

## **Dungeons and Dragons in Education: A Usability Study**

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**Abstract:** When it comes to this generation of learners, challenges that often arise for educators are getting learners engaged, getting learners to process information and getting learners to apply that information. Game-based learning has been seen as an effective tool for engaging students in these areas. A web-based resource website was developed for Dungeons and Dragons (D&D) in education for educators that are seeking a way to facilitate learning engagement and assess learning transfer. This paper focuses on the design and evaluation of a website about D&D in education. Feedback collected from six participants indicated that they felt the website was easy to navigate and felt satisfied with the site's content and design.

### **Statement of the Problem**

When we think about teaching, some of the major issues that come up are on the topics of student engagement and assessing the learning transfer. In order for students to learn effectively, they must be engaged in the subject matter (Kuh, 2003). If students lack engagement or interest in the topic, they will be less inclined to retain content. Students must also be able to practice their skills and knowledge in order to receive proper feedback. In other words, students must be given the opportunity to practice and implement learned skills in class whereupon they can receive instant feedback from instructors in order to build up their working knowledge. This is to ensure that students may build upon foundational skills and become more adept in their learning (Kun, 2003).

From the researcher's own experience being a student and from working with students, when there is no interest in the content being taught, then the learning becomes ineffective. Likewise, in terms of checking student understanding, aside from looking at what the student has memorized, it is equally important to make sure that students are able to apply the information they have learned. In order to address this issue, the researcher created a website for Dungeons and Dragons (D&D), a role-playing tabletop game, for educators that wish to try a new method of engaging students.

Game-based learning has been seen as a method that allows educators to give learners the opportunity to explore, recognize, and respond to various situations that serve to enrich the educational experience. Though not all games are suited for certain educational practices or subjects, the way teachers utilize and implement these games is what truly makes the difference. That said, a well-developed game design should touch upon the following areas; freedom to fail, rapid feedback, progression, and storytelling (Scott & Neustaeder, 2013).

According to studies, game-based learning is brought into the classroom as an effort in enhancing learners' motivation. Games allow learners to make meaningful connections to fit their lessons and teaching styles (Educause, 2014). The teachers' role in game-based learning shifts constantly. They must be the instructor, the guide, the playmaker, and the evaluator (Hangoj & Brund, 2010). As aforementioned in the paragraph above, it is important to understand that gameplay is meant for assessing the learning transfer and not for grading (Farber, 2016). For instance, the use of gameplay can provide teachers the opportunity to give instant feedback and assess students' abilities to think on the fly and react to spontaneous situations.

#### Purpose statement

The purpose of this usability study was to evaluate a web-based resource site for teachers that may be interested in incorporating Dungeons and Dragons into their classroom

#### Dungeons and Dragons

Dungeons and Dragons is a strategic, role-playing tabletop game that gives learners the opportunity to explore and apply learned concepts, increase interest, and facilitate collaboration and communication (Carter, 2011). The purpose of the developed web resource on D&D in education was to inform and give educators a possible alternative method in assessing the learning transfer as well as further engaging students in a wide range of topics. D&D has been seen as a way to solve problems with friends and classmates in a safe environment, a way to explore life, and a way to make mistakes without carrying dire real-life consequences (Carter, 2011). These features give learners the opportunity to apply learned knowledge and experience acquired in the classroom through the game. The flexible gameplay also lends itself to enhance problem-solving skills, promotes interaction with others, and allows learners to explore a broader range of perspectives and educational experiences (Carter, 2011).

#### Game-based Learning

Game-based learning has been defined as learning that utilizes games to support teaching and learning (Featherstone, Houghton & Perrotta, 2013). It encourages students to be more self-motivated and self-driven by presenting learning material as something enjoyable through participating in goal-oriented gameplay while giving them a sense of autonomy.

While game-based learning has been looked at in the context of video games, implementing games into lessons helps to facilitate engagement. Rather than being an add-on to a lesson, it becomes part of the lesson itself and creates a good balance between fun and learning (Aston, et al, 2013).

### Web-based Learning

In relation to the website that was developed for this study, web-based material allows for convenient and instant access to information (Breithaupt, Farress, Gabriel, Macdonald & Stole, 2001). With some planning, web-based materials allow for content creators to incorporate specific materials, information, activities, animations, images, and more in order to make the learning process more enjoyable and engaging for learners (Cantillon, Jollie & McKimm, 2003).

### Teacher Training

When teachers are introduced to something new that may be incorporated into the classroom, information and training is always needed. Training, of course, involves “understanding the basic concepts” and trying out new strategies in the classroom (Boudersa, 2016, p.3). From the researcher’s personal experience, teachers are not always receptive to new strategies if they do not seem purposeful. Therefore, it is important that training is structured with clearly defined goals and intent (Boudersa, 2016), and teachers are provided with ample information, meaningful material, and content that will hopefully lead to student productivity and learning.

### Usability Testing

Usability testing is used as a way to test how effective or easy to use something is with real users and participants (Experience UX, 2019). Before something becomes widespread, it is important to test the product with smaller groups to ensure usability. When it comes to conducting a usability test for websites for specific educational purposes, it is important to make sure that it contains the following: a search engine, a site map, an alphabetical order index, a multi-categorical menu, a FAQs section, and navigational aids (Blades, Bragdon, Gullikson, McKibbin, Sparling & Toms, 1999). This is something to keep in mind for the construction of the website.

## **Methodology**

### Research Questions/Goals

The following research questions were developed with the intention of guiding the testing process:

1. How easy is it for educators to navigate a web-based resource site on Dungeons and Dragons?

2. How satisfied are educators with the information provided on a web-based resource site for Dungeons and Dragons?
3. How appealing is the visual design of the web-based resource site for Dungeons and Dragons?

The goal for this usability study was to assess the navigation, satisfaction, and design of the web-based resource site. This was to ensure the website was usable, meaning easily accessible, convenient, organized, and provided sufficient material on the topic of D&D in education.

In order to access these aspects of the website, users were given a set of tasks. The tasks were directly linked to the research questions and asked the users to a) navigate/click/search for specific items or pieces of information, b) talk out loud as they went through the site, and c) asked participants to rate the site content using the Likert scale during the post-survey. Interviews were also conducted as a form of debriefing for additional data collection. The usability test took less than an hour to complete and all participants were given pseudonyms to ensure confidentiality. All information has been stored on a secured drive and password protected.

### Content Analysis

For this study, the researcher focused on using Keller's ARCS model (Keller, 1987). The ARCS model was used as the overall structure of the design.

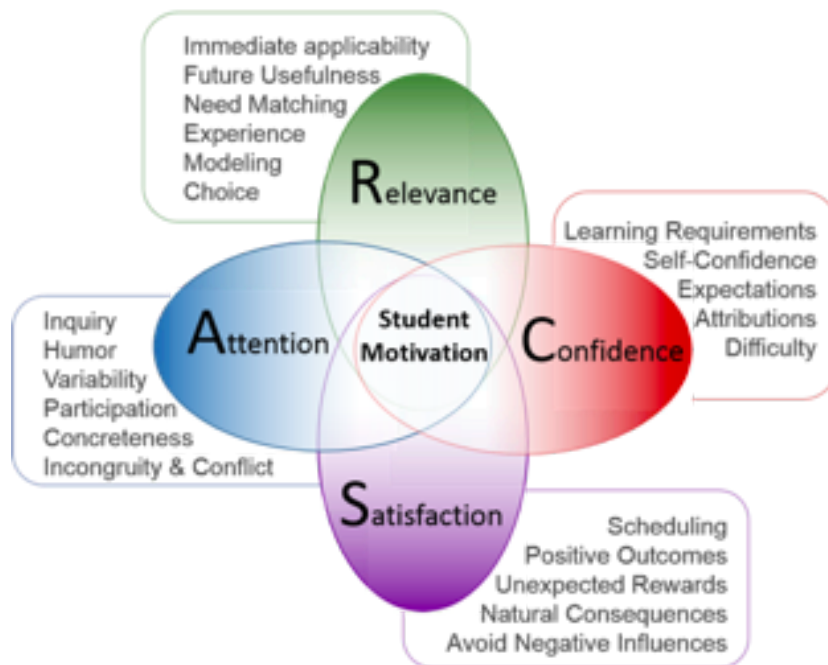


Figure 1. Diagram of Keller's ARCS model detailing each component of the model

The intention was to engage educators by sparking their interest in role-playing games including game-based learning, specifically as it relates to D&D. Participants will reflect on the relevance of using game-based learning strategies as they navigate through the website. By providing helpful tips and suggestions, participants can build on prior experience and make their own adjustments as needed to suit their needs. After navigating through the website, participants will start to gain a broader perspective on D&D and develop confidence in using it in their own classroom. At the end of the usability, participants were hoped to feel satisfied with what they have learned and potentially implement these strategies themselves.

Before getting into D&D, teachers must first be made aware of game-based learning strategies and implementation. This is specifically important for teachers who are not familiar with game-based learning strategies or have minimal knowledge of the subject. Teachers that are familiar with game-based learning may also want to learn more or further refine their knowledge. Understanding game-based learning is crucial in order to implement D&D into the classroom effectively. Game-based learning requires structure and clearly defined goals (Aston et al, 2013).

Once teachers have a good grasp on game-based learning, they can then move on to learning about the game itself. As with the researcher's experience with D&D, it may be seen as a fantasy type of game involving dragons, elves, and the like; however, it is important to note that there is more to it than that. The basics of the game are rather simple in that what is always needed is a set of dice and a story. A section dedicated to gameplay will cover the basics of constructing a simple game as well as how to use dice. The next category involves implementation. This will cover specifically on how to incorporate D&D specifically into lessons as well as how to use it as a tool for assessment.

A wireframe (See Appendix H) was created for the initial design of the website. The wireframe had the following options on the navigation bar: Home, Game-based learning, How to Play, Strategies, and Additional Resources. The wireframe did not include a teacher's guide that was later incorporated into the design and grouped all materials and content under the Strategies section.

### Participants

For the purpose of this study, there were three iterations of the website created with testing conducted in between each iteration. Six participants ( $n=6$ ) in total were recruited for the study. The first group consisted of three participants while the second group consisted of five participants, including two participants from the first group. Upon analyzing the results, the researcher found that there was an equal number of male and female participants. In regards to the recruiting process, participants were contacted via email and sent a pre-survey in advance to

gauge participants' interest. Sample questions for the pre-screening survey included demographic questions (age, gender, years of service, etc) and specific questions such as "how much do you know about roleplaying games" and "how interested are you in Dungeons and Dragons?" These questions required participants to rate their knowledge of interest using the Likert scale (1-5), with 1 meaning "very little" and 5 meaning "a lot." These participants were recruited from the researcher's inner circle and networking through social media.

**Table 1**

*Participant age, gender, years of teaching experience, n=6*

	Characteristics	Number
<i>Age</i>	<b>23-28</b>	<b>4</b>
	30+	2
<i>Gender</i>	Male	3
	Female	3
<i>Years of teaching experience</i>	Less than a year	2
	2-3 years	2
	6+ years	2
<i>Comfortable navigating online</i>	Comfortable	1
	<b>Very comfortable</b>	<b>5</b>
<i>Interested in D&amp;D</i>	Interested	1
	<b>Very Interested</b>	<b>5</b>

Four of the participants were between the ages of 23 and 28 with 2 participants being 30 years or older. Among the participants recruited, there was an even number of teachers with varying years of teaching experience. These participants were comfortable using a laptop or personal computer (PC) and were comfortable navigating online and showed interest in learning about D&D.

### Evaluation Instruments

A website on D&D in education was created using Wix. The researcher spent time debating whether to use Wix or Weebly for the creation of the website. After careful consideration of both pros and cons, the researcher ultimately decided that Wix was more ideal.

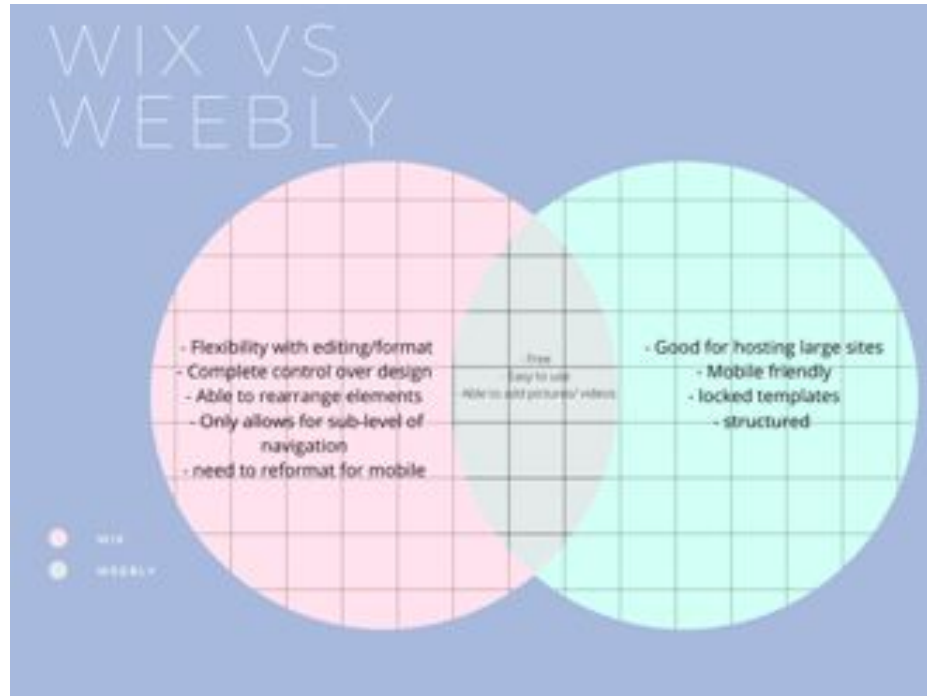


Figure 2. Venn diagram depicting the pros and cons of both website creators

Once the website was completed, a usability protocol (See Appendix B) was created to ensure testing would keep on track and remain organized. The usability protocol that was used for this portion of the testing was taken from Steve Krug's *Rocket Surgery Made Easy* (2009).

A verbal debriefing interview (See Appendix G) was conducted after testing with each participant. There were five questions in total and took about 5 minutes to complete. The purpose of these verbal interviews was to collect in-depth responses for further insight and feedback to improve the website. Following this, participants were asked to complete a 21 question post-survey (See Appendix F) that was sent over email and was expected to be completed within two to three days' time. The post-survey asked participants to rate certain aspects using the Likert scale (1=poor, 5=very good) of the site for example, "navigating the site was very easy", "the information provided was very clear" and "the layout of the website made sense."

### Project Design

The researcher focused on the affective and cognitive domains for this study. The affective domain entails looking at what the game (D&D) is, what instruction method it utilizes, and the benefits it provides. Following that was getting teachers to understand the value of utilizing game-based learning strategies in the classroom. The site's purpose is to bring awareness to the game, how it can be used, how it can benefit the classroom, and how it can potentially improve student performance. The cognitive aspects of this project are meant to supplement the affective aspects including the use of texts and images and provided instructional strategies and various resources for teachers to peruse through. Teachers will then evaluate the content and understand its relevance to the classroom.

When considering the development of the website the researcher used Gestalts Principles of Visual Perception (1920). Gestalts Principles of Design are based on psychology on how people perceive information, images, and objects. Essentially, following Gestalts principles help us process and organize information. They are (1) figure-ground, (2) similarity, (3) proximity, (4) common region, (5) continuity, (7) closure, (8) focal point. The following will discuss how these concepts were applied to create the current website (See Appendix K)

*Figure-ground* is how we distinguish objects from the foreground and background. All pages on the website have a distinguishable background and foreground. This is made possible due to the contrasting colors of the white background and images, texts, and colors that make up the foreground.

*Similarity* is how elements are arranged to show relatedness to other objects within a group. Colors for labels and images were lined up on the website to show they were related to each other.

*Proximity* is when we perceive items that are close together as related. An example of this is how images are grouped together on pages of the website along with texts to show that texts and images close together are related.

*Common Region* is similar to proximity in that the items that are located within the same closed space are grouped together and are often separated with a visible or invisible border. The site utilizes both visible borders and invisible borders to distinguish sections from each other. This is evident in the separation of texts and various images.

*Focal Point* is whatever stands out to the individual or what your eyes are drawn to naturally. The website incorporates lots of images, colors, and a video that are meant to capture the user's attention. On the Teacher's Guide section (See Appendix K) there are lots of bright images to



catch the user's eye and to ensure that the user is associating images to the text on the page, which will hopefully increase the user's ability to remember the information.

### Procedures

This usability study was conducted upon completing all CITI Certifications (See Appendix A) and approval from the Institutional Review Board (IRB). The website created for usability testing went through three iterations with two rounds of testing after the first and second iteration. These rounds of testing were conducted on February 8, 2020, and February 22, 2020. The first round of testing consisted of three participants while the second round had five participants. These participants were contacted beforehand via email (See Appendix C) and were asked to complete a pre-screening survey to ensure they were ideal for the study. Participants were also asked to fill out a consent form. The researcher then scheduled appointment dates and times with the participants.

During the usability testing sessions, the researcher had participants log into Zoom about five minutes before their scheduled appointment time to make sure their audio and microphones were working. The participants were given pseudonyms to protect their identities. The researcher ensured that participants were allowed to stop or withdraw at any point during the session if they felt discomfort or fatigued. The participants were given a link to the website and were asked to open the link. They were instructed to stay on the homepage to wait for further instructions. A usability script (See Appendix B) was used to help guide the session and read aloud by the researcher. The researcher asked participants questions and had participants complete various tasks by asking them to locate specific information. Participants' responses were noted down in a separate document.

The participants were encouraged to speak aloud as they navigated throughout the whole website and communicated what their thoughts and feelings were on certain aspects of the site. These responses were recorded on the document as well. After the initial testing session, participants were asked to stay for a brief five-minute interview (See Appendix G). The researcher logged down additional feedback from the interview and informed the participants that the session was over. Lastly, the researcher thanked the participants for their time and reminded them to complete the post-survey.

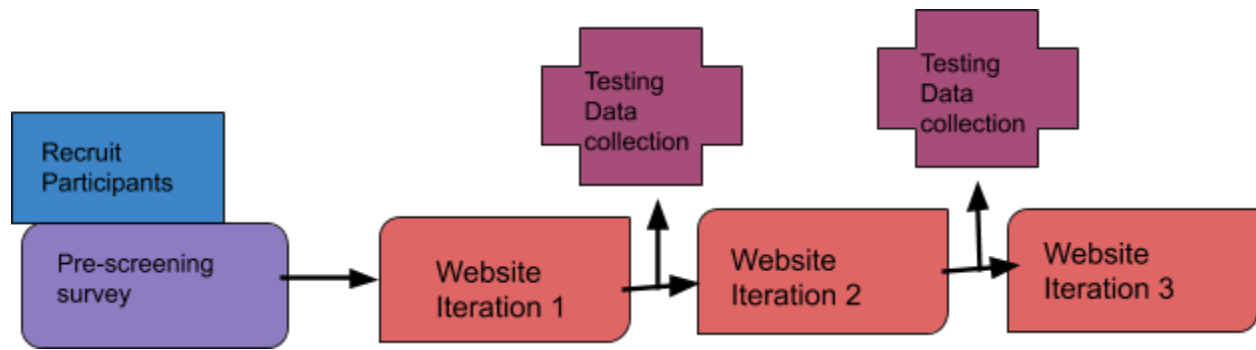


Figure 3. The usability study's procedure

## Results

The goal of this usability study was to test whether or not the website on Dungeons and Dragons in Education was usable in its navigation, design, and content. Both qualitative and quantitative data were collected from the pre-surveys, testing sessions, interviews, and post-surveys.

The first iteration (See Appendix I) consisted of three participants. Although there seemed to be generally positive feedback about the website, there were many areas in much need of improvement as shown through the results that will be discussed below.

**Table 2**

*Data gathered from the first iteration of the usability testing evaluating the website on navigation, visual design, and satisfaction*

	Likert-Scale Rating				
	1 (Very Negative)	2	3	4	5 (Very Positive)
<b>Navigation</b>					
Overall navigation	0	0	0	2	1
Finding information	0	0	0	2	1
Identifying tabs	0	0	2	1	0
Locating sections	0	0	1	1	1

<b>Visual Design</b>					
Organization	0	0	0	1	2
Layout	0	0	0	2	1
<b>Satisfaction</b>					
Relevant Media	0	0	0	1	2
Information	0	0	0	0	3
Overall Impression	0	0	0	0	3
<b>Total</b>	0	0	3	10	14

As conveyed by the table above, according to participant feedback, one out of three(33%) participants felt the overall navigation of the website was very easy while two out of three (66%) found it fairly easy to use. Two out of the three (66%) participants had trouble using the navigation tabs due to the labeling. The navigation tabs were labeled using D&D terms that refer to skill checks (what the player's abilities are) such as Wisdom, Survival, and Insight. While the sentiment of including D&D terminology was appreciated by the participants, they expressed concern for those that are not familiar with D&D may get confused. Some issues of navigation were also due to broken links. In terms of visual design, participants felt the site was well-organized and that the layout more or less made sense but suggested that some sections could be moved around to create better flow. Participants agreed that media such as images, videos, and links were relevant to the content of the website. All three of the participants (100%) of the participants were overall satisfied with the information provided and the site in general. All suggestions were taken into consideration when working on the second iteration.

The second iteration (See Appendix J) consisted of five participants. Two of the participants from the first round were included in this round of testing as well.

### Table 3

*Data gathered from the first Iteration of the website on navigation, visual design, and satisfaction*

Likert-Scale Rating

	1	2	3	4	5
	(Very Negative)				(Very Positive)
<b>Navigation</b>					
Overall navigation	0	0	0	1	4
Finding information	0	0	0	1	4
Identifying tabs	0	0	2	1	4
Locating sections	0	0	0	1	4
<b>Visual Design</b>					
Organization	0	0	0	2	3
Layout	0	0	0	2	3
<b>Satisfaction</b>					
Relevant Media	0	0	0	2	3
Information	0	0	0	2	3
Overall Impression	0	0	0		5
<b>Total</b>	0	0	2	12	33

Results gathered from this second round of testing showed a slight decrease in some areas in comparison to the first iteration. Note that this is in part due to the increase in participants as well as added content to the website. Such examples of this are two out of five (40%) participants felt the information on the website was satisfactory, however, felt that more could be included such as student work and detailed lesson plans. There was an increase from the first iteration in terms of navigation in which 4 out of the 5 (80%) participants thought the site was very easily navigable in regards to finding information, identifying tabs, and locating specific sections. It is also worth noting that the two participants from the first round of testing answered much more positively about the second iteration and thought there was much improvement made to the site in terms of layout, consistency, and use of images. A comment made by one of the returning

participants mentioned that they “feel like the site is more unified” and that they “really like the added resources.”

One very prominent comment made by participants was about the color scheme and fonts. They felt that the grays and reds clashed too much and felt that the font was too blocky and hard to read. Grays, reds, whites, and blacks were chosen to exhibit more of a D&D image, however, with much consideration, the researcher understood that there must be a balance between maintaining a D&D image and creating a usable website properly suited for teachers.

During the post-interviews, participants were given the opportunity to debrief and give more in-depth responses about their experiences with the site. The purpose of this was to give participants time to process what they did and relieve some of the pressure that comes with usability testing. Participants’ responses were noted down and later analyzed. Their responses were organized and categorized by topic (i.e. experience with the testing process, what they liked, things to be improved on, etc). In general, some of the most common concerns and feedback had to do with consistency, colors and fonts, and suggestions for more content.

One participant remarked that “it may benefit to include more images and pictures so the background is less black and white and the overall theme can be worked on.” Many participants shared this sentiment and thus worked on to create the third iteration. Participants also remarked that “maybe including more original content like student work could help teachers get a better idea of what it looks like in the classroom” and “it may help to provide us with a guide so we have a better idea of what we are supposed to do.” Due to time constraints, the researcher was not able to gather student work or create much original content. However, a guide was created for teachers for the third iteration. Another helpful suggestion one participant made was to rename the “Implementation” section of the website to “Tips and Strategies” as they felt that “rather than this page being about implementation it seems more that it’s about tips and how to use the game in these various aspects.”

Participants gave a lot of positive feedback as well including “the site is already on the track of being easily accessible” and “the site is very straightforward and very useful.” There were participants that wanted to use some of the content provided on the site as well as share the site with their co-workers who were interested in game-based learning.

## **Discussion**

D&D, while being a fairly old game, is only now starting to re-emerge and used as a tool for education. Therefore, there are not a lot of websites out there that talk about D&D in education. The few websites that do exist that discuss D&D were somewhat difficult to use and only addressed upper-level education. The overall goal of the usability study was to create a website

for elementary teachers about D&D in education that was easy to use, visually appealing, and that provided sufficient information.

Through the process of this study, the researcher grew to understand the importance of good visual design, testing links, buttons, and providing good content for users. Although some sites require a search function, for a site as small as the one created and with a site map on the homepage, it was not necessary to have. Other lessons learned is that while some design choices were originally made to fit a certain theme, in this case D&D, there needs to be consideration for the user's perception of the site. If colors are dark and cold, teachers may be turned away or feel intimidated. Using brighter colors helps provide a friendlier and welcoming site. This posed a big challenge when creating the site as the researcher had to consider the proper balance between education and the game.

The following discusses final conclusions based upon the research questions created for this study:

*How easy is it for educators to navigate a web-based resource site on Dungeons and Dragons?*

There was an overall improvement between iterations in terms of navigation. This is attributed to fixing broken links and buttons as well as simplifying the labels of the navigation tabs. A site map with a properly detailed legend also provided clarity of what each section was about.

*How satisfied are educators with the information provided on a web-based resource site for Dungeons and Dragons?*

Participants were generally satisfied with the information provided on the site, however, they felt that there was a lack of ready-made content, student work, or proper guidance for teachers.

While some of these concerns were addressed for the third iteration, much more work will need to be done to create ready-made materials such as detailed lesson plans. Despite this, participants understood the importance and how it could benefit the classroom.

*How appealing is the visual design of the web-based resource site for Dungeons and Dragons?*

There was a lot of struggle with the visual design of the website concerning the color scheme and fonts as well as some consistent formatting issues that were distracting to the user. More than half of the participants answered "no" or "maybe" to the question asking them if they liked the colors and fonts. The third iteration was changed with much consideration of these issues. A more detailed site map was created to add visual appeal to the homepage.

Overall, going through these rounds of testing and conducting this study was worth it. Getting feedback from others sheds light on things that need improvement or things that are really great but could be made better. As the creator, there are some things that can go unnoticed or seem

clear to us, however, to an outsider's perspective, this could be a totally different case. It is likewise important to make sure there are as many people as possible reviewing the product created to ensure you are gathering ample data. Every perspective contributes something to the study that helps to better improve the website.

The researcher will continue to work on the website and share its contents with others and hopes that this study will support and provide some help for those that will conduct usability studies on websites in the future.

### References

- EUCAUSE. *7 Things You Should Know About Games and Learning*. (2014, March 11). Retrieved from <https://library.educause.edu/resources/2014/3/7-things-you-should-know-about-games-and-learning>
- Boudersa, N. (2016). The importance of teachers' training programs and professional development in the Algerian educational context: Toward informed and effective teaching practices. *Expériences Pédagogiques*, (pp.3).
- Carter, A. (2011). Using Dungeons and Dragons to integrate curricula in an elementary classroom. In *Serious Games and Edutainment Applications* (pp. 329-346). London UK: Springer.
- Farber, M. (2016, October 20). 3 Ways to Use Game-Based Learning. Retrieved from <https://www.edutopia.org/article/3-ways-use-game-based-learning-matthew-farber>
- Gullikson, S., Blades, R., Bragdon, M., McKibbin, S., Sparling, M., & Toms, E. G. (1999). The impact of information architecture on academic web site usability. *The Electronic Library*, 17(5), 302.
- Hanghøj, T., & Brund, C. E. (2010, October). Teacher roles and positionings in relation to educational games. In *European Conference of Games Based Learning* (pp. 116-122).
- Huang, W. H. Y., & Soman, D. (2013). Gamification of education. *Research Report Series: Behavioural Economics in Action, Rotman School of Management, University of Toronto*.
- Keller, J. M. (1987). Development and use of the ARCS model of instructional design. *Journal of instructional development*, 10(3), 2.

- Krug, S. (2009). *Rocket surgery made easy: The do-it-yourself guide to finding and fixing usability problems*. Berkley, CA: New Riders.
- Kuh, G. D. (2003). What we're learning about student engagement from NSSE: Benchmarks for effective educational practices. *Change: The Magazine of Higher Learning*, 35(2), 24-32.
- MacDonald, C. J., Stodel, E. J., Farres, L. G., Breithaupt, K., & Gabriel, M. A. (2001). The demand-driven learning model: A framework for web-based learning. *The Internet and Higher Education*, 4(1), 9-30.
- McKimm, J., Jollie, C., & Cantillon, P. (2003). Web based learning. *Bmj*, 326(7394), 870-873.
- Miller, C. (2013). The Gamification of Education . *Developments in Business Simulation and Experiential Learning* , 40, 196–199.
- Perrotta, C., Featherstone, G., Aston, H., & Houghton, E. (2013). Game-based learning: Latest Evidence and future directions. *Slough: NFER*.
- Rees, D. (2020, January 24). What is usability testing? Retrieved from <https://www.experienceux.co.uk/faqs/what-is-usability-testing/>
- Stott, A., & Neustaedter, C. (2013). Analysis of gamification in education. *Surrey, BC, Canada*, 8, 36.



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Appendix A  
CITI Training certification



Figure A1. Hawaii Subjects Research (HSR) Non-Exempt Social & Behavioral Sciences Research and Key Personnel



Figure A2: Information Privacy Security (IPS) Non-Exempt Social & Behavioral Researchers and Key Personnel

Appendix B  
Usability Protