys. Then press Enter.
L: ((Clicked on the group of workers))
((Clicked on open land))
((Workers moved to new area))
((Pressed Enter))

822
(Screen showed road being added after turn ended)

(Whoa.

R: See then they built their road.

L: Oh Ok I see. (Clicks on the workers building the road)

Footnotes:
1. "Order the worker to build a road (and later, railroad) in the square it occupies. Roads can be built on any land space (except for impassable spaces)." (Civilization IV Manual, p.74)

2. Pressing Enter (on the keyboard) will end the turn.

Clip Keywords:
Control : L control
granularity : short episode
Transana Users : sharritt

Clip Notes:
Observations
- Non-active player: offers explanation of how game works "you click people and tell them what to do, then hit enter, then they do it"
- Shows the learning of many things, most importantly the turn-taking style of Civ 4 (Press Enter comes up a lot, which is the way of advancing a turn).

Clip: Civ 4 Dl R - peer team as social affordance, progress checked
Collection: Learning > Level: Discovery of Interface / Testing Functionality
File: D:/My Documents/Dissertation/Data/video/Civ4-Day1-R/Civ4-Day1-R 2007_05_10_17_26_19.avi
Time: 0:39:38.3 - 0:40:13.5 (Length: 0:00:35.2)

Clip Transcript:

R: (Clicked on 'Tech Investment Percentage' icon)

L: "Awesome city." (Talking to peer team)

R: (Clicked on 'Military Advisor')

L: Which guy are you?

 Peer team: Uh!, (mutters name of his Civilization)

R: (Clicked 'Exit' on the 'Military Advisor' screen)

L: Mark's in first place, dude.

R: What? (Laughs)
L: ((Laughs)) He just (.) he's doing good

R: How did you make money?

((Clicked on 'Technology Advisor' icon))
((Technology tree popped up))
((Clicked on a blue colored technology))
((Clicked on the same blue colored technology))

Peer team: I dunno.

L: ((Laughs)) You have like all these symbols, it's weird.

R: ((Clicked on a different blue colored Technology))

Peer team: These things?

L: Yeah. No. Like those, and those, uh, what is that, like bread?

Peer team: Uh...

R: ((Clicked on a green colored technology))

L: Bread and...

Peer team: I guess.

R: ((Clicked on a different green colored technology))

((Double clicked on the same green colored technology, nothing is happening))

L: "Alright, Matt let's do something."

Footnotes:
1. "This displays how much of your civilization's income is presently invested in researching new technologies." (Civilization IV Manual, p. 26)

2. The military advisor displays everything you need to know about your military.

3. The 'Technology Advisor' allows implications of decisions to be viewed by displaying a tree of technology items along with their contingencies. The 'Technology Advisor' displays all 80 technologies available to the gamer (including those available later in the game) from left to right. The technologies on the left are less advanced than ones further to the right.

4. The technologies that have already been unlocked are green. The ones that are blue have not been researched yet by the civilization.

Clip Keywords:
- Control : R control
- granularity : short episode
- Transana Users : sharritt

Clip Notes:
Observations
- Game objectives consulted... peer progress checked again. Prompts questioning of peer team: "how did you make money?", etc.

- Shows important things happening: goals as a means of re-motivating gamers; peer teams as a social affordance; idea of making / needing money borrowed from real life;
  social affordance of peer team: peer team is a tool to check progress;
  competition as motivation

Clip: Civ 4 D3 R - game manual as affordance
Collection: Learning > Level: Discovery of Interface / Testing
Functionality
File: D:/My Documents/Dissertation/Data/video/Civ4-Day3-R/Civ4-Day3-R
2007_05_14_22_41_32.avi
Time: 0:06:01.2 - 0:08:44.8 (Length: 0:02:43.6)
Clip Transcript:

L: >Why is this, like, < sad? (Clicks on a group of workers)
((Points to the group of workers that has a sad face next to them))
((Clicked on an open area of land))
((Game showed how many turns it would take to move the workers to the new location))
((Workers moved to new location))

R: Give me the book. Craig give me the book.
L: Yeah. ¡Look up the sad thing, and see what it means! ¡(Hands game manual to R)!
((Scrolls to bottom of map))
((Clicks on 'Build Road' icon))
((Game shows number of turns it will take to make a road))
((Scrolls further South on map))
((The number of turns increases to build a road))
((Clicks on an open area of land))
((Scrolls back up to the top part of the map))
((Uses the keyboard for a shortcut key))
((Map moves to the left))
((Uses the keyboard again))
((Clicks on a group of workers))
((Scrolls to bottom part of map))
((Clicks on an open area of land))
((Game shows it will take two turns to move the group of workers to new location))

L: ((Reading dialog)) 'Buddhism has spread in your land. Converting will produce, -smiley's.'- Yes. ((Clicks 'Yes')) (1.0) ((Workers moved to new area selected))
((Map moved to the left))

825
(Clicked on workers)
(Clicked on another group of workers)
(Clicked on 'Chop Down a Forest' icon)
(Clicked on a Military Unit)
(Clicked on 'Automated Build Improvements')
(Clicked on left side of map)
(Clicked on bottom of map)
(Clicked on a group of workers already working nothing happened)
(Clicked on a different group of workers)
('City Build Menu' options came up)
(Clicked on map)
(Clicked on a group of workers)
(Clicked on 'Automated Improve Nearest City' icon)
(A new technology was unlocked)
R: We can build a plantation now. ((Laughs))
L: Yeah then we can do the obvious things. "What would you like to research next?" window popped up? "Monarchy?" ((Clicks over 'Monarchy'))
There's a winery? ((Laughs))
L: ((Scrolls to bottom part of map))
(Zooms in on map)
(Scrolls around on the map)
(Scrolls over to bottom of map)
(Screams can be heard)
Uh no.
R: They're taking over our village?
L: We got attacked. ((Scrolls around the bottom part of map))
R: Are you gonna put - are you gonna send people down there?
L: ((Clicked on a group of workers))
R: Is, is that us?
L: We lost our city. ((Scrolling around map))
R: ((Continues to look through game manual))
L: ((Scrolls around map))
((Clicks on 'City Build' menu))
((Clicks on the far right bottom icon in the 'City Build' menu))
Footnotes:
1. "The sad face next to a civilian means that some citizens in the city are unhappy." (Civilization IV Manual, p. 57)

2. "Order the worker to build a road (and later, railroad) in the square it occupies. Roads can be built on any land space (except for impassable spaces)." (Civilization IV Manual, p. 74)

3. The game has keyboard shortcuts. They are listed in the game manual.

4. "The worker will move about your civilization, building any improvements the computer thinks would be the most useful." (Civilization IV Manual, p. 76)

5. "This is where you can select what the city should construct next: a unit, a building, or a wonder." (Civilization IV Manual, p. 153)

6. "The worker will build improvements for the nearest city only." (Civilization IV Manual, p. 76)

7. The research window offers choices for what should be researched next. The game provides recommendations for two of the items offered by putting the word 'Recommended' after the technology name to be researched.

8. "Monarchy allows Winery and enables hereditary rule." (Civilization IV: Tech Tree & Specifications Charts)

9. "The city build menu lists all of the military units and buildings that can be constructed there. You can change a city's current production by clicking on an item in the list. Buildings that appear greyed out have been "unlocked" but cannot currently be built. [Rollover] the grey button to get popup help about why that building cannot be constructed at this time." (Civilization IV Manual, p. 50)
Observations
- Something unclear: chose to look up in game manual (affordance taken up: use the game manual to figure out things not made clear enough by the interface)

- A good idea to have game manuals handy for students while playing the game; they use them
  (lost interest in manual [game grabbed non-active player's interest]: question not answered)

- Game manual might be an affordance discussed: useful for supplying info to game players

- R player flipping through manual still. Game slowly draws his attention away from the manual, and he seems to forget why he picked it up in the first place

- potentially a missed opportunity for the manual

Clip: MH D1 R - learning to move military units / use game interface
Collection: Learning > Level: Discovery of Interface / Testing Functionality
Time: 0:11:50.5 - 0:14:05.0 (Length: 0:02:14.5)
Clip Transcript:
L: «Clicked on a 'Destroyer' ship»
R: Alright go attack someone.
«715074> (...)
L: «Ship now has a green circle around it»
«(Clicks in the 'Operational Map' under ship options)»
«(Scrolls through ship options)»
«(Clicked on an order for the ship, nothing happens)»
«(Clicks on the ship again)»
So where do I... «(Clicked under 'Combat Reports')»
R: Just go like (.5) attack Britain or something.
L: «( Scrolls over to another ship)»
R: Attack Cuba.
«743009> (.5)
L: «(Clicked on a ship order)» What's disband mean? «(A window popped up asking to disband or not to)»
R: Break apart.
L: «(Clicks 'No')»
«(Clicks on a different order for the ship)»
«747408> (.5)
L: How do you pick a place for it to go? (Scrolled around the ship chosen)
R: You gotta ah ah um right click.
L: (Zoomed out of map)
L: (Clicked on a ship in the Gulf of Mexico)
L: (Clicked on same ship in the Gulf of Mexico)
L: (Moving mouse around the Florida region)
L: (Clicked on land)
L: (Clicked on the same ship in the Gulf of Mexico)
L: (Clicks on South Carolina)
L: (Changes view of camera)
L: (Continues to change the view of the camera)

"North Carolina."
L: (Clicks on the same ship in the Gulf of Mexico)
L: (In the 'Operational Map' the options for the ship pop up)
L: (Zoomed out from map)
L: (Scrolls to the Atlantic Ocean)
L: (Scrolls over to Europe)
L: (Zooms in on Europe)

(2.0) Oh. (4.0) Let's put that over here.
L: (Laughs)
R: (Zooms in on map) We will just join in this little battle
L: (Clicks on a naval battle near China already in progress) (.5) Yeah.
L: (Clicked 'End Turn')
R: Is it going like all the way around the world or something?
L: (The green movement line is going half way around the world)
L: 'End Turn'. (Laughs)
L: (Places hands under his chin) What? (Clicked on 'End Turn')
R: Oh there we go. (Laughs) (8.0)
L: Oh? We've got something going on. (Clicks on 'Mini Map')
L: (Clicks on Europe on the 'Mini Map')
L: (Game shows an explosion in the middle of the Atlantic Ocean)
R: Wait is that us?
L: (Clicks on the explosion, which signifies a battle)
L: (Clicks on the explosion a second time)
L: (Zoom in on explosion)

Footnotes:
1. "Escort Destroyers—an advanced level of destroyers—are the only ships that can see submarines." (Making History Manual, p. 20)
2. "From the Operational map, click on a naval fleet. A green circle
appears to show that it has
been selected. That fleet's information will appear in the right hand
panel." (Making History Manual, p. 20)

3. "The Operational map is central to playing MAKING HISTORY. From
here, you can move forces and view military divisions, battles, cities,
regions, nations, and resources. You can click on any city, region, or
nation in the game." (Making History Manual, p. 9)

4. "Combat reports offer summaries of ongoing battles. Click on a
report to view details." (Making History Manual, p. 11)

5. "A green arrow will appear, outlining your path. The division panel
will detail the "travel
time" for the division." (Making History Manual, p. 20)

6. "Use the mini map to quickly move around the world. Clicking
anywhere on the mini-map will take you immediately to that destination.
The default view is of your nation." (Making History Manual, p. 8)

Clip Keywords:
Control : L control
granularity : short episode
Transana Users : sharritt

Clip Notes:
Observations
- At this point, basically just learned how to move military stuff
around (and hit 'end turn'). objectives of game still not clear.
- Group joins a battle already in progress.

Clip: MH D1 R - unclear objectives, use peer team for
feedback
Collection: Learning > Level: Discovery of Interface / Testing
Functionality
File: D:/My Documents/Dissertation/Data/video/MakingHistory-Day1-
R/MakingHistory-Day1-R 2007_05_10 20_50_36.avi
Time: 0:04:18.0 - 0:04:30.6  (Length: 0:00:12.6)

Clip Transcript:

L: Alright, I'm just gonna hit 'End Turn' [so then...] ((Clicked on
'End Turn'))

Peer team: [How do you guys figure] out what you're supposed to do?
R: See what happens. ((Laughs))

L: 
((Addresses peer team)) We haven't done anything yet.
R: I just click 'End Turn' ((Clicked on 'End Turn'))

Peer team: That's what we did. ((Laughs))
Clip Keywords:
  Control : L control
  granularity : short episode
  Transana Users : sharritt

Clip Notes:

Observations
- Unclear game objectives. Asked peer team, they did the same thing.
- Shows peer team as a social affordance: getting feedback to reduce confusion

Clip: Civ4 D1 R - learning to build first city

Collection: Learning > Level: Discovery of Interface / Testing Functionality
File: D:/My Documents/Dissertation/Data/video/Civ4-Day1-R/Civ4-Day1-R
2007_05_10_17_26_19.avi
Time: 0:04:30.2 - 0:04:53.2 (Length: 0:00:23.0)

Clip Transcript:

R: Press 'Enter' already.
L: Oops city. >¡WHAT?><¡YEAH.> ((Laughs))
((Game prompts for city name. L erases the city name suggested by the game))
R: That was all me. ((Laughs))
   =<280410> (.).
L: City name? Whatever we will just leave it the same. ((Retypes the
   suggested name back in))
   =<284838> (.).
R: ((Laughs))
L: Whenever ((Clicks 'Ok'))
   ((Laughs))
R: What? ((Laughs))
L: Ok whatever. Alright. (('What would you like to build next'
   window pops up with recommended choices))
R: "Like you could build another city?"  
   =<292779>

Footnotes:
1. "Cities are built by settler units. If the settler is in a place
   where a city can be built, the “build city” action will appear in the
   settler’s action box. Simply click on the action button and the settler
   will disappear, to be replaced by the new city. The program suggests a
   name for this city, or you can give it any name you want. (Once built,
city names cannot be changed.)" (Civilization IV Manual, p. 45)

2. When you build a new city, a window appears saying 'What would you like to build in (your city name)?' "The units and buildings you construct should reflect your objectives. Your specific objectives will vary from game to game and over time during a game, but the "Early Objectives" list is a good place to start." (Civilization IV Manual, p. 59)

Clip Keywords:
  Control : L control  
  granularity : short episode  
  Transana Users : sharritt

Clip Notes:
Observations
- Attempting to build home city / R person suggested where to build, it worked (success)

Clip: Civ4 D1 R - discussion of research / turns to complete
Collection: Learning > Level: Discovery of Interface / Testing Functionality
Time: 0:28:07.4 - 0:28:17.9 (Length: 0:00:10.6)

Clip Transcript:

R: Sailing. {{'What would you like to research now' window popped up}}
L: YEAH. Sailing. {{Clicked on 'Sailing'}} "Cuz it's so." Ah then that that shows how many turns there is until it's done. {{Pointed to 'Research Bar'}}
R: "Yeah."
L: {{Scrolls to top of map}}
{{Scrolls to bottom of map}}

Footnotes:
1. The research window gives options for what should be researched next. The game also provides recommendations for two of the items offered by putting the word 'Recommended' after the technology name to be researched.

2. Sailing is a technology that allows trading in coastal areas.

3. "The Research Bar shows what technology you are currently researching and how many turns until research is completed." (Civilization IV Manual, p. 27)

Clip Keywords:
Control : L control
granularity : short episode
Transana Users : sharritt

Clip Notes:
Observations
- Sailing; interface is learned: showed how many turns until item is complete (green bar at top)

**Clip: RCT3 D1 R – learned play / pause interface**

Collection: Learning > Level: Discovery of Interface / Testing Functionality
Time: 0:00:32.7 - 0:00:42.7 (Length: 0:00:10.0)

Clip Transcript:

R: Right. Hit the pause button so we can like build it. ((Points to upper left screen to Pause button)) "Perfect."
L: ((Clicks on Pause button)) Ok. Well they take money every time you pause it.
R: You do?
L: I think. It just went down. ((Scrolls over left side menu options)) Um

Footnotes:
1. At the top left of the screen there are buttons to play, pause, and fast-forward time. At any point in play gamers can pause time until they want to resume business, or fast-forward the game play to speed up time (to watch the park / profits change over time).

Clip Keywords:
- Control : L control
- granularity : short episode
- Transana Users : sharritt

Clip Notes:
Observations
- Pause game to build stuff: play / pause / fast forward figured out quickly.

Collection: Learning > Level: Discovery of Interface / Testing Functionality > MH D1 R – using airplanes (sequence)

Clip: MH D1 R – figuring out how to move airplanes

Collection: Learning > Level: Discovery of Interface / Testing Functionality > MH D1 R – using airplanes (sequence)
Alright this guy (.5) needs to go (.5) over here.  ((Clicks on a plane in Georgia))  (1.0)  How do you move 'em again?  

The plane doesn't move. How do you move 'em again?  

The planes won't move (1.0) like I can get the (1.0) armies to move but I can't get the planes to move.  

Do you know how to move planes?  ((Clicks on the same plane in Georgia))  

Do you know how?  ((Scrolls through US continent))  

No. Do you know how?  

No (Laughs)  

That would be really helpful. How do you get your file like that? It would make it so much easier. Having this crazy...  

((Changing the view of the map))  

((Zooming in and out on map))  

You just right click it.  

Ohhhh (Laughs)  

Alright, somehow we just need to get... uh, what the heck?!  

What the heck?  ((Scrolling across midwest region of US))  

(Right clicked on an army in Canada))  

(Clicked on an army in US that was engaged with Canadian forces))  "What the heck?"  

We are going to kill them. How do you move those planes?!  

((Clicked on an airplane in Georgia))  

('Air Force' menu popped up))  ((Clicked on 'Rebase' in the 'Air Force' menu))  Oh here we go. (.5) Canada. What the heck? Why isn't Canada in here? ((Scrolls through list of states / countries to find Canada))  

Maybe you gotta send (.5) try sending the one from New York to
Canada.

L: (Continues to scroll through states / countries), Or to Michigan., (Continuing to scroll through list of states / countries)

L: (Continues to scroll through the list of states / countries to attack)

R: Yeah go to Minnesota. Then we can attack them from there.

L: (Clicks on Minnesota) Go (Scrolls over continent)

L: (Sighs, places hands up by mouth)

L: (Scrolls through map along green active path from Georgia to Minnesota)

Footnotes:
1. "Every nation in MAKING HISTORY belongs to one of four ideologies: Authoritarian, Communist, Democratic, or Fascist. With the Ideology map you can see which nations share ideologies. You can also click on regions, nations and capital cities." (Making History Manual, p.9)

2. "With the In Supply map you can see what trade routes are open to your nation. Occupied regions and enemy lands are “out of supply”. Your military divisions need open supply lines to remain armed and at full strength. From this map you can also click on regions, nations and capital cities." (Making History Manual, p.10)

3. "The Operational map is central to playing MAKING HISTORY. From here, you can move forces and view military divisions, battles, cities, regions, nations, and resources. You can click on any city, region, or nation in the game." (Making History Manual, p.9)

4. When a military unit is given orders to attack an enemy, a green arrow appears between them both (drawn from your military unit, pointing at the enemy unit to attack: showing a path to the enemy). This shows that the unit is on the move towards the enemy. With each turn passing, the military unit will follow the green path and advance towards the enemy until the enemy is reached, at which point the battle begins.

5. "Fighting in squadrons, air units can attack land and air forces, cities, ships, and resource producers. They can also patrol and perform reconnaissance over land and water, both crucial to unfogging regions (In MAKING HISTORY, military forces are fogged. You can see your forces and your allies' forces, but most of the world lies in shadow. As you can only see enemy forces under the following circumstances, you do not know when an attack might come). Air units
cannot control regions. Some unique air unit capabilities are: fighters and bombers."  (Making History Manual, p.17, 23)

6. When rebase is chosen from the Air Force Menu "a green arrow will outline the squadron's path to the new region. It will take one turn for the squadron to move to its new base."  (Making History Manual, p.17)

Clip Keywords:
Control : L control
granularity : sequence of episodes
Transana Users : sharritt

Clip Notes:
Observations
- Much time wasted trying to learn how to move & use airplanes
- Group asks their peer team for help but they do not have the answer as to how to move the planes.
- Group continues to click, right click, and click on other menus to try to figure out how to move the planes.
- Left student gets very frustrated when he finds that the planes still have not moved.

Relates To
1 of 2

2. MH D1 R - figured out how to use airplanes to bomb enemy

Clip: MH D1 R - figured out how to use airplanes to bomb enemy

Collection: Learning > Level: Discovery of Interface / Testing Functionality > MH D1 R - using airplanes (sequence)
Time: 0:28:11.9 - 0:29:34.3  (Length: 0:01:22.4)

Clip Transcript:
R: {{Clicked on different airplanes around the map}}
{{('Air Force' menu popped up)}}
{{Right clicked on an airplane}}
{{(Options for the airplane popped up)}}
{{<1706739>  (.5)}}
{{(Clicked on American flag)}}
{{(Clicked on a plane in Massachusetts)}}
{{('Army' menu popped up)}}
{{(Clicked on an airplane in New Hampshire)}}
{{('Air Force' menu popped up)}}
Oh they took over so many of our ((Scrolling map across Northeastern U.S.))

R: ((Right-clicked on an enemy target in Maine))
((A menu appeared offering the option to bomb them))
((Mouse control traded from R to L))
R: Oh crap =
L: Oh how did you =
R: = They're taking over all of our states.
L: = no we can actually bomb someone now.

R: Oh (.5) how did you do that? :
L: I don't know you did it. ((Laughs))
R: Did I?;
L: Yeah ((Laughs))
R: Ah geez;

L: Ah sweet (1.0) alright bomb them. ((Clicked on one of their airplane units))
((Clicked on an enemy targeted army))
R: It's like (.) hold it down or something.
L: ((Double clicks on airplane))
(('Air Force' menu pops up))
((Right clicks on enemy army))
((Clicks on their army))
((Clicks on an airplane))
(('Air Force' menu pops up))

L: There. (1.5) Wait. (8.0) ((Clicked on airplane))
((Mouses over airplane))
((Options for the airplane moused over pop up))
((Chooses air mission)) Air mission. Alright there we go. ((Scrolls across US towards Illinois))

Footnotes:
1. "Fighting in squadrons, air units can attack land and air forces, cities, ships, and resource producers. They can also patrol and perform reconnaissance over land and water, both crucial to unfogging regions (In MAKING HISTORY, military forces are fogged. You can see your forces and your allies' forces, but most of the world lies in shadow. As you can only see enemy forces under the following circumstances, you do not know when an attack might come). Air units cannot control regions. Some unique air unit capabilities are: fighters and bombers." (Making History Manual, p.17, 23)

2. "Army units are called "primary units" because they are the only
military forces that can control land regions. Conquering and defending land regions is essential to game success. Army units fight in divisions, which can contain any combination of Infantry, Armored, Artillery, Missiles, or Mobile forces. Within those categories, there are different types of armed units. Some are available at the start of the game, others you can develop through research." (Making History Manual, p.16)

3. Figured out how to send an airplane to bomb an enemy target.

**Clip Keywords:**
- Control: L control
- Control: R control
- granularity: sequence of episodes
- Transana Users: sharritt

**Clip Notes:**
**Observations**
- Learned how to use airplanes to bomb enemy.
- Right member of group did not know that he was the one that figured out how to bomb enemies. Left member reassured him.
- The group then tested out bombing an enemy.

**Relates To**
2 of 2

1. MH D1 R - figuring out how to move airplanes

**Collection:** Learning > Level: Discovery of Interface / Testing Functionality > RCT3 - controlling camera / view (sequence)

**Collection Comment:**
sequence of figuring out how to use the movement / camera angle (interface)

**Clip: RCT3 D1 R - cannot control interface**

**Collection:** Learning > Level: Discovery of Interface / Testing Functionality > RCT3 - controlling camera / view (sequence)

**File:** D:/My Documents/Dissertation/Data/video/RCT3-Day1-R/RCT3-Day1-R 2007_05_23_12_51_26.avi

**Time:** 0:07:20.8 - 0:08:35.2 (Length: 0:01:14.4)

**Clip Transcript:**

L: I wouldn't. Oh, no! (.5) "Gosh." Confusing. ((Changes camera view))

((Camera is stuck in the mountain along side the park))
((Changing angle of camera still stuck in the mountain))
L: ((Zooms out from park)) Not working out for us that well. There we go.
R: Seriously
L: ((Still attempting to get camera view to move to center of park))
Gosh, alright I'm getting out of this one.
L: OK, "I'm getting kind of frustrated at this folks, ((Clicks on 'Delete Object' icon))
((Camera view keeps changing and the pair cannot get the view that they want))
R: Does it keep popping it back up?
L: ((The camera view of the park keeps going from sky to ground)) Yeah.
L: I can't get it, here, ((Laughs)) you do it, just try it.
R: ((Takes over control of the mouse))
L: You have to use like use, the um, yeah, that, yeah and you have to like click it to move, and then move the mouse. No, hold, hold that,
R: ((Trying to control the camera view with the advice of L))
((Zooms in and out of park))
L: NO that the middle button and then move it. (.5) Then you scroll. 2
L: Are we going to build a path?

Footnotes:
1. 'Delete Object' is signified by single and double trash can icons (delete single, delete multiple). After clicking one of these icons you can delete objects in the park by clicking on them.

2. L offers explanation of his understanding of how to move the camera to R.

Clip Keywords:
- Control : L control
- Control : R control
- granularity : sequence of episodes
- Transana Users : sharritt

Clip Notes:
Observations
- Confused: cannot figure out view controls to center screen where they want- can swivel around, but haven't figured out how to move L/R/up/down
- Mouse control traded: explained to peer how to improperly move the view around

- Failure to learn how to control camera movement in game causes havoc and confusion: could be easily fixed by help from peer or teacher.

Relates To
1 of 4

2. RCT3 D2 R - cannot move camera view
3. RCT3 D2 R - more camera problems, explained to peer
4. RCT3 D2 R - figure out movement by asking peer team

Clip: RCT3 D2 R - cannot move camera view
Collection: Learning > Level: Discovery of Interface / Testing
Functionality > RCT3 - controlling camera / view (sequence)
2007_05_23_16_04_12.avi
Time: 0:00:00.0 - 0:01:59.5  (Length: 0:01:59.5)
Clip Transcript:

R: I am trying to figure out how to get over there. (Talking to researcher, who does not offer help))
{(Zooms in and out of camera view)}
{(Swivels camera view by moving mouse)}
{(Zooms in on park)}
{(Swivels the view of the camera)}
{(Zooms out)}
{(Zooms in and out)}
{(Swivels camera view from right to left in a circle)}
{(Zooms in on park)}
{(Zoomed in and out on park)}

Clip Keywords:
- Control: R control
- granularity: sequence of episodes
- Transana Users: sharritt

Clip Notes:
Observations
- Struggling with interface: cannot change view

Relates To
2 of 4

1. RCT3 D2 R - cannot control interface
3. RCT3 D2 R - more camera problems, explained to peer
4. RCT3 D2 R - figure out movement by asking peer team

Clip: RCT3 D2 R - more camera problems, explained to peer
Collection: Learning > Level: Discovery of Interface / Testing
Functionality > RCT3 - controlling camera / view (sequence)
2007_05_23_16_04_12.avi
Time: 0:02:37.0 - 0:03:12.7 (Length: 0:00:35.7)
Clip Transcript:

R: We're working on it.
L: Of course.

R: I can't get over there. I spent literally five minutes just trying
to get over to the ride. (Zoomed camera in on park)
L: Oh no. Wait why are we back to here?
R: (Swivels view of camera from left to right)

R: ((Laughs)) I can't (.). Because when we left I guess the mouse
moved. (Clicked on ride that was in the process of being built)
L: There we go.

R: ((Laughs)) Where did they even go? (Zooms in on ride)
L: I don't know.

Clip Keywords:
  Control : L control
  granularity : sequence of episodes
  Transana Users : sharritt
Clip Notes:
Observations
- Explanation to peer: cannot move camera over to ride

Relates To
3 of 4

1. RCT3 D2 R - cannot control interface
2. RCT3 D2 R - cannot move camera view
4. RCT3 D2 R - figure out movement by asking peer team

Clip: RCT3 D2 R - figure out movement by asking peer team
Collection: Learning > Level: Discovery of Interface / Testing
Functionality > RCT3 - controlling camera / view (sequence)
2007_05_23_16_04_12.avi
Time: 0:03:13.5 - 0:03:53.3 (Length: 0:00:39.9)
Clip Transcript:

841
L: Liz, do you know like how to move it so like you can like «(Laughs)» (.5) control it like perfectly so you know where exactly to go? Because we're like moving it and it's not even working. (.5) Like we're trying to get like down here and we're scrolling but it only goes to there. «(Scrolls mouse to zoom in and out)» «(Clicked near the point where the camera is swiveling the view, off to the side of the park)» Peer team: Um you can scroll like by moving it to the edge of the screen. Move your mouse to like the edge of [the screen] «<217607> (.«)
R: [Like this way] [That's what I] «(Points to right side of screen all the way to edge)» Peer team: [Yeah just like that way] L: «(Points the cursor to the edge of the screen and the camera moves right, back over the middle of the park)» OHHHHH. R: «(Laughs)» L: «(Continues to scroll to edges of screen to move around camera view)» «<225618> (.«)
Peer team: It's easier that way.
L: Yeah it is. Geez. «(Now able to view and look around park with camera successfully)» Peer team: Yeah there are some things you just have to...
L: It's like ((Laughing)) I don't know how I didn't get that. «(Continues to scroll to edges of screen to move around camera view)» «<233193>»

Clip Keywords:
Control : L control
  granularity : sequence of episodes
  Transana Users : sharritt

Clip Notes:
Observations
- Learned how to move camera: change view by moving mouse to edge of screen.
- When teammate arrives, confusion continues. ask peer team, which explain to move mouse to edge of screen.
- Movement of camera finally figured out!
Relates To
4 of 4
1. RCT3 D2 R- cannot control interface
2. RCT3 D2 R- cannot move camera view
3. RCT3 D2 R- more camera problems, explained to peer

842
**Collection:** Learning > Level: Discovery of Interface / Testing Functionality > RCT3 D2 R - Learning to construct paths / ride entrance & exit (sequence)

**Clip:** RCT3 D2 R - cannot connect path to ride entrance / exit

**Collection:** Learning > Level: Discovery of Interface / Testing Functionality > RCT3 D2 R - Learning to construct paths / ride entrance & exit (sequence)

**File:** D:/My Documents/Dissertation/Data/video/RCT3-Day2-R/RCT3-Day2-R 2007_05_23_16_04_12.avi

**Time:** 0:33:50.2 - 0:34:53.5 (Length: 0:01:03.3)

**Clip Transcript:**

L: Is that cool? «Places ride near a main path»
R: Yeah. Is the pathway going to be hard to make?
L: “No.” «Places the entrance / exit for the ride»
R: It's on a hill «Laughs»
L: “Well it shouldn't have been.”

R: We should have stuck with the other one.
L: I know! «Laughs» Oops «Clicked on the different path options»
R: We should go back. «Laughs»

R: How do you get? Do you guys know how to do like inclines; for like paths? «Zoomed in on ride»
Peer team: Yeah. There's like a I don't know there's like a button for it or something.
L: Oh is that what! «what! it is, a button?» Thanks for the help. «Clicks on a different type of path»
R: «Laughs»

R: It's not gonna work. «Chuckles»
L: Alright, fine we're gonna make it work. (.5) That was a bad spot to put it in. We should of put it in the middle. «Changes cameras view to middle of park where the land is flat» But we can do more rides.

**Footnotes:**

1. Every ride must have an entrance / exit in order to have the customers be able to get to and from the ride.
2. The paths icon allows the gamer to create a path from other paths in the park to their new ride. This will allow the customers to get to and from the new ride.

3. If you have a ride that is on a hill (elevation above or below the footpath) you must make your path a ramp in order to connect the path to the ride entrance and exit. Path creation has options (icons) for vertical incline or decline of foot paths.

**Clip Keywords:**
- Control : L control
- granularity : sequence of episodes
- Transana Users : sharritt

**Clip Notes:**

**Observations**
- Path problem.
- Insufficient response to help them, so give up and make a different ride.

**Clip: RCT3 D3 R - cannot create a path / entrance to ride**

**Collection:** Learning > Level: Discovery of Interface / Testing
Functionality > RCT3 D2 R - Learning to construct paths / ride entrance & exit (sequence)

**File:** D:/My Documents/Dissertation/Data/video/RCT3-Day3-R/RCT3-Day3-R 2007_05_24_18_45_02.avi

**Time:** 0:14:15.4 - 0:25:43.5 (Length: 0:11:28.1)

**Clip Transcript:**

R: I wonder if things will fit.
L: No they won't, oh.
R: How they gonna leave?
L: Whatever. ((laughs))

((Clicked on 'Paths')):
((Attached one piece of path to the entrance)):

R: ((laughs))
L: "I don't know"

…<865332> (.5)
L: "No more mechanics?"
R: Yeah
L: Alright, where's that again? ((Scrolling through side menu))
R: The mechanics 'Park Management'.

…<876781> (.5)
L: "Oh we don't have anybody." (('Park Management' menu pops up with staff))
R: There's a mechanic.
L: "We need a janitor."
"We need a couple of mechanics." ((Clicks to add mechanics and janitors)) "We need a couple of everything." "No no don't need an 'Animal Keeper' though."

"Two 'Entertainers'. We need to change the 'Entertainers' costumes. ((Clicked on entertainer in the park to bring up his own menu choices)) ((Clicked on costume choices)) ((Changed the costume of the Entertainer)) Something scary."

"Two 'Entertainers'. We need to change the 'Entertainers' costumes. ((Clicked on entertainers in the park to bring up his own menu choices)) ((Clicked on costume choices)) ((Changed the costume of the Entertainer)) Something scary."

"We got to drop them somewhere. (.5) I think you're holding him."

"Yeah. He's right there."

"Ok well then we'll (.5) put him (.5) let's go over here. ((Places the new staff member)) (.0) Alright, let's do another ride. Or else let's just [open this one.]"

"[You gotta do] a path. When you get down."

"Um ((Clicks on the new ride)) (.5) We have to do financials as well."

"Is this the financials? ((Clicks on ride being built)) ((Options for ride pop up)) How much three?"

"Three I would say six. That is a cool ride. I would pay six for it."

"You would? ((Clicks on price of ride)) ((Raises price to six dollars))"

"Yeah it goes in the mountain out of the mountain."

"That's true."

"This is going really slow."

"((Clicking through price of ride to raise to six dollars)) I know isn't it?"

"((Continues to click through to six dollars)) Do you want to go to four just because it's like ((Laughs)) really slow? (.5) We'll try after that. (.1)"

"((Clicks on Fast Forward button)) Ok super fast forward let's go. (.1) Alright, let's open this sucker. Oh we have to draw a path. You're right."

"And an exit."

"Where?"

"Go from there I don't know how to go down. ((Points to side of left
mountain terrain}
L: Hmmm Hmmm Hmmm
R: 'High speed bridge' I'm guessing.
L: Do we have to to any I think there are some like lifts that you can do
like
R: We're gonna lift you
L: Yeah.
R: We're gonna lift you up there?
L: It's under like the rides but (.5) "I have to go to the bathroom
though."

((Trade mouse control from L to R))

R: ['Transport Rides']
L: Yeah it's [under Transport Rides]
R: Ok I am going to figure this out.

((Moves around piece of new ride))
((Places on top of the mountain))
(1.0)
((Scrolls over ride piece options))
(.5)
((Scrolls over ride piece options again))
((Scrolls through menu options on left side of screen))
((Clicks on 'Paths' icon))
((Clicks on a path))
((Scrolls over to top of mountain))
((Places a piece of path))
((Moves mouse from left side of computer to right side))
((Zooms in between two mountains))
((Scrolls over to top of mountain where new ride is being built))
((Places a path piece on top of the mountain covering the whole top
where the new ride is being built))
((Scrolls over to the menu options on the left side of screen))
((Scrolls back over to the top of the mountain where new ride is being
built))
((Scrolls back over to the menu options on the left side of screen))
((Places a ramp piece on to the existing ramp piece coming off the side
of the mountain))
((Zooms out from ride area))
((Places two more ramp pieces to the existing ramp piece coming off the
side of the mountain))
((Scrolls over menu options on the left side of the screen))
((Clicks on 'Ride' menu))
((List of rides pops up))
((Clicks on same ride already being built))
((Scrolls over to ride being built))
((Clicks on 'Path' icon))
((Moves new path piece over to existing ramp pieces but they do not connect))
((Adds a new ramp piece to the existing ramp))
((Clicks on another site for a ramp piece but R cannot connect them))
((Moves camera view, shows more of the mountain view behind the ride being built))
((Scrolls over to right side of ride being built))
((Clicks on 'Financials' icon))
((Increases the cost of the ride being built))
((Clicks on 'Guest Thoughts' icon))
((Clicked on ride 'Stats' icon))
((Clicks on 'Entrance / Exit' icon))
((Adds another swirling rail to the rails already in existence on the ride being built))
((Clicks on the swirling rails several times))
((Deletes a swirling rail on the ride being built))
((Deletes all of the swirling rails on the ride being built))
((Scrolls to left side of mountain side))
((Places a swirling rail piece in a different location closer to the front of the mountain top))
((Adds another swirling rail on top of the existing rail))
((Zooms camera in on ride being built))
((Deletes all the swirling rails))
((Zooms out from ride))

L: ((Back from bathroom)) Did you get it?
R: ((Zooms out from ride)) Um no. Because I would've thought that the elevated through the mountain you know.
L: No you can't do that.
R: You have to go up the side up the wall with this thing now?
L: Well (.5) no.
R: See no it won't be there. ((Placed a path on the side of the mountain))
L: Yeah so I'd delete it.
R: ((Deletes the path))

L: ((Switches mouse control back to L)) Alright I'll try.
R: And then I did like a walk out thing trying to get an elevator to go down that way for the exit [but that didn't] work either.
L: [Um hum] Oops. (.5) ((Scrolls to left side of park to an open area)) "Um Yeah you got to go back over here. Where are we?"
((Scrolls back to the right towards the ride being built))
R: "Right here." ((Points to where the ride is being built))
L: Right there alright. (.5) Um (.5) What other things can we do? ((Scrolls to side menu))
((Clicks on 'Rides' button))
«Clicks on a ride»
«Chooses the same ride again»
«Build menu pops up»
R: The designs I guess.
«<1364722>» (.5)
R: You need to like build it.
L: Yeah I know. (1.0) So we just do a path. (.5) Cuz there's some paths we can do to (.5) to get up or whatever. «Clicks on 'Paths' icon» (.5) See like (1.0) It won't go up? «Clicked on grass path»
Can you build bridges from like here to here? «Pointing to the top of two mountains»
R: Mmmmm maybe.
L: Ah yeah that would be cool if you could build a bridge.
R: You could make the line go up.
L: That is true. Let's do that. Gosh you can't even see anything. «The screen is dark for night and raining» Is your place raining?
Peer team: No. It's sunny.
«<1433864>» (1.0)
L: «Changes speed of game to faster» It will be a while before it gets bright again. Alright. Gosh. See what I mean. «Zoomed camera into the ground view» Yeah maybe we could make the ground bigger like right here. «Points to the ground between two mountains where they are trying to make the path»
R: Try it.
L: «Clicks on 'Terrain Shaping')»
«Clicks and drags the land to get rid of the side of the mountain»
R: «Points to left side of left mountain» I would do the same thing over there too. So people can get out or get off.
«<1495107>» (.)
L: "Gosh. See isn't this ridiculous." «Camera view keeps changing» I can't get it. There now we go ;stop, stop, stop; (1.5) Uh I don't know.
R: «(Laughs)»
L: I [don't know]
R: [Flatten it.] «Points to icon that has a flat top to the terrain»
Oh it doesn't work?
L: Whatever. That is tons of money that we wasted.
R: You could have it go down.
L: Yeah but it's more money I think.
R: What does editing mode mean?
L: See it's more money every time we do it. We need to just focus on a different ride. Cuz we're getting like screwed here dude.
«<1542720>»

Footnotes:
1. Footpaths need to be made from the main pathway to the entrance and exit of each ride. Paths guide the customers to the ride's entrance.
and exit. Without a path, customers can not get on the rides.

2. Attempted to place a path piece to the entrance of the new ride. They could not place a grass path because they were on the side of a mountain.

3. The 'Park Management' icon is where one can change and manage your staff. Here, it shows whether staff are happy, and if not, staff can be given raises, promoted, or given training.

4. All new staff members must be placed in the park somewhere.

5. When raising the price on a ride the price goes through increments of 0.10 (ten cents). It can take a while to raise the price from one dollar to six dollars.

6. At the top left corner of the screen is a pause / play button, a fast-forward button, and super-fast-forward button. Gamers can stop the game when needing time to build a ride, or speed up time once the theme park is up and running to raise money faster.

7. The financials icon displays what the ride is making per hour, any losses, and total income from the ride.

8. The 'Guest thoughts' icon displays the thoughts of the customers. Viewing the thoughts provides information on customers' thoughts and can influence the adjustment of the attraction's price or options.

9. Every ride must have an entrance and exit in order to have the customers be able to get to and from the ride.

10. It will not work because they are building on the side of a mountain.

11. By clicking on 'Terrain' they will be able to click on the shovel icon and make the land flatter around the new ride. However, this feature does not work well on mountains.

12. The camera view keeps changing because he is using the mouse to move around terrain, which causes the camera view to change when he scrolls.

Clip Keywords:

- Control : L control
- Control : R control
- granularity : sequence of episodes
- Transana Users : sharritt

Clip Notes:
Observations
- Continue by placing entrance / exits
- Cannot connect a footpath to the custom coaster
- Try adding a transport ride (doesn't work either)
- A misinterpretation of the purpose of transport rides (missed opportunity: teacher might be able to clarify)
- Look for an elevator-like contraption (fail)
- Try to raise surrounding terrain to make a path
- Expensive
- End up giving up and building other rides
- Missed opportunity: a little time from a teacher or peer could have helped this repeat problem

Clip: RCT3 D3 R - cannot fix ride entrance / exits
Collection: Learning > Level: Discovery of Interface / Testing Functionality > RCT3 D2 R - Learning to construct paths / ride entrance & exit (sequence)
Time: 0:31:00.4 - 0:31:55.7 (Length: 0:00:55.3)
Clip Transcript:
R: There we go. Now go to construction.
L: There is no construction.
R: Right here isn't this construction? ((Points to the 'Customer' icon)) (.5) Oh what's this the people?
L: "Customers', 'Operating'" ((Clicks through the different menu options))
R: This little guy with little 'thing.' ((Points to the 'Maintenance' icon))
L: That's 'Maintenance'.
=x<1886419> (.5)
R: Can you just delete it and put a new one in?
L: ((Clicks on the ride))
((Clicks all over the ride)) Yeah. But I don't think we can delete that "can we?" ((Clicks on 'Delete Objects' icon represented by a trash can))
R: Go to delete and
L: ((Clicks around the ride with the garbage can))
Have you guys deleted a ride yet?

Peer team: Hmmm

Footnotes:
1. The Customer icon shows the stats of every customer that have been on the ride. It can tell you how many times they have been on the ride and how much they have spent on your ride.

2. The maintenance icon shows how many times the ride has broken down, the last time it broke down, what was wrong with it, and when the next maintenance check will be.

3. Delete icons appear as a garbage can (delete single item) and a double garbage can (delete multiple items). The gamers try to delete the trees using the 'delete multiple' button.

Clip Keywords:
- Control: L control
- granularity: sequence of episodes
- Transana Users: sharritt

Clip Notes:
Observations
- Missed opportunity.
- Players notice a problem with a ride: entrance / exits not properly made (no way to get in or out)
- Try to delete the ride (changing entrance / exit / footpaths too hard)
- Give up trying to delete the ride, since problem figuring out how to delete stuff

Clip: RCT3 D3 R – make ride / path (broke) but figure out how to fix it
Collection: Learning > Level: Discovery of Interface / Testing Functionality > RCT3 D2 R – Learning to construct paths / ride entrance & exit (sequence)
Time: 0:44:34.1 - 0:49:22.4 (Length: 0:04:48.3)

Clip Transcript:
L: Hmmmmm. "What is this?" (clicked on a ride to build) Nope. (.5) "Nope."
R: You could do a big pool of water and do wind surfer.
L: «Clicked a ride to place» Jesus this one's HUGE. «Placed the huge ride in the middle of the park»
R: Put it right there so then people will go in there when they are waiting in line. (.5) Pick the what was it there was music too we picked.

L: «Placed the entrance / exits on the ride»
«Clicked 'Paths' icon»
«Tried to place a path by the entrance they built but it would not go into a previous path already made with a fence»
R: It won't go into the fence?
L: Cause it's closed.
R: "Oh ok."

L: «Let's open it." How much? «Clicked on ride options»
«Changed the price of the ride»
R: Five.

L: People are there at like there at like 1 am?
R: «(Laughs)» 24/7
L: That's how much money we got. (.5) We need to start making money. «Continuing to click on the price of the ride» (.5) We're gonna get a lot of biz.
R: 'Janitor 1 is lazy consider some training or discipline.' How do you give them discipline?
L: "I don't know.""Ok cool whatever. We're busy here." «(Yawns)»
R: «(Zooms out from park)» Alright let's open this place. "Dino burger?" «Drop down menu popped up saying something about Dino Burger»
L: Get burgers.
R: People still can't get in. 6
L: «(Zooms in on ride)»
«(Moves cursor to entrance)»
R: Try deleting the fence.
L: «(Clicks on 'Delete Objects' icon)»
R: «Click on the little fence. Like you deleted you know how you deleted that (.5) building.»
L: ((Continues to click on fence with the 'Delete Objects' icon clicked but it is only lighting up the area in blue and not deleting the fence))
R: Are you serious? (.5) Are they all like kept in?
L: No. Serious. ((Clicked on 'Delete Objects' icon))
((Clicked on path))
R: "There. Now they can go in." 
L: Probably shouldn't have put the like the little entrance [two different places.] ((Zooming out of park))
R: [Right at the edge of the other one.]
L: That's fine. Whatever.
R: ((Laughs))
L: More people will come anyway.
R: We can delete the exit thing too.
L: Hold on we gotta do this too. (.5) We have to delete this. ((Zoomed in on a ride))
((Clicked on another ride))
((Tries to place a path but the path is blocked by the fence so the people are just standing there without a way to get on the ride))
R: ((Laughs))
((The people are leaving the path to the ride because there is no entrance now)) I think it's because we don't have an entrance there's like nothing to delete the fence. I'm thinking how we get an entrance. (1.0) Try 'Operating Mode'.
L: ((Drop down menu said that people thought the prices of food was too high so they will not eat)) Alright, well we just need to get um (.5) lower the prices half off. Also, so
R: People will eat
L: No that's what it said people;
R: No No so people will eat. 
L: Yeah.
L: Yeah we're lowering everything. Hold on. ((Clicks on Hotdog stand))'
R: It's not even that expensive.

Footnotes:
1. Every ride must have an entrance and exit in order to have the customers be able to get to and from the ride.
2. The paths icon allows the gamer to create a paths from other paths in the park to their new ride. This will allow the customers to get to and from the new ride.
3. Reading drop down menu which tells you when staff are unhappy or when rides break down.

4. Reading what a guest thinks of the food stand.

5. When a ride is placed, ride option icons appear around the central ride icon. One icon consists of a green and red flag. The green flag, once clicked, opens the ride for business. Clicking the red flag closes the ride down.

6. People are going past the entrance that the pair built because they cannot get in. The pair forgot to build a path from the main pathway to the ride entrance.

7. The first path placed has a bar blocking the entrance, so the pair cannot add a path to connect the entrance.

8. Customer thoughts came up, saying that the Hotdog stand was too expensive.

Clip Keywords:
- Control : L control
- granularity : sequence of episodes
- Transana Users : sharritt

Clip Notes:
Observations
- Go back to making a thrill ride (no customization)

- However, path doesn't connect properly (another missed opportunity that perpetuates: learning to create paths)

- Delete path and re-create it: strategy works, connects paths properly (learning takes place: learn a strategy to connect paths with ride entrances / exits. however, not very efficient, still not totally fixed)

Clip: RCT3 D4 R - successfully make a entrance / exit and pathway
Collection: Learning > Level: Discovery of Interface / Testing Functionality > RCT3 D2 R - Learning to construct paths / ride entrance & exit (sequence)
Time: 0:22:56.7 - 0:27:04.4 (Length: 0:04:07.7)
Clip Transcript:
L: It's up though.
R: Which is going to be a problem.
L: Not really. (Places an entrance and an exit by new ride)
R: Most likely. (Laughs)
L: Um (Changes view of camera) I don't know yet. I will find out.
(1.0) (Zooms in on the new ride) We'll find out right here. (Clicks
on 'Paths' icon)
L<1392361> (0.5)
R: Yes or a bridge or whatever. (0.5) We have to build a bridge.
L: (Starts placing an Asphalt path near entrance and exit of new
ride) Yeah I know. So (0.5) how do we do that?
R: Right there (Points to 'Paths' editing buttons)
L: "No I think this" (Scrolls over path choices)
R: Oh this is it right here. (Points to 'Queue Path' button) (0.5) No
it's not it.
L: Hmmm
R: (Points to 'Scenery' icon) I think it's this button because
there's like fences and trees and there should be... (2.0) We can raise
the ground right there.
L: (Scrolls through icons under 'Scenery' icon) No. We haven't had
too much luck with that. (0.5) Alright. (0.5) How about (0.5) we (3.0)
(Moused over all icons) I don't know how to do that. (0.5) Do you
want to try the terrain thing?
R<1472031> (.)
R: Try it and see what happens. (Clicked on 'Terrain Tools' icon)
(Clicked on 'Terrain textures' icon)
L: Oh that's texture.
R: Do you like this one? (Clicked on 'Terrain shaping' icon)
(Points to 'Adjust terrain tiles' icon) What does that do?
L: I don't know.
R<1490166> (.)
R: (Laughs) Do this one so it goes like up and flat. (Points to
'Adjust terrain tiles' again) I think. Or maybe not. (0.5)
L: (Clicks on 'Adjust terrain tiles')
(Clicks on 'Free-form terrain tile shaping' icon)
R: OH YEAH. (0.5) That's what it was.
L: (Clicked on ground and nothing happened)
R: (1.0) Yeah, that doesn't work.
L: Where does it work? (0.5) There's no money. WHAT. What is going on?
(0.5) No ramps.
R: Didn't we like have ramps like just
L: Yeah that's what I thought we did. (0.5) I swear we had a ramp.
Whatever we're gonna have to do something else then.
R: (hhh) Just go into a (unclear speech)
R<1540688> (.)
L: Oh there might be something here. (Clicked on ride menu) (4.0)
(Clicked on 'Exit' icon in ride menu) I'm gonna try the entrance
exit thing. (Changing view of camera)
(Clicked on path leveling icon in ride exit menu) (2.0) Ooo! What
is this? 

{(Ground under path automatically is leveling to height of ride exit)}

R: Oh my goodness.

L: Cool. 

={(Placed exit by clicking)}

={1588641} (.5)

R: It's so much nicer. Now we have to go back and do the entrance.

{(2.0) Oh that one didn't work. Do we have to draw a [path over...]};

L: {Oh yeah} I didn't do that um this thing! 

={(Clicked on 'Choose an entrance for the ride / attraction' icon)}

={(Clicked the path leveling button on the ride entrance menu, which successfully leveled the terrain to connect path with entrance)}

R: Ahh. (2.0) Now open it.

L: Cool. 

={1623264}

Footnotes:
1. The land is on a hill so the pair believes that a path will be a problem.

2. Every ride must have an entrance / exit in order to have the customers be able to get to and from the ride.

3. The paths icon allows the gamer to create a path from other paths in the park to their new ride. This will allow the customers to get to and from the new ride.

4. The problem is that the ride entrance and exits are elevated.

5. The scenery icon allows for the placing of garbage cans, trees, plants, and benches.

6. Terrain icon is for changing the terrain of the landscape either to flat, rocks, or grass. You can also have the option to level land by clicking on the icon that looks like a shovel.

Clip Keywords:
Control : L control
granularity : sequence of episodes
Transana Users : sharritt

Clip Notes:
Observations
"It's up though" - realizing when building entrance / exits to ride, that a vertical path will be needed

- Begin search through icons for a solution

- Try terrain editing (doesn't help)
Find a button that levels ground to path (learning occurs; however still missed opportunity on making vertical paths)

Clip: RCT3 D4 R - repeated strategy works
Collection: Learning > Level: Discovery of Interface / Testing
Functionality > RCT3 D2 R - Learning to construct paths / ride entrance & exit (sequence)
Time: 0:29:03.5 - 0:29:22.2 (Length: 0:00:18.7)
Clip Transcript:

R: Do that terrain thing again. {{Points to 'Auto Terrain leveling with edges smoothed' icon}}
L: I will. {{Zooms in on ride}}
\(\text{\textless}1746973\) \(\text{(.5)}\)
L: That's what we should have done for that mountain thing.
R: Yeah I know.
L: {{Clicks on a new entrance for the ride using 'Choose an entrance for the ride / attraction' again}}.
\(\text{\textless}1762141\)

Footnotes:
1. Every ride must have an entrance and exit in order to have the customers be able to get to and from the ride. The pair showed less hesitation creating level entrances and exits this time.

Clip Keywords:
Control : L control  
granularity : sequence of episodes  
Transana Users : sharritt

Clip Notes:
Observations
- "Do that terrain thing again" (referring to entrance / path leveling)
- "That's what we should have done for the mountain thing" (a previous ride that they struggled with)
- No hesitation in building the entrance for their new ride.

Summary
Control : L control 19
Control : R control 5
Conversation : Questioning Interface 1
Transana Users : sharritt 21
granularity : sequence of episodes 12
granularity : short episode 9
Clips: 21 Total Time: 0:41:03.1
H.3 Failure Triggers Learning

Collection: Learning > Trigger: Failure Triggers Learning > Repeated Failure > Making History: Diplomacy (sequence)

Collection Comment:
repeated failure of diplomacy in Making History: cannot achieve diplomatic relations

Clip: MH D1 R - introduction to diplomacy; pair realizes diplomacy needed for success
Collection: Learning > Trigger: Failure Triggers Learning > Repeated Failure > Making History: Diplomacy (sequence)
Time: 0:14:05.0 - 0:15:33.4 (Length: 0:01:28.4)
Clip Transcript:

L: It's ah, It's Germany. Didn't we declare war with them? ('War Expands' window pops up)
((Clicks 'Ok' to close window))
R: ((Laughs))

L: ((Alliance screen pops up showing a Chinese alliance was formed)) Our enemies (.5) oh God.1
R: The Chinese alliance. ((Laughs))
L: ((Laughs))
((Clicks 'Ok' to close Alliance window))

Peer team: So who are you guys joined up with now?
L: Dude, we are all by [ourselves because we declared war] on everyone. ((Clicked on 'Military' icon)) 2
R: [Yeah we're attacking everyone.]
Peer team: Awesome. ((Laughs))

L: Yeah let's see (.5) we're ((Clicked on 'Diplomatic Agreements' icon))3 (.5) We have no alliances.
((laughs))
((Scrolls over combat reports))4

858
R: ((Laughs))
L: ((Clicks on 'Select Nation'))
((Selects a nation))
((Clicks on a diplomatic action))
((Confirms the action taken)) OOOOH. Both of em. ('Peace offering fails' window pops up) Do we get to play RollerCoaster Tycoon?
R: Yeah I want to play that that would be fun.
L: ((Clicks on 'Diplomatic Agreements'))
((Clicks on a nation))
((Clicks on a diplomatic action))
((Confirms the diplomatic action))
(('Treaty Rejected' window popped up))
((Clicks 'Ok' to close window)) Alright. Wait are these our allies?
((Clicks on a nations flag)) "Wait, wait" ((Uses the keyboard to go back to the previous screen))
R: No (.5) those are just what they are called. We don't have any allies.
L: ((Scrolls to Northeast United States on map))
R: ((Zooms out from map))
L: Alright let's find someone in the air. ((Clicks on the plane that R suggests))
R: Oh go take that plane.
L: ((Clicks on the plane that R suggests))

Footnotes:
1. "Your allies are countries you've agreed to defend and vice versa. If you attack a nation, your allies are expected to join your fight. If your allies attack a nation, you are expected to join them. When other nations want to join your alliance, their membership must be approved by all major allies (all playable nations)." (Making History Manual, p. 25)

2. "Your army, navy, and air forces contain a variety of military units, each with a set of offensive and defensive capabilities. Offensive powers are measured in how well a unit can attack on land, in air or at sea. Defensive strength is assessed by how many hits a unit can absorb in battle. Some units have capabilities unique to their unit type." (Making History Manual, p. 14)

3. "You can use the Select Nation and Select Alliance buttons to propose or modify your diplomatic agreements. To individual nations you can propose various treaties. To an alliance you can only propose or demand peace." (Making History Manual, p. 27)
4. "In the Turn Summary panel, the Combat Report summaries show the attacking nation's flag on the left and the defending nation's flag on the right. Next to each flag is a set of numbers. The black number shows how many forces remain, and the red number shows how many forces have been lost. When a battle is won, the losing country is grayed out in the combat summary." (Making History Manual, p. 15)

5. "If you want to demand peace or offer surrender, you must first seek alliance approval." (Making History Manual, p. 26)

Clip Keywords:
- Control: L control
- granularity: sequence of episodes
- Transana Users: sharritt

Clip Comment:
early in day 1, pair realized they need diplomacy to succeed in the game

Clip Notes:
Observations
- War focus turns to diplomatic focus: wars expand and other countries form alliances to declare war on them.
- Realize they have no alliances.
- Realize diplomatic importance of game.
- Attempt to make treaties with other countries.
- First 'ah-ha' moment that diplomacy is required to win at game (supports military objectives)

Relates To
1 of 8

2. MH D2 R - learning from D1 - check diplomacy / war
3. MH D2 R - failed attempts at diplomacy
4. MH D2 R - breakdown of game purpose (random war)
5. MH D2 R - repeated diplomatic rejection
6. MH D2 R - first successful alliance, but very little feedback (why it worked)
7. MH D3 R - open with diplomacy but fail again, resort to war
8. MH D3 R - attempt alliance w / Italy - surprised when it works

Clip: MH D2 R - learning from D1 - diplomacy before war
Collection: Learning > Trigger: Failure Triggers Learning > Repeated Failure > Making History: Diplomacy (sequence)
Time: 0:03:20.9 - 0:03:48.6 [Length: 0:00:27.7]
Clip Transcript:

L: No. We need to find out (.5) if we are at war with anyone.

(*Clicked on 'Diplomatic' icon*)

No current wars. (*Scrolled across map*)

Let's get some alliances before we start any wars with anyone. (2.0)

Should be alliances with people around us or with people from far away and then take over all these?

(*Scrolls around Europe*)

Teacher: (*Giving advice to both pairs; telling them to vocalize their strategy*)

R: We should make alliances with bigger countries. Like USA and stuff, Russia.

L: Alright. 

Footnotes:

1. "In the Diplomatic panel, you can propose treaties and review alliances. As the game progresses, you can declare war, demand surrender, or beg for peace." (Making History Manual, p. 27)

Clip Keywords:

Control : L control

granularity : sequence of episodes

Transana Users : sharritt

Clip Notes:

Observations

- Learning from day 1: check wars / diplomacy before starting military campaigns

- Shows learning from day 1- diplomacy important before using military; tied together. Want to get diplomatic allies before ruining relations with wars. Try powerful countries first: U.S. and Russia.

Relates To

2 of 8

1. MH D1 R - introduction to diplomacy; pair realizes diplomacy needed for success

3. MH D2 R - failed attempts at diplomacy

4. MH D2 R - breakdown of game purpose (random war)

5. MH D2 R - repeated diplomatic rejection

6. MH D2 R - first successful alliance, but very little feedback (why it worked)

7. MH D3 R - open with diplomacy but fail again, resort to war

8. MH D3 R - attempt alliance w / Italy - surprised when it works

Clip: MH D2 R - failed attempts at diplomacy

Collection: Learning > Trigger: Failure Triggers Learning > Repeated
Failure > Making History: Diplomacy (sequence)

Time: 0:03:48.6 - 0:05:50.3 (Length: 0:02:01.7)
Clip Transcript:

L: ((Scrolled across United States))
((Clicked on 'Mini Map'))
((Zoomed out from map))
((Clicked on 'Diplomatic Agreements'))
((Clicked on a Nation))
((Clicked 'OK' to confirm action))
(('Treaty Rejected' window popped up))

R: Aww, come on! What do we have to get?

L: ((Scrolls around world map)) I don't think we're friends with them man. ((Clicks on 'Mini Map'))

L: ((Clicks on 'Diplomatic' icon))
((Clicked on 'Diplomatic Agreements'))
((Clicked on a Nation))
((Clicked 'OK' to confirm action))
(('Treaty Rejected' window popped up))

L: ((Scrolls over to Europe))
((Clicks on 'Diplomatic' icon))
((Clicked on 'Diplomatic Agreements'))
((Clicked on a Nation))
((Clicked a Diplomatic action))
((Clicked 'OK' to confirm action))
(('Treaty Rejected' window popped up))

L: ((Scrolls over to Europe))
((Clicks on 'Diplomatic' icon))
((Clicked on 'Diplomatic Agreements'))
((Clicked on a Nation))
((Clicked a Diplomatic action))
((Clicked 'OK' to confirm action))
(('Treaty Rejected' window popped up))

L: Alright, we're gonna have to start some wars now.

R: Definitely. It's the only way to uh, (.5) to win this game.

L: ((Scrolls over to Europe))
((Zooms in on Europe))
Then -
((Clicked on 'Military' icon))

R: Stay, stay on this for a second. (.5) Is there like a (.5) what the hell? *

L: ((Opens up instruction manual to game))
R: ((Picks up Game Interface brief booklet))

Footnotes:
1. "Use the mini map to quickly move around the world. Clicking
anywhere on the mini-map will take you immediately to that destination. The default view is of your nation." (Making History Manual, p. 8)

2. "You can use the Select Nation and Select Alliance buttons to propose or modify your diplomatic agreements. To individual nations you can propose various treaties. To an alliance you can only propose or demand peace." (Making History Manual, p. 27)

3. "In the Diplomatic panel, you can propose treaties and review alliances. As the game progresses, you can declare war, demand surrender, or beg for peace." (Making History Manual, p. 25)

4. "Your army, navy, and air forces contain a variety of military units, each with a set of offensive and defensive capabilities. Offensive powers are measured in how well a unit can attack on land, in air or at sea. Defensive strength is assessed by how many hits a unit can absorb in battle. Some units have capabilities unique to their unit type." (Making History Manual, p. 14)

Clip Keywords:
Control: L control
granularity: sequence of episodes
Transana Users: sharritt

Clip Notes:
Observations
- Attempting diplomacy w/ US & Russia; both rejected) / (try alliances w/ nearby countries; rejected)

- Computer rejected every effort at treaties / diplomacy, both decide "we're gonna have to start some wars now"
peer replies: "definitely. it's... the only way to win this game"

- Failure of game? constant rejection leads to alternative course of action. diplomacy in this game almost NEVER works!

- Game vs. simulation: while this may be accurate (treaties probably would have been rejected in real life), it negatively impacts the gameplay, immersion, fun level in game

- This could be an opportunity for a teacher to step in: help make treaties / diplomacy that could actually work. However, left to their own devices, students quickly lose interest in diplomacy and resort back to military & warfare (even though they realize diplomacy is very important to their success)

- Too hard to learn aspects of game from the start causes them to not be used
(represented a failure of a game to scaffold)
Relates To
3 of 8

1. MH D1 R - introduction to diplomacy; pair realizes diplomacy needed for success
2. MH D2 R - learning from D1 - check diplomacy / war
4. MH D2 R - breakdown of game purpose (random war)
5. MH D2 R - repeated diplomatic rejection
6. MH D2 R - first successful alliance, but very little feedback (why it worked)
7. MH D3 R - open with diplomacy but fail again, resort to war
8. MH D3 R - attempt alliance w / Italy - surprised when it works

Clip: MH D2 R - breakdown of game purpose (random war)
Collection: Learning > Trigger: Failure Triggers Learning > Repeated Failure > Making History: Diplomacy (sequence)
Time: 0:05:44.4 - 0:08:18.7 (Length: 0:02:34.3)

Clip Transcript:

R: ((Has control of mouse))
((Clicks on Spain))
((A warning screen pops up))
((Clicks 'ok'))
((Chuckles))
((War is declared by Spain))
L: What?
R: ((Clicks 'OK')) It's just Spain. Spain sucks.
»<417757> (.)
((Mouse controls traded from R to L))
L: ((Scrolls around Africa))
R: Take some planes and go bomb those ships. ((Laughs))
L: ((Clicked on a ship in The Bay of Biscay))
((A warning window popped up))
((Clicked 'OK'))
»<430997> (.)
L: Wait, what did you click when you did this one? ((Clicks on a Military unit in Africa))
((Clicks on another Military unit in Africa))
((Clicked on Military unit in Spain))
R: ((Chuckles)) I just clicked right-clicked on the guy.
»<448294> (.)
L: ((Clicks on Military unit in Africa))
((Double clicks on Military unit in Spain))
((Clicks on Algeria))
((Zooms out from map))
{Clicks on a airplane in Africa})
{Clicked on a different airplane in Northern Africa})
{Clicked on a different airplane in Africa})
{Clicked on a ship in the Atlantic Ocean})
{(Navy window popped up})

R: Oh that's our ship.
L: Oh OK. This one isn't though. {(Clicked on the ship in The Bay of Biscay})
R: Right.
L: {(Scrolled map to Mediterranean Sea})

Footnotes:
1. "Traveling in fleets, naval units can patrol sea regions, battle enemy naval forces, blockade ports, and escort transport ships (land divisions moving across water). Sea regions cannot be controlled or owned. Look in Military Unit Types in the Book to see naval unit capabilities." (Making History Manual, p. 20)

Clip Keywords:
Control : L control
Control : R control
granularity : sequence of episodes
Transana Users : sharritt

Clip Notes:
Observations
- War declared on Spain, for no apparent reason.
- Warfare beginning to be random: just fight whoever is nearby.
- Shows how gameplay becomes very boring after consistent failure in certain aspects of game. Only can use one feature of game (military) with any signs of success, even though players seem to implicitly know they need to excel at other game areas to win.
- Seems that not much is being learned, other than geography and military weaponry.

Relates To
4 of 8

1. MH D1 R -introduction to diplomacy; pair realizes diplomacy needed for success
2. MH D2 R -learning from D1 - check diplomacy / war
3. MH D2 R -failed attempts at diplomacy
4. MH D2 R -repeated diplomatic rejection
5. MH D2 R -first successful alliance, but very little feedback (why it
worked)
7. MH D3 R - open with diplomacy but fail again, resort to war
8. MH D3 R - attempt alliance w/ Italy - surprised when it works

Clip: MH D2 R - repeated diplomatic rejection
Collection: Learning > Trigger: Failure Triggers Learning > Repeated Failure > Making History: Diplomacy (sequence)
Time: 0:13:00.2 - 0:14:12.5 (Length: 0:01:12.3)
Clip Transcript:

L: ((scrolls across map to ocean))
((clicks on an explosion that represents a battle))
R: We're free to kill them.
L: What's this? ((navy window pops up))
R: Holy crap. Wait are they they're not our enemies are they?
L: Yeah.
R: Let's make friends with them.
L: ((clicks on ship in ocean))
R: Are they our enemies? (.5) I don't think they are.
L: ((clicked on 'diplomatic' icon))
((clicked on a nation))
((clicked on a diplomatic action))
((confirmed the diplomatic action))
(('Treaty Rejected' screen popped up))
R: Geez. (.5) It looks like we have no choice but to attack them.
L: We need more planes.
R: Take that tank and move it to there. Right there. ((points to the screen to show L where to move tank))
L: To there? ((points on screen with cursor)) You can't move it to there.
R: No! take that tank! and move it to there. ((points again to screen to show L where to move tank in a different country))
L: ((clicks on a military unit in Spain)) Oh. ((clicks on a new area for tank to move to))
((clicked on military unit))?
((warning window popped up))
R: ((laughs))
L: ((clicks 'OK'))
((clicks on a different military unit))
R: We took over Denmark. ((talking to teacher that walked by))
((laughs))
Teacher: ((laughs))
Footnotes:
1. "In the Diplomatic panel, you can propose treaties and review alliances. As the game progresses, you can declare war, demand surrender, or beg for peace." (Making History Manual, p. 25)

2. "Your army, navy, and air forces contain a variety of military units, each with a set of offensive and defensive capabilities. Offensive powers are measured in how well a unit can attack on land, in air or at sea. Defensive strength is assessed by how many hits a unit can absorb in battle. Some units have capabilities unique to their unit type." (Making History Manual, p. 14)

Clip Keywords:
  Control: L control
  granularity: sequence of episodes
  Transana Users: sharritt

Clip Notes:
Observations
- Try to make friends with another country: diplomatic treaties rejected again. resort to military again. (repeats again later in game- treaties keep getting rejected)
Relates To
5 of 8

1. MH D1 R -introduction to diplomacy; pair realizes diplomacy needed for success
2. MH D2 R -learning from D1 - check diplomacy / war
3. MH D2 R -failed attempts at diplomacy
4. MH D2 R -breakdown of game purpose (random war)
6. MH D2 R -first successful alliance, but very little feedback (why it worked)
7. MH D3 R -open with diplomacy but fail again, resort to war
8. MH D3 R -attempt alliance w / Italy - surprised when it works

Clip: MH D2 R - first successful alliance, but very little feedback (why it worked)
Collection: Learning > Trigger: Failure Triggers Learning > Repeated Failure > Making History: Diplomacy (sequence)
Time: 0:27:20.1 - 0:28:09.5 (Length: 0:00:49.3)
Clip Transcript:
L: Move all of our (.5) yeah like take over this. (Scrollled over continent)
R: Try to make friends with Italy. (.5) More to the right. In the
green there on the bottom.
L: Here? (((Scrolls around Europe)))
R: Yeah.
L<1656460> (.)
R: (((Laughs)))
L: (((Clicked on 'Diplomatic' icon)))
L: (((Clicked on 'Diplomacy Agreements' icon)))
L: (((Clicked on a nation)))
L: (((Confirmed the diplomacy action)))
L: ('Our Alliance Forms' popped up))
R: YEAH. (((Laughs))) Yes. Nice. Alright. (((Scrolls across
continent)))
L<1680210> (.)
R: Can we use their troops?
L: "Let's try this." No they'll just back us up now.
R: Good we need some back up.
L<1687428>

Footnotes:
1. "In the Diplomatic panel, you can propose treaties and review
alliances. As the game progresses, you can declare war, demand
surrender, or beg for peace." (Making History Manual, p. 25)

2. "You can use the Select Nation and Select Alliance buttons to
propose or modify your diplomatic agreements. To individual nations
you can propose various treaties. To a nation you can only propose
or demand peace." (Making History Manual, p. 27)

Clip Keywords:
Control : L control
granularity : sequence of episodes
Transana Users : sharritt

Clip Notes:
Observations
- Attempt alliance w/ Italy: alliance forms! (first successful
alliance)
Relates To
6 of 8

1. MH D1 R -introduction to diplomacy; pair realizes diplomacy needed
   for success
2. MH D2 R -learning from D1 - check diplomacy / war
3. MH D2 R -failed attempts at diplomacy
4. MH D2 R -breakdown of game purpose (random war)
5. MH D2 R -repeated diplomatic rejection

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7. MH D3 R - open with diplomacy but fail again, resort to war
8. MH D3 R - attempt alliance w/ Italy - surprised when it works

**Clip: MH D3 R - open with diplomacy but fail again, resort to war**

**Collection:** Learning > Trigger: Failure Triggers Learning > Repeated Failure > Making History: Diplomacy (sequence)

**File:** D:/My Documents/Dissertation/Data/video/MakingHistory-Day3-R/MakingHistory-Day3-R 2007_05_15_06_29_45.avi

**Time:** 0:02:18.8 - 0:03:19.5  (Length: 0:01:00.7)

**Clip Transcript:**

L: Who are we?
R: Uh, Russia.

L<143190> (.)
R: (((Clicks on 'Diplomatic' icon)));
   (((Clicked on 'Diplomatic Agreements')))2
   (((Clicked on a Nation))
   (((Clicked a Diplomatic action))
   (((Clicked 'OK' to confirm action))
   (((Treaty Rejected' window popped up))
L: What?
L<151882> (.)
R: (((Clicked on 'Mini Map')))3
   (((Clicked on 'Diplomatic Agreements')))2
   (((Clicked 'No' when asked to confirm))
   (((Clicks on 'Diplomatic' icon))1
   (((Clicked on 'Diplomatic Agreements')))2
   (((Clicked on a different Nation))
   (((Clicked a Diplomatic action))
   (((Clicked 'OK' to confirm action))
   (((Treaty Rejected' window popped up))
L<180555> (.)
   (((Clicked on 'Mini Map')))3
   (((Clicks on 'Diplomatic' icon))1
   (((Clicked on 'Diplomatic Agreements')))2
   (((Clicked on a different Nation))
   (((Clicked a Diplomatic action))
   (((Clicked 'OK' to confirm action))
   (((Treaty Rejected' window popped up))
   (((Scrolled over to Russia))
L<198518>

**Footnotes:**

1. "In the Diplomatic panel, you can propose treaties and review alliances. As the game progresses, you can declare war, demand surrender, or beg for peace."  (Making History Manual, p. 25)
2. "You can use the Select Nation and Select Alliance buttons to propose or modify your diplomatic agreements. To individual nations you can propose various treaties. To an alliance you can only propose or demand peace." (Making History Manual, p. 27)

3. "Use the mini map to quickly move around the world. Clicking anywhere on the mini-map will take you immediately to that destination. The default view is of your nation." (Making History Manual, p. 8)

Clip Keywords:
Control : R control
granularity : sequence of episodes
Transana Users : sharritt

Clip Notes:
Observations
- Attempt to make treaties at beginning
- Learned from previous days, easier to do diplomacy before pissing the world off by declaring war on everyone
- Computer keeps rejecting all attempted treaties

Relates To
7 of 8

1. MH D1 R - introduction to diplomacy; pair realizes diplomacy needed for success
2. MH D2 R - learning from D1 - check diplomacy / war
3. MH D2 R - failed attempts at diplomacy
4. MH D2 R - breakdown of game purpose (random war)
5. MH D2 R - repeated diplomatic rejection
6. MH D2 R - first successful alliance, but very little feedback (why it worked)
8. MH D3 R - attempt alliance w/ Italy - surprised when it works

Clip: MH D3 R - attempt alliance w/ Italy - surprised when it works

Collection: Learning > Trigger: Failure Triggers Learning > Repeated Failure > Making History: Diplomacy (sequence)
File: D:/My Documents/Dissertation/Data/video/MakingHistory-Day3-R/MakingHistory-Day3-R_2007_05_15_06_29_45.avi
Time: 0:15:33.0 - 0:16:25.6  (Length: 0:00:52.5)

Clip Transcript:
L: ((Clicked on 'Diplomatic' icon))
((Clicked on 'Diplomatic Agreements'))
((Clicked 'No' when asked to confirm))
«Clicks on 'Diplomatic' icon»,
«Clicked on 'Diplomatic Agreements'»;
«Clicked on a different Nation»
«Clicked a Diplomatic action»
«Clicked 'OK' to confirm action»
«'Our Alliance Forms' popped up»
R:  ((Laughs))  "What?"
L:  Finally.
»<951882>  (.)
L:  So we're with (.5) them.  ((Clicked on 'Diplomatic' icon))
R:  Yeah.
»<962291>  (.)
L:  And they're against Yugoslavia right now?  ((Clicked on 'Diplomatic' icon))
R:  There. (1.0) Where is Yugoslavia?  ((Scrolling around map))
L:  Uh, It's around there somewhere.
»<984950>

Footnotes:
1. "In the Diplomatic panel, you can propose treaties and review alliances. As the game progresses, you can declare war, demand surrender, or beg for peace."  (Making History Manual, p. 25)

2. "You can use the Select Nation and Select Alliance buttons to propose or modify your diplomatic agreements. To individual nations you can propose various treaties. To an alliance you can only propose or demand peace."  (Making History Manual, p. 27)

**Clip Keywords:**
- Control : L control
- granularity : sequence of episodes
- Transana Users : sharritt

**Clip Notes:**
**Observations**
- Resort to befriending Italy: it works again!  (only successful diplomacy)
- Check to see the enemies of their ally, help them fight

**Relates To**
8 of 8

1. MH D1 R -introduction to diplomacy; pair realizes diplomacy needed for success
2. MH D2 R -learning from D1 - check diplomacy / war
3. MH D2 R -failed attempts at diplomacy
4. MH D2 R -breakdown of game purpose (random war)
5. MH D2 R -repeated diplomatic rejection

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6. **MH D2 R** - first successful alliance, but very little feedback (why it worked)
7. **MH D3 R** - open with diplomacy but fail again, resort to war

**Collection:** Learning > Trigger: Failure Triggers Learning > Repeated Failure > RCT3 D2/3/4 R - Pathway / entrance to ride problems (sequence)

**Collection Comment:**
- having trouble connecting footpaths to ride entrances (terrain / up-down issues)

**Clip: RCT3 D2 R - cannot connect path to ride entrance / exit**

**Collection:** Learning > Trigger: Failure Triggers Learning > Repeated Failure > RCT3 D2/3/4 R - Pathway / entrance to ride problems (sequence)

**File:** D:/My Documents/Dissertation/Data/video/RCT3-Day2-R/RCT3-Day2-R 2007_05_23_16_04_12.avi

**Time:** 0:33:50.2 - 0:34:53.5 (Length: 0:01:03.3)

**Clip Transcript:**

L: Is that cool? **(Places ride near a main path)**
R: Yeah. Is the pathway going to be hard to make?
L: “No.” **(Places the entrance / exit for the ride)**
R: We should have stuck with the other one.
L: I know! **(laughs)** OOPS **(Clicked on the different path options)**
R: We should go back. **(laughs)**

Peer team: Yeah. There’s like a I don’t know there’s like a button for it or something.
L: Oh is that what? what it is, a button? **(laughs)** Thanks for the help.
R: **(laughs)**
L: Alright, fine we’re gonna make it work. **(laughs)** That was a bad spot to
We should of put it in the middle. ((Changes camera view to middle of park where the land is flat)) But we can do more rides.

Footnotes:
1. Every ride must have an entrance / exit in order to have the customers be able to get to and from the ride.
2. The paths icon allows the gamer to create a paths from other paths in the park to their new ride. This will allow the customers to get to and from the new ride.
3. If you have a ride that is on a hill (elevation above or below the footpath) you must make your path a ramp in order to connect the path to the ride entrance and exit. Path creation has options (icons) for vertical incline or decline of foot paths.

Keywords:
- Control : L control
- granularity : sequence of episodes
- Transana Users : sharritt

Observations
- Follows by asking peer team how to join path to elevated ride.
- Insufficient response to help them, so give up and make a different ride

Relates To
1 of 6

2. RCT3 D3 R -cannot create a path / entrance to ride
3. RCT3 D3 R -cannot fix ride entrance / exits
4. RCT3 D3 R -make ride / path (broke) but figure out how to fix it
5. RCT3 D4 R -successfully make a entrance / exit and pathway
6. RCT3 D4 R -repeated strategy works

Collection: Learning > Trigger: Failure Triggers Learning > Repeated Failure > RCT3 D2/3/4 R - Pathway / entrance to ride problems (sequence)

Time: 0:14:15.4 - 0:25:43.5  [Length: 0:11:28.1]

Transcript:
R: I wonder if things will fit.
L: No they won't, oh.
R: How they gonna leave?
L: Whatever. 

«Laughs»

((Clicked on 'Paths'))

((Attached one piece of path to the entrance))

R: «(Laughs)»

L: "I don't know"  

((No more mechanics?))

R: Yeah

L: Alright, where's that again? 

((Scrolling through side menu))

R: The mechanics 'Park Management'.

L: ¡Oh we don't have anybody.!

((Park Management menu pops up with staff))

R: There's a mechanic.

L: "We need a janitor."

((We need a couple of mechanics.)

((Clicks to add mechanics and janitors))

((We need a couple of everything.))

((No no don't need an 'Animal Keeper' though."))

R: mmm

L: "Two 'Entertainers'. We need to change the 'Entertainers' costumes."

((Clicked on entertainer in the park to bring up his own menu choices))

((Clicked on costume choices))

((Changed the costume of the Entertainer))

Something scary."

((Scrolling through 'Park Management' icon))

R: We got to drop them somewhere. 4 (.5) I think you're holding him.

L: No

R: Yeah. He's right there.

L: Uh yeah? 

((Closes 'Park Management' menu))

((Scrolling around park))

L: Ok well then we'll (.5) put him (.5) let's go over here. ((Places the new staff member)) (.1) ¡Alright, let's do another ride.!

R: [You gotta do] a path. When you get down.

L: Um ((Clicks on the new ride)) (.5) We have to do financials as well.

((Clicks on price of ride))

((Options for ride pop up))

How much three?

R: Three I would say six. That is a cool ride. I would pay six for it.

L: You would? ((Clicks on price of ride))

((Raises price to six dollars))

R: Yeah it goes in the mountain out of the mountain.
L: That's true.
R: This is going really slow.
L: ((Clicking through price of ride to raise to six dollars)) I know isn't it?
R: ((Continues to click through to six dollars)) Do you want to go to four just because it's like ((Laughs)) really slow? We'll try after that. ((Clicks on Fast Forward button)) Ok super fast forward let's go. Alright, let's open this sucker. Oh we have to draw a path. You're right.
R: And an exit.
L: Where?
R: Go from there I don't know how to go down. ((Points to side of left mountain terrain))
L: Hmmmm Hmmmm Hmmmm
R: 'High speed bridge' I'm guessing.
L: Do we have to any I think there are some like lifts that you can do like
R: We're gonna lift you
L: Yeah.
R: We're gonna lift you up there?
L: It's under like the rides but "I have to go to the bathroom though." ((Trade mouse control from L to R))
R: ['Transport Rides']
L: Yeah it's [under Transport Rides]
R: Ok I am going to figure this out.
L: We're gonna lift you up there?
L: It's under like the rides but "I have to go to the bathroom though."
R: ('Transport Rides')
L: Yeah it's [under Transport Rides]
R: Ok I am going to figure this out.
L: 'High speed bridge' I'm guessing.
R: Do we have to any I think there are some like lifts that you can do like
R: We're gonna lift you
L: Yeah.
R: We're gonna lift you up there?
L: It's under like the rides but "I have to go to the bathroom though."
R: ('Transport Rides')
L: Yeah it's [under Transport Rides]
R: Ok I am going to figure this out.
L: 'High speed bridge' I'm guessing.
R: Do we have to any I think there are some like lifts that you can do like
R: We're gonna lift you
L: Yeah.
R: We're gonna lift you up there?
L: It's under like the rides but "I have to go to the bathroom though."
R: ('Transport Rides')
L: Yeah it's [under Transport Rides]
R: Ok I am going to figure this out.
L: 'High speed bridge' I'm guessing.
R: Do we have to any I think there are some like lifts that you can do like
R: We're gonna lift you
L: Yeah.
R: We're gonna lift you up there?
L: It's under like the rides but "I have to go to the bathroom though."
R: ('Transport Rides')
L: Yeah it's [under Transport Rides]
R: Ok I am going to figure this out.
L: 'High speed bridge' I'm guessing.
R: Do we have to any I think there are some like lifts that you can do like
R: We're gonna lift you
L: Yeah.
R: We're gonna lift you up there?
L: It's under like the rides but "I have to go to the bathroom though."
R: ('Transport Rides')
L: Yeah it's [under Transport Rides]
R: Ok I am going to figure this out.
L: 'High speed bridge' I'm guessing.
R: Do we have to any I think there are some like lifts that you can do like
R: We're gonna lift you
L: Yeah.
R: We're gonna lift you up there?
L: It's under like the rides but "I have to go to the bathroom though."
R: ('Transport Rides')
L: Yeah it's [under Transport Rides]
R: Ok I am going to figure this out.
((Scrolls over to the menu options on the left side of screen))
((Scrolls back over to the top of the mountain where new ride is being built))
((Scrolls back over to the menu options on the left side of screen))
((Places a ramp piece on to the existing ramp piece coming off the side of the mountain))
((Zooms out from ride area))
((Places two more ramp pieces to the existing ramp piece coming off the side of the mountain))
((Scrolls over menu options on the left side of the screen))
((Clicks on 'Ride' menu))
((List of rides pops up))
((Clicks on same ride already being built))
((Scrolls over to ride being built))
((Clicks on 'Path' icon))
((Moves new path piece over to existing ramp pieces but they do not connect))
((Clicks a new ramp piece to the existing ramp))
((Clicks on another site for a ramp piece but R cannot connect them))
((Moves camera view, shows more of the mountain view behind the ride being built))
((Scrolls over to right side of ride being built))
((Clicks on 'Financials' icon))
((Increases the cost of the ride being built))
((Clicks on 'Guest Thoughts' icon))
((Clicked on ride 'Stats' icon))
((Clicks on 'Entrance / Exit' icon))
((Adds another swirling rail to the rails already in existence on the ride being built))
((Clicks on the swirling rails several times))
((Deletes a swirling rail on the ride being built))
((Deletes all of the swirling rails on the ride being built))
(( Scrolls to left side of mountain side))
((Places a swirling rail piece in a different location closer to the front of the mountain top))
((Adds another swirling rail on top of the existing rail))
((Zooms camera in on ride being built))
((Deletes all the swirling rails))
((Zooms out from ride))

L: ((Back from bathroom)) Did you get it?
R: ((Scrolls out from ride)) Um no. Because I would’ve thought that the elevated through the mountain you know.
L: No you can’t do that.
R: You have to go up the side up the wall with this thing now?
L: Well (.5) no.
R: See no it won’t be there. ((Placed a path on the side of the
mountain))
L: Yeah so I'd delete it.
R: ((Deletes the path))
«1332.005> (.)
R: So let you do it.
L: ((Switches mouse control back to L)) Alright I'll try.
R: And then I did like a walk out thing trying to get an elevator to
go down that way for the exit [but that didn't] work either.
L: [Um hmm] OOps. (.5) ((Scrolls to left side of park to an open
area)) "Um Yeah you got to go back over here. Where are we?"
((Scrolls back to the right towards the ride being built))
R: "Right here." ((Points to where the ride is being built))
L: Right there alright. (.5) Um (.5) What other things can we do?
((Scrolls to side menu))
((Clicks on 'Rides' button))
((Clicks on a ride))
((Chooses the same ride again))
((Build menu pops up))
R: The designs I guess.
«1364788> (.5)
R: You need to like build it.
L: Yeah I know. (.0) So we just do a path. (.5) Cuz there's some
paths we can do to (.5) to get up or whatever. ((Clicks on 'Paths'
icon)) (.5) See like (.0) It won't go up? ((Clicked on grass path))
Can you build bridges from like here to here? ((Pointing to the top of
two mountains))
R: Mmmmm maybe.
L: Ah yeah that would be cool if you could build a bridge.
R: You could make the line go up.
L: That is true. Let's do that. Gosh you can't even see anything.
((The screen is dark for night and raining)) Is your place raining?
Peer team: No. It's sunny.
«1425578> (.0)
L: ((Changes speed of game to faster)) It will be a while before it
gets bright again. Alright. Gosh. See what I mean. ((Zoomed camera
into the ground view)) Yeah maybe we could make the ground bigger like
right here. ((Points to the ground between two mountains where they are
trying to make the path))
R: Try it.
L: ((Clicks on 'Terrain Shaping'))
((Clicks and drags the land to get rid of the side of the mountain))
R: ((Points to left side of left mountain)) I would do the same thing
over there too. So people can get out or get off.
«1494658> (.)
L: "Gosh. See isn't this ridiculous." ((Camera view keeps changing))
I can't get it. There now we go ;stop, stop, stop; (.5) Uh I don't
know.

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R: (\textit{(Laughs)})
L: I [don't know]
R: [Flatten it.] ([Points to icon that has a flat top to the terrain])

Oh it doesn't work?
L: Whatever. That is tons of money that we wasted.
R: You could have it go down.
L: Yeah but it's more money I think.
R: What does editing mode mean?
L: See it's more money every time we do it. We need to just focus on a different ride. Cuz we're getting like screwed here dude.

Footnotes:
1. Footpaths need to be made from the main pathway to the entrance and exit of each ride. Paths guide the customers to the ride's entrance and exit. Without a path, customers cannot get on the rides.

2. Attempted to place a path piece to the entrance of the new ride. They could not place a grass path because they were on the side of a mountain.

3. The 'Park Management' icon is where one can change and manage your staff. Here, it shows whether staff are happy, and if not, staff can be given raises, promoted, or given training.

4. All new staff members must be placed in the park somewhere.

5. When raising the price on a ride the price goes through increments of .10 (ten cents). It can take a while to raise the price from one dollar to six dollars.

6. At the top left corner of the screen is a pause / play button, a fast-forward button, and super-fast-forward button. Gamers can stop the game when needing time to build a ride, or speed up time once the theme park is up and running to raise money faster.

7. The financials icon displays what the ride is making per hour, any losses, and total income from the ride.

8. The 'Guest thoughts' icon displays the thoughts of the customers. Viewing the thoughts provides information on customers' thoughts and can influence the adjustment of the attraction's price or options.

9. Every ride must have an entrance and exit in order to have the customers be able to get to and from the ride.

10. It will not work because they are building on the side of a
mountain.

11. By clicking on 'Terrain' they will be able to click on the shovel icon and make the land flatter around the new ride. However, this feature does not work well on mountains.

12. The camera view keeps changing because he is using the mouse to move around terrain, which causes the camera view to change when he scrolls.

**Clip Keywords:**
- Control : L control
- Control : R control
- granularity : sequence of episodes
- Transana Users : sharritt

**Clip Notes:**

**Observations**
- Continue by placing entrance / exits
- Cannot connect a footpath to the custom coaster
- Try adding a transport ride (doesn't work either)
- A misinterpretation of the purpose of transport rides (missed opportunity: teacher might be able to clarify)
- Look for an elevator-like contraption (fail)
- Try to raise surrounding terrain to make a path
- Expensive
- End up giving up and building other rides
- Missed opportunity: a little time from a teacher or peer could have helped this repeat problem

**Relates To**
2 of 6

1. RCT3 D2 R -cannot connect path to ride entrance / exit
3. RCT3 D3 R -cannot fix ride entrance / exits
4. RCT3 D3 R -make ride / path (broke) but figure out how to fix it
5. RCT3 D4 R -successfully make a entrance / exit and pathway
6. RCT3 D4 R -repeated strategy works

**Clip: RCT3 D3 R - cannot fix ride entrance / exits**

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Collection: Learning > Trigger: Failure Triggers Learning > Repeated Failure > RCT3 D2/3/4 R - Pathway / entrance to ride problems (sequence) 
Time: 0:31:00.4 - 0:31:55.7 (Length: 0:00:55.3)

Clip Transcript:

R: There we go. Now go to construction.
L: There is no construction.
R: Right here isn't this construction? ((Points to the 'Customer' icon)) (.5) Oh what's this the people?
L: "Customers', 'Operating'" ((Clicks through the different menu options))
R: This little guy with little "thing." ((Points to the 'Maintenance' icon))
L: That's 'Maintenance'.
R: Can you just delete it and put a new one in?
L: ((Clicks on the ride))
R: ((Clicks all over the ride)) Yeah. But I don't think we can delete that "can we?" ((Clicks on 'Delete Objects' icon represented by a trash can))
L: Go to delete and
R: ((Clicks around the ride with the garbage can))
L: ((The ride is not deleting but the ground around it is)) Have you guys deleted a ride yet?
Peer team: Hmmm

Footnotes:
1. The Customer icon shows the stats of every customer that have been on the ride. It can tell you how many times they have been on the ride and how much they have spent on your ride.
2. The maintenance icon shows how many times the ride has broken down, the last time it broke down, what was wrong with it, and when the next maintenance check will be.
3. Delete icons appear as a garbage can (delete single item) and a double garbage can (delete multiple items). The gamers try to delete the trees using the 'delete multiple' button.

Clip Keywords:
Control : L control
granularity : sequence of episodes
Transana Users : sharritt
Clip Notes:

Observations
- Missed opportunity
- Players notice a problem with a ride: entrance / exits not properly made (no way to get in or out.
- Try to delete the ride (changing entrance / exit / footpaths too hard.
- Give up trying to delete the ride, since problem figuring out how to delete stuff.

Relates To
3 of 6
1. RCT3 D2 R - cannot connect path to ride entrance / exit
2. RCT3 D3 R - cannot create a path / entrance to ride
4. RCT3 D3 R - make ride / path (broke) but figure out how to fix it
5. RCT3 D4 R - successfully make a entrance / exit and pathway
6. RCT3 D4 R - repeated strategy works

Clip: RCT3 D3 R - make ride / path (broke) but figure out how to fix it

Collection: Learning > Trigger: Failure Triggers Learning > Repeated Failure > RCT3 D2/3/4 R - Pathway / entrance to ride problems (sequence)


Time: 0:44:34.1 - 0:49:22.4 (Length: 0:04:48.3)

Clip Transcript:

L: Hmmmm. "What is this?" (Clicked on a ride to build) Nope. (.5)
   "Nope."
R: You could do a big pool of water and do wind surfer.
L: ((Clicked a ride to place)) Jesus this one's HUGE. ((Placed the huge ride in the middle of the park))
R: Put it right there so then people will go in there when they are waiting in line. (.5) Pick the what was it there was music too we picked; (.5)
   <2710313> (.)
L: ((Placed the entrance / exits on the ride));
   ((Clicked 'Paths' icon));
   ((Tried to place a path by the entrance they built but it would not go into a previous path already made with a fence))
R: It won't go into the fence?
L: Cause it's closed.
R: "Oh ok."

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Let's open it. How much? (Clicked on ride options) (Changed the price of the ride)
R: Five.
L: People are there at like there at like 1 am?
R: (Laughs) 24/7
L: That's how much money we got. (.5) We need to start making money. (Continuing to click on the price of the ride) (.5) We're gonna get a lot of biz.
R: 'Janitor 1 is lazy consider some training or discipline.' How do you give them discipline?
L: "I don't know."
R: 'The hotdogs are too expensive.'
L: "Ok cool whatever. We're busy here."
R: (Yawns)
L: (Zooms out from park) Alright let's open this place. "Dino burger?" (Drop down menu popped up saying something about Dino Burger)
R: Get burgers.
L: Oh really is that what it is?
R: mmmm hummm
L: I don't care Janitors get out of here. (Drop down menu, at top, states that janitors are unhappy) (1.0) Just open that up. (Clicks on green flag to open up the ride) Let's do it.
R: People still can't get in.
L: (Zooms in on ride) (Moves cursor to entrance)?
R: Try deleting the fence.
L: (Clicks on 'Delete Objects' icon)
R: Click on the little fence. Like you deleted you know how you deleted that (.5) building.
L: (Continues to click on fence with 'Delete Objects' icon clicked but it is only lighting up the area in blue and not deleting the fence)
R: Are you serious? (.5) Are they all like kept in?
L: No. Serious. (Clicked on 'Delete Objects' icon)
R: "There. Now they can go in."
L: Probably shouldn't have put the like the little entrance [two different places.] (Zooming out of park)
R: [Right at the edge of the other one.]
L: That's find. Whatever.
R: (Laughs)
L: More people will come anyway.
R: We can delete the exit thing too.
L: Hold on we gotta do this too. (.5) We have to delete this. ((Zoomed in on a ride))
    ((Clicked on another ride))
    ((Tries to place a path but the path is blocked by the fence so the people are just standing there without a way to get on the ride))
R: ((Laughs))
    ((The people are leaving the path to the ride because there is no entrance now)) I think it's because we don't have an entrance there's like nothing to delete the fence. I'm thinking how we get an entrance. (1.0) Try 'Operating Mode'.
<<2930416> (.5)
L: ((Drop down menu said that people thought the prices of food was too high so they will not eat)) Alright, well we just need to get um (.5) lower the prices half off. Also, so
R: People will eat
L: ¡No that's what it said people!
R: ¡No No so people will eat.
L: Yeah.
<<2951566> (.5)
L: Yeah we're lowering everything. Hold on. ((Clicks on Hotdog stand))
R: ¡It's not even that expensive.
<<2961110>

Footnotes:
1. Every ride must have an entrance and exit in order to have the customers be able to get to and from the ride.

2. The paths icon allows the gamer to create a paths from other paths in the park to their new ride. This will allow the customers to get to and from the new ride.

3. Reading drop down menu which tells you when staff are unhappy or when rides break down.

4. Reading what a quest thinks of the food stand.

5. When a ride is placed, ride option icons appear around the central ride icon. One icon consists of a green and red flag. The green flag, once clicked, opens the ride for business. Clicking the red flag closes the ride down.

6. People are going past the entrance that the pair built because they cannot get in. The pair forgot to build a path from the main pathway to the ride entrance.
7. The first path placed has a bar blocking the entrance, so the pair cannot add a path to connect the entrance.

8. Customer thoughts came up, saying that the Hotdog stand was too expensive.

**Clip Keywords:**
- Control: L control
- granularity: sequence of episodes
- Transana Users: sharritt

**Clip Notes:**
**Observations**
- Go back to making a thrill ride (no customization)
- However, path doesn't connect properly (another missed opportunity that perpetuates: learning to create paths)
- Delete path and re-create it: strategy works, connects paths properly (learning takes place: learn a strategy to connect paths with ride entrances / exits. however, not very efficient, still not totally fixed)

**Relates To**
4 of 6

1. RCT3 D2 R - cannot connect path to ride entrance / exit
2. RCT3 D3 R - cannot create a path / entrance to ride
3. RCT3 D3 R - cannot fix ride entrance / exits
4. RCT3 D4 R - successfully make a entrance / exit and pathway
5. RCT3 D4 R - repeated strategy works

**Clip: RCT3 D4 R - successfully make an entrance / exit and pathway**

**Collection:** Learning > Trigger: Failure Triggers Learning > Repeated Failure > RCT3 D2/3/4 R - Pathway / entrance to ride problems (sequence)

**File:** D:/My Documents/Dissertation/Data/video/RCT3-Day4-R/RCT3-Day4-R 2007_05_24_21_25_41.avi

**Time:** 0:22:56.7 - 0:27:04.4 (Length: 0:04:07.7)

**Clip Transcript:**

L: It's up though. 
R: >Which is going to be a problem.<
L: Not really. ((Places an entrance and an exit by new ride))
R: Most likely. ((Laughs))
L: Um ((Changes view of camera)) I don't know yet. I will find out. (1.0) ((Zooms in on the new ride)) We'll find out right here. ((Clicks on 'Paths' icon))

<<1392122> (.5)
R: Yes or a bridge or whatever. (.5) We have to build a bridge.
L: ((Starts placing an Asphalt path near entrance and exit of new ride)) Yeah I know. So (.5) how do we do that?
R: Right there ((Points to 'Paths' editing buttons))
L: "No I think this" ((Scrolls over path choices))
R: Oh this is it right here. ((Points to 'Queue Path' button)) (.5) No it's not it.
L: Hmmm
R: ((Points to 'Scenery' icon)) I think it's this button because there's like fences and trees and there should be... (2.0) We can raise the ground right there.
L: ((Scrolls through icons under 'Scenery' icon)) No. We haven't had too much luck with that. (.5) Alright. (.5) How about (.5) we (3.0) ((Moused over all icons)) I don't know how to do that. (.5) Do you want to try the terrain thing?
<<1471657> (.5)
R: Try it and see what happens. ((Clicked on 'Terrain Tools' icon))
((Clicked on 'Terrain textures' icon))
L: Oh that's texture.
R: Do you like this one? ((Clicked on 'Terrain shaping' icon))
((Pointed to 'Adjust terrain tiles' icon)) What does that do?1
L: I don't know.
<<1490720> (.5)
R: ((Laughs)) Do this one so it goes like up and flat. ((Points to 'Adjust terrain tiles' again)) I think. Or maybe not. (.5)
L: ((Clicks on 'Adjust terrain tiles'))
((Clicks on 'Free-form terrain tile shaping' icon))
R: OH YEAH. (.5) "That's what it was."
L: ((Clicked on ground and nothing happened))
R: (1.0) Yeah, that doesn't work.
L: Where does it work? (.5) There's no money. WHAT. What is going on? (.5) No ramps.
R: Didn't we like have ramps like just
L: Yeah that's what I thought we did. (.5) I swear we had a ramp.
Whatever we're gonna have to do something else then.
R: (hhh) Just go into a (unclear speech)
<<1540688> (.5)
L: Oh there might be something here. ((Clicked on ride menu)) (4.0)
((Clicked on 'Exit' icon in ride menu)) I'm gonna try the entrance exit thing. ((Changing view of camera))
((Clicked on path leveling icon in ride exit menu)) (2.0) Ooo! What is this? ((Ground under path automatically is leveling to height of ride exit))
R: Oh my goodness.
L: Cool. ((Placed exit by clicking))
<<1587936> (.5)
R: It's so much nicer. Now we have to go back and do the entrance.
(2.0) Oh that one didn't work. Do we have to draw a [path over...]? L: [Oh yeah] I didn't do that um this thing! ((Clicked on 'Choose an entrance for the ride / attraction' icon))
((Clicked the path leveling button on the ride entrance menu, which successfully leveled the terrain to connect path with entrance))
R: Ahh. (2.0) Now open it.
L: Cool. ((Successful))

Footnotes:
1. The land is on a hill so the pair believes that a path will be a problem.
2. Every ride must have an entrance / exit in order to have the customers be able to get to and from the ride.
3. The paths icon allows the gamer to create a path from other paths in the park to their new ride. This will allow the customers to get to and from the new ride.
4. The problem is that the ride entrance and exits are elevated.
5. The scenery icon allows for the placing of garbage cans, trees, plants, and benches.
6. Terrain icon is for changing the terrain of the landscape either to flat, rocks, or grass. You can also have the option to level land by clicking on the icon that looks like a shovel.

Clip Keywords:
Control : L control
granularity : sequence of episodes
Transana Users : sharritt

Clip Notes:
Observations
- "It's up though" - realizing when building entrance / exits to ride, that a vertical path will be needed
- Begin search through icons for a solution
- Try terrain editing (doesn't help)
- Find a button that levels ground to path (learning occurs; however still missed opportunity on making vertical paths)

Relates To
5 of 6

1. RCT3 D2 R -cannot connect path to ride entrance / exit
2. RCT3 D3 R - cannot create a path / entrance to ride
3. RCT3 D3 R - cannot fix ride entrance / exits
4. RCT3 D3 R - make ride / path (broke) but figure out how to fix it
6. RCT3 D4 R - repeated strategy works

Clip: RCT3 D4 R - repeated strategy works
Collection: Learning > Trigger: Failure Triggers Learning > Repeated Failure > RCT3 D2/3/4 R - Pathway / entrance to ride problems (sequence)
Time: 0:29:03.5 - 0:29:22.2 (Length: 0:00:18.7)

Clip Transcript:

R: Do that terrain thing again. ((Points to 'Auto Terrain leveling with edges smoothed' icon))
L: I will. ((Zooms in on ride))
¼<1746259> (.5)
L: That's what we should have done for that mountain thing.
R: Yeah I know.
L: ((Clicks on a new entrance for the ride using 'Choose an entrance for the ride / attraction' again))
¼<1762176>

Footnotes:
1. Every ride must have an entrance and exit in order to have the customers be able to get to and from the ride. The pair showed less hesitation creating level entrances and exits this time.

Clip Keywords:
Control : L control
granularity : sequence of episodes
Transana Users : sharritt

Clip Notes:
Observations
"Do that terrain thing again" (referring to entrance / path leveling) - "That's what we should have done for the mountain thing" (a previous ride that they struggled with)

Relates To
6 of 6

1. RCT3 D2 R - cannot connect path to ride entrance / exit
2. RCT3 D3 R - cannot create a path / entrance to ride
3. RCT3 D3 R - cannot fix ride entrance / exits
4. RCT3 D3 R - make ride / path (broke) but figure out how to fix it
5. RCT3 D4 R - successfully make a entrance / exit and pathway

Collection: Learning > Trigger: Failure Triggers Learning
> Unexpected Failure

Collection Notes:
Description of Category
This category is reserved for failures in the game by pairs. The pair expected success, but a game event occurred resulting in failure. The failure often was surprising and led to the pursuit of a new task (to resolve the problem).

Clip: Civ4 D3 R - lost battle, surprised at loss
Collection: Learning > Trigger: Failure Triggers Learning >
Unexpected Failure
File: D:/My Documents/Dissertation/Data/video/Civ4-Day3-R/Civ4-Day3-R 2007_05_14_22_41_32.avi
Time: 0:34:45.5 - 0:35:07.5 (Length: 0:00:22.0)
Clip Transcript:

R: "Should I attack them?"
L: Which era are you guys in? Oh you guys are in 100 B.C. ((Talking to peer team)) (.5) Yeah attack 'em. ((Talking to R again))
R: ((Clicks on 'Pillage' icon)): Uh sweet. ((The enemy has turned around and killed the pair's military))
L<2099324> (0.5) No this did not happen.
R: WHAT!
L: He killed all three guys? ((Talking to peer team))
R: ((Pressed 'Enter' to end turn))
L<2107311>

Footnotes:
1. "The unit destroys an improvement in the space it occupies. If there is more than one improvement in the space, the unit will destroy the most valuable. (In other words it would take two actions to destroy both a farm and a road in a space.)" (Civilization IV Manual, p. 39)

2. A possible reason for losing the battle that the pair seems unaware: "Cities are defended from capture by the units inside them. Archer units get a defensive bonus when defending inside cities; this makes them particularly good choices for early garrisons. You can construct a number of buildings to enhance a city's defense: walls and castles, for example." (Civilization IV Manual, p. 49)

Clip Keywords:
Control : R control
granularity : short episode
Transana Users : sharritt

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**Clip Notes:**

**Observations**
- Lost battle, in attacking city: don't notice they have multiple units, and a home-field advantage (missed opportunity?)

**Summary**

<table>
<thead>
<tr>
<th>Control</th>
<th>13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control : L control</td>
<td></td>
</tr>
<tr>
<td>Control : R control</td>
<td>4</td>
</tr>
<tr>
<td>Transana Users : sharritt</td>
<td>15</td>
</tr>
<tr>
<td>granularity : sequence of episodes</td>
<td>14</td>
</tr>
<tr>
<td>granularity : short episode</td>
<td>1</td>
</tr>
</tbody>
</table>

Clips: 15

Total Time: 0:32:30.4
H.4 GAME FEATURE TRIGGERS LEARNING

Collection: Learning > Trigger: Game Feature Triggers Learning > External Cognition / Offloading

Collection Comment:
cognitive offloading of responsibility to game AI

Collection Notes:
Description of Category
External Scaffolding / Cognitive Offloading

This feature of games occurs when mental offloading can occur within the game. Well designed games have some AI built in, where game features such as workers, employees, repetitive tasks, etc. can be 'handed off' to the computer for it to manage. This is especially useful in turn-based games, so that each turn gamers don't have to repeat commands for each and every unit they are controlling.

Clip: ME D3 R - lots of time wasted to adjust production (counter example: offloading needed)
Collection: Learning > Trigger: Game Feature Triggers Learning >
External Cognition / Offloading
File: D:/My Documents/Dissertation/Data/video/MakingHistory-Day3-
R/MakingHistory-Day3-R 2007_05_15_06_29_45.avi
Time: 0:05:43.5 - 0:11:32.7 (Length: 0:05:49.2)
Clip Transcript:

R: (((Scrolled around Russia)))
(((Clicked on Russia's flag))
(((The 'Turn Summary' menu popped up for Russia)))
(((Clicked on 'Military' icon)));
(((Clicked on 'Diplomatic' icon)));
(((Scrolled to the West side of Russia))
(((Clicked on a ship in the Baltic Sea))
(((Scrolled to a different spot in the Baltic Sea))
(((A green lined appeared showing that the ship chosen was on the move)))
(((Scrolled back over to the East side of Russia))

<414588> (.)
R: (((Clicked on a military unit several times - nothing happened)))
(((Clicked on an Alliance)))
(((Clicked on 'Production'))
((Production window popped up))
(((Clicked on Military)))
(((Clicked on a factory))
(((Clicked on 'Production'))
(((Clicked on 'Air Force'))
(((Clicked on 'Bombers'))
(((Clicked on a 'Military' unit))
(((Clicked on a army division))
(((Clicked on the map))
(((Green movement line appeared outlining the path for the military to take))
(((Clicked on a different military unit))
(((Clicked on a different area of map))
(((Green movement line appeared outlining the path for the military to take))

L: Why would it go all the way around? ((Referring to green line 'Unit Moving' that looks like it is going around the world))
R: Yeah I don't know this is just ridiculous. ((Double clicked on random military unit))
(((Clicked on 'Air Force' icon))
(((Scrolled to the West of Russia))

R: ((Clicks on 'Diplomatic Agreements' icon))
((Clicks on a nation))
((Clicks on a diplomatic action))
((Confirms diplomatic action))
(('Treaty Rejected' window pops up))
(((Clicked on 'OK'))
(((Clicked on diplomatic action))
((Confirmed diplomatic action))
(('Treaty Rejected' window popped up))
(((Clicked on 'Diplomatic' icon))
(((Clicked on 'Diplomatic Agreements'))
(((Clicked on a nation))
((Clicks on a diplomatic action))
(('Clicks 'No' for confirmation of diplomatic action))
(((Clicked on 'Diplomatic' icon))
(((Clicked on 'Diplomatic Agreements'))
((Click on a nation))
(((Clicked on 'Diplomatic' icon))
(((Clicked on 'Diplomatic Agreements'))
((Click on a nation))
(((Clicked on 'Diplomatic' icon))
(((Clicked on 'Diplomatic Agreements'))
((Click on 'End Turn'))

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R: «Scrolls south on map))
L: Click on that. «Points to a military unit)
R: «Clicks on 'Military' icon))
«Clicks on 'National Events')
L: «Points to Navy))
R: «Clicks on Navy)
L: Then you can move those around I think.
R: «Clicks on a navel ship choice)) "Look they're Swedish."
L: Oh.
R: «Clicks on 'Military' icon))
L: Well I don't know what that was.
R: «Scrolls across continent again)

Footnotes:
1. "The middle of the right-hand panel contains policy-specific information and actions. This Interface section looks at the Turn Summary panel. Other policy panels will be explored in their own sections. The Turn Summary appears automatically after you've clicked End Turn. During a turn, you can click on the globe icon to see the panel." (Making History Manual, p. 11)

2. "Your army, navy, and air forces contain a variety of military units, each with a set of offensive and defensive capabilities. Offensive powers are measured in how well a unit can attack on land, in air or at sea. Defensive strength is assessed by how many hits a unit can absorb in battle. Some units have capabilities unique to their unit type." (Making History Manual, p. 14)

3. "In the Diplomatic panel, you can propose treaties and review alliances. As the game progresses, you can declare war, demand surrender, or beg for peace." (Making History Manual, p. 25)

4. "A green arrow will appear, outlining your path. The division panel will detail the "travel time" for the division." (Making History Manual, p. 16)

5. "When MAKING HISTORY starts, your cities might produce a mix of arms, goods, military units, and research. Additionally, cities can invest in expansion and upgrades and port cities can produce Transport Capacity credits and repair naval forces. The Industry summary shows how many IPUs (Industrial Production Units) your economy produced this turn. Production can be dampened by insufficient supplies, military attack, dissatisfied workers or workers from a different culture." (Making History Manual, p. 31)

6. "Fighting in squadrons, air units can attack land and air forces,
cities, ships, and resource producers. They can also patrol and perform reconnaissance over land and water, both crucial to unfogging regions. Air units cannot control regions. In the game, look in Military Unit Types in the Book to see air unit capabilities. Some unique air unit capabilities are fighters and bombers." (Making History Manual, p. 17)

7. "Bombers can travel farther than fighters. They can attack everything fighters can attack, plus naval pairs, cities and resource producers." (Making History Manual, p. 17)

8. "You can use the Select Nation and Select Alliance buttons to propose or modify your diplomatic agreements. To individual nations you can propose various treaties. To an alliance you can only propose or demand peace." (Making History Manual, p. 27)

9. "Some game actions are implemented during a turn. For example, treaties are accepted or rejected directly after you send them. Other game actions, such as military movements, do not happen until you end the turn. Click on the End Turn button at the bottom right of the screen to execute your actions and move to the next turn." (Making History Manual, p. 12)

Clip Keywords:
- Control : R control
- granularity : short episode
- Transana Users : sharritt

Clip Notes:
Observations
- Attempting to boost military production from a factory.
- Game offers little feedback, and complicated interface. Difficult to determine if something gets changed, and what the effect is.
- Too much micro-management of production is required to get any decent results: takes away from the game if anything. Offloading (automate) feature might be an improvement, or at least a less complicated interface (adjusting individual factories' outputs).

Clip: MH D3 R - monitoring / changing output of individual factories (offloading needed)
Collection: Learning > Trigger: Game Feature Triggers Learning >
External Cognition / Offloading
File: D:/My Documents/Dissertation/Data/video/MakingHistory-Day3-R/MakingHistory-Day3-R_2007_05_15_06_29_45.avi
Time: 0:29:56.9 - 0:30:57.1 [Length: 0:01:00.2]

Clip Transcript:
L: «(Clicked on 'Production' of a city)»
«(Clicked 'Air Force')»
«(Clicked on 'New Production Order')»
«(Clicked on an Air Plane)»
«(Clicked on 'Production')»
«(Production window popped up)»
«(Clicked on 'Air Force')»
«(Clicked on Military)»
«(Clicked on 'New Production Order')»
«(Clicked on a 'Goods')»
«(Clicked on 'Air Force')»
«(Clicked on 'Fighters')»
«(Clicked on 'New Production Order')»
«(Clicked on three different areas of the map)»
«(Clicked on 'Production')»
«(Clicked on 'Air Force')»
«(Clicked on 'Bombers')»
«(Clicked on 'New Production Order')»

Footnotes:
1. "When MAKING HISTORY starts, your cities might produce a mix of arms, goods, military units, and research. Additionally, cities can invest in expansion and upgrades and port cities can produce Transport Capacity credits and repair naval forces. The Industry summary shows how many IPUs (Industrial Production Units) your economy produced this turn. Production can be dampened by insufficient supplies, military attack, dissatisfied workers or workers from a different culture." (Making History Manual, p. 31)

2. "Fighting in squadrons, air units can attack land and air forces, cities, ships, and resource producers. They can also patrol and perform reconnaissance over land and water, both crucial to unfogging regions. Air units cannot control regions. In the game, look in Military Unit Types in the Book to see air unit capabilities. Some unique air unit capabilities are fighters and bombers." (Making History Manual, p. 17)

3. "Goods keep your workers satisfied and bring you money. When you produce goods, you can sell them to your citizens and trade them on the World Market. These profits strengthen your financial score (important to your overall score) and give you money to spend elsewhere. If workers lack goods, production can suffer. You can review goods levels in the Supplies panel." (Making History Manual, p. 32)

4. "Fighters are strong in air-to-air combat. They can patrol, support land battles, and attack land pairs and resource producers." (Making History Manual, p. 17)
5. "Bombers can travel farther than fighters. They can attack everything fighters can attack, plus naval pairs, cities and resource producers." (Making History Manual, p. 17)

Clip Keywords:
- Control : L control
- Game Focus : Making History - Economy / Production
- granularity : short episode
- Transana Users : sharritt

Clip Notes:
Observations
Production; repetitive

Clip: Civ 4 D2 R - game draws attention to icon: to build more cities
Collection: Learning > Trigger: Game Feature Triggers Learning > External Cognition / Offloading
File: D:/My Documents/Dissertation/Data/video/Civ4-Day2-R/Civ4-Day2-R 2007_05_11_19_45_35.avi
Time: 0:49:18.6 - 0:49:40.2 (Length: 0:00:21.6)
Clip Transcript:

R: What are these people doing? (Scroll cursor over to pair of warriors at top of map)

(Game has an icon highlighted and blinking to build a city)

R: Oh, you can, you can build a city! Anywhere! I can build a city somewhere. I'm gonna send them somewhere else. (Scrolls around map to fight a spot for a new city) Like down here. Like right here I can build a city. (Points cursor to a spot on map)

L: Yeah do it right there. (Points to a different spot on the map)

R: (Scrolls over to spot where L suggested)

(LClicks on the spot)

L: It can be like our defense city.

Footnotes:
1. "If an action icon is flashing, the computer is telling you that action is particularly useful. For example, the "fortify" action will flash if an archer is in an empty city. (But remember that the computer doesn't know about your strategic situation that archer may very well be more needed elsewhere." (Civilization IV Manual, p. 38)

Clip Keywords:
- Control : R control
- granularity : short episode
- Transana Users : sharritt

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Clip Notes:
Observations
- Learn how to build a 2nd city!
- Mouseover, highlighted icon by game
- This was a missed opportunity by the pair for some time.
- Previously in D2 cities had been pillaged from other Civs, and destroyed rather than adding the city to their own Civ.
- To advance in Civ 4 it is important to build lots of cities. So far the pair had only their original home city, and hadn't expanded to more cities.
- The game draws attention to the neglected aspect: highlighting and flashing the icon to build a 2nd city, which is then mouse-overed to view what the icon does. This causes the realization that more cities can be built.
- About a minute or two after the episode, the 2nd city is created.
- Find a way to connect this episode with previous events that lead up to it
- When they take an enemy village and destroy it rather than keeping it (missed opportunity)
- Previous events which are relevant (is this supported in the software)

Collection: Learning > Trigger: Game Feature Triggers
Learning > External Cognition / Offloading > Civ 4 D1/2 R - visually supported game goals (sequence)
Collection Comment:
use the 'technology advisor' to see the game goals, visually

Clip: Civ 4 D1 R - visually supporting game goals
Collection: Learning > Trigger: Game Feature Triggers Learning > External Cognition / Offloading > Civ 4 D1/2 R - visually supported game goals (sequence)
Time: 0:43:17.6 - 0:44:07.7 (Length: 0:00:50.1)
Clip Transcript:
((Window pops up in game, explaining the new technology item the pair unlocked))

((A description of the new technology item is listed; as well as new items that can be built))
R: ((Clicks on one of the items that can be built, then exits back to pop-up))

((Clicks 'Continue' to proceed in game))

((List of future / researchable items appears, prompting pair what they would like to research next))
R: ((Clicks first button called 'Let's see the big picture' which pulls up the 'Technology Advisor'))
R: ((Moused over the different items to be researched next))
L: 'Iron working. Can remove jungle!' (Laughs)
R: ((Scrolls through the 'Technology Advisor' from left to right according to advancement))
R: "Build a Winery"? ((Surprised))

Footnotes:
1. The 'Technology Advisor' allows implications of decisions to be viewed by displaying a tree of technology items along with their contingencies. The 'Technology Advisor' displays all 80 technologies available to the gamer (including those available later in the game) from left to right. The technologies on the left are less advanced than the ones further to the right.

2. "'Build a Winery' provides access to the wine resource. It can be built only in a space with that resource." (Civilization IV Manual, p. 75)
3. A technology will appear on your list only when you have learned the necessary prerequisite technologies.

4. "Pottery allows your workers to construct cottages, which increase the commerce in their space. Pottery also allows you to build granaries in your cities." (Civilization IV Manual, p. 71)

Clip Keywords:
  Control : R control
  granularity : sequence of episodes
  Transana Users : sharritt

Clip Notes:
Observations
- Game interface: choices offered also can be seen from 'the big picture' in order to see consequences of player choices.

- A feature of Civ 4 is to provide a visual layout of game goals, masked as 'technology advisor'. There are advisors for other important aspects of game, such as a 'military advisor', etc. These give players the feeling of being in control (like a dictator / president) of their Civilization, while visually laying out the goals / unlockables of the game.

- (See Civ 4 / R / Day 2 for later manifestation of this: use the technology advisor to pick course of civilization)

Relates To
1 of 2

2. Civ 4 D2 R - visually supported game goals (continued)

Clip: Civ 4 D2 R - visually supported game goals (continued)

Collection:  Learning > Trigger: Game Feature Triggers Learning > External Cognition / Offloading > Civ 4 D1/2 R - visually supported game goals (sequence)
File:  D:/My Documents/Dissertation/Data/video/Civ4-Day2-R/Civ4-Day2-R 2007_05_11_19_45_35.avi
Time:  0:19:14.3 - 0:19:56.7  (Length: 0:00:42.4)

Clip Transcript:

L:  What should we (.) 'Code of Law'? ((Scrolling through the list of technologies that can be researched next))
L:  ((Some technology items have the word 'Recommended' after them))
 ((The game pops up a suggestion menu with categories for what the pair should probably work on next))
R:  Hold on. Look for other kind (.5) click on 'Let's see the big
picture' ("Let's see the big picture' pulls up the 'Technology Advisor');

R: What do we need? (Looking at the 'Technology Advisor' screen)

R: Hold on.

R: Like, what stuff do we have that we (.5) Mining leads to Masonry?

L: (Mouses-over different technologies listed in the 'Technology Advisor')

R: Hold on.

L: (Laughs)

R: ((Looking at the 'Technology Advisor' screen»

L: I think the green ones are the ones we have. (Scrolls through 'Technology Advisor' screen from left to right)

L: We should probably get this. Says it leads to Monarchy. (Mouses over 'Monotheism')

L: (Monotheism is not colored green)

L: 'Monotheism'? Yeah.

L: (Looks over to peer team's screen)

R: Really? (Laughs)

L: Oops. (Didn't click on 'Monotheism' from 'Technology Advisor' screen wrong menu popped up)

R: 'Monotheism'? (Clicks 'Monotheism')

L: Alright, now I think we can get other guys. (Scrolls across map)

Footnotes:
1. "'Code of Law' enables caste system." (Civilization IV: Tech Tree & Specifications Charts)

2. The game suggests what technology items the gamers should research next.

3. The 'Technology Advisor' allows implications of decisions to be viewed by displaying a tree of technology items along with their contingencies. The 'Technology Advisor' displays all 80 technologies available to the gamer (including those available later in the game) from left to right. The technologies on the left are less advanced than the ones further to the right.

4. Green boxes are unlocked items; blue boxes have not yet been researched yet.

5. "'Monotheism' allows Judaism" and "enables organized religion".

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(Civilization IV: Tech Tree & Specifications Charts)

**Clip Keywords:**
- Control: L control
- granularity: sequence of episodes
- Transana Users: sharritt

**Clip Notes:**

**Observations**
- Developed a complex goal set: represented well in the software. Look at big-picture to figure out what to research next, to best help their civ.

- Good game interface: complex goals supported visually, and correlate to users' mental models (external cognition?)

- Continued support for positive aspects of visually supporting game goals. Was learned on D1, more advanced understanding and use on D2

Relates To
2 of 2

1. Civ 4 D1 R - visually supporting game goals

**Collection:** Learning > Trigger: Game Feature Triggers Learning > External Cognition / Offloading > RCT3 D1/3 R - learn mechanics automatically fix rides (sequence)

**Clip: RCT3 D1 R - game draws attention to broken ride**

**Collection:** Learning > Trigger: Game Feature Triggers Learning > External Cognition / Offloading > RCT3 D1/3 R - learn mechanics automatically fix rides (sequence)

**File:** D:/My Documents/Dissertation/Data/video/RCT3-Day1-R/RCT3-Day1-R

**Time:** 0:27:13.5 - 0:28:07.1 (Length: 0:00:53.6)

**Clip Transcript:**

L: High flyer has got its doors stuck open. (**Pop up window appeared stating that High Flyer has its doors stuck open; suggesting to send a maintenance person**) NO! Go to high flyer.

R: Maintenance.

L: Where's High flyer?

R: Is that High flyer? (**Points to a ride on the screen**)

L: Yeah, probably. (**Clicks on the ride that R pointed to**)

R: We should definitely raise the price on these huge long wait ones.
L: ((Clicks on maintenance man icon)) That high flyer?  
R: Maintenance. (.5) Ok now he's going.  
L: ((Clicked on maintenance guy walking to ride))  
R: ((Reading game dialog)) 'Put me down. My work is varied. Bored bored bored.' ((Reading thoughts of maintenance man))  
≡<1662405> (.5)  
L: I don't think that's high flyer is it?  
R: I dunno. We should -  
L: ((Scrolls over ride just chosen))  
R: Oh shoot. Where's the high flyer?  
L: ((Name of ride appears))  
R: I dunno. We should.  
L: ((High flyer does not appear for the ride chosen)) >TUMBLER. That's tumbler.<  
R: Oh shoot. Where's the high flyer?  
L: ((Changes camera view to find high flyer ride)) Is that the high flyer? ((Scrolls over the Chairswing to have name of ride pop up))  
R: No that's the Chairswing.  
≡<1677029> (.5)  
L: We don't have any more rides. ((Changes view of camera again))  
R: Oh [there it is.]  
L: [Oh there it is.]  
R: Oh I didn't see that one.  
L: ((Window pops up saying that high flyer has been fixed)) >Has been fixed. Has been fixed.< Maintenance guy did it.  
R: Try to click...  
≡<1686230> 

Clip Keywords:  
  Control : L control  
  granularity : sequence of episodes  
  Transana Users : sharritt  

Clip Notes:  

Observations  
- Game notifies player of broken ride: draws attention to ride. maintenance called, and price raised after observing long queue line.  
- Shows how game can redirect attention and encourage other game functions to be used (encourages learning)  
- Team is working on building a new ride. For some time, most all attention has been focused on building new rides.  
- Pair spent a long time trying to figure out which ride as High Flyer. They clicked on one ride and later found out that it wasn't the ride that they needed to fix. They then spent some time changing the camera view so they could see all rides. While doing this they had to scroll over all rides to have the names of the rides pop up. They finally
changed the camera view one last time to find High Flyer. Then the
game notified them that the ride had been fixed by a nearby maintenance
person. The pair did not know that if a maintenance person is in the
area of a broken game that they will fix it automatically without the
player telling them to do so.

2. RCT3 D3 R - waiting for mechanic to fix ride (learned he's
automated)

Clip: RCT3 D3 R - waiting for mechanic to fix ride (learned
he's automated)

Collection: Learning > Trigger: Game Feature Triggers Learning >
External Cognition / Offloading > RCT3 D1/3 R - learn mechanics
automatically fix rides (sequence)

2007_05_24_18_45_02.avi
Time: 0:51:00.6 - 0:53:28.3 (Length: 0:02:27.6)

Clip Transcript:

L: ((Zoomed out from park)) “Nobody's on this ride.”
R: ?No one is on the ride?!

L: Well (.5) I don't know see. ((Zooms out with camera))
R: Is it broken?
L: Yeah.

R: How much does it cost for that one? (.5) 'Minutes from last'
((Reading from ride menu the last time the ride was checked by
maintenance)) Uh, it should be like every minute. (.5) Get pick the
janitor for the thing. ((Points to maintenance man icon))
L: ((Clicks on maintenance icon)) Oh [yeah.]
R: [Like I] mean this thing so he can fix it.

L: "Can I pick him up and have him go over there?" ((Maintenance guy
is nowhere near the ride))
R: I don't know.

L: ((Clicked on maintenance guy)) “Well we need him because we're
losing money.” (.5) There he is. He's coming.
R: Yep. ((Teacher came in to ask the students a question)) (1.0) How
much is this ride?
L: ‘A lot”
R: It is?
L: "We're making cash on it.”

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R: Fast forward it I hate it when it's dark. "(The game has turned night mode on and screen is darker)"
L: "(Clicks the fast forward button)" Ok hopefully uh the janitor went to go or the -
R: "(Yawns)" Mechanic.
L: Yep. "(Clicks on fast forward again)"
"(Zooms out from park)"

Footnotes:
1. Every park ride has a ride inspection interval. Increasing the frequency of inspections increases ride reliability, but puts more burden on the park's mechanics.

2. At the top left of the screen there are buttons to play, pause, and fast-forward time. At any point in play gamers can pause time until they want to resume business, or fast-forward the game play to speed up time (to watch the park / profits change over time).

Clip Keywords:
Control : I control
Game Focus : RCT3 - Editing Rides
Game Focus : RCT3 - Staffing
granularity : sequence of episodes
Transana Users : sharritt

Clip Notes:
Observations
- Edit rides / staffing (fix ride)

Relates To
2 of 2

1. RCT3 D1 R - game draws attention to broken ride

Collection: Learning > Trigger: Game Feature Triggers
Learning > Game Cue Redirects Attention

Collection Comment:
focus redirected to another game aspect; prompted by game itself

Collection Notes:
Description of Category
Redirections occur when the game players have their attention redirected by a feature of the game. Often gamers will be playing the game and doing one thing, when they are interrupted or given a message that changes their focus to another, possibly neglected, aspect of the game.

Clip: Civ 4 D2 R - game draws attention to icon: to build
more cities

Collection: Learning > Trigger: Game Feature Triggers Learning > Game Cue Redirects Attention

File: D:/My Documents/Dissertation/Data/video/Civ4-Day2-R/Civ4-Day2-R 2007_05_11_19_45_35.avi

Time: 0:49:18.6 - 0:49:40.2 (Length: 0:00:21.6)

Clip Transcript:

R: "What are these people doing?! ((Scrolled cursor over to pair of warriors at top of map))
  ((Game has an icon highlighted and blinking to build a city)))
  "<2962311> (. )
R: "Oh, you can, you can build a city! Anywhere!"  I can build a city somewhere. I'm gonna send them somewhere else. ((Scrolls around map to fight a spot for a new city)) Like down here. Like right here I can build a city. ((Points cursor to a spot on map))
  "<2973747> ( . )
L: Yeah do it right there. ((Points to a different spot on the map))
R: ((Scrolls over to spot where I suggested))
  ((Clicks on the spot))
L: It can be like our defense city.
  "<2980072>

Footnotes:
1. "If an action icon is flashing, the computer is telling you that action is particularly useful. For example, the “fortify” action will flash if an archer is in an empty city. (But remember that the computer doesn’t know about your strategic situation that archer may very well be more needed elsewhere." (Civilization IV Manual, p. 38)

Clip Keywords:
  Control : R control
  granularity : short episode
  Transana Users : sharritt

Clip Notes:
Observations
- Learn how to build a 2nd city!
- Mouseover, highlighted icon by game
- This was a missed opportunity by the pair for some time.
- Previously in D2 cities had been pillaged from other Civs, and destroyed rather than adding the city to their own Civ.
- To advance in Civ 4 it is important to build lots of cities. So far the pair had only their original home city, and hadn't expanded to more cities.
- The game draws attention to the neglected aspect: highlighting and 
flashing the icon to build a 2nd city, which is then mouse-overed to 
view what the icon does. This causes the realization that more cities 
can be built.

- About a minute or two after the episode, the 2nd city is created.

- Find a way to connect this episode with previous events that lead up 
to it.

- When they take an enemy village and destroy it rather than keeping it 
(missed opportunity)

- Previous events which are relevant (is this supported in the software)

Clip: MH Di R - game draws attention to another battle
Collection: Learning > Trigger: Game Feature Triggers Learning > Game 
Cue Redirects Attention
File: D:/My Documents/Dissertation/Data/video/MakingHistory-Dayl-
R/MakingHistory-Dayl-R 2007_05_10_20_50_36.avi
Time: 0:22:22.0 - 0:26:33.0  (Length: 0:04:11.0)
Clip Transcript:

L: We can declare. ("National Events' popped up telling the pair that 
Canada seized control of Michigan") What Canada seized control of 
Michigan?
R: Oh crap.
L: What? ("Clicks on 'Mini Map'")

L: Where's Michigan? ("Scrolls over continent to find Michigan")
R: Oh shoot there it is.
L: Not occupied, Oooh who did?
R: We can take that back. Canada. We can't take it from Canada.
L: Dude, ah. ("Zooms in on map")

R: Do we have like any armies here? ("Clicks through the 
different map views")
L: I don't know where the "hell (.5) our armies are."
L: Alright this guy (.5) ("Clicks on a plane in Georgia") needs to go 
(.5) over here. ("Clicks on an area in Michigan") (1.0)
L: ("The plane does not move") How do you move 'em again?
R: The planes won't move (1.0) like I can get the (1.0) armies to move 
but I can't get the planes to move.

L: ("Clicks on a plane in Georgia")
((Clicks on Washington)) Do you know how to move planes? ((Clicks on the same plane in Georgia))
((Clicks on Washington))
((Moves cursor to 'Mini Map' of nations));
((Clicks on 'Ideology' map));
((Clicks on 'In Supply' map));
((Clicks on 'Operational' map));
((Asks the peer team for help with moving planes))
Peer team: Do you?
L: Do you know how? ((Scrolls through US continent))
Peer team: No. Do you know how?
L: No ((Laughs))
Peer team: ((Laughs))

Peer team: That would be really helpful. How do you get your file like that? It would make it so much easier. Having this crazy...
L: ((Changing the view of the map))
((Zooming in and out on map))
((Zooms in and out on Michigan)) You just right click it.
Peer team 1: Ohhhh ((Laughs))
Peer team 2: Oh it's so much easier.

Peer team: Alright, somehow we just need to get... uh, what the heck?
L: What the heck? ((Scrolling across Midwest region of US))
((Right clicked on an army in Canada))
((Clicked on an army in US that was engaged with Canadian forces))
"What the heck?"
R: We are going to kill them. How do you move those planes?

L: ((Clicked on an airplane in Georgia))
(('Air Force' menu popped up));
((Clicked on 'Rebase' in the 'Air Force' menu)) Oh here we go. (.5) Canada. What the heck? Why isn't Canada in here? ((Scrolls through list of states / countries to find Canada))
R: Maybe you gotta send (.5) try sending the one from New York to Canada.

L: ((Continues to scroll through states / countries)) , Or to Michigan.. ((Continuing to scroll through list of states / countries))
R: Yeah go to Minnesota. Then we can attack them from there.

L: ((Clicks on Minnesota)) Go ((Scrolls over continent))
((Sighs, places hands up by mouth))
((Scrolls through map along green active path from Georgia to...)

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Minnesota)
R: Oh man we're "going down."
((Mouse controls traded))
L: Canada is seizing control of oh my gosh. Alright, how do we declare war on Canada?
R: ((Clicks on 'International Events'))
L: Canada joined them? ((War Extends popped up))
R: Stupid Canada. ((Laughs))
L: Dude
R: Wait where are these armies going? We can send this army, (1.5) wait come over here.
L: Here did we ever (.5) did we declare war on Canada? Did we ever do that?
((Points to score details))
R: Yeah I think we did. Alright, there we'll move back the .
L: Yeah see Canada is one of the allies (.5) they don't like us. (1.0)
R: Oh geez.
L: Here move (.5) uh (.5) some of them right here. ((Points to Canada))
R: Where the hell was this?

Footnotes:
1. "Here you can learn about production, idle cities, resource shortages, trade changes, completed research, and industrial upgrades." (Making History Manual, p. 11)

2. "Use the mini map to quickly move around the world. Clicking anywhere on the mini-map will take you immediately to that destination. The default view is of your nation. To return home, click on your country’s flag in the upper right corn." (Making History Manual, p. 8)

3. "Every nation in MAKING HISTORY belongs to one of four ideologies: Authoritarian, Communist, Democratic, or Fascist. With the Ideology map you can see which nations share ideologies. You can also click on regions, nations and capital cities." (Making History Manual, p. 9)

4. "With the In Supply map you can see what trade routes are open to your nation. Occupied regions and enemy lands are “out of supply”. Your military divisions need open supply lines to remain armed and at full strength. From this map you can also click on regions, nations and capital cities." (Making History Manual, p. 10)
5. "The Operational map is central to playing MAKING HISTORY. From here, you can move forces and view military divisions, battles, cities, regions, nations, and resources. You can click on any city, region, or nation in the game." (Making History Manual, p. 9)

6. "Fighting in squadrons, air units can attack land and air forces, cities, ships, and resource producers. They can also patrol and perform reconnaissance over land and water, both crucial to unfogging regions. Air units cannot control regions. In the game, look in Military Unit Types in the Book to see air unit capabilities. Some unique air unit capabilities are fighters and bombers." (Making History Manual, p. 17)

7. "Major diplomatic and combat events appear here. See what treaties have been signed, wars have been declared, and regions are in conflict." (Making History Manual, p. 12)

Clip Keywords:
- Control : L control
- Control : R control
- granularity : short episode
- Transana Users : sharritt

Clip Notes:
Observations
- Discovered that Canada occupies Michigan. Focus is shifted to this battle: raises engagement of peer (non-active mouser)
- Much time wasted trying to learn how to move & use airplanes

Collection: Learning > Trigger: Game Feature Triggers
Learning > Game Cue Redirects Attention > Civ4 D1/2/3/4 R - Game redirects to diplomacy / avatars (sequence)

Clip: Civ4-Day1-R - first interaction day 1
Collection: Learning > Trigger: Game Feature Triggers Learning > Game
Cue Redirects Attention > Civ4 D1/2/3/4 R - Game redirects to diplomacy / avatars (sequence)
File: D:/My Documents/Dissertation/Data/video/Civ4-Day1-R/Civ4-Day1-R 2007_05_10_17_26_19.avi
Time: 0:13:47.5 - 0:14:08.9 (Length: 0:00:21.4)
Clip Transcript:

R: Press Enter.
L: ((Clicks Enter))
R: ?What?" ((Trader window pops up));
=>832489> (.)
L: 'I am [unclear speech]' ((Reading from pop up window of a leader

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who has something to say) He's Greek.
R: He's gonna declare war against us. ((Laughs))
L: ((Laughs)) Oh.
R: We should probably -
L: We should probably go start building an army. ((Uses a shortcut on the keyboard))
((Highlights 'Farewell'))

Footnotes:
1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now." (Civilization IV Manual, p. 101)

Clip Keywords:
- Control : L control
- Game Focus : Civ 4 - avatar interaction
- granularity : trend
- Transana Users : sharritt

Clip Notes:
- Avatar interaction

Clip: Civ4-Day2-R - trade w/ Isabella

Collection: Learning > Trigger: Game Feature Triggers Learning > Game Cue Redirects Attention > Civ4 D1/2/3/4 R - Game redirects to diplomacy / avatars (sequence)

File: D:/My Documents/Dissertation/Data/video/Civ4-Day2-R/Civ4-Day2-R_2007_05_11_19_45_35.avi
Time: 0:16:56.5 - 0:17:29.9 (Length: 0:00:33.4)

Clip Transcript:

R: 'Let's make a deal.' ((Isabella, a leader, pops up to trade; reads choices from screen))
L: 'Open Borders?' ((Reading choices from pop up window))
R: Yeah. Tell them that's a good deal.
L: To do it?
R: (.)
L: We would -
R: "What are the current deals that we have together?" ((Reading choice from screen))
L: «Clicks on 'What are the current deals that we have together?')»: Nothing. «(Laughs) Oh wait.»

R: Open borders.

L: 'Isabella offers clam for wheat.' «(Reads from screen)»

(Roves mouse from 'Trade Offers' to 'Farewell' but does not click anything)

R: Yeah. «.5) Say 'Farewell.' » «(Reads choice from screen)»

L: «Clicks on 'Farewell')»:

Footnotes:
1. "Some "annual" deals continue over time. This option lets you review any such deals you have in place with the leader." (Civilization IV Manual, p. 100)

2. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now." (Civilization IV Manual, p. 101)

Clip Keywords:
- Control: L control
- Game Focus: Civ 4 - avatar interaction
- granularity: trend
- Transana Users: sharritt

Clip Notes:
- Observations
  - Avatar interaction

Clip: Civ4-Day2-R - war w/ Alexander

Collection: Learning > Trigger: Game Feature Triggers Learning > Game

Cue Redirects Attention > Civ4 D1/2/3/4 R - Game redirects to diplomacy / avatars (sequence)

File: D:/My Documents/Dissertation/Data/video/Civ4-Day2-R/Civ4-Day2-R
2007_05_11_19_45_35.avi

Time: 0:41:26.1 - 0:42:35.2 (Length: 0:01:09.1)

Clip Transcript:

R: 'Peace Treaty.' «(Reading choices from leader on screen who would like to trade))»

L: »NO.< We're gonna win dude. We're winning it.

R: He's furious.

L: »No, no, no.< It ain't happening. It ain't happening. «(Points to 'It ain't happening')»

R: Hold on here 'Willing to negotiate'. «(Read option from leader's choices given)»

L: Wait try that first.
R: 'Declare war on Isabella?' 
((Reading from screen the options that the leader is giving the pair))
L: No dude.
R: ((Clicks on pairs tradable items))
L: Forget that just we we're gonna take over his empire anyways.
(.5) 'Alexander offers to cease fire.' 
((Reading from screen))
R: ((Clicking on leader's tradable items))
L: (1.0) Make him give us gold.; ((Laughs))
R: What? I am making him give us a city. 
((Clicks a city of Alexander's to trade he starts flying his fists around and shaking his head no))
L: >Do it.<
R: ((Clicks on 'Never Mind'))
((Clicks on 'Farewell.'));

Footnotes:
1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now." (Civilization IV Manual, p. 101)

Clip Keywords:
Control : R control
Game Focus : Civ 4 - avatar interaction
granularity : trend
Transana Users : sharritt

Clip Notes:
Observations
- Avatar interaction

Clip: Civ4-Day3-R - new Civ discovered
Collection: Learning > Trigger: Game Feature Triggers Learning > Game Cue Redirects Attention > Civ4 D1/2/3/4 R - Game redirects to diplomacy / avatars (sequence)
File: D:/My Documents/Dissertation/Data/video/Civ4-Day3-R/Civ4-Day3-R_2007_05_14_22_41_32.avi

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R: ((A leader has popped up to trade));
L: Whoa.
R: What?
L: 'Greetings honorable Craig.' ((Reading from leader screen))
R: 'There's only peace in our town.' ((Reading from leader screen))
\[<1806934>\]
L: There's another guy?
R: Yeah. ((Clicked on the pairs tradable items)) ((Scrolls through leader's tradable items)) (1.0) "Declare war has ended." ((Reading pop up on screen)) (1.0) Why can't they do that?
(.5) How much gold we like from them? ((Clicks on leader's gold))
\[<1831974>\]
L: ((Points to gold supply)) No dude they only have ten. !We have so much !gold let's give 'em gold for something.!
R: ((Clicks 'Ok')) Well we do. ((Clicked on pairs gold supply))
L: Give 'em !gold for uh (.5) !'Open Borders.'
R: ((Clicks on gold amount and increase it for trade))
\[<1845630>\]
R: ((Clicks 'Ok')) "Whatever." ((Clicks on several of the leader's tradable items nothing is appearing for options))
L: "No passing?"
R: ((Clicks on gold that was on the trade table));
L: !'Open Borders for Open Borders?'! ((Reading what in on the trade table for the leader and the pair))
((Laughs))
R: Yep.
L: !>What. What.<!
R: I guess we just have to end it somewhere. ((Clicks on 'Farewell'))
\[<1876590>\]

Footnotes:
1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. "On the Trade Table, all of your tradable items are listed in the right-hand column, while the other leader's stuff is in the left hand column. To make an offer, click on one (or more) items in your column, and one (or more) items in the other leader's column, and then click on the "make offer" button. If the leader agrees, the deal is done. If not, you can exit diplomacy or try another deal." (Civilization IV Manual, p. 101)

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3. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now."
(Civilization IV Manual, p. 101)

Clip Keywords:
- Control : R control
- Game Focus : Civ 4 - avatar interaction
- granularity : trend
- Transana Users : sharritt

Clip Notes:
- Avatar interaction

Clip: Civ4-Day3-R - no peace w/ Alexander

Collection: Learning > Trigger: Game Feature Triggers Learning > Game
Cue Redirects Attention > Civ4 D1/2/3/4 R - Game redirects to diplomacy / avatars (sequence)

File: D:/My Documents/Dissertation/Data/video/Civ4-Day3-R/Civ4-Day3-R
2007_05_14_22_41_32.avi

Time: 0:33:28.2 - 0:34:00.9 (Length: 0:00:32.7)

Clip Transcript:

((A leader has popped up to make a trade proposal, offers peace treaty for current war with concessions))

R: "What's this mean? Do 'Peace treaty'.

L: "No dude." Then we have to trade our code of laws. ((Points to the only thing the pair has to trade)) Screw that it ain't happening.

R: ((Clicks on 'Can we Negotiate?') "What?" ((Clicks on 'Would you like to make another deal?'))

((The leader starts shaking his fist and head no))

R: "What?"

L: "He wants something (.5) from us. 'Nah screw that.

R: ((Scrolls over what the pair has to trade))

L: Just say 'Never mind.' 'Farewell.' ((Reading from screen the choices))

R: ((Clicks on 'Never Mind'))

((Clicks on 'Farewell'))

Footnotes:
1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may
end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. "Available only if you’re at war." (Civilization IV Manual, p. 100)

3. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now."
   (Civilization IV Manual, p. 101)

Clip Keywords:
- Control: R control
- Game Focus: Civ 4 - avatar interaction
- granularity: trend
- Transana Users: sharritt

Clip Notes:
- Observations
  - Avatar interaction

Clip: Civ4-Day3-R - new Civ / Incas - more advanced trading skills

Collection: Learning > Trigger: Game Feature Triggers Learning > Game Cue Redirects Attention > Civ IV D1/2/3/4 R - Game redirects to diplomacy / avatars (sequence)

File: D:/My Documents/Dissertation/Data/video/Civ4-Day3-R/Civ4-Day3-R 2007_05_14_22_41_32.avi

Time: 0:41:58.9 - 0:43:44.0 (Length: 0:01:45.1)

Clip Transcript:

R: (Inca leader popped up to trade): "What the hell?"
L: The Incan Empire?
R: Oh he's the first. (Wants to trade)
L: Yeah.
R: 'Trade Proposal.' (Reading choice from screen)
L: (Points to pig count on right menu) One pig.
R: Didn't he like declare war on someone?
L: We have one pig. (Points to pig count on right menu) One dye.
R: (Scrolls over the tradable items for both the leader and the pair)
L: They have cows? (Clicks on gold to trade)
R: (Clicked on 'Open Borders'): Let's do 'Open Borders'. (3.0) Don't they have cows? (Clicks on pairs gold to trade)
L: Give 'em some gold. We have four twenty in gold.
R: (Clicks on pairs gold to trade)
(Moved mouse from number of gold to the 'OK' button))
(Clicks 'OK'))
(Clicks on gold again))
(Clicks on number of gold to trade))
(Moves number of gold to trade to two))
(Clicks 'OK'))
L: †Not two,†
R: One gold per [turn.]
L: [One.] gold per turn. Give 'em more gold dude. >No not that!<
R: "You know what he won't take it anymore."
L: †You only offered him one gold we have like four hundred and twenty.†
R: ((Clicks on gold and increases the number of gold to trade with))
L: "Give him like a bunch."
R: We can only do four Chris.
L: What?
R: It's only four possible.
L: ((Reading what the trader wants to trade))
R: ((Clicked on 'What would you like to trade now?')) And 'a pig.'
(Reading what the trader wants to trade))
L: †You gave him a pig for a cow?†
R: †Yep. ((Laughs))
L: What? ((Laughs))
R: And open †borders. ((Clicked 'Farewell')),

Footnotes:
1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. "Your units can now move freely through your partner's territory, and vice versa. If you declare war against a civilization you have an Open Borders agreement with, all of your units are removed from his territory, and all of his units are removed from yours."

3. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now." (Civilization IV Manual, p. 101)

Clip Keywords:
Control : R control
Game Focus : Civ 4 - avatar interaction
Granularity: trend
Transana Users: sharritt

Clip Notes:
Observations
- Avatar interaction

Clip: Civ4-Day3-R - peace w/ Alexander - diplomacy over war
Collection: Learning > Trigger: Game Feature Triggers Learning > Game Cue Redirects Attention > Civ4 D1/2/3/4 R - Game redirects to diplomacy / avatars {sequence}
File: D:/My Documents/Dissertation/Data/video/Civ4-Day3-R/Civ4-Day3-R 2007_05_14_22_41_32.avi
Time: 0:44:54.9 - 0:45:33.2 {Length: 0:00:38.3}
Clip Transcript:

R: "Alright, lets this one" ((Leader popped up for trade))
L: >NO.
>s<2699329> (.)
R: Yeah. Dude they're going to kill us. ((Laughs))
L: >Feudalism? ((Points to what the pair has on the trade table, Feudalism))
R: Craig, they're gonna kill us.
L: We're giving 'em our crap for nothing dude!
R: ((Clicked on 'Can we negotiate') Give us the city.
>s<2707490> (2.0)
L: >Tell him to give us Delphi. ((Laughs))
R: ((A note from the leader popped up))
((Clicked 'OK') "Whaaa ha what?" ((Offer rejected))
>s<2715049> (.)
L: Whatever I don't care.
R: ((Clicks to accept the original offer of a peace treaty with concessions))
("'We would like to make a proposal' pops up) "Where's the city?"
((Clicks on the leaders city to trade))
((Trying to click on 'Declare War') (.5) How do I declare war against someone? ((Clicks 'Farewell'))
>s<2733153>

Footnotes:
1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the
other leaders, or say farewell and leave the trader for now."
(Civilization IV Manual, p. 101)

Clip Keywords:
- Control : R control
- Game Focus : Civ 4 - avatar interaction
- granularity : trend
- Transana Users : sharritt

Clip Notes:
- Avatar interaction
- Avatar interaction

Clip: Civ4-Day4-R - diplomatic strategy w/ Egyptians /
Isabella

Collection: Learning > Trigger: Game Feature Triggers Learning > Game
Cue Redirects Attention > Civ4 D1/2/3/4 R - Game redirects to diplomacy
/ avatars {sequence}
File: D:/My Documents/Dissertation/Data/video/Civ4-Day4-R/Civ4-Day4-R
2007_05_15_20_45_49.avi
Time: 0:18:52.4 - 0:20:46.5 (Length: 0:01:54.1)

Clip Transcript:

L: Ah, we would lose our Explorer. ((Leader has popped up to start trading))
R: No.
L: And we can't construct harbors.
R: No. Say no.
L: ((Clicked on 'Farewell')); "Trade." ((Isabella popped up wanting to talk)
"It can no longer be tolerated we demand that you leave the Egyptians" ((Reading what the leader has to say)) What's our deals with the Egyptians? (.5)
†We should probably cancel it because she's right next to us.†
R: Yeah. Let's do that.
L: ((Clicked on 'What do you think of...'))
((Clicked on 'Alexander'))
L: 'Annoyed.' ((Reading from screen))
((Laughs))
R: †See if you can declare war with her.‡ Make a trade proposal. "No that's something else."L: ((Clicked on 'Farewell')); Oops.
R: Click on ((Pointed to Isabella's name)) (.5) Isabella.
L: [Trade Proposal?] ((Reading from list of options from trade screen of Isabella))
R: [Trade Proposal?] Yeah.
L: ((Clicks on 'Trade Proposal'))
((Items to be traded for both sides pop up))
R: "Like declare war on her. (.5) Scroll down. 'Alexander'."
L: For what?
R: Click on that.
L: What?
R: Click on 'What do you want for this'. ((Choice on screen))
L: ((Clicks on 'What do you want for this' option))
R: No what? ((Isabella is shaking her hand and her head no))
L: [Gold going up] ((Clicked on pair's gold))
((Closed gold option))
R: [Gold going up] 'Can you trade this for a good friend?' ((Points to option on Isabella's trade screen))
L: ((Clicks 'Can you trade this for a good friend?'))
((Isabella shakes her head no and her hand no)) I don't know what we're doing.
R: Ok never mind. Go back to. !Try to declare war.!
L: ((Clicked on 'Farewell'))

Footnotes:
1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now."
(Civilization IV Manual, p. 101)

Clip Keywords:
Control : L control
Game Focus : Civ 4 - avatar interaction
granularity : trend
Transana Users : sharritt

Clip Notes:
Observations
- Avatar interaction

Collection: Learning > Trigger: Game Feature Triggers
Learning > Game Cue Redirects Attention > RCT3 D1/3/4 R - game messages lead to staffing changes (sequence)
Clip: RCT3 D1 R - game draws attention to broken ride

Collection: Learning > Trigger: Game Feature Triggers Learning > Game CUE Redirects Attention > RCT3 D1/3/4 R - game messages lead to staffing changes (sequence)

Time: 0:27:13.5 - 0:28:07.1 (Length: 0:00:53.6)

Clip Transcript:

L: High flyer has got its doors stuck open. (Pop up window appeared stating that High Flyer has its doors stuck open; suggesting to send a maintenance person) NO! Go to high flyer.
R: Maintenance.
L: Where's High flyer?
R: Is that High flyer? (Points to a ride on the screen)
L: Yeah, probably. (Clicks on the ride that R pointed to)
R: We should definitely raise the price on these huge long wait ones.
L: (Clicks on maintenance man icon) That high flyer?
R: Maintenance. (.5) Ok now he's going.
L: (Clicked on maintenance guy walking to ride)
R: (Reading game dialog) 'Put me down. My work is varied. Bored bored bored.' (Reading thoughts of maintenance man)
L: I don't think that's high flyer is it? ((Scrolls over ride just chosen))
R: I dunno. We should -
L: (High flyer does not appear for the ride chosen) >TUMBLER. That's tumbler.<
R: Oh shoot. Where's the high flyer?
L: (Changes camera view to find high flyer ride) Is that the high flyer? (Scrolls over the Chairswing to have name of ride pop up)
R: No that's the Chairswing.
L: We don't have any more rides. (Changes view of camera again)
R: Oh [there it is.]
L: [Oh there it is.]
R: Oh I didn't see that one.
L: (Window pops up saying that high flyer has been fixed) >Has been fixed. Has been fixed.< Maintenance guy did it.
R: Try to click..."
Control: L control
granularity: sequence of episodes
Transana Users: sharritt
Clip Notes:
Observations
- Game notifies player of broken ride: draws attention to ride.
maintenance called, and price raised after observing long queue line
- Shows how game can redirect attention and encourage other game
functions to be used (encourages learning)
- Team is working on building a new ride. For some time, most all
attention has been focused on building new rides.
Relates To
1 of 3

2. RCT3 D3 R - waiting for mechanic to fix ride (learned he's automated)
3. RCT3 D4 R - game messages cause group to add staff

Clip: RCT3 D3 R - waiting for mechanic to fix ride (learned
he's automated)
Collection: Learning > Trigger: Game Feature Triggers Learning > Game
Cue Redirects Attention > RCT3 D1/3/4 R - game messages lead to
staffing changes (sequence)
2007_05_24_18_45_02.avi
Time: 0:51:00.6 - 0:53:28.3 (Length: 0:02:27.6)
Clip Transcript:
L: "Zoomed out from park" °Nobody's on this ride.°
R: ¡No one is on the ride?,
L: °Well (.5) I don't know see. ((Zooms out with camera))
R: Is it broken?
L: Yeah.
R: °How much does it cost for that one? (.5) 'Minutes from last'
((Reading from ride menu the last time the ride was checked by
maintenance)) ¡Uh, it should be like every minute. (.5) Get pick the
janitor for the thing. ((Points to maintenance icon)) Oh [yeah.]
L: °(Clicks on maintenance icon)° Oh [yeah.]
R: [Like I) mean this thing so he can fix it.
L: °Can I pick him up and have him go over° there?° ((Maintenance guy
is nowhere near the ride))
R: I don't know.
L: <3104494> (.5)
L: "(Clicked on maintenance guy) "Well we need him because we're losing money." (.5) There he is. He's coming.
R: Yep. ((Teacher came in to ask the students a question)) (1.0) How much is this ride?
L: A lot!
R: It is?
L: "We're making cash on it."
R: Fast forward it I hate it when it's dark. ((The game has turned night mode on and screen is darker))
L: ((Clicks the fast forward button)): Ok hopefully uh the janitor went to go or the -
R: ((Yawns)) Mechanic.
L: Yep. ((Clicks on fast forward again)):
((Zooms out from park))

Footnotes:
1. Every park ride has a ride inspection interval. Increasing the frequency of inspections increases ride reliability, but puts more burden on the park's mechanics.

2. At the top left of the screen there are buttons to play, pause, and fast-forward time. At any point in play gamers can pause time until they want to resume business, or fast-forward the game play to speed up time (to watch the park / profits change over time).

Clip Keywords:
Control : L control
Game Focus : RCT3 - Editing Rides
Game Focus : RCT3 - Staffing
granularity : sequence of episodes
Transana Users : sharritt

Clip Notes:
Observations
- Gamers believe that a ride does not have anyone on them. The ride is broken.

Relates To
2 of 3

1. RCT3 D1 R - game draws attention to broken ride
3. RCT3 D4 R - game messages cause group to add staff

Collection: Learning > Trigger: Game Feature Triggers
Learning > Game Cue Redirects Attention > RCT3 D2 R - game redirects to food stand w/o entrance path (sequence)
Clip: RCT3 D2 R - food entrance problem

Collection: Learning > Trigger: Game Feature Triggers Learning > Game Cue Redirects Attention > RCT3 D2 R - game redirects to food stand w/o entrance path (sequence)


Time: 0:15:05.0 - 0:17:15.7 (Length: 0:02:10.7)

Clip Transcript:

L: "Making a path around the new restaurants"
(Zooms in on park)
R: "People are having trouble getting to the entrance of burgers one." ((Reading from the drop down message board of the game interface)) Oh maybe did just make a path. Try making, I don't get (1.0) Just try putting one right there.

<RCT3>924486</RCT3> (.)
L: It won't. ((Trying to make a path from the burger stand to the main path so the people can get to the burger stand))
R: Just delete the burger.
L: No we have to go to here. Tidiest park and safest park. : ((Reading from drop down menu)) Nice.
R: Very nice.

<RCT3>934007</RCT3> (.)
L: Have you guys won that award yet?
Peer team: Which one?
L: [Tidiest Park and safest park.] ((Reads from drop down message board of the game interface))
R: [Tidiest Park and safest park.] ((Reads from drop down message board of the game interface))
Peer team: Yeah we did.
L: Probably not.

<RCT3>941839</RCT3> (.)
L: ((Laughs)) We're super good.

<RCT3>945927</RCT3> (.)
R: Why won't it work? (.5) Ah we need bathrooms.
L: No we don't. ((laughs))
R: People are gonna be like go on the side. ((laughs))

<RCT3>956862</RCT3> (.)
L: ((Clicked on 'facilities' icon))
(Added a Balloon shop)
((Placed the balloon shop)) Balloons? What?
R: So you can buy a balloon. |I feel like we should um oh watch do this. Make a little path like this and we'll put a path of like all different stuff.| ((Points to an imaginary path route around the park that R would like built))
L: Ok.
L: "Good idea." ((Clicked on 'Path'))
   ((Started to place a path around the burger stand))
R: Then we will put a path right here by the burger place so people
    can get to it. Maybe if we put the burger place backwards. (.5) "Now
    can people go to it?"
L: Can we move the bathrooms? ((Double clicks on the burger stand))
R: I don't get what is going on with the burger place.
L: Can we move it? ((Clicked on 'Delete Object'))
R: Delete it. And then we will re-put it on the pathway. It won't
    delete?
L: No I don't think so "yeah it will."
R: Delete.
L: Press delete. ((Clicked on burger stand))
R: Right try right clicking. Delete it. Where's the delete button?
   Do you see the delete button. Oh delete. Same with the ice cream
   place.
L: I don't know how to delete it though.
R: Oh you know what I think the entrance = swing around that way = I
   think the entrance is that way. Cuz look the ice cream place -
L: ((Keeps clicking on burger stand)) Do you guys know how to delete
   it?
Peer team: How to delete like a ride?
L: No like a restaurant.
Peer team: I think you should maybe try right clicking.
R: That doesn't work. Put a little -

Footnotes:
1. The pair doesn't realize is that the entrance to the burger stand
   is not facing the main path so the 'Path' function will not connect the
   burger stand to the main path.
2. The game offers many different awards. Often awards are part of
   the game objectives (to move through apprentice, entrepreneur and
   tycoon levels).

Clip Keywords:
   Control : L control
   granularity : sequence of episodes
   Transana Users : sharritt

Clip Notes:
Observations
   - Missed opportunity again: fix problem by building circular path all
   the way around the building.
- Choose to delete food stand: interface design confusion

- Not clear how to delete it. many options tried. ask peer team how to do it

- End up giving up

- Missed opportunity: don't realize how to make food stands face the direction they want

- Game message: problem with entrance to food. draws focus to food stand (good game intelligence)

- Fixed problem (learned to put path in front of entrance) / learning episode? 
  
  Relates To
  1 of 4

  2. RCT3 D2 R - build 2nd food stand
  3. RCT3 D2 R - explanation by peer of problem
  4. RCT3 D2 R - fix entrance by building path around building

Clip: RCT3 D2 R - build 2nd food stand

Collection: Learning > Trigger: Game Feature Triggers Learning > Game Cue Redirects Attention > RCT3 D2 R - game redirects to food stand w/o entrance path (sequence)


Time: 0:18:16.8 - 0:19:26.7 (Length: 0:01:09.8)

Clip Transcript:

R: Try putting a pathway right there.  (Points to a point on the screen to place the pathway)  Cuz look at the ice cream it's like -
L: No like it's not.
R: It's facing the wrong way.
L: Should we just open a different one. Lets like put a path down and like open another burger place.
R: Do it in the front maybe.
L: Yeah. (Zooms in and out of screen camera view)

R<1109579> (.)
L: Let's build one right (Changes camera view) (.5) let's put one right here.
R: Ok.
L: Is that cool with you? (Opened up the 'Facility' icon) Which one, burger?
R: Yeah.
L: 'Hold on we got to put down paths first, never mind.'  [Remember
because last time.
R: [It didn't work.]
L: Yeah last time we screwed that one up. ((Clicked on 'Paths'))
R: Just make it like all cement and we'll put like benches and
"whatever."
L: ((Clicked on 'Paths'))
((Adds the path to the main pathway from the new burger stand)) Ok now
we'll do. Can we put it on? We can't put it on there. Can I connect
it? (.5) We can't get it like that, what?
R: Why try opening it right (.) there. Try putting it there by the
cement. See look it worked I don't get it.
L: Oh yeah its connected now. It's connected now. See.
R: It is?
L: Yeah. ((Zooms in on burger stand and people are able
to go up to it))

Clip Keywords:
  Control : L control
  granularity : sequence of episodes
  Transana Users : sharritt
Clip Notes:
Observations
- Add 2nd food stand: give up on modifying first one, so build a 2nd
  one with a path in front of the entrance

- Missed opportunity: don't realize food stand direction can be
  changed

- Accomplish making a food stand, but force themselves to follow false
  rules

Relates To
2 of 4
1. RCT3 D2 R - food entrance problem
3. RCT3 D2 R - explanation by peer of problem
4. RCT3 D2 R - fix entrance by building path around building

Clip: RCT3 D2 R - explanation by peer of problem
Collection: Learning > Trigger: Game Feature Triggers Learning > Game
  Cue Redirects Attention > RCT3 D2 R - game redirects to food stand w/o
  entrance path (sequence)
L: I think honestly I think what happened was that we um we put it in the wrong spot. We had it flipped around. ((Used cursor to outline on screen what they did wrong)) ((Changed view of screen by zooming in for a closer view of ride for explanation))
R: The wrong way [yeah]
L: [Yeah]
«<1211794> (.)
L: You were right on the ice cream shop so let's go do that now.
R: 'It's time to try the entrepreneur objectives'. ((Reading message that popped up on screen; pair had achieved earlier 'apprentice' objectives and achieved the 'entrepreneur' level))
«<1218522>

Footnotes:
1. The pair received this prompt because they had past the objectives of the beginner level.

Clip Keywords:
Control : L control
granularity : sequence of episodes
Transana Users : sharritt

Clip Notes:
Observations
- Explanation of missed opportunity: seem to think direction of entrance can be flipped around

Relates To
3 of 4

1. RCT3 D2 R - food entrance problem
2. RCT3 D2 R - build 2nd food stand
4. RCT3 D2 R - fix entrance by building path around building

Clip: RCT3 D2 R - fix entrance by building path around building

Collection: Learning > Trigger: Game Feature Triggers Learning > Game Cue Redirects Attention > RCT3 D2 R - game redirects to food stand w/o entrance path (sequence)
Time: 0:20:23.7 - 0:20:38.7 (Length: 0:00:15.0)
Clip Transcript:
L: °Oooo.° Can't mess with us. ((Building a pathway around the ice
cream stand))
R: "Is it open now?" Put a pathway all around it. ((Laughs))
L: We'll decide where it is. ((Laughs))
((Places path around the whole ice cream stand to ensure))
((By placing a path around the whole ice cream stand the customers were able to get to the entrance))
R: You should put some benches over there. So people can sit.

Clip Keywords:
Control: L control
granularity: sequence of episodes
Transana Users: sherritt

Clip Notes:
Observations
- Missed opportunity again: fix problem by building circular path all the way around the building
Relates To
4 of 4

1. RCT3 D2 R - food entrance problem
2. RCT3 D2 R - build 2nd food stand
3. RCT3 D2 R - explanation by peer of problem

Collection: Learning > Trigger: Game Feature Triggers Learning > Game Forces Decision > Civ4 D3/4 R - avatar interactions

Clip: Civ4 D3 R - avatar interactions
Collection: Learning > Trigger: Game Feature Triggers Learning > Game Forces Decision > Civ4 D3/4 R - avatar interactions
File: D:/My Documents/Dissertation/Data/video/Civ4-Day3-R/Civ4-Day3-R 2007_05_14_22_41_32.avi
Time: 0:44:54.9 - 0:45:33.2 (Length: 0:00:38.3)

Clip Transcript:
R: "Alright, lets this one" ((Leader popped up for trade)):
L: "NO."
R: Yeah. Dude they're going to kill us. ((Laughs))
L: "Feudalism?" ((Points to what the pair has on the trade table, Feudalism))
R: Craig, they're gonna kill us.
L: "We're giving 'em our crap for nothing dude!"
R: "((Clicked on 'Can we negotiate')) Give us the city.

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L: 'Tell him to give us Delphi.' (Laughs)
R: ((A note from the leader popped up))
   ((Clicked 'Ok')) "Whaaa ha what?" ((Offer rejected))
L: 'Whatever I don't care.'
R: ((Clicks to accept the original offer of a peace treaty with concessions))
   (('We would like to make a proposal' pops up)) "Where's the city?"
   ((Clicks on the leader's city to trade))
   ((Trying to click on 'Declare War')) (.5) How do I declare war against someone? ((Clicks 'Farewell'))

Footnotes:
1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now." (Civilization IV Manual, p. 101)

Clip Keywords:
- Control : R control
- Game Focus : Civ 4 - avatar interaction
- granularity : short episode
- Transana Users : sharritt

Clip Notes:
Observations
- In this case, game players are at war with another computer civilization. After the war hasn't been going well for a while, the computer (enemy) civilization makes a peace treaty offer with the game players' civilization.
- A key choice must be made whether to surrender some technology in order to achieve peace, or whether to keep fighting a potentially losing battle. The game players decide to surrender some of their technology to avoid being conquered.

Clip: Civ4-Day4-R - diplomatic strategy w/ Egyptians / Isabella
Collection: Learning > Trigger: Game Feature Triggers Learning > Game Forces Decision > Civ4 D3/4 R - avatar interactions
File: D:/My Documents/Dissertation/Data/video/Civ4-Day4-R/Civ4-Day4-R
L: Ah, we would lose our Explorer. (Leader has popped up to start trading)
(R: No)
L: And we can't construct harbors.
R: No. Say no.
L: ((Clicked on 'Farewell')) "Trader." (Isabella popped up wanting to talk) "It can no longer be tolerated we demand that you leave the Egyptians''
(R: Clicked on 'Farewell') What's our deals with the Egyptians? (.5) We should probably cancel it because she's right next to us.
R: Yeah. Let's do that.
L: ((Clicked on 'What do you think of...'))
(R: Clicked on 'Alexander')
L: 'Annoyed.' (Reading from screen)
(R: (Laughs))
L: "See if you can declare war with her." Make a trade proposal. "No that's something else."
R: Click on ((Pointed to Isabella's name)) (.5) Isabella.
L: [Trade Proposal?] (Reading from list of options from trade screen of Isabella)
R: [Trade Proposal?] Yeah.
L: [Trade Proposal?] (.
R: Click on 'Trade Proposal') (.
L: (Items to be traded for both sides pop up)
R: 'Like declare war on her. (.5) Scroll down. 'Alexander'.'
L: For what?
R: Click on that.
L: What?
R: Click on 'What do you want for this'. (Choice on screen)
L: (Choice on 'What do you want for this')
R: No what? (Isabella is shaking her hand and her head no)
L: [Gold going up] (Clicked on pair's gold) (Closed gold option)
R: [Gold going up]'Can you trade this for a good friend?' (Points to option on Isabella's trade screen)
L: ((Clicks 'Can you trade this for a good friend?'))
(Isabella shakes her head no and her hand no) I don't know what we're doing.
R: Ok never mind. Go back to. !Try to declare war.!
L: ((Clicked on 'Farewell'))

Footnotes:
1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now." (Civilization IV Manual, p. 101)

Clip Keywords:
Control : L control
Game Focus : Civ 4 - avatar interaction
Transana Users : sharritt

Clip Notes:
Observations
- After discovering multiple computer run civilizations (avatars), game players are presented with a complex diplomacy decision. Many of the computer civilizations do not like each other, and the gamers, through avatar interactions (with computer civilizations) are required to choose sides.

- Size and power influence who they want to be friends with, as does proximity on the map. Game players chose to 'cancel all deals' with another civilization (that they were on good terms with) in order to appease another computer civilization that was very close to them on the map (to avoid going to war with them). Learning from earlier warfare showed that it can be very difficult to fight off enemies that are located nearby as they can easily send military forces across the borders.

- Avatar interaction

Collection: Learning > Trigger: Game Feature Triggers
Learning > Game Forces Decision > Initial Scenario
Selection (Civ4 / MH / RCT3)

Clip: Civ4 D1 R - selecting initial scenario
Collection: Learning > Trigger: Game Feature Triggers Learning > Game
Forces Decision > Initial Scenario Selection (Civ4 / MH / RCT3)

File: D:/My Documents/Dissertation/Data/video/Civ4-Day1-R/Civ4-Day1-R
2007.05.10.17.26.19.avi

Time: 0:00:17.4 - 0:01:14.8 (Length: 0:00:57.3)

Clip Transcript:

L: {'Select A Civilization' screen popped up}!
No way.
R: Uh no way.
L: No way. (Laughs)
R: [(Clicking through character leaders)] Yeah. (Laughs)
L: Dude no {do Greek, Greek.} (Points to Greek)
R: No Aztec. How about that guy?
L: Alright. Whatever.
R: (Laughs)
L: Look at him he's cool.
R: 'Leader Name.' (Reading from screen choices) We can change this.
L: Yeah.
R: Craig. (Laughs) With three g's.
L: (Types name in) Alright let's do it go. (Motions for R to click on name) "Game Speed." (Reading from screen next choice)
R: "Difficulty." (Reading choice from screen) Uh let's just do that one because it's [so cool.]
L: Yeah [that's cool.]

Footnotes:
1. "On this screen you pick the civilization you want to play. Or you can pick "Random" and let the Fates decide. Some civilizations have more than one leader to pick from: if you choose a civilization with multiple leaders you'll then need to choose which leader you want to portray. There are eighteen civilizations and 26 leaders to choose from. Each civilization has its own unique unit and each leader has two specialties allowing him or her to excel in certain areas within the game." (Civilization IV Manual, p. 15)

2. "The "Game Speed" determines how many turns it takes to construct
units, buildings and wonders, how many it takes to research technologies, build "improvements" and so forth. These settings let you experience the full epic sweep of time inherent in Civ while allowing you to customize the game based on how much time you have available and other preferences. Game Speed DOES NOT have any effect upon the amount of time you have to complete a turn - you always have as much time as you want in a single-player game. There are three game speeds to choose from: Epic: It takes a longer number of turns to construct, research, and improve. Normal: It takes an average number of turns to construct, research, and improve. (We recommend this for your first several games.) Quick: It takes fewer turns to construct, research, and improve. Once you have chosen a game speed, click "OK" to proceed, or "Go Back" to return to the "Difficulty" screen." (Civilization IV Manual, p. 14-15)

3. "The difficulty level you choose has a number of subtle but important effects on play. We'll discuss this more in the "Advanced" section of the manual; for now suffice it to say that at easier difficulties you build cities and units faster and the AI civilizations builds them slower, while at higher difficulties you build them slower and the AIs faster." (Civilization IV Manual, p. 14)

Clip Keywords:
- Control : R control
- granularity : short episode
- Transana Users : sharritt

Clip Notes:
- Negotiating scenario

Clip: MH D1 R - choosing initial scenario

Collection: Learning > Trigger: Game Feature Triggers Learning > Game Forces Decision > Initial Scenario Selection (Civ4 / MH / RCT3)


Time: 0:00:15.9 - 0:01:36.9 [Length: 0:01:21.0]

Clip Transcript:

R: Is it like fighting?
L: I don't know. Which one should we do? ((Choices of scenarios popped up))

((Scrolling through choices))

R: Uh (1.0) Whatever. They're all the same.
L: Ah we'll do that one." ((Clicked on 'Steps To A Global War'))

((Clicked 'Load Scenario')) (1.0) Oh
R: Ah we can pick which one we are?
L: ((Choice of countries to be popped up))

((Scrolling through the country flags)) Yeah. Ah definitely the
R: Oh obviously. ('Laughs) ('Reading prompt on screen) ('Loading Scenario' screen popped up while game is loading) (Clicked on 'Enter Game') Oh man. (Screen opens for game) «Laughs)

L: «Laughs) 'Enter Game' «Reading on screen) 

R: (Choice are up on screen for the pair to choose a country to be)
L: (Looking through manual for game) Um. (.5) USSR? 
R: Uh they suck. 
L: 'Germany?' (Reading off choices from screen) 'France?' (Clicked on France) 
(A paragraph about Frances role in the scenario popped up)
R: "No France sucks." ¡Be Germany.¡ 
L: (Clicked on Germany) 
(A paragraph about Germany's role in the scenario popped up) ¡Oh it didn't find the¡ (.5) (Clicked on Italy) 
(Clicked on Japan) 
(Clicked on United Kingdom) 'Air power ranking 10' (Reading from choices after clicking France) 
(Clicked on United States) 
(Clicked on USSR) 
(Clicked on Italy) 
(Clicked on Germany) 
R: Germany had the first air [power.] 
L: (Clicked on China) [Germany.] Let's do Germany. (Chose Germany) 
(Clicked on game options) 
R: Put it on 'Easiest.' (Reading from screen choices) (laughs) 

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L: ((Clicked on 'Easiest' game difficulty))
((Clicked on 'Load Game'))

Clip Keywords:
Control: L control
granularity: short episode
Transana Users: sharritt

Clip Notes:
Observations
- Careful selection of new scenario, potentially because of frustration w/ game on Day 1 ("put it on easiest" - referring to difficulty)

Clip: RCT3 D2 R - new scenario (after reboot)
Collection: Learning > Trigger: Game Feature Triggers Learning > Game Forces Decision > Initial Scenario Selection (Civil4 / MH / RCT3)
Time: 0:30:00.0 - 0:31:27.3 (Length: 0:01:27.3)
Clip Transcript:

((Computer updates rebooted computer; lost game and had to start new scenario))
R: So we're doing what we just did.
L: That was pretty simple. ((Game is loading))
R: The little (.5) plain one.
L: YEP. How much money do you guys have? ((Talking to peer team))
Peer team: Um I don't know. Um.
R: We have nine thousand.
Peer team: We have six thousand.
L: ((Laughs))
Peer team: ((Laughs))
L: Oh my god what is going on?
R: We had like a thousand. ((Laughs))
L: Yeah but we were making money too so. We were on the way up. No we were on our way up. ((Talking to peer team))
Peer team: Ok.
L: You know how I work I (.) I get the stuff done.
R: ((Laughs))
L: ((Clicked on 'Career Mode'))
((Clicked on RCT 3)) Oh cool.
R: It is the should we start a new one though? ((Laughs))
L: Yeah. ((Laughs))
{(Clicked on new game)}

R: {{Laughs}}

Peer team: What is that? {{(Music to loading the pairs game is jungle sounding and loud)}}

L: It's our game. {{(Laughs)}}

{{(Turns volume down on computer)}}

R: {{(Laughs)}}

Peer team: {{(Laughs)}}

L: Which one should we do? 'Scenario one?'

R: Yeah. Isn't that what we just did? (.5) Do that one that one was cool. {{(Points to a choice on screen)}}

L: Yeah. (.5) There we go. Which one do you want?

R: Do this one? {{(Points to 'Fright Night' icon for park choice to build)}}

L: 'Fright Night.' {{(Reading from screen)}}

R: Just pick one.

L: 'Gold Rush'

R: Ok. I'm about to sneeze.

L: {{(Clicked on 'Gold Rush')}} I don't like that one.

R: Do 'Checkered Flag.'

L: No. (.5) 'Fright Night.' We'll do scary stuff.

R: Ok. {{(Clears throat)}}

Clip Keywords:

Control : L control

granularity : short episode

Transana Users : sharritt

Clip Notes:

Observations

- New game started after reboot.

Collection: Learning > Trigger: Game Feature Triggers

Learning > Unexpected Discovery > Civ4 D4 R - unhappy population (sequence)

Clip: Civ4-Day4-R - problem identified

Collection: Learning > Trigger: Game Feature Triggers Learning > Unexpected Discovery > Civ4 D4 R - unhappy population (sequence)

File: D:/My Documents/Dissertation/Data/video/Civ4-Day4-R/Civ4-Day4-R_2007_05_15_20_45_49.avi

Time: 0:23:46.0 - 0:24:24.7 (Length: 0:00:38.7)

Clip Transcript:

Peer team: Our people are mad.
L: Our people are mad too it, it doesn't make sense.
R: Click, click on our city.
L: What do all these symbols mean? (Double clicked on a city)
   (City screen popped up with many new symbols placed on the city map)
   (Clicked on 'Happiness' Display and a window popped up, informing that
   people are unhappy due to the city being overcrowded)
   (Clicked on the 'Happiness Display' icon again and same message came
   up 'it is too crowded') It's too crowded. (Laughs) What does that
   mean like?
R: Too many people. Make more cottages or something.

Footnote:
1. "The city screen is where most city management takes place. The
   City Screen also tells you how happy your city is. Further, if a city
   is unhappy, an "Unhappy City" icon will appear next to the city's name
   on the Main Screen. Unhappiness is caused by a number of factors,
   including overpopulation and war." (Civilization IV Manual, p. 146-
   149)
Clip Transcript:

R: ((Scrolls around map))
   ((Clicks on a military group))
L: We need to figure we need like (.5) to make it less crowded somehow. ((Points at screen to area where it is too crowded)) I don't, I don't know what that means.

R: ((Clicked on City screen))
   ((Scrolled over 'Food Bar'))
   ((Clicked on 'Food Bar'))
   ((Message came up stating 'Starvation')) Starvation?
L: WHAT? ((Laughs)) We need more food.
R: ((Clicks on the keyboard to get back to the main game screen))
L: (5.0) ((Looks over at peer team's screen)) Get more food.

Footnote:
1. "The Food Bar will usually show the number of turns needed for the city to increase in size; moving the mouse over the Food Bar will show the exact amount of food stored at the moment and the amount of food needed to be grown." (Civilization IV Manual, p. 147)

Clip Keywords:
- Control : L control
- Control : R control
- granularity : sequence of episodes
- Transana Users : sharritt

Clip Notes:
Observations
- Controls traded
- Goal expressed as trading: "need to make it less crowded"
- New mouse controller pulls up overview screen, reads "starvation"
- Shows new goal, reason for civ unhappiness: need more food

Relates To
2 of 5

1. Civ4-Day4-R -problem identified
2. Civ4-Day4-R -trade proposals attempted to resolve
3. Civ4-Day4-R -move out workers to try and resolve
4. Civ4-Day4-R -build farms for more food (problem resolved)
Clip: Civ4-Day4-R - trade proposals attempted to resolve
Collection: Learning > Trigger: Game Feature Triggers Learning > Unexpected Discovery > Civ4 D4 R - unhappy population (sequence)
File: D:/My Documents/Dissertation/Data/video/Civ4-Day4-R/Civ4-Day4-R
2007_05_15_20_45_49.avi
Time: 0:26:22.0 - 0:27:18.1 (Length: 0:00:56.1)

Clip Transcript:

((A leader appears with a trade offer))
L: Look at all the resources we have.
R: "I know."((Clicks on accepting trade offer))
L: Just give her gold dude, we have so much gold. ((Points to pair's gold resources on right side of screen)) Look how much gold we have compared to her. ((Points out that the leader, they are trading with, has little gold))
R: We need like, she doesn't have anything good. ((Scrolls through what the leader has to offer for trade))
(.5)
R: ((Clicks on 'Farewell' to current trader))
L: Look at all these workers we have.
R: ((Another leader pops up to trade))
L: That's probably why it's too crowded.
R: ((Places cursor over tradable items from leader))
((Moves cursor over tradable items from leader, as well as own items for trade))
L: There's twenty gold.
R: ((Clicks 'Farewell' without trading anything))
L: ((Tells peer team)) Our people are starving.

Footnotes:
1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now." (Civilization IV Manual, p. 101)

Clip Keywords:
Control : R control
granularity: sequence of episodes

Transana Users: sharritt

Clip Notes:

Observations
- Trade proposals with other civs, attempt to gain food

Relates To
3 of 5

1. Civ4-Day4-R - problem identified
2. Civ4-Day4-R - crowding identified as problem
4. Civ4-Day4-R - move out workers to try and resolve
5. Civ4-Day4-R - build farms for more food (problem resolved)

Clip: Civ4-Day4-R - move out workers to try and resolve

Collection: Learning > Trigger: Game Feature Triggers Learning > Unexpected Discovery > Civ4 D4 R - unhappy population (sequence)

File: D:/My Documents/Dissertation/Data/video/Civ4-Day4-R/Civ4-Day4-R_2007_05_15_20_45_49.avi

Time: 0:27:18.1 - 0:29:52.1 (Length: 0:02:34.0)

Clip Transcript:

L: Look at all those workers. (.5) Just keep doing improvements. (.5)

R: ((Clicks on workers, selects icon to do more improvements))
   ((Clicks on military to move))

L: (3.0) Wait go over the, click on him, go over the thing I want to see what it says.
   ((Clicked on City screen scrolling through City Build Menu))

R: ((Scrolls over building icons at bottom of screen))
L: ((Points to 'Delete Unit' icon)); 'Cost one gold', 'builds workshops', 'minus food' ((Describing what is eating up the food supply)) We need something that is plus food. What, what's that? ((Points to 'Sentry' icon)); Here's plus food. You know like most farms.

R: We don't have Civil Service now.
L: We don't?
R: That's what it says we don't have Civil Service.

L: ((Talks to peer team)) You guys are just winning. Dude we're in last, we're in dead last.

R: "What?" ((Scrolls to top of map))

L: ((Clicks on group of workers moves them to the other side of the ...
city).

L: How come they can move just when ever now? {{Laughs}}
R: I don't know.

R: {{Scrolled over 'Unit Action' Box}}
L: >Wait, wait what's that?< {{Points to an icon on the City Build Menu}} Oh go back.
R: "Let's build a cottage." {{Clicks on 'Pillage' icon}}
L: "No it wasn't a cottage." (3.0) Maybe if you build more roads it will be less crowded.

Footnotes:
1. Building icons are only offered when selecting a worker. Workers can build things such as cottages, farms, workshops, etc.

2. "Delete Unit icon deletes the unit from play." (Civilization IV Manual, p. 38)

3. "Sentry icon keeps unit inactive until an enemy unit enters an adjacent square." (Civilization IV Manual, p. 39)

4. "The City screen is where most management takes place for the city selected." (Civilization IV Manual, p. 146)

5. With improved roads, units can move further per turn than before.

6. "When a unit is 'active', this displays its available 'action icons'. Roll your cursor over an action icon to learn more about it; click on an icon to order the unit to perform the action." (Civilization IV Manual, p. 26)

7. "Pillage is when the unit destroys an improvement in the space it occupies. If there is more than one improvement in the space, the unit will destroy the most valuable." (Civilization IV Manual, p. 39)

Clip Keywords:
- Control : R control
- granularity : sequence of episodes
- Transana Users : sharritt

Clip Notes:
Observations
- Redirect workers to make improvements that help gather food: build farms

- Worker options: use mouseover of icons to see what actions help gather food
- Problem solved
- Workers moved out of town to reduce crowding

Relates To
4 of 5

1. Civ4-Day4-R - problem identified
2. Civ4-Day4-R - crowding identified as problem
3. Civ4-Day4-R - trade proposals attempted to resolve
5. Civ4-Day4-R - build farms for more food (problem resolved)

Clip: Civ4-Day4-R - build farms for more food (problem resolved)

Collection: Learning > Trigger: Game Feature Triggers Learning > Unexpected Discovery > Civ4 D4 R - unhappy population (sequence)
File: D:/My Documents/Dissertation/Data/video/Civ4-Day4-R/Civ4-Day4-R 2007_05_15_20_45_49.avi
Time: 0:29:52.1 - 0:31:34.2 (Length: 0:01:42.2)

Clip Transcript:

R: “What do we want at the market?” {Civil Market window popped up})
L: “I don't know.” (.5) {{What would you like to research now' window popped up} Yes. Commerce. Paper. (.5)
R: ((Clicked on 'Paper'))
L: Alright now build some farms.
R: ((Clicked on 'Skip Turn'))
=((1820893) (.5)
L: How many towns do you guys have?
Peer team: Um (.5) like five.
R: ((Clicks on the highlighted 'Promote Unit' icon))
=((1843680) (.5)
L: Yeah build, build uh
R: ((Scrolled over 'City Build Menu' icons))
((R scrolled over a 'City Build Menu' icon 'Plantation'))
L: >ahh build to increase food.<
R: ((Clicked on 'Chop Down A Forest' icon))
((Clicked on a group of workers))
=((1860559) (2.0)
L: Hit farm. ((Points to 'Farm' icon on screen))
R: ((Continues to try to move selected military to a new spot but it does not work))
((Scrolls over the 'Farm' icon but does not click it))
L: ((Yawns))
=((1878699) (.))
R: ((Drama has been unlocked on the Technology Advisor))
((The game asks 'What would you like to research next?' from a list of
new technologies from the Technology Advisor)\textsuperscript{1}\\

((Clicks on 'Philosophy'))\textsuperscript{1}\textsuperscript{2}

L: The cottages, the cottages look different. ((Puts hands over mouth))

\texttt{\textless{}1884178\textgreater{}} (.)

R: ((Continues to have workers build in different locations))

((Clicks on 'Go To Mode' icon))\textsuperscript{1}\textsuperscript{2}

L: We're in the 1800's.

\texttt{\textless{}1893801\textgreater{}}

Footnotes:

1. Civic market increases the wealth of a city.

2. The research window gives options for what should be researched next. The game also provides recommendations for two of the items offered by putting the word 'Recommended' after the technology name to be researched.

3. "'Paper' enables map trading." (Civilization IV: Tech Tree & Specifications Charts)

4. "Some promotions are available only to certain unit types; some require that the unit possess other promotions before they are available. There is no limit to the number of promotions a unit can receive." Sometimes the game will offer suggestions by highlighting icons in blue. (Civilization IV Manual, p. 43-44)

5. "City build screen where most of the management for a city takes place." (Civilization IV Manual, p. 146)

6. "Building a plantation will increase food production. Plantations provide access to bananas, dyes, incense, silk, spices, and sugar resources and can be built only in those spaces." (Civilization IV Manual, p. 75)

7. "The Chop Down A Forest icon instructs the workers to remove the forest." (Civilization IV Manual, p. 75)

8. "The worker builds a farm improvement in the space. Farms improve the food output of a space. Farm improvements must be built adjacent to 'fresh water sources': rivers, oases, or lakes." (Civilization IV Manual, p. 74)

9. "Drama is a technology that can be unlocked. Drama can produce theatre, globe theatre, and can adjust culture rate." (Civilization IV: Tech Tree & Specifications Charts)
10. Once the gamer has completed their last research technology then the game prompts them to do more research in order to unlock other technologies. The game will place the word 'Recommended' next to the technologies that the game suggests should be done next.

11. "Philosophy enables pacifism" (opposition to war or violence as a means of settling disputes). (Civilization IV: Tech Tree & Specifications Charts)

12. "The 'Go To Mode' icon orders the unit to move to a square that you select." (Civilization IV Manual, p. 38)

**Clip Keywords:**
- Control : R control
- granularity : sequence of episodes
- Transana Users : sharritt

**Clip Notes:**

**Observations**
- Workers build farms: help food supply
- Problem resolved

**Relates To**
- 5 of 5

1. Civ4-Day4-R - problem identified
2. Civ4-Day4-R - crowding identified as problem
3. Civ4-Day4-R - trade proposals attempted to resolve
4. Civ4-Day4-R - move out workers to try and resolve

**Summary**

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**Total Time:** 0:45:45.3
**H.5 MISSED OPPORTUNITIES FOR LEARNING**

**Collection:** Learning > Missed Opportunities for Learning

**Collection Comment:**
where learning was 'missed' by group

**Collection Notes:**
Description of Category
Missed Opportunity:

Missed opportunities for learning: where learning could have occurred, but was missed. Perhaps overlooked by the game player, or a game feature not being 'evident enough' for pursuit / use by the group.

**Clip: MH D3 R - lack of feedback from game**

**Collection:** Learning > Missed Opportunities for Learning

**File:** D:/My Documents/Dissertation/Data/video/MakingHistory-Day3-R/MakingHistory-Day3-R 2007_05_15_06_29_45.avi

**Time:** 0:44:53.3 - 0:45:37.1  (Length: 0:00:43.8)

**Clip Transcript:**

L: We have regained (.5) did we take over?!

R: Wait we gained control.

L: Check this out, that's where I sent everyone, I think that was like right (.5) here or something. (Moving cursor over continent)

R: Didn't even know Germany took something from us.

L: I just remember I was moving a lot of people over to (unclear speech) because that was a country I had to select. (.5) Look at all (.5) we must have won, cuz look at all the planes. (Scrolls over continent)

R: Oh, yeah.

L: We'll stop these (Clicks on a military unit)

((Clicked on five different military units))

**Clip Keywords:**
Control : L control
granularity: short episode
Transana Users: sharritt

Clip Notes:

Observations
- " Territory regained" is listed after ending a turn
- Player cannot even remember where the territory is located
- No animation or attention grabbers when territories are gained / lost; battles won / lost (text doesn't really cut it - could be much more dramatic & engaging)

- Shows a lack of game feedback, which might be done through animations, etc. Feedback comes through text (list) and map changing instantaneously (after turn ends, computer calculates operations and updates map: pretty lame)

- Players have been playing as Russia / USSR. They have been fighting military campaigns to the West, with Eastern-block countries, Germany, and Scandinavian countries.

- This episode occurs immediately after ending a turn, and waiting for the computer to update the scenario (after ending your turn, there is a pause in the game while the computer calculates your moves and updates other countries in the scenario).

Clip: RCT3 D2 R - cannot figure out how to build custom coaster

Collection: Learning > Missed Opportunities for Learning
Time: 0:05:41.1 - 0:07:21.5 (Length: 0:01:40.4)

Clip Transcript:

L: "Um." (.5) Let's open it ((Laughs))
((Scrolls over ride option icons))
R: ((Laughs)) Construction.
L: ((Clicks on 'Construction' icon)) I: Ok here we go. Now.
R: Look we need uh, hey where did it go? ((Points to screen))
I: Let's come back (.5) into the -
R: You need to go that way. ((Points to far left of screen where ride has been cut off because the camera view changed)) You can't even see it anymore.!
L: ((Clicked on pieces of ride to be placed))
((Game continues to pop up error messages about the piece of ride being placed))

945
R: We can't place a track piece anywhere.
L: «Clicks 'Auto-Complete')2
Where can we place it?
R: Oh [there we can do it.]
L: [Can we connect it?]
R: You should do it somewhere over this way so we can um (.5) "why is it going that way."
L: «(Ride piece trying to be placed is now taken over by the computer, after clicking 'Auto-Complete')2
R: What happened to the thing that went underground?
L: Alright, ‚I'm like, it's just going, like out of control, like I'm not even like touching it, I'm not even gonna! ((laughs))
((Trying to place a track for the new ride but the computer has taken over the movement of the new piece))3
R: ((laughs))
L<400946> (.)
L: Ok [now.]
R: [There now] you can.
L: Oh we can't put any pieces. (.5) ((Error message popped up saying that they could not place anymore track))1 Why can't we put any pieces?
R: I don't know.
L: ((Clicked on different icons in the build menu)) NO. [What is going] on-
R: [Should we be] playing it just so we can make money or no?
L: Yeah. (.5) Let's get more rides dude let's just forget this ride.
We're not even opening it. ((laughs))
R: ((laughs))
L: Like. ((laughs)) Honestly we just gotta build some more rides, so.
Is this one open?
R: Yeah.
L<443331>

Footnotes:
1. The construction icon allows you to build a ride from scratch by placing each and every game piece. Each piece must fit together properly or the game will prompt an error message stating that you cannot place the piece selected.

2. When building custom rollercoasters, one of the buttons labeled 'Auto-complete' will give the computer control to attempt to automatically complete the roller coaster. The computer takes the incomplete coaster, and attempts to create a track to connect the two ends. Typically in order to work, the ends need to be somewhat in each other's vicinity, or the computer will not be able to find a way of connecting them.

Clip Keywords:
Control: L control
granularity: short episode
Transana Users: sharritt

Clip Notes:
Observations
- Frustration with custom coaster building interface: doesn't give enough feedback to correct problems. "cannot place track there" isn't helpful enough, and 'auto-complete' function isn't working (supposed to help finish the track (loop the end of the track to the beginning)
- A missed opportunity for learning (gave up)
- Might be a teacher opportunity
- Pre-built coasters not easily discovered in interface (poor interface design)

Clip: RCT3 D2 R - cannot figure out how to fire employee, give up
Collection: Learning > Missed Opportunities for Learning
2007_05_23_16_04_12.avi
Time: 0:21:32.3 - 0:23:14.1 (Length: 0:01:41.8)

Clip Transcript:

R: What's these little glasses for? ((Points to the courtyard area of the park))
L: Here it is.
R: 'You've won an award' (.5) best- ((Reading the prompt that popped up telling them that they won an award))
L: ((Clicked on 'Staff' icon)) Reliability. (.5) This is so strange (.5) ugh. Wait, who was thinking about quitting?
L: Mechanic 2 and 3 both are! ((Clicks on the mechanics unhappy face)) How do we move?
R: Look at their pay. What is their pay? Maybe we only need one mechanic. Maybe they're bored because they have nothing to do.
L: ((Clicks on each mechanic)) ((Scrolls over each mechanics pay rate)) Maybe they have too much to do. ((Clicks on a mechanic in the park)) (.5) Let's change the uniform. ((Clicks on 'Uniform' icon))
R: ((Colors pop up for uniform colors)) Pink. (.5) Purple.
L: Red.
R: They're still not happy. ((Opens 'Staff' screen))
((Scrolls over mechanics emotions represented by faces)) (1.0)
"Scrolled over how many rides the chosen mechanic has fixed") He hasn't fixed, any rides. =
L: Let's fire him.
R: = And he got employed in March. And it's July.
L: Let's fire him.
R: How do you fire him?
L: ((Moves cursor to 'Staff' window))
((Scrolls over different icons))
((Asks peer team)) Do you guys know how to fire people?
R: What's the 'i'?
L: Yeah, well, one of 'em is bored so, I'm like get out of here.
Peer team: I know the feeling.
L: Yeah. Umm hmm. It happens. It happens when we're making the most money. What's up Liz? ((Talking to peer team; bragging / flirting))
L: ((Closes the 'Staff' window)) 'K, well, you know what? If they're unhappy, guess what? I don't care. They're gonna do their job.
R: They'll still quit.
L: Yeah. (.5) They're still working.

Clip Keywords:
- Control : L control
- granularity : short episode
- Transana Users : sharritt

Clip Notes:
Observations
- Removing staff: missed opportunity
- Cannot figure out how to fire unhappy employees
- Give up, leave them unhappy and figure out other stuff to do
- This highlights a missed opportunity that may have been avoided with game AI or teacher help
- An aspect of RCT3 is managing employees.
- The team notices one maintenance guy wants to quit and is unhappy with his job. Borrowing from real life, they determine they want to fire him. (Also makes logical sense, since you can keep hiring / adding staff)

Clip: RCT3 D4 R - ride entrance / exits broke, can't fix 948
R: The skull ride... the guy fixed the entrance so that people could get into it over [here.]
L: [OOh you did?]
R: [Except], yeah except [people.]
L: [Trainer] one has quit. ((Reading from pop-up message))
R: Whatever, I don't care.!
L: Like look, people are all just standing there.
R: ((Zooms out from the ride))
R: I dunno if it's like broken, it's open, and it's, (.5) working. So (.5) "I don't understand."
L: ((Clicked on ride))
((Pivoted camera view around))
<<939667> (.5)
L: No, they're waiting for this one. ((Zoomed in on ride))
R: For what one?
L: Oh.
<<950050> (1.0)
L: ((Clicked on price for the ride)) Maybe it's too much.
R: That's what I did. I brought it down to one.
L: No you didn't.
R: Yeah.
L: It's at 3.
R: >No, I said I did! When they were all standing there and no one still got on the ride.<
<<966527> (.4)
L: Is it broken?
R: Nnnn I don't know click on that.
L: ((Clicks on 'Maintenance' icon))
<<973875> (.5)
L: Hasn't been broken down. ((Checks status of ride))
<<977465> (1.0)
L: (( Scrolls over different menu options for the selected ride))
R: Maybe we have it in a really bad spot. Do you want to delete it?
R: Yeah, you can delete it.
<<995677> (.1)
L: Alright, well, (.5) "lets delete it then." ((Clicks on 'Delete Object' icon))
((Goes over to ride and starts clicking around the ride))
<<1007237> (1.0)
R: You know I think (.5) this button right here. ((Points to the 'Finance' button))
L: ((Clicks on icon that R suggested))
R: Oh wait no what one is it? Is it that? ((Points to 'Ride Status' icon))
L: ((Clicks on icon that R suggests))
R: ((Yawns)) It's about where you just hit the delete one comes up. I guess not.
L: ((Clicks around on all ride icons))
R: Yeah there we go.
L: ((Prompt comes up confirming that they want to delete the ride))
R: ((Prompt popped up suggesting that the pair discipline an employee))
((Ride gets deleted)) (1.0) How do you train or discipline them?

Footnotes:
1. The 'Maintenance' icon shows how frequently a ride is scheduled for inspection. The gamer can change the frequency. It shows the last time the ride broke down and what failed when it last broke down.

2. By clicking on 'Check Status' you can see when the ride last broke down. This can help set the interval between maintenance checks.

3. Delete icons appear as a garbage can (delete single item) and a double garbage can (delete multiple items). The gamers try to delete the trees using the 'delete multiple' button.

4. The 'Financials' icon displays what the ride is making per hour, any losses, and total income from the ride.

Clip Keywords:
- Control : L control
- granularity : short episode
- Transana Users : sharritt

Clip Notes:

Observations
Game people getting stuck: flaw of game? Path is created in a way that tons of people are stuck between rides and cannot escape - path problem
- end up deleting ride to attempt fixing problem (seem to not realize it's a path problem)
- ride gets deleted but people still stuck on path leading to nowhere (same learning opportunity is missed yet again)

- Shows a lack of feedback from game, causing people to get stuck

- Major part of game is placing rides, their entrances and exits, and then building paths to them.
In this case, team made the exit of one ride feed to the entrance of another, with no escape. People in park try to escape but cannot unless they go through the 2nd ride, so they end up just accumulating. This gets misinterpreted as a queue to the 2nd ride.

Clip: RCT3 D1 R - failure to find a game feature: pre-made roller coasters

Collection: Learning > Missed Opportunities for Learning


Time: 0:28:38.1 - 0:31:09.1 (Length: 0:02:31.0)

Clip Transcript:

L: (What rides you wanna do?) ((Scrolled through the rides they can create))
R: Do a thrill one.
L: Let's do a rollercoaster. ((Partner's request ignored)) ((Clicks on 'Rollercoaster' icon))
R: (Yeah that's what; "I meant.")
L: Which one you wanna do?
R: Suspended swinging roller.
L: ((Scrolls over roller coaster options))
R: Ok do that one.
L: ((Zooms out from ride))
R: We should do it towards. Oh, we actually build it?
L: (Clicked around the grounds of the park in an empty area)
R: Which one you wanna do?
L: ((Clicks on the one piece that he already placed and nothing happens))
((Clicks a different piece to build— from the building menu))
((A game prompt appears telling the pair that the two pieces they are trying to connect will not connect together)): Never mind. ((Continues to click on different pieces to connect to their original piece already placed on the park grounds))
R: How do we go up? We should make it really really high.
L: ((The new piece chosen works))
R: Oh that's how? ((Laughs)) Oh my God.
L: (Continues to click and build pieces in a circular pattern, higher and higher)}
R: Oh that's how? ((Laughs)) Oh my God.

951
R: "Okay, go straight across, then dip down."
L: ((Clicks on a new piece that is straight))

R: Yeah, do straight, and then go. ((Laughs))
L: ((Clicks on another piece to build))
((Another prompt comes up telling them that the piece chosen will not connect))
R: You know people are gonna get sick on this ride.
L: Yes ma'am.

L: That's my goal. ((Clicks on a different piece to build))
((Moved cursor to the ride being built))
((An outline of where the piece would go started swinging everywhere without I doing anything))
R: "What?" (.5) What happened to the top? ((Points to the top of the ride they are building))
L: No idea. ((Clicked to place a piece but the blue outline is still swinging everywhere))
R: What's going on?

L: ((Clicks on another piece to place))
((A prompt comes up telling them that it cannot connect to the other piece already placed))
((Continues to click on different pieces))
((The same prompt pops up saying that the pair cannot connect the pieces))
R: Maybe you can't do anymore.
L: "Probably out of money." ((Laughs))

R: "No, we have five thousand dollars."
L: ((Closes building ride menu))

L: "OK this one is not working out for us. ((Clicked on the 'Delete Object' icon instead)) So let's go; "work on this ride." >Should we just delete this ride? <
R: Yeah. [It's gonna cost more.]
L: [And work on it later?] Yeah. No. ((Clicked on single trash to delete ride))
((The ride is not deleting))

L: Ok you guys, lets uh...
R: Time to delete.
L: ((Clicking around the ride trying to delete it)) Yeah, lets delete this man. ((Clicked on the double trash can to delete more space))
((Prompts keep coming up saying that they cannot delete the ride))
L: ((Deleting ride pieces one at a time)) What? Why can't we delete it? Delete! OK. I guess we just have to work on it then.

R: Let's put some food places in there, so that people are hungry. ((Points to food stands menu))

L: No, well no, we gotta work on our ride, dude. ((Clicked on 'Rides' menu again))

((Choose to build a ride from scratch))

((Build menu popped up for new ride to be built))

Footnotes:
1. The construction icon allows you to build a ride from scratch by placing each and every game piece. Each piece must fit together properly or the game will prompt an error message stating that you cannot place the piece selected.

2. Delete icons appear as a garbage can (delete single item) and a double garbage can (delete multiple items). The gamers try to delete the trees using the 'delete multiple' button.

Clip Keywords:
  Control : L control
  granularity : short episode
  Transana Users : sharritt

Clip Notes:
Observations
building a rollercoaster: select a ride and don't realize that pre-made designs can be used. pair begins making coaster piece-by-piece, which takes lots of time and is somewhat difficult to learn.
- non-active mouser asks "Oh we actually have to build it ourselves?" and active mouser replies "Yeah". (this isn't true: may be a failure of the game interface)
- end up not completing coaster. give up and try to delete it (piece by piece).
  
- Shows how a missed game feature can negatively inhibit gameplay. Game offers multiple ways of accomplishing something, but never hints at other ways to do it. This negatively impacts gameplay; much time gets wasted creating custom rollercoasters.

- When building rollercoasters in the game, you can choose pre-built coasters that you open and place on your park. This is accomplished by clicking the folder icon in the bottom right corner of each ride type. If this is missed and the ride is just clicked on, the default mode is creating a coaster of that type piece by piece (very time consuming: you place each section of track manually).
- Of course, some students might get a thrill out of creating a custom rollercoaster, but in this case, focus should be on business: thus using pre-made plans of rollercoasters to save lots of time (and aggravation)

Clip: Civ4 D2 R - won battle / took enemy civ's city & ruined it

Collection: Learning > Missed Opportunities for Learning
File: D:\My Documents/Dissertation/Data/video/Civ4-Day2-R/Civ4-Day2-R 2007_05_11_19_45_35.avi
Time: 0:24:54.7 - 0:25:24.3 (Length: 0:00:29.6)
Clip Transcript:

R: Oh that thing is deep in their village isn't it?
L: ((Clicks on Unit to 'Pillage' enemy unit))
"(Units start fighting)"
R: Uh oh. ((Battle animation shows fighting military units; some are lost))
"(Pair conquered enemy city)"
"(Window pops up asking whether to burn down the city or install a new governor)"
R<1504522>
R: Yeah. We need to keep it.
L: ((Scrolls over install new governor))
R: Hold on. Ok. We need to keep it?
R<1518443> (.)
L: ((Clicks on burn the city to the ground)) No. ((Laughs)) We just earned money from destroying the barracks.
R: We destroyed three of something.
R<1524249>

Footnotes:
1. Burning down the city destroys the city and wipes it off the map. Installing a new governor will add the city to your civilization.

Clip Keywords:
Control : L control
granularity : sequence of episodes
Transana Users : sharritt

Clip Notes:
Observations
- Took an enemy village - won the battle, pillaged the city (destroyed it rather than keeping it)

Summary
Control : L control 6
Transana Users : sharritt 6
granularity: sequence of episodes  1
granularity: short episode  5

Clips:  6  Total Time:  0:09:18.7

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H.6 TRENDS (SLOW CHANGES OVER TIME)

Collection: Learning > Granularity: Trends (Slow Changes Over Time) > Civ 4 - Avatar Interaction

Collection Notes:
Description of Category
These are a few selected avatar interactions (interactions with the computer civs / AI) from Civilization IV.

A slow but steady change can be witnessed among these: marking a trend in learning while playing Civilization IV.

Early interactions are characterized by trading and making deals, while later interactions become more competitive against computer-played avatars. These later interactions mark important decisions and largely affect the outcome of the played civilization. Often to please one computer civilization, one must become enemies with another computer civilization (choosing sides and one's fate).

Clip: Civ4-Day1-R - first interaction day 1
Collection: Learning > Granularity: Trends (Slow Changes Over Time) > Civ 4 - Avatar Interaction
File: D:/My Documents/Dissertation/Data/video/Civ4-Day1-R/Civ4-Day1-R 2007_05_10_17_26_19.avi
Time: 0:13:47.5 - 0:14:08.9 (Length: 0:00:21.4)
Clip Transcript:
R: Press Enter.
L: ((Presses 'Enter' on keyboard))
R: 'What?' ((Trader window pops up))
L: 'I am (unclear speech)' ((Reading from pop up window of a leader who has something to say)) He's Greek.
R: He's gonna declare war against us. ((Laughs))
L: ((Laughs)) Oh.
R: We should probably -
L: We should probably go start building an army. ((Uses a shortcut on the keyboard))
((Highlights 'Farewell'))

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Footnotes:
1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now." (Civilization IV Manual, p. 101)

Clip Keywords:
Control : L control
Game Focus : Civ 4 - avatar interaction
granularity : trend
Transana Users : sharritt

Clip Notes:
Observations
- Avatar interaction

Clip: Civ4-Day1-R - second interaction day 1 / Isabella
Collection: Learning > Granularity: Trends (Slow Changes Over Time) > Civ 4 - Avatar Interaction
File: D:/My Documents/Dissertation/Data/video/Civ4-Day1-R/Civ4-Day1-R_2007_05_10_17_26_19.avi
Time: 0:22:25.5 - 0:22:45.2 (Length: 0:00:19.7)

Clip Transcript:

R: Like, click on them, and see if you can do anything. ((Clicked on Isabella avatar)) 'Let's discuss something else' ((Reading screen option in avatar interaction))
L: ((Clicks on 'Let's Discuss Something Else')) (unclear speech: reading dialog on screen)
R: 'What do you think of' ((Reading avatar interaction dialog / option))
L: ((Clicks 'What do you think of..'))
R: 'Let's discuss something else' ((Reading screen option in avatar interaction))
L: ((Clicks on 'Let's Discuss Something Else'))
R: 'Ok
L: ((Clicks on 'Let's Discuss Something Else'))
R: Oh no...
L: Click (.). 'What do you think of'. ((Reading screen option in avatar interaction)) Can you type something in?
L: ((Clicks on 'Let's Discuss Something Else'))
R: Or no?
L: No. ((Clicks 'Farewell' to dismiss avatar))

Footnotes:
1. This gives the option to discuss other leaders with the current leader that would like to trade. This game option can be beneficial when trying to figure out allies and enemies (for diplomacy, warfare, etc.).

2. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now." (Civilization IV Manual, p. 101)

Clip Keywords:
Control: L control
Game Focus: Civ 4 - avatar interaction
granularity: trend
Transana Users: sharritt

Clip Notes:
Observations
- Avatar interaction

Clip: Civ4-Day1-R - later in day 1
Collection: Learning > Granularity: Trends (Slow Changes Over Time) > Civ 4 - Avatar Interaction
File: D:/My Documents/Dissertation/Data/video/Civ4-Day1-R/Civ4-Day1-R 2007_05_10_17_26_19.avi
Time: 0:49:08.6 - 0:49:40.0 (Length: 0:00:31.5)

Clip Transcript:
L: ((Leader pops up to make a trade))
((Leaders tradable items show on left side of screen, pair's tradable items show on right side of screen))
R: We we can trade a pig. ((Scrolls over to pair's tradable items))
L: ((Laughs)) ["Barter."]
R: ((Scrolls over to leaders tradable items)) ["What's expensive?"]
«<2956804> (.)
R: ((Clicks through different items to trade)) I, I want to declare war on someone.
L: Oh, go back.
«<2960774> (.)
R: ((Clicks out of avatar screen back to main screen of game))
L: And ah (. ) hit you have to hit his name. ((Points to the leaders name)) No not our name.
R: ((Clicks on the avatar's name like L suggested)) I did his name.
«<2966472> (.)
L: There.
R: {"Leader pops up again\})
"(Clicks on 'Let's discuss something else')
L: No. >There there.< Do it.
R: ((Clicks on 'Declares War') Look, look at this. ((Prompt pops up asking if they want to go to war))
L: Yes.
R: ((Clicks on 'Yes')) ((Laughs))

Footnotes:
1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. This gives the option to discuss other leaders with the current leader that would like to trade. This game option can be beneficial when trying to figure out allies and enemies (for diplomacy, warfare, etc.).

Clip Keywords:
  Control: R control
  Game Focus: Civ 4 - avatar interaction
  granularity: trend
  Transana Users: sharritt

Clip Notes:
Observations
- Avatar interaction

Clip: Civ4-Dayl-R - mid day 1- trade / diplomacy
Collection: Learning > Granularity: Trends (Slow Changes Over Time) > Civ 4 - Avatar Interaction
Time: 0:36:53.3 - 0:38:12.6  (Length: 0:01:19.4)

Clip Transcript:

R: {"Leader pops up asking to go to war")
"(Clicks on 'Let's Discuss Something Else')
L: War! Do it. Do it.
"<2218975> (.)
R: ((Clicks on 'What do you think about Isabella?')) No it's with Isabella.
L: Let's team up with him and then just (.) kill Isabella.
R: "'Now tell me what you think and be totally honest."
"(Reading
from the avatar screen)
R: ((Clicked on Isabella's name)) Just keep clicking on it.
L: No dude.
R: Hold on. ((L tried to take mouse away from R))
((Clicked on 'Let's discuss something else'))
((Clicked on 'What do you think of...'))
L: Head off the war.
R: "No." ((Clicks 'Farewell'))

R: ((Clicked on Alexander the Greek leader)) No. I didn't want to do that. ((Clicks 'Farewell' on avatar screen))
((Goes back to main screen))
((Clicks on Isabella))
((Isabella pops up))
((Clicks on 'What would you like to trade')) 'Trade Proposals'
((Scrolls over what Isabella has to trade)) 'Declare war on Alexander.' ((Reading a choice on Isabella's trade list))
((Clicked on 'Declare War' does not confirm))
L: Trade. To declare war?
R: ((Scrolls over what the pair has to trade))
L: We have one gold. ((Laughs)) Whatever that means.

R: ((Clicking through what the pair has to trade)) Well how do we offer stuff? ((Clicking on every option the pair has to trade with))
Oh ok we can only trade gold?
L: Yeah. (.) !We can only offer tangible items.!
R: ((Clicks on all of Isabella's tradable items)) Do you want (unclear speech) ((Clicked on a city that Isabella had))
L: No. You can't trade cities.
R: Why not?
L: I guess you could but...
((Clicks on 'Farewell' to exit avatar interaction))

Footnotes:
1. This gives the option to discuss other leaders with the current leader that would like to trade. This game option can be beneficial when trying to figure out allies and enemies (for diplomacy, warfare, etc.).

2. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now."
(Civilization IV Manual, p. 101)
3. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

4. "The polite way to open hostilities." (Civilization IV Manual, p. 100)

Clip Keywords:
- Control: R control
- Game Focus: Civ 4 - avatar interaction
- granularity: trend
- Transana Users: sharritt

Clip Notes:
- Observations
  - Avatar interaction

Clip: Civ4-Day2-R - trade w/ Isabella
Collection: Learning > Granularity: Trends (Slow Changes Over Time) > Civ 4 - Avatar Interaction
File: D:/My Documents/Dissertation/Data/video/Civ4-Day2-R/Civ4-Day2-R 2007_05_19_45_35.avi
Time: 0:16:56.5 - 0:17:29.9 (Length: 0:00:33.4)

Clip Transcript:

R: 'Let's make a deal.' ((Isabella, a leader, pops up to trade; reads choices from screen))
L: 'Open Borders?' ((Reading choices from pop up window))
R: Yeah. Tell them that's a good deal.
L: To do it?
R: Yes. (.5)
L: We would -
R: "What are the current deals that we have together?" ((Reading choice from screen))
L: ((Clicks on 'What are the current deals that we have together?'))
L: Nothing. ((Laughs)) Oh wait."
L: <1038761> (.)
R: Open borders.
L: 'Isabella offers clam for wheat.' ((Reads from screen))
((Moves mouse from 'Trade Offers' to 'Farewell' but does not click anything))
R: Yeah. (.5) "Say 'Farewell.'" ((Reads choice from screen))
L: ((Clicks on 'Farewell'))
L: <1049837>

Footnotes:
1. "Some "annual" deals continue over time. This option lets you
review any such deals you have in place with the leader."
(Civilization IV Manual, p. 100)

2. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now."
(Civilization IV Manual, p. 101)

Clip Keywords:
Control : L control
Game Focus : Civ 4 - avatar interaction
granularity : trend
Transana Users : sharritt

Clip Notes:
Observations
- Avatar interaction

Clip: Civ4-Day2-R - war w/ Alexander
Collection: Learning > Granularity: Trends (Slow Changes Over Time) > Civ 4 - Avatar Interaction
File: D:/My Documents/Dissertation/Data/video/Civ4-Day2-R/Civ4-Day2-R
2007_05_11_19_45_35.avi
Time: 0:41:26.1 - 0:42:35.2 [Length: 0:01:09.1]

Clip Transcript:

R: 'Peace Treaty.' (Reading choices from leader on screen who would like to trade)
L: >NO.< We're gonna win dude. We're winning it.
R: He's furious.
L: >No, no, no.< It ain't happening. It ain't happening. (Points to 'It ain't happening')
R: Hold on here 'Willing to negotiate'. (Read option from leader's choices given)
L: Wait try that first.
=(2499149) (.5)
R: 'Declare war on Isabella?' (Reading from screen the options that the leader is giving the pair)
=(2506074) (.5)
L: No dude.
R: (Clicks on pair's tradable items)
L: 'Forget that just we we're gonna take over his empire anyways.' (.5) 'Alexander offers to cease fire.' (Reading from screen)
R: (Clicking on leader's tradable items)
L: (1.0) 'Make him give us gold.' (Laughs)
=(2525427) ()
R: 'What?' I am making him give us a city. (Clicks a city of Alexander's to trade he starts flying his fists around and shaking his head no)
L:  >Do it.<

R:  ((Clicks on 'Never Mind'))
    ((Clicks on 'Farewell.'))

Footnotes:
1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now." (Civilization IV Manual, p. 101)

Clip Keywords:
- Control : R control
- Game Focus : Civ 4 - avatar interaction
- granularity : trend
- Transana Users : sharritt

Clip Notes:
- Observations
  - Avatar interaction

Clip: Civ4-Day3-R - new Civ discovered
Collection:  Learning > Granularity: Trends (Slow Changes Over Time) > Civ 4 - Avatar Interaction
File:  D:/My Documents/Dissertation/Data/video/Civ4-Day3-R/Civ4-Day3-R 2007_05_14_22_41_32.avi
Time:  0:30:01.5 - 0:31:16.9  [Length:  0:01:15.5]

Clip Transcript:
R:  ((A leader has popped up to trade))
L:  Whoa.
R:  What?
L:  'Greetings honorable Craig.'  ((Reading from leader screen))
R:  'There's only peace in our town.'  ((Reading from leader screen))

L:  There's another guy?
R:  Yeah.  ((Clicked on the pair's tradable items))
    ((Scrolls through leader's tradable items))  (1.0)  "Declare war has ended."  ((Reading pop up on screen))  (1.0)  Why can't they do that?  (.5)  How much gold we like from them?  ((Clicks on leader's gold))

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L: «Points to gold supply!) No dude they only have ten. †We have so much †gold let's give 'em gold for something.†
R: «(Clicks 'Ok') Well we do. «(Clicked on gold supply)
L: Give 'em †gold for uh (.5) †'Open Borders.'
R: «(Clicks on gold amount and increase it for trade)
L: «(Clicks 'Ok') «Clicks on gold supply)!
R: «Clicks on several of the leader's tradable items nothing is appearing for options)
L: "No passing?"
R: «(Clicks on gold that was on the trade table)2
L: †'Open Borders for Open Borders?'† «(Reading what in on the trade table for the leader and the pair) (Laughs)
R: Yep.
L: †>What. What.<†
R: I guess we just have to end it somewhere. «(Clicks on 'Farewell')3

Footnotes:

1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. "On the Trade Table, all of your tradable items are listed in the right-hand column, while the other leader's stuff is in the left hand column. To make an offer, click on one (or more) items in your column, and one (or more) items in the other leader's column, and then click on the "make offer" button. If the leader agrees, the deal is done. If not, you can exit diplomacy or try another deal." (Civilization IV Manual, p. 101)

3. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now." (Civilization IV Manual, p. 101)

Clip Keywords:
- Control : R control
- Game Focus : Civ 4 - avatar interaction
- granularity : trend
- Transana Users : sharritt

Clip Notes:
- Observations
- Avatar interaction

Clip: Civ4-Day3-R - no peace w/ Alexander
"A leader has popped up to make a trade proposal, offers peace treaty for current war with concessions."

R: "What's this mean? Do 'Peace treaty.' 2

L: >No dude.< Then we have to trade our code of laws. ((Points to the only thing the pair has to trade)) Screw that it ain't happening.

R: ((Clicks on 'Can we Negotiate?')) "What?" ((Clicks on 'Would you like to make another deal?'))

((The leader starts shaking his fist and head no))

R: "What?"

L: "He wants something from us. 'Nah screw that."

R: ((Scrolls over what the pair has to trade))

L: Just say 'Never mind.' 'Farewell.' ((Reading from screen the choices))

R: ((Clicks on 'Never Mind'))

((Clicks on 'Farewell'))

Footnotes:
1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. "Available only if you're at war." (Civilization IV Manual, p. 100)

3. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now." (Civilization IV Manual, p. 101)

Clip Keywords:
- Control : R control
- Game Focus : Civ 4 - avatar interaction
- granularity : trend
- Transana Users : sharritt

Clip Notes:
Observations
- Avatar interaction

Clip: Civ4-Day3-R - new Civ / Incas - more advanced trading skills
Collection: Learning > Granularity: Trends (Slow Changes Over Time) > Civ 4 - Avatar Interaction
File: D:/My Documents/Dissertation/Data/video/Civ4-Day3-R/Civ4-Day3-R 2007_05_14_22_41_32.avi
Time: 0:41:58.9 - 0:43:44.0 (Length: 0:01:45.1)
Clip Transcript:

R: ((Inca leader popped up to trade))
L: The Incan Empire?
R: Oh he's the first. ((Wants to trade))
L: Yeah.
R: 'Trade Proposal.' ((Reading choice from screen))
L: »Didn't he like declare war on someone?«
R: We have one pig. ((Points to pig count on right menu)) One pig.
R: ((Scrolls over the tradable items for both the leader and the pair))
R: »Clicked on 'Open Borders'. Let's do 'Open Borders'. (3.0) Don't they have cows? ((Clicks on gold to trade))
L: Give 'em some gold. We have four twenty in gold.
R: ((Clicks on pair's gold to trade))
L: ((Moves mouse from number of gold to the 'Ok' button))
R: ((Clicks 'Ok'))
L: ›Not two.«
R: One gold per [turn.]
L: [One.] gold per turn. Give 'em more gold dude. >No not that!«
R: "You know what he won't take it anymore."
L: »You only offered him one gold we have like four hundred and twenty.«
R: ((Clicks on gold and increases the number of gold to trade with))
L: "Give him like a bunch."
R: We can only do four Chris.
L: What?
R: It's only four possible.

R: ((Clicked on 'What would you like to trade now?') And 'a pig.'
((Reading what the trader wants to trade))
L: You gave him a pig for a cow?
R: Yep. ((Laughs))
L: What? ((Laughs))
R: And open t borders. ((Clicked 'Farewell'))

Footnotes:
1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. "Your units can now move freely through your partner’s territory, and vice versa. If you declare war against a civilization you have an Open Borders agreement with, all of your units are removed from his territory, and all of his units are removed from yours."

3. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now."
(Civilization IV Manual, p. 101)

Clip Keywords:
Control : R control
Game Focus : Civ 4 - avatar interaction
granularity : trend
Transana Users : sharritt

Clip Notes:
Observations
- Avatar interaction

Clip: Civ4-Day3-R - peace w/ Alexander - diplomacy over war
Collection: Learning > Granularity: Trends (Slow Changes Over Time) > Civ 4 - Avatar Interaction
File: D:/My Documents/Dissertation/Data/video/Civ4-Day3-R/Civ4-Day3-R 2007_05_14_22_41_32.avi
Time: 0:44:54.9 - 0:45:33.2 (Length: 0:00:38.3)

Clip Transcript:
R: Alright, lets this one" ((Leader popped up for trade))
L: NO.

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R: Yeah. Dude they're going to kill us. ((Laughs))
L: "Feudalism"? ((Points to what the pair has on the trade table, Feudalism))
R: Craig, they're gonna kill us.
L: "We're giving 'em our crap for nothing dude!"
R: ((Clicked on 'Can we negotiate')') Give us the city.
L: "Tell him to give us Delphi." ((Laughs))
R: ((A note from the leader popped up))
R: ((Clicked 'Ok')') "Whaaa ha what?" ((Offer rejected))
L: "Whatever I don't care."
R: ((Clicks to accept the original offer of a peace treaty with concessions))
R: (('We would like to make a proposal' pops up)) "Where's the city?"
((Clicks on the leaders city to trade))
R: ((Trying to click on 'Declare War')) (.5) How do I declare war against someone? ((Clicks 'Farewell'));
L: «2715688» (.)
L: «2731383»

Footnotes:
1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now." (Civilization IV Manual, p. 101)

Clip Keywords:
- Control : R control
- Game Focus : Civ 4 - avatar interaction
- granularity : trend
- Transana Users : sharritt

Clip Notes:
- Avatar interaction

Clip: Civ4-Day4-R - diplomatic strategy w/ Egyptians / Isabella

Collection: Learning > Granularity: Trends (Slow Changes Over Time) > Civ 4 - Avatar Interaction

File: D:/My Documents/Dissertation/Data/video/Civ4-Day4-R/Civ4-Day4-R 2007_05_15_20_45_49.avi

Time: 0:18:52.4 - 0:20:46.5 (Length: 0:01:54.1)
Clip Transcript:

L: Ah, we would lose our Explorer. ((Leader has popped up to start trading))
((Clicked on offer that is on the table))
R: No.
L: And we can't construct harbors.
R: No. Say no.

L: ((Clicked on 'Farewell') z "Trader." ((Isabella popped up wanting to talk)) "It can no longer be tolerated we demand that you leave the Egyptians" ((Reading what the leader has to say)) What's our deals with the Egyptians? (.5) We should probably cancel it because she's right next to us.
R: Yeah. Let's do that.

L: ((Clicked on 'What do you think of...')
((Clicked on 'Alexander'))
L: 'Annoyed.' ((Reading from screen))
((Laughs))
R: See if you can declare war with her. Make a trade proposal. "No that's something else."
L: ((Clicked on 'Farewell')) z Oops.
R: Click on ((Pointed to Isabella's name)) (.5) Isabella.

L: [Trade Proposal?] ((Reading from list of options from trade screen of Isabella))
R: [Trade Proposal?] Yeah.

L: ((Clicks on 'Trade Proposal'))
((Items to be traded for both sides pop up))
R: 'Like declare war on her. (.5) Scroll down. 'Alexander'."
L: For what?
R: Click on that.
L: What?
R: Click on 'What do you want for this'. ((Choice on screen))
L: ((Clicks on 'What do you want for this' option))
R: No what? ((Isabella is shaking her hand and her head no))

L: [Gold going up] ((Clicked on gold))
((Closed gold option))
R: [Gold going up]'Can you trade this for a good friend?' ((Points to option on Isabella's trade screen))

L: ((Clicks 'Can you trade this for a good friend?'))
((Isabella shakes her head no and her hand no)) I don't know what we're doing.
R: Ok never mind. Go back to. ↑Try to declare war.↑
L: «Clicked on 'Farewell')

Footnotes:
1. "When another leader makes you an offer, you must choose to refuse or accept the offer. If you accept, the trade occurs immediately. If you decline, the other leader may ask you to make a counter-offer, may end diplomacy, or may declare war on you." (Civilization IV Manual, p. 101)

2. "The gamer has four options to choose from when the trader screen comes up. They can accept the trade, decline the trade, talk about the other leaders, or say farewell and leave the trader for now." (Civilization IV Manual, p. 101)

Collection: Learning > Granularity: Trends (Slow Changes Over Time) > MH - Economy / Production
Collection Comment:
- trend of learning how to use production / economic development
Collection Notes:
Description of Category
A slow change in strategy / complexity over time, in Making History: The Calm & The Storm, with respect to economy / production aspect of game.

Early knowledge of economic output becomes more complex, and eventually is manipulated in order to change the production / output of the countries being played.

Typically boosts in military units such as airplanes, tanks or troops are done by the group to help support their military campaigns.

Clip: MakingHistory-Day1-R - first look at economy
Collection: Learning > Granularity: Trends (Slow Changes Over Time) > MH - Economy / Production
Time: 0:04:01.4 - 0:04:11.0 (Length: 0:00:09.6)
Clip Transcript:

R: Look how much money we got.
L: Where's that?
R: It's right here. ((Points to 'Treasury'))
L: Dang

Footnotes:
1. "The Treasury figure is how much your government has saved— or is in debt." (Making History Manual, p. 39)

Clip Notes:
- R sees their supply of money come up.
- They come to the conclusion that they are supposed to buy stuff but they do not know what.

Clip: MakingHistory-Day1-R - look at oil / production
Collection: Learning > Granularity: Trends (Slow Changes Over Time) >
MH - Economy / Production
Time: 0:04:41.0 - 0:05:19.5 (Length: 0:00:38.5)

Clip Transcript:

L: Export. (1.0) ((Looks over at peer team's screen)) We need some oil I think.
R: What do we need to produce this though?
L: ((Laughs))
((((Clicked on oil icon)))) Oooo oil.

L: ((Saw oil on map)) Yeah. (((Clicked on 'Mini Map' USA)));
((Moved camera to India region)) Oh there's a red dot right there.
((Clicked on an explosion in the Indian Ocean)) Oooo. ((Scrollled around map back to USA))

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Footnotes:
1. "Resources fuel your nation. To produce anything, your cities need oil, coal, and metals. Without these resources, production will slow and eventually cease." (Making History Manual, p. 34)

2. "Use the mini map to quickly move around the world. Clicking anywhere on the mini-map will take you immediately to that destination. The default view is of your nation." (Making History Manual, p. 8)

Clip Keywords:
Control : I control
Game Focus : Making History - Economy / Production
granularity : trend
Transana Users : sharritt

Clip Notes:
- Discovered that they needed oil. They found oil on the map.

Clip: MakingHistory-Day2-R - day 2 / raise military production
Collection: Learning > Granularity: Trends (Slow Changes Over Time) > MH - Economy / Production
Time: 0:05:33.9 - 0:06:43.3 [Length: 0:01:09.4]

Clip Transcript:
L: «Game manual in hand»
R: Wait see we can make like armies and stuff. ((Opened Production menu)): Choose where you want to build ((Scrolling through products to build))
L: ((Looking through game manual at Military section))
R: ((Scrolls through Production menu))
L: «Chooses planes to produce»
R: Yeah.

Footnotes:
1. "Production Reports list completed military units and resource outputs for that turn. Click on the Production Report button to view the report." (Making History Manual, p. 12)

Clip Keywords:
Clip: MakingHistory-Day2-R - describing how to raise production

Collection: Learning > Granularity: Trends (Slow Changes Over Time) > MH - Economy / Production
Time: 0:08:51.3 - 0:09:44.1 (Length: 0:00:52.9)

Clip Transcript:

"Mouse controls were just traded"

L: How do you find that production of our...
R: Ah. Now what I just clicked you clicked on that. Just click on that thing. (Points to 'Manage & Build Forces') What do you want to build more armies? ((Laughs))
L: This?
Teacher: Hey, when you guys plan your attack, be sure you don't leave your resources too thin. ((Gives advice about planning their attacks))
R: No the swords. And just click German military.
L: ((Clicked on the swords 'Military' icon))
R: Then you can change like what you are producing.
L: What? ((Scrolling through 'City Production' window))
Teacher: When you plan your attack make sure you don't deplete your resources so low that you can't defend yourself.
L: Right. ((Clicking through 'Production' menu))
R: ((Laughs))
L: ((Laughs))
R: ((Laughs))
Teacher: The thing with war you want to take the offensive but you don't want to leave [your (.5) uh ] =
L: [Oh should I leave...]
Teacher: = defenses so thin that you can get attacked from the other side.
L: ((Scrolled through map))
Teacher: (Map now has each country in different colors)
R: What happened to the map? ((The pair was on

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World Summary' map)
L: ((Clicked on 'Diplomatic' icon))
((Clicked on 'Diplomatic' icon on mini map))
R: Oh. ((Laughs))

Footnotes:
1. "To improve your military, you can invest in research. To expand your military, you should build new forces. When building, consider how you want to balance your forces—their defensive and offensive strengths, unique capabilities, costs, and production times. You can rearrange forces, splitting and combining as necessary. If you have economic difficulties, you can disband divisions." (Making History Manual, p. 22)

2. "Army units are called "primary units" because they are the only military forces that can control land regions. Conquering and defending land regions is essential to game success. Army units fight in divisions, which can contain any combination of Infantry, Armored, Artillery, Missiles, or Mobile forces." (Making History Manual, p. 16)

3. "Clicking on the (Nation) Industry button takes you to the City Production box. There you can review and revise what your cities are producing. As leader, you decide what is most important to produce, and change orders accordingly. The four tabbed sections—Cities, Output Distribution, Supplies, and Production Report—allow you to assess all aspects of your nation’s industrial needs." (Making History Manual, p. 33)

4. "The World Summary map gives a big picture view of the world’s nations. You can see nation borders and capitals and track territorial changes. (A conquered region changes to its new ruler’s color.) You can also click on all regions, nations, and capital cities." (Making History Manual, p. 9)

5. "In the Diplomatic panel, you can propose treaties and review alliances. As the game progresses, you can declare war, demand surrender, or beg for peace." (Making History Manual, p. 25)

6. "Use the mini map to quickly move around the world. Clicking anywhere on the mini-map will take you immediately to that destination. The default view is of your nation. To return home, click on your country's flag in the upper right corner." (Making History Manual, p. 8)

Clip Keywords:
Control : L control
Game Focus : Making History - Economy / Production
granularity : trend
Transana Users : sharritt

Clip Notes:
Observations
- Production

- L finds out how to change production of different items by R.
- Teacher gives advise on planning their attacks.

Clip: MakingHistory-Day2-R - directed production / more airplanes
Collection: Learning > Granularity: Trends (Slow Changes Over Time) > MH - Economy / Production
Time: 0:11:23.1 - 0:13:03.0 (Length: 0:01:40.0)
Clip Transcript:

R: Some city.
L: ((Clicked on 'Military' icon))
<686652> (.)
R: Yeah I think we're making (.5) yeah we do need more planes.
((Scrolling through 'Production' menu))
<690977> (4.0)
L: Basic fighters (.5) see assign. ((Scrolling through 'City Production' screen)) One per five turns. Alright, so we need to get more so I can use (unclear speech) 'Change Order' ((Clicked on 'Change Order'))
R: No go to yeah or [air force]
L: [Air force]
<720421> (1.0)
L: Takes five turns to make resources required. ((Reading from 'City Production' screen for 'Air force'))
((Clicks on an Air Force in Europe))
((Clicks 'Change Orders'))
<729569> (.5)
L: Ah it will be finished in one turn. What's IPU? Required.
((Picks up game manual puts it down to return to game))
R: I don’t know.
<759827> (.)
L: ((Clicks on a Bomber plane))
R: Oh see the IFO IPU is like (.5) like that is why it takes five turns.
<781952>

Footnotes:

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1. "Your army, navy, and air forces contain a variety of military units, each with a set of offensive and defensive capabilities. Offensive powers are measured in how well a unit can attack on land, in air or at sea. Defensive strength is assessed by how many hits a unit can absorb in battle. Some units have capabilities unique to their unit type." (Making History Manual, p. 14)

2. "Clicking on the (Nation) Industry button takes you to the City Production box. There you can review and revise what your cities are producing. As leader, you decide what is most important to produce, and change orders accordingly. The four tabbed sections—Cities, Output Distribution, Supplies, and Production Report—allow you to assess all aspects of your nation's industrial needs." (Making History Manual, p. 33)

3. "From the city panel, click on change order. In the Production Orders box, your current order will be highlighted. Review the tabbed options, choose a new production order and click on the order. Note: you can only build naval forces in port cities." (Making History Manual, p. 23)

4. "Fighting in squadrons, air units can attack land and air forces, cities, ships, and resource producers. They can also patrol and perform reconnaissance over land and water, both crucial to unfogging regions. Air units cannot control regions. In the game, look in Military Unit Types in the Book to see air unit capabilities. (In this guide, look in the Book section to learn about the Military Unit Types chart.) Some unique air unit capabilities are fighters and bombers." (Making History Manual, p. 17)

5. "Bombers can travel farther than fighters. They can attack everything fighters can attack, plus naval groups, cities and resource producers." (Making History Manual, p. 17)

Clip Keywords:
- Control : L control
- Game Focus : Making History - Economy / Production
granularity : trend
- Transana Users : sharritt

Clip Notes:
Observations
- Production

- Group searches through Production menu to see how many turns it will take to produce airplanes.

Clip: MakingHistory-Day3-R - changing output of individual factories
R: (Clicked on 'Change Orders')
(Clicked on 'Production' menu popped up)
(Clicked on 'Alliances' icon)
(Clicked on an Alliance)
(Scrolled around map)
(Clicked on another Alliance)
(Clicked on another Alliance)
(Clicked on 'Change Orders')
('Production' menu came up)
(Clicked on 'Air Force' tab once in the Production menu)
(Clicked on a bomber)

Footnotes:
1. "From the city panel, click on change order. In the Production Orders box, your current order will be highlighted. Review the tabbed options, choose a new production order and click on the order. Note: you can only build naval forces in port cities." (Making History Manual, p. 23)

2. "Clicking on the (Nation) Industry button takes you to the City Production box. There you can review and revise what your cities are producing. As leader, you decide what is most important to produce, and change orders accordingly. The four tabbed sections–Cities, Output Distribution, Supplies, and Production Report–allow you to assess all aspects of your nation’s industrial needs." (Making History Manual, p. 33)

3. "Your allies are countries you’ve agreed to defend and vice versa. If you attack a nation, your allies are expected to join your fight. If your allies attack a nation, you are expected to join them." (Making History Manual, p. 25)

4. "Fighting in squadrons, air units can attack land and air forces, cities, ships, and resource producers. They can also patrol and perform reconnaissance over land and water, both crucial to unfogging regions. Air units cannot control regions. In the game, look in Military Unit Types in the Book to see air unit capabilities. (In this guide, look in the Book section to learn about the Military Unit Types chart.) Some unique air unit capabilities are fighters and bombers."
5. "Bombers can travel farther than fighters. They can attack everything fighters can attack, plus naval groups, cities and resource producers." (Making History Manual, p. 17)

Clip Keywords:
- Control : R control
- Game Focus : Making History - Economy / Production
- granularity : trend
- Transana Users : sharritt

Clip Notes:
- Observations
  - Production

- R clicked on separate factories to view the production of each and changed the production output on bombers produced.

Clip Transcript:

L: ((Clicked on an Alliance factory))
   (('Production' menu came up))
   ((Clicked on 'Air Force'))
   ((Closed window))
   #<1817322> (.)
L: ((Clicked on a different Alliance factory))
   ((Clicked 'Change Orders'))
   ((Production window came up))
   ((Clicked on 'Air Force'))
   ((Closed window))
   #<1846192> (.)
L: ((Clicked on a Alliance))
   ((Clicked on 'Change Orders'))
   ((Production menu popped up))
   ((Clicked on 'Air Force'))
   ((Scrollled over 'Fighter' planes))
   ((Clicked on 'Fighter'))
   ((Closed window))
   ((Clicked on another alliance factory))
   ((Clicked on a different alliance factory))
"Clicked on another alliance factory")
"Clicked 'Change Orders')"
"Clicked 'Air Force')"
"Clicked 'Bomber']"
"Closed window"
"Clicked on another alliance factory")

Footnotes:
1. "Fighting in squadrons, air units can attack land and air forces, cities, ships, and resource producers. They can also patrol and perform reconnaissance over land and water, both crucial to unfogging regions. Air units cannot control regions. In the game, look in Military Unit Types in the Book to see air unit capabilities. (In this guide, look in the Book section to learn about the Military Unit Types chart.) Some unique air unit capabilities are fighters and bombers." (Making History Manual, p. 17)

2. "From the city panel, click on change order. In the Production Orders box, your current order will be highlighted. Review the tabbed options, choose a new production order and click on the order. Note: you can only build naval forces in port cities." (Making History Manual, p. 23)

3. "Fighters are strong in air-to-air combat. They can patrol, support land battles, and attack land groups and resource producers." (Making History Manual, p. 17)

4. "Bombers can travel farther than fighters. They can attack everything fighters can attack, plus naval groups, cities and resource producers." (Making History Manual, p. 17)

Clip Keywords:
Control: L control
Game Focus: Making History - Economy / Production
granularity: trend
Transana Users: sharritt

Clip Notes:
Observations
Production, repetitive

Clip: MakingHistory-Day4-R - checking factory production / getting more land troops
Collection: Learning > Granularity: Trends (Slow Changes Over Time) > MH - Economy / Production
File: D:/My Documents/Dissertation/Data/video/MakingHistory-Day4-R/MakingHistory-Day4-R 2007_05_16_08_10_58.avi
Time: 0:04:52.3 - 0:05:39.2 [Length: 0:00:46.9]
Clip Transcript:

L: Alright, let's see where are we, what we're producing. Oh that's not good. (((Clicked on a factory)))
(((Clicked on 'Change Orders'))) Should we do land troops?
R: Yeah.

L: (((Clicked on 'land troops'))) (((Clicked on first option in Production menu)))
(((Closed window)))
(((Clicked 'Change Orders'))) (((Clicked 'Land Troops'))) (((Clicked 'Air Force'))) (((Clicked Bomber)))
(((Closed window)))
(((Clicked on an alliance factory)))
(((Clicked 'Change Orders')))1

R: Send those planes in there. Just bomb the crap out of them.
L: (((Clicked 'Land Troops'))) (((Closed window)))

L: (((Clicked on a factory)))

Footnotes:
1. "From the city panel, click on change order. In the Production Orders box, your current order will be highlighted. Review the tabbed options, choose a new production order and click on the order. Note: you can only build naval forces in port cities." (Making History Manual, p. 23)

2. "Fighting in squadrons, air units can attack land and air forces, cities, ships, and resource producers. They can also patrol and perform reconnaissance over land and water, both crucial to unfogging regions. Air units cannot control regions. In the game, look in Military Unit Types in the Book to see air unit capabilities. (In this guide, look in the Book section to learn about the Military Unit Types chart.) Some unique air unit capabilities are fighters and bombers." (Making History Manual, p. 17)

3. "Bombers can travel farther than fighters. They can attack everything fighters can attack, plus naval groups, cities and resource producers." (Making History Manual, p. 17)

Clip Keywords:
Control : L control
- Group decides to produce land troops.

**Collection:** Learning > Granularity: Trends (Slow Changes Over Time) > RCT3 - Park Operations & Staffing

**Collection Comment:**
evolution of understanding / complexity w/ park management

**Collection Notes:**
Description of Category
In RollerCoaster Tycoon 3, one aspect of the game requiring some attention is the theme park's staffing and park operations.

Typically this is the managerial role of a theme park owner: maintaining employees, keeping them happy, and keeping them busy.

These episodes represent a change over time, as more complex understandings and strategies are used by the group.

**Clip: RCT3-Day1-R - first staffing: getting staff, and customizing them**

**Collection:** Learning > Granularity: Trends (Slow Changes Over Time) > RCT3 - Park Operations & Staffing


**Time:** 0:19:42.9 - 0:22:23.4  **(Length: 0:02:40.5)**

**Clip Transcript:**

L: We want staff. ((Clicked on 'Staff' icon))
((Opened up all of their current staff members)) Ok. (. ) We want Janitors.
R: Janitor 1. We can name 'em.
L: ((Clicked on Janitor 1)) Ok. Dooo ((Double clicked on the name 'Janitor 1' and hit the backspace button to put in a name))
<(1195012) (.)
R: Name him Water Boy because he's watering.
L: (hhh) ((Types in name of janitor))
((Humming))
R: Jackie? ((Laughs))
<(1204200) (1.5)
L: ((Laughs)) I'll be the mechanic and you can be the Janitor.
"Clicks on mechanics name"
"Changes it to a different name"
R: Ok. "(Laughs)"

L: "(Laughs) 'Park Inspector' "(Reading names of staff off of staff screen) His name is Park Inspector. Let's hire him. "(Clicks at bottom of screen on the icon for hiring a janitor) Let's hire a Janitor."

R: You're hiring more. How many [Janitors do we need?]
L: [Let's hire (. mechanics.] We need mechanics. "(Clicked on hiring a mechanic)"

R: Make like five janitors.

L: We need a bunch of mechanics. And a couple more janitors. "(Clicked on hiring a janitor) Couple of security people. "(Clicked on security people to hire) Couple entertainers. "(Clicked on hiring entertainers) Animal Keeper. Ahh. We don't-
R: Animal Keeper.
L: 'You need at least one enclosure (unclear speech) "(Reading from pop up when L scrolled over 'Animal Keeper')" Alright, we don't need him.

R: What is this person doing?
L: It's an entertainer.
R: OH.
L: He's not really entertaining. "(Laughs)"

R: "(Laughs)"

L: Like (hhh) "(Clicked on costume option for entertainer)" costume to wear.

R: Make it like an animal. Cute one or something.
L: "(Clicked on costume options for entertainer)" A shark.

R: A whale. Oh [it's a shark.]
L: [It's a shark.]
R: Make it a Panda. Oh ok good.
L: He's not really happy. "(Viewing face next to staff member)"
R: Click the costume colors.
L: "(Clicks on costume colors as suggested by R)"
R: Oh pink.

L: "(Clicks on pink)"

L: "(Clicks on the entertainers 'Thoughts' icon)"

R: It's just just his [thoughts.]
L: [Thoughts.] 'I hate working [here.']
R: What the - hate working [Here]. Make him like (. happy.
L: Uh ok. 'Laziness.' "(Laughs)" 'Happiness' "(Reading icons that
are options for the entertainer)

((Clicked on wage))

R: Oh no. Don't make his wage higher.
L: Why? That's why he's sad.
R: Well. ((Laughs)) Make it higher and see if he gets happier.
L: ((Clicked to increase wage)) It only goes up to "there." Maybe we should like not have him.

R: He's a horrible employee.
L: We should fire him.
R: ((Points to a different entertainer)) There he is. Is that him? Oh no that's another entertainer.

L: I think that's him. ((Scrolls across the different staff members at the bottom of the 'Staff' window))
((Clicks on a staff member))

R: Is he happy now? He's standing. ((Scrolled to bottom right of screen the entertainer is now standing))
L: Yep. ((The entertainer's mood is now happy because his face turned green with a smile))
R: ((Laughs))

L: Yeah he's happy now. So let's check everybody else what they're doing.
R: Everyone else seems happy. (. ) Like Jackie's happy.
L: Everybody else is happy. ((Scrolling through all the staff members faces)) "Happy, happy, happy, happy." Cool.

R: ((Laughs))
L: Awesome. ( )Now( )

Clip Keywords:
Control : L control
Game Focus : RCT3 - Staffing
granularity : trend
Transana Users : sharritt

Clip Notes:
Observations
Staffing

Clip: RCT3-Day2-R - managing staff / day 2 / cannot fire employee
Collection: Learning > Granularity: Trends (Slow Changes Over Time) > 983
L: What are these guys doing? These guys aren't supposed to be around here. (.5) These entertainers. ((Zooms in on the courtyard where the entertainers are))
   ((Clicks on an entertainer))
   ((Clicks on the entertainers thoughts)) 'Bored, Bored, Bored'!
   ((Reading the thoughts of the one entertainer that L clicked on))
because you're in the wrong spot.
R: [Mechanic 2 is thinking about quitting.] ((Reading from drop down menu at top of screen))
L: [Mechanic 2 is thinking about quitting.] ((Reading same as above))
No. Get mechanic 2. Where is mechanic 2? ((Laughs))
R: ((Laughs))
L: Let's get him.
R: Go to the (.5) You may want to go to the people.
R<1287778> (.)
R: What's these little glasses for? ((Points to the courtyard area of the park))
L: Here it is.
R<1295755> (.)
L: Staff.
R: 'You've won an award' (.5) best = ((Reading the prompt that popped up telling them that they won an award))
L: ((Clicked on 'Staff' icon) = Reliability. (.5) This is so strange (.5) ugh. Wait, who was thinking about quitting?
R<1305909> (.)
L: Mechanic 2 and 3 both are! ((Clicks on the mechanics unhappy face))
How do we move?
R: Look at their pay. What is their pay? Maybe we only need one mechanic. Maybe they're bored because they have nothing to do.
R<1322461> (.3)
L: ((Clicks on each mechanic))
   (( Scrolls over their pay)) Maybe they have too much to do. ((Clicks on a mechanic in the park to see what they have been working on)) (.5)
   Let's change the uniform. ((Clicks on 'Uniform' icon))
R: ((Colors pop up for uniform colors)) Pink. (.5) Purple.
L: Red.
R: They're still not happy. ((Looks at 'Staff' screen))
   (( Scrolls over mechanics emotions)) (.0) ((Scrollled over how many rides the chosen mechanic has fixed)) He hasn't fixed, any rides. =
L: Let's fire him.
R<1345910> (.5)
R: = And he got employed in March. And it's July.
L: Let's fire him.

=1350061> (.)

R: How do you fire him?
L: ((Moves cursor to 'Staff' window and starts scrolling over different icons))
((Asks peer team)) Do you guys know how to fire people?
R: What's the 'i'?
L: Yeah, well, one of 'em is bored so, I'm like get out of here.
Peer team: I know the feeling.
L: Yeah. Umm hmm. It happens. It happens when we're making the most money. What's up Liz? ((Talking to peer team))
=1381496> (.)
L: ((Closes the 'Staff' window}) 'K, well, you know what? If they're unhappy, guess what? I don't care. They're gonna do their job.
R: And they'll quit.
L: Yeah. (.5) They're still working.
=1394752>

Footnotes:
1. The game updates with information on 'behind the scenes' park operations such as customer thoughts, staffing problems, broken rides, etc.

2. Once a certain level has been reached, a certain amount of money has been made, or a park inspection has been passed, awards will be given. Some awards are required to move from Apprentice to Entrepreneur to Tycoon (levels in the game).

Clip Keywords:
Control : L control
Game Focus : RCT3 - Staffing
granularity : trend
Transana Users : sharritt

Clip Notes:
Observations
staffing

Clip: RCT3-Day3-R - day 3 - massage prompts hiring of staff (new park)
Collection: Learning > Granularity: Trends (Slow Changes Over Time) > RCT3 - Park Operations & Staffing
Time: 0:14:25.9 - 0:15:41.4 (Length: 0:01:15.5)

Clip Transcript:
L: ¡More mechanics?¡
R: Yeah.
L: Alright, where's that again? ((Scrolls through side menu))
R: The mechanics 'Park Management'.
L: ((Clicked on 'Park Management')):
  ((Clicked on 'Staff')) ¡Oh we don't have anybody.
R: There's a mechanic. ((Points to Mechanic icon on staff menu))
L: "We need a janitor." ((Clicked on 'Mechanic'))
  ((Clicked on 'Janitor'))
L: "We need a couple of mechanics." ((Clicked on 'Mechanic'))
  ((Clicked to add another Mechanic)) ¡We need a couple of everything.
  ((Scrolled over the staff that the pair can hire))
  (('Animal Keeper' popped up)) "No we don't need an 'Animal Keeper' though." 
R: num
L: "Two 'Entertainers'. ((Clicked on 'Entertainers')) We need to
  change the 'Entertainers' costumes. Something scary." ((Clicked on 'Costume' for entertainer))
  ((Clicked on entertainer's thoughts))
L: "Two 'Entertainers'. ((Clicked on 'Entertainers')) We need to
  change the 'Entertainers' costumes. Something scary." ((Clicked on 'Costume' for entertainer))
  ((Clicked on entertainer's thoughts))
R: We got to drop them somewhere. ((The staff member that they just
  hired is in mid air)) (.5) I think you're holding him.
L: No.
R: Yeah. He's right there.
L: ((Scrolls through new hires))
  ((Closes staff window)) Uh yeah?
L: ((Scrolls through new hires))
  ((Closes staff window)) Uh yeah?
L: Ok well then we'll; ((Zoom out from map)) (.5) put him (.5)
  let's go over here. ((Scrolling around park with new employee in air
  ready to be placed))
  ((Places the new employee in an open area of map near a ride)) (1.0)
  ¡Alright, let's do another ride.!

Footnotes:
1. 'Park Management' contains 'Staffing', where different employees
   can be hired, fired, disciplined, or promoted.

2. When a new employee is hired, they will need to be placed somewhere
   in the park. Placing employees next to a ride (or section of the park)
   that they are intended to work is helpful so that it does not take them
   long to get to their objective.

Clip Keywords:
  Control : L control
  Game Focus : RCT3 - Staffing

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granularity: trend
Transana Users: sharritt

Clip Notes:
Observations
staffing

Clip: RCT3-Day3-R - monitoring mechanic / fix ride
Collection: Learning > Granularity: Trends (Slow Changes Over Time) > RCT3 - Park Operations & Staffing
Time: 0:50:29.4 - 0:51:00.6 (Length: 0:00:31.2)

Clip Transcript:

L: ((Clicked on ride that was broken down))
((Ride options popped up))
((Clicked on Mechanic icon))
R: Where are we? Did he fix it yet?
L: ((Viewing window switched from the ride that was broken to the mechanic walking)) Better be.
((Clicked on ride stats to see if the ride was up and running again))
((Closed the window for the broken ride))
R: ((Yawns))

Footnotes:
1. Clicking the mechanic icon shows his current task (to see if the mechanic is on his way to fix a ride).
2. Ride stats show how long a ride has been broken, when it was last checked by maintenance, and what is wrong with the ride.

Clip Keywords:
Control: L control
Game Focus: RCT3 - Staffing
Granularity: trend
Transana Users: sharritt

Clip Notes:
Observations
staffing

Clip: RCT3-Day3-R - waiting for mechanic to fix ride
Collection: Learning > Granularity: Trends (Slow Changes Over Time) > RCT3 - Park Operations & Staffing
Time: 0:51:00.6 - 0:53:28.3 (Length: 0:02:27.6)

987
Clip Transcript:

L: "Nobody's on this ride." ((Zoomed out from park))
((Scrolled over a ride the number of people on it-zero))
R: 
L: Well (.5) I don't know see. ((Zooms out with camera to see if ride
is moving))
R: Is it broken?
L: Yeah.
R: How much does it cost for that one? (.5) 'Minutes from last'
L: ((Clicked on ride broken down))
R: ((Reading from ride menu the last time the ride was checked by
maintenance)) Uh it should be like every minute. (.5) Get pick the
janitor for the thing. ((Points to maintenance man icon))
L: ((Clicks on maintenance icon)) Oh [yeah.]
R: [Like I] mean this thing so he can fix it.
L: "Can I pick him up and have him go over there?" ((Maintenance
guy is not near the ride))
R: I don't know.
L: ((Clicked on maintenance guy)) “Well we need him because we're
losing money.” (.5) There he is. He's coming.
R: Yep. ((Teacher came in to ask the students a question)) (1.0) How
much is this ride?
L: A lot!
R: It is?
L: "We're making <cash> on it."
R: Fast forward it I hate it when it's dark. ((The game has turned to
night mode screen is getting darker))
L: ((Clicks the fast forward button at top left of screen)) Ok
hopefully uh the janitor went to go or the -
R: ((Yawns)) Mechanic.
L: Yep. ((Clicks on fast forward again))

Footnotes:
1. At the top-left of the screen there are buttons to play, pause,
and fast-forward time. At any point in play gamers can pause time
until they want to resume business (such as when building a ride), or
fast-forward the game play to speed up time (to watch the park /
profits change over time).

Clip Keywords:
Control : L control
Game Focus: RCT3 - Editing Rides
Game Focus: RCT3 - Staffing
granularity: trend
Transana Users: sharritt

Clip Notes:
Observations
staffing (might need for ride, but don't)

Clip: RCT3-Day4-R - hiring lots of staff, customizing - appropriate for park size
Collection: Learning > Granularity: Trends (Slow Changes Over Time) >
RCT3 - Park Operations & Staffing
File: D:/My Documents/Dissertation/Data/video/RCT3-Day4-R/RCT3-Day4-R
2007_05_24_21_25_41.avi
Time: 0:12:14.9 - 0:14:38.2 (Length: 0:02:23.3)

Clip Transcript:

L: Where is it again? ((Scrolled over left side menu))
R: Underneath the eyes.
L: No that's save.
R: No go up again. The eyes. Those little things. This thing.
((Points to 'Park Management'))
L: 'That's not it.'
R<746262> (.)
L: It's not?
R: 'No.'
L: Are you sure? [Oh no,] its just the statistics with the graph.
R: [Yeah.] ((Clicked on 'Park Management' icon))
L: ((Staff screen popped up))
R<755774> (1.0)
L: Hey. We only have one mechanic. And one janitor.
R: ((Scrolls over the mechanics and janitors))
R<771988> (2.0)
L: There now it's light out. See? ((Screen changed from dark / nighttime to light / daytime))
R: Fwww. (hhh)
R<787002> (.)
R: We've got to place him.
L: ((Reading from game prompt that customers are thirsty)) 'Consider placing drink drink stalls?' There's no drink places are there? Oh yeah we never had any. Oh yeah we got to put this security guard somewhere. (1.0) Where should I put him?
R: Just drop him right there.
L: 'How about (..) a janitor?' ((Scrolls through staff menu))
R<813241> (.)
Entertaining. ((Reading off what each staff member is doing by clicking on each staff member)) You better start entertaining bud. You're not scary either."

R: ((Laughs))
L: "'I hate working.'" ((Reading thoughts of the janitor)) Let's go to (.) to there. ((Increased the staff members pay)) Now he's happy."

L: Happier. So I'm ok with. What's this?
R: Janitor.
L: Alright, now what.
R: Drink spot and then delete that ride.
L: Alright.

Footnotes:
1. 'Park Management' contains 'Staffing', where different employees can be hired, fired, disciplined, or promoted.

Clip Keywords:
- Control : L control
- Game Focus : RCT3 - Staffing
- granularity : trend
- Transana Users : sharritt

Clip Notes:
Observations
staffing

Clip: RCT3-Day4-R - want animal keeper for animal attraction, learn it's not needed

Collection: Learning > Granularity: Trends (Slow Changes Over Time) > RCT3 - Park Operations & Staffing
File: D:/My Documents/Dissertation/Data/video/RCT3-Day4-R/RCT3-Day4-R
2007_05_24_21_25_41.avi
Time: 0:27:04.8 - 0:27:26.7 (Length: 0:00:21.9)

Clip Transcript:

L: Get an animal trainer first before everything.
R: We do?
L: Yeah. We need one. There's animals in there.
R: ((Laughs))
L: ((Scrolls over to the left side of the screen)) Which one was it again?
R: This one. ((Points to 'Park Management' icon))
L: ((Clicks on the 'Park Management' icon that R told him to click on))
"Now place him. I think there."

L: ((Prompt comes up stating that they can't place the animal keeper for that ride)) I guess we don't need one.

Footnotes:
1. 'Park Management' contains 'Staffing', where different employees can be hired, fired, disciplined, or promoted.

Clip Keywords:
Control : L control
Game Focus : RCT3 - Staffing
granularity : trend
Transana Users : sharritt

Summary
Control : L control 17
Control : R control 9
Game Focus : Civ 4 - avatar interaction 11
Game Focus : Making History - Economy / Production 8
Game Focus : RCT3 - Editing Rides 1
Game Focus : RCT3 - Staffing 7
Transana Users : sharritt 26
granularity : trend 26

Clips: 26 Total Time: 0:29:04.2
APPENDIX I:

GLOSSARY OF TERMS
AI – Artificial Intelligence (ability to program intelligent behavior, communication, etc. into pieces of a game; such as game avatars)

Appropriation – the choice to make use of something (such as students’ choices of particular game affordances to complete a task in the game)

Avatar – virtual identities (characters) in a game

Cognitive affordance – a potential for cognitive action (by an actor in its environment)

COTS - Commercial off-the-shelf games, typically produced by larger game corporations

Digital immigrants - older generations; did not grow up in the digital age playing video games

Digital natives - generations growing up in the digital age, in the presence of video games

Flow - an optimal experience; characterized by losing track of time and the ambient environment; experiencing high levels of focus and immersion (Csikszentmihalyi, 1990)

Mods - game engine modifications

MMOG - Massively Multiplayer Online Game (an online game supported by a community of thousands of players in a virtual world)
MMORPG - Massively Multiplayer Online Role-Playing Game (similar to MMOGs, but focused on role-playing games such as World of Warcraft)

Pedagogy - instructional technique

RPG - Role Playing Game (a game genre, often where players play medieval or heroic characters / avatars)

Serious Games – a project focusing on serious uses of games in public sectors (business, government, health care, education, politics, etc.)

Social affordance – a potential for social action (by an actor in its environment)

Virtual Identity – see Avatar
APPENDIX J:

TRANSCRIPT OF INTERVIEWS
Q1 (overall experience)
PI: What do you guys think of the game? What was your experience like playing it?
Rg-R: I thought it was fun but there was like I didn't understand what to really do in it.
Lg-R: a lot of it.
PI: Yeah
Rg-L: At first it's kind of hard but then you understand like certain things you have to do other things.
PI: Ok
Lg-L: yeah
Lg-R: ((Nods head yes)) Uh yeah, at first it's kind of hard to learn but then you, you kind of get to use to it and it's easier.
PI: It's easier to pick up stuff?
Lg-R: Yeah
Rg-L: Yeah
PI: Yeah

Q2 (what was accomplished)
PI: Do you guys feel like you accomplished something by playing the game?
Lg-R: Uh Yeah we got in first place so yeah.
Lg-L: ((Laughs))
PI: Yeah? That's good.
Lg-R: We dominated.
Lg-R: Laughs
Rg-L: Uh
Rg-R: I don't know
Rg-L: ((Laughs)) We were in dead last.
Rg-R: ((Laughs))
Q3 (significant problems)
PI: Did you guys encounter any like significant problems while you played the game and if so how did you resolve them?
Rg-L: Uh
Rg-R: It's like war and
Rg-L: We did war but then we just did a peace treaty because we couldn't, we weren't going to beat him. ((Laughs))
PI: That's good.
Rg-R: Yeah ((Chuckles))
PI: How about you guys?
Lg-L: Um, No, we went to war a lot and we actually got in first by doing that.
PI: Uh wow.
Lg-R: Yeah
PI: Good job.
Lg-L: So that's good.
Lg-R: Yeah
Rg-L: They're in two wars right now.

Q4 (hold backs)
PI: Do you think there's anything that held you guys back though that like maybe you didn't understand too well?
Rg-R: I didn't understand what to do like in the game.
PI: It's a little hard at first though.
Rg-R: Yeah.
Lg-L: Laughs
Lg-R: Laughs
Lg-R: Uh kind of like the economy and uh, uh and building things
Lg-L: Yeah. Keeping people happy.
Lg-R: is kind of its a lot more hard than uh like making military units and stuff
Q5 (learn history)
PI: Uh do you think you learn anything about history by playing the game?
Rg-R: I don't know. Probably not really.
Rg-L: Uh... a little bit like
Rg-R: We learned like about the people.
Rg-L: It showed all the religions.
Rg-R: Yeah.
Lg-R: Yeah it shows you like uh like the Greeks have like the Phalanx and stuff like that so it kind of gives you an idea of what it was like or something.
PI: Ok.

Q6 (game accuracy)
PI: Do you think that the game was pretty historically accurate or what do you think about that?
Rg-L: Yeah like with the times.
Rg-R: Yeah
Rg-L: The cause it shows you like we're in 1828 AD and then like
Rg-R: Like things are like being built better
Rg-L: Yeah like things you can built
PI: Ok. Like the enlightenment period.
Rg-R: Yeah.
Rg-L: Yeah.
PI: Do you think so? It was pretty historically accurate?
Lg-L: Yeah ((Shakes head yes))
Lg-R: ((Shakes head yes))

Q7 (extra things learned)
PI: Was there anything else that you learned by playing the game besides what I just asked I guess?
Rg-L: Um (.5) I don’t know.
Rg-R: I don’t (Laughs)
Lg-R: Hmmmm
Lg-R: I don’t know
Lg-L: We already knew a lot about this kind but just maybe like remembering like things that made us remember stuff or whatever.
PI: Ok.

Q8 (learn from other games)
PI: Do you guys think that you could learn from other games in the future?
Rg-L: Probably
Rg-R: Yeah
Rg-L: Definitely
PI: You think it’s a good thing to do in like schools and stuff?
Lg-R: Yeah.
PI: Yeah.

Q9 (teams helpful)
PI: Did you guys think it was uh was it helpful for you to work in teams like in groups of two like this or do you think that it would have been player if you had played by yourself?
Rg-R: I think it was good in groups you could like talk about what to do with the other person.
PI: Hmm. How about you guys?
Lg-R: Uh, Yeah pretty much the same thing.
Lg-L: Yeah.
PI: Ok.

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Q10 (teacher helpfulness)
 PI: Uh Do you think, if it was like in a real classroom do you think the teacher would be helpful cause they're like kind of helping you manage the game or giving you tips and stuff?
 Rg-L: Yeah.
 Rg-R: Probably.
 Lg-R: Yeah if they knew what to do then yeah
 Lg-L: Yeah
 Rg-L: Yeah kind of like a tutorial
 PI: Ok yeah.
 Rg-L: I'm sure there's a tutorial in the game that would have helped.
 PI: Right yeah. Ok.

Q11 (learn from teammate)
 PI: Um, What did you learn from your classmates, I guess your teammate here?
 Rg-R: Um. I don't know.
 Rg-L: ((Laughs))
 Rg-R: Not to just click randomly on things. Like read what they were saying to like see what was wrong with the cities to see what improvements we needed to make.
 Rg-L: ((Laughs))
 PI: Yeah you had a little bit of history with I guess Civ 2 right? You played a similar game before.
 Rg-L: Yeah.
 PI: Yeah. Ok.

Q12 (catching up)
 PI: Actually I had a question for you since you came on day 2. Um do you think it was easy for you to catch up and get into the game?
 Lg-L: Yeah, no it was just kind of hard but kind of got used to it. Because there was so much going on its hard to see like how he is doing all of this. Yeah
Lg-R: Yeah
PI: Yeah I saw you kind of taught him how to play so yeah.
Lg-L: It was pretty diff hard.
PI: Ok.

Q13 (mouse controls)
PI: And my last question here is, I noticed you guys kind of took turns with the mouse. Did you like being in control of the mouse or um what did you guys like doing the best? You like controlling the game or given
Rg-R: I like controlling them. I like I think uh doing it individual would have been cool too.
PI: Ok. I guess when you weren't using the mouse though were you just, I guess what were you guys doing when you weren't
Rg-L: Kind of observing what's happening and then like saying like you should do this or whatever. And then that person usually does it because their kind of
PI: Work in a team?
Rg-L: Yeah.
Lg-L: Yeah
PI: Alright, well that's it.
J.2 Interview: Making History: The Calm & The Storm

Q1 (overall experience)
PI: You can play the game here in a minute. I was wondering if you guys could tell me about your experience playing the game.
Lg-L: Like, how?
PI: Like what stuck out or what you thought...
Lg-L: Oh. Like alliances and stuff like that.
PI: That was real important?
Lg-R: Yeah. It was confusing.
Rg-R: It was confusing.
Rg-L: Uh yeah well at first it was confusing but then after like two days you got the hang of it. And like how to like like the production of cities and stuff and then uh.... yeah. And like getting alliances and wars and stuff.
PI: You thought so?
Rg-R: Yeah it's just kind of I don't know kind of confusing. Like with all the colors and stuff but it's interesting.

Q2 (what was accomplished)
PI: Ok. Do you guys feel like you accomplished something by playing the game?
Lg-L: Kind of.
Lg-R: We took over Mexico.
Lg-L: Yeah.
Lg-R: We lost the United States to Canada but that's cool.
Rg-L: Yeah. Uh if you really pay attention it can like teach about the uh those time periods.
Q3 (significant problems)
PI: Um did you come across any like significant problems while you played the game? And if so how did you go about resolving them?
Lg-L: We lost America. \textit{(Laughs)}
Lg-R: We haven't figured out how to resolve that one yet. \textit{(Laughs)}
PI: \textit{(Laughs)}
Lg-R: We're currently holding on to Minnesota and that's it.
PI: Ok.
Rg-L: Uh if you start a war with a country uh that's bigger than you I don't know
Rg-R: Yeah you see like
Rg-L: Usually you get taken over
Rg-R: You need to keep up your resources and where your armies are and stuff.
PI: Ok.
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Q4 (hold backs)
PI: Um was there anything in the game you didn't really understand or thought that it held you back?
Lg-L: How to like how to start stuff. Like with like the first day with moving like the planes and stuff. I didn't understand how to do it.
Lg-R: Um, other than just war stuff like keeping your country like productive and diplomatic and all that.
PI: Ok.
Lg-R: Yeah. I still don't know what this button does. \textit{(Scrolls over Production icon)} Production trade and (unclear speech) Yeah that's lost to me.
PI: Ok. How about you guys?
Rg-L: \textit{(Shrugged shoulders)}
PI: Anything that held you back or you couldn't figure out?
Rg-L: Hmmmm not really.
Rg-R: Yeah not not no.
PI: Ok.
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Q5 (learn history)
PI: What did you guys learn about history from playing the game?
Lg-L: Um. I don't know.
Lg-R: Nobody was able to change their uh government or the way their
government worked. Nobody did at least in the game so I don't know if
that has anything to do with it.
Lg-L: Yeah.
Lg-R: All I know is that we can pretty much even though it's during that time in
the game we have the ability to form the alliances that never would have
been but whatever.
Lg-L: Yeah.
Lg-R: Working with Germany is alright.
PI: «(Laughs)»
Lg-R: Under the right circumstances.
PI: How about you guys? Do you think did you learn anything about history?
Rg-R: You know you always hear about like the bigger countries during WWII
but there was like a lot of stuff going on with the smaller countries that
you never really recognized their role in the war.
PI: That's true. Yeah.

Q6 (game accuracy)
PI: Ok. Do you think the game was pretty historically accurate or what do you
think about that?
Lg-L: For the most part. Just like like I liked how you could make your own
alliances it didn't have to go with what history did. So like for the most
part yeah.
PI: Ok.
Rg-L: Yeah. It was accurate.

Q7 (extra things learned)
PI: Is there anything else you guys learned from playing the game?
Lg-L: No.
Lg-R: Canada is powerful enough to take over the whole United States.
PI: (Laughs)
Lg-R: In a game.
PI: (Laughs)
Rg-L: Um there's just a lot of like stuff that you don't think of when you think of war and uh yeah.
PI: Ok.
Rg-L: Like a lot involved.
PI: Ok.

Q8 (learn from other games)
PI: Do you guys think you could learn from games in the future? Like if you played more?
Rg-L: Yeah.
Lg-L: Hmm.
Lg-R: Yeah.

Q9 (teams helpful)
PI: Ok. Do you think it was helpful to work in teams?
Lg-L: Yeah.
Lg-R: Yeah. (Laughs)
PI: Like if you guys were playing on one person per computer it would've been probably different.
Lg-L: Yeah.
Rg-L: Yeah.
Lg-L: Yeah.
Lg-R: We wouldn't have had the outside resources.
Lg-L: Yeah
PI: So you liked that ok.

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Q10 (learn from teammate)
PI: Um what did you guys learn from your classmates or your teammates?
Lg-R: To expand our war to outside the countries nearby. Uh.
Lg-L: Yeah.
Rg-L: Uh we just agreed on like the countries and like want to join our alliance
we would just start a war with them. So uh
PI: That’s cool.
Rg-L: Yeah. ((Laughs))

Q11 (teacher helpfulness)
PI: Um Do you think that your teacher was helpful over here? ((Laughs))
Rg-L: Yeah. ((Laughs))
Lg-R: Oh awesome. Actually he did. Oh we lost Minnesota. ((Reading from
screen))
Rg-R: Very helpful.
Rg-L: No he gave us tips.
Lg-L: Actually um yeah he knows a lot about US history.
Lg-R: How to keep our guys safe.
Lg-L: And strategy.

Q12 (how teacher can help more)
PI: If you guys like um if this was like really part of like a real history class in the
school like is there anything you can think of that like the teacher could do
to make it like a better learning experience or more helpful?
Lg-L: Just explain how to use the tools more. Like, like before you play like do a
lesson about like how you're supposed to play the game.
PI: Ok
Lg-L: Like set like better parameters like not just
Rg-L: Like give you tasks.
Lg-L: Yeah. Like.
Teacher: That's a good point.

PI: Ok.

Q13 (train / update new teammate)

PI: Alrighty, actually had one last question for you. Do you think it was um I know that you trained the other person on the second day to play the game? Uh what was that like? Do you think it was kind of hard or kind of easy to do or?

Lg-L: Um. No it wasn't hard you just, no it was easy to explain, it is easy to explain once you know what to do. So I don't think it was. Yeah.

PI: Alright that's all I got so you guys can keep playing here. Thank you for participating this week.

Lg-R: Thank you for giving us something to do.

Lg-L: Yeah.

Lg-R: <2197830>
Q1 (overall experience)
PI: I have a few questions for you here? So I'll just read the question and maybe each of you could add something to it. Ok, so first off can you guys tell me about your experience playing the game?
Rg-R: At like at first it was hard kind of cause you didn't know what to do. And the terrain was all different and stuff and you had to even it and it was just kind of frustrating.
Rg-L: Yeah we ah had some problems with financing just overall just making money. But after we after we like played a little bit we grasped it and got a hold of it.
PI: Ok
Lg-R: Yeah same here. Um at the beginning getting used to all the controls and getting used to like how to figure out how to even like look at the screen a certain way was probably the most difficult thing. And um it took a while to establish like making any headway. Um but once we finally got going got used to it it's a lot of fun. ((Laughs))
PI: Ok cool.
Rg-L: Yeah it's kind of hard to figure out all of this stuff just cause it's hard to get used to. But after like after like maybe 20 minutes or after you start figuring out like all the different controls and stuff it starts getting a lot easier. Basically just try to accomplish the different goals that you like want to do. You want to try to make a lot of money and build a lot of stuff so.
PI: Ok. Alright.

Q2 (what was accomplished)
PI: Um do you guys feel like you accomplished a lot of stuff by playing the game?
Rg-L: Uh yeah I think we worked pretty good together after working a couple of times getting used to it but uh yeah we made some money. Yeah I think we accomplished many goals.
PI: Ok.
Rg-R: Yeah pretty much what he said. We built a park basically, it was fun.
PI: Alright.
Lg-R: Uh we got really excited when someone would accomplish something. So yeah it was ah the little like awards and things in the game were rewarding was fun cause it made it feel like you did something.
Lg-L: Yeah it is like it feels rewarding if you don't like think about other stuff outside of it. Like if you are just really focused on the game like you feel like you actually like accomplished something. But I guess if I was thinking about like ah like uh going to classes and like doing homework and stuff I would feel like I'm not accomplishing anything.
Lg-R: ((Laughs))
Lg-L: But.
PI: Ok.

Q3 (significant problems)
PI: Um did you encounter any significant problems while you played the game?
Rg-L: Uh controls. And um entrances and where to put stuff. But like we said before uh if once we worked on it a little bit we ah we grasped it and got control of everything and.
PI: Do you feel like you figured it out ok?
Rg-L: Yeah. Ah yeah after like she said after 20 minutes like we started to get everything and control of everything.
PI: Ok. How about you guys?
Lg-R: Uh yeah we well at first we needed to build more rides to make more money. But we need more money to make more rides. So um that was a little bit of an issue for us we would like stand here waiting for the or the
profit to go up high enough so we could build our next thing. And um and what other problems did we run into that was the major one?

Lg-L: Ummmm. Not really too much. Yeah just like a lot of stuff with controls and like making sure we had enough money to build stuff. And stuff like that but nothing really that couldn't be fixed.

PI: Ok.

Q4 (hold backs)

PI: Were there things in the game that you didn't understand or that you feel maybe held you back a little bit?

Rg-L: Um.

Rg-R: The people working in our park.

Rg-L: We didn't understand why they wouldn't work and why they chose to be lazy. We needed to improve their work status by like giving them more money and they continued to be lazy and stuff like that so. There was no incentive to give them.

Lg-R: Us either.

Lg-R: Yeah we got a little frustrated by ah why like people wouldn't be going to certain rides then we realized we had like a piece of path missing or something like that. So like it didn't tell us I guess and we couldn't see it cause of the scenery. Um was that was another frustrating thing the shadows from all the scenery.

Lg-L: Yeah.

Lg-R: We couldn't figure out how to get rid of them or anything.

PI: Ok

Q5 (learn business)

PI: What did you guys learn about business from playing the game?

Rg-L: Definitely management and money. Because if you spend too much money on like a certain ride you’re not going to have enough money to
get people to come by ah having a lower price and by ah not offering them like food and beverage and items like that they need.

Rg-R: You had to figure out how much they would actually pay cause we would like jack the prices up really high and then like the thing would pop up saying no one is buying your hotdogs cause they’re way too expensive. So you have to know like the variation like what the high point of that someone will actually spend on a hotdog and what the low point and stuff.

PI: Ok.

Lg-R: Um for us definitely pricing on rides. How much people would pay and still go on them. And then um also like how far can we push it. You know to still have people buy it.

Lg-L: Yeah.

Lg-R: And then um the value of marketing.

Lg-L: Yeah cause we did like marketing campaigns and stuff. And that helped a little bit. So yeah and then also

PI: That brought in more people?

Lg-R: Yeah.

Lg-L: Yeah. And then also like dealing with like the people who work in your park. Like the different employees and like how to keep them happy and how to keep them wanting to do their job. And yeah just like a lot of the stuff is just like its like basic business stuff knowing where to put everything so that people will go to it. And yeah stuff like that.

Q6 (game helped teach business principles)

PI: Ok. So you thought playing the game helped you learn those things?

Rg-L: Yeah.

Q7 (extra things learned)

PI: Was there anything else you thought you learned from playing the game besides what you just mentioned?
Rg-L: Um. I don't know.
Rg-R: More like patience. If you don't have like a high patience tolerance because it takes a lot of time to like get perfect. It's not like you're hands on and you can do it. So computers make me frustrated.
Lg-R: Um I think that pretty much covered it. I guess just noticing like what things are popular with people too.
PI: Ok.
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Q8 (make any custom coasters)
PI: Did you guys make any custom roller coasters or did you just use the built in designs?
Lg-L: We just used all the built in stuff cause like I played this game before but it was a different version and I know it is kind of hard to build the custom roller coasters so we kind of avoided that.
Lg-R: We're lazy.
PI: ((Laughs)) That's cool
Rg-L: We attempted our to do a lot of custom roller coasters. Yeah some of them worked but we couldn't um
Rg-R: The entrance
Rg-L: Yeah get people to get on because the entrance would either be too high or too low. Also some of our rides we uh, we didn't know where to delete so we didn't know what to delete on uh, on the rides so there would uh... just be half a roller coaster and we can't have people go on that. Cause uh yeah bad stuff would happen.
PI: Ok
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Q9 (learn from other games)
PI: Do you guys think you could learn from other games in the future?
Lg-R: Definitely.

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Rg-L: Yeah because ah like we don't like how it is to own a roller coaster or theme park we kind of got a little feel for that so. I can't say that I can't learn from another game cause I actually learned from this one.

PI: Ok.

Lg-L: Yeah I think that these games like even though it's kinda feels like your not accomplishing to much I think that you can still kind of learn from it. Cause my little sister plays games like these too and she's always figuring out new stuff about like how like her to run her business and stuff. So I think it's yeah I think they can definitely help. Maybe not for older people but a lot for younger kids.

PI: Ok.

Lg-R: Also um all the stuff that we learned in our class like we ran our own businesses for a while. And like a lot of that same stuff we probably got a little more in touch with it with ah actually doing it. Because we spent months on it. But um like a lot of the same stuff comes through in these games and I mean while it seems like small and on a small scale and not very realistic there are a lot of the same problems that we like ran into running our own business that come up here too.

PI: Ok.

Q10 (mouse control)

PI: I have a couple more questions for you guys here. Who controlled the mouse I guess between the two of you? Did one of you take over or did you kind of trade?

Lg-L: We kind of split it. But then since like I have played this game before

Lg-R: Yeah.

Lg-L: I knew how to do some things that were confusing I guess so

PI: Ok.

Lg-R: Ideas and technical skills we split it up.

Lg-L: Yeah.

PI: So you prefer controlling the mouse. What did you see your roll as?
Lg-R: I don't know. I kind of would prefer watching and giving ideas and maybe telling Liz like what like we should do and um I don't know. I didn't feel like I wasn't in control although I guess I wasn't the one holding the mouse. But

PI: But you enjoyed doing that?
Lg-R: Yeah.
PI: Ok. How about you guys?
Rg-L: Uh I controlled the mouse but before I like made a decision or changed something. We worked together to see what would work the best. Possible situation what the best situation for our business would be.

PI: Ok.

Q11 (helpful to work in teams)
PI: Do you guys think it was helpful to work in teams?
Rg-L: Yeah.
Rg-R: Hmmm.
Rg-L: Yeah. Because if you do it alone it would be very very difficult.
Rg-R: You'd be asking a lot of questions of each other trying to figure out like how to do this or like figure how to do that.
Rg-L: If I couldn't find something um like to delete or to move something like she would find it. So stuff like that. Make sure like being right there.
Lg-R: It would be a lot more frustrating if we didn't work in pairs.
PI: Ok. Alright.

Q12 (game accuracy / business)
PI: Do you feel that the game was fairly accurate to real life?
Rg-L: I think so.
Rg-R: Yeah.
Rg-L: We have like only when the time would be like as much problems happen as possible in like ten minutes but like. There are always problems and
there's always positives and negatives of a company in a business and it showed it by saying rides broke down and you need people to fix it.
Rg-R: Like people are thirsty, people can't get on the ride because you don't have like an inch of cement you know what I mean so.
Rg-L: Yeah. It's really accurate so.
Rg-R: Yes it is pretty accurate.

Q13 (business principles well represented)
P1: So you think the business principles were well represented or do you think there's any that got left out?
Rg-R: No I think that it was well represented because you had to like down to the point where you had to turn on the game like the ride you had to open it. You had to figure out the pricing how much you would have someone to pay for the ride. And it gave you updates all the time on the ride and you had to look at how many people come on per year. And like see what you can doing with pricing to get more people to come on or stay off.
P1: Ok.
Rg-R: So it was pretty accurate.
Lg-R: I think the only thing that might have been simplified in the game is like the rides that we were able to buy they were all like 100% safe would always work and had to be fixed sometimes. But I mean in a real business with uh, you would probably have to hire people to like design your rides and to like test it more and it would probably take a lot longer to build it. Um but I mean you really can't do that in a game cause it would get really boring. (\textit{(Laughs)})
P1: (\textit{(Laughs)})
Lg-R: So.
P1: Ok.
Lg-L: I think a lot of it was realistic. Like a lot of the stuff like dealing with employees and making sure the customers were happy so.
Lg-R: Part of it to where you could like see people's customers opinions like it would tell you when people were thirsty or whatever. I think that um
that was easier on the game then it would be in real life. Like you would have to do more surveys. You would have to have more people out there asking people instead of just you know click on something and like this person has been thinking these things.

PI: Ok.
Lg-R: Which is nice in the game but.
PI: Ok.

Q14 (teacher helpfulness)
PI: Do you think a teacher would have been helpful? Um say this was a real classroom do you think the teacher would have been helpful to play the game?
Rg-L: Probably.
Rg-R: Yeah. Just in the beginning because I the one game that I used RollerCoaster Tycoon there was nothing to do like this so I didn’t really know where to find things or how to delete things in the beginning and stuff so... It would have taken like us a day or two without teachers to actually get a hands on like know what we’re doing. But if a teacher was here it probably would of only take 10 or 15 minutes and then we would have been at the same stage we are now.
Rg-L: Yeah.
PI: Ok. Alright.
Lg-L: I think a teacher would have been helpful yeah like at the beginning for like figuring out everything and learning how to play the game. But after you get a hang of it it’s pretty easy.
PI: You guys could handle it.
Lg-L: Yeah.
PI: Ok. Alright. That’s all I have. So you guys can play until the bell rings.
Rg-L: Thank you.
Appendix K: Gee's 36 Learning Principles
Following are 36 Learning Principles, presented by James Gee, that connect activities in games with learning. These principles are described in greater detail in Gee’s book: *What video games have to teach us about learning and literacy*. The learning principles are provided below (from Gee, 2003, p. 207-212):

1. **Active, Critical Learning Principle** 
The learning environment is set up to encourage active and critical learning.

2. **Design Principle** 
Learning about and appreciating design and design principles are core to the learning experience.

3. **Semiotic Principle** 
Using multiple sign systems (images, words, actions, symbols, artifacts, etc.)

4. **Semiotic Domains Principle** 
Mastering semiotic domains and participating in the affinity group or groups connected to them.

5. **Metacognitive Thinking about Semiotic Domains Principle** 
Active and critical thinking about the relationships of the current semiotic domain to other semiotic domains.

6. **"Psychosocial Moratorium" Principle** 
Learners can take risks in space where real consequences are lowered.

7. **Committed Learning Principle** 
Learners are engaged through a commitment to extensions of their real-world identities and virtual work that they find compelling.

8. **Identity Principle** 
Taking on and playing with identities in such a way that the learner can explore the relationship between new identities and old ones.

9. **Self-Knowledge Principle** 
The virtual world is constructed in such a way that learners learn not
only about the domain but about themselves and their current and potential capacities.

10. **Amplification of Input Principle**
For little input, learners get a lot of output

11. **Achievement Principle**
Intrinsic rewards exist for all learners, customized to each learner’s level, effort, and growing mastery and signaling the learner’s ongoing achievements.

12. **Practice Principle**
Learners get lots of practice in a context where the practice is not boring and spend lots of time on task.

13. **Ongoing Learning Principle**
The distinction between learner and master is vague. There are cycles of new learning, automatization, undoing automatization, and new reorganized automatization.

14. **“Regime of Competence” Principle**
The learner gets ample opportunity to operate within, but at the edge of, his or her resources, so tasks are challenging but not “undoable”.

15. **Probing Principle**
Learning is a cycle of acting (probing); reflecting in and on this action, forming a hypothesis; reprobing; and then accepting or rethinking the hypothesis.

16. **Multiple Routes Principle**
This allows learners to make choices, rely on their own strengths and styles of learning and problem solving, while also exploring alternative styles.

17. **Situated Meaning Principle**
The meanings of signs (words, actions, objects, artifacts, symbols, texts, etc.) are situated in embodied experience.

18. **Text Principle**
Texts are not understood just verbally (i.e, in terms of definitions) but in terms of embodied experiences.
19. Intertextual Principle
The learner understands texts as a family ("genre") of related texts.

20. Multimodal Principle
Meaning and knowledge are built up through various modalities
(images, texts, symbols, interactions, abstract design, sound, etc.), not
just words.

21. “Material Intelligence” Principle
Thinking, problem solving, and knowledge are “stored” in material
objects in the environment.

22. Intuitive Knowledge Principle
Intuitive or tacit knowledge built in repeated practice and experience
counts and is honored. Not just verbal and conscious knowledge is
rewarded.

23. Subset Principle
Learning even at its start takes place in a (simplified) subset of the real
domain.

24. Incremental Principle
Learning situations are ordered in the early stages so that earlier cases
lead to generalizations that are fruitful for later cases.

25. Concentrated Sample Principle
Fundamental signs and actions are concentrated in the early stages so
that learners get to practice them often and learn them well.

26. Bottom-Up Basic Skills Principle
Basic Skills are not learned in isolation or out of context.

27. Explicit Information on-Demand and Just-in-Time Principle
The learner is given explicit information both on-demand and just-in-
time.

28. Discovery Principle
The learner is given opportunities to experiment and make discoveries.

29. The Transfer Principle
Skills and knowledge gained in early parts of the experience are used
in later parts.
30. Cultural Models about the World Principle
Learners come to think consciously and reflectively about some of their cultural models of learning and themselves as learners, and juxtapose them to new models of learning and themselves as learners.

31. Cultural Models about Learning Principle
Learners can reflect on cultural models of learning and on themselves as learners, and juxtapose them to new models of learning and themselves as learners.

32. Cultural Models about Semiotic Domains Principle
Learners think consciously and reflectively about the cultural models about a particular semiotic domain they are learning, and juxtapose them to new models about this domain.

33. Distributed Principle
Meaning/Knowledge is distributed across the learner, objects, tools, symbols, technologies, and the environment

34. Dispersed Principle
Meaning/Knowledge is dispersed and can be shared with others outside the domain/game, some of whom the learner may rarely or never see face to face

35. Affinity Group Principle
Learners constitute a group bonded through shared endeavors, goals, and practices and not shared race, gender, nation, ethnicity, or culture.

36. Insider Principle
The learner is an "insider", "teacher", and "producer" (not just a consumer).

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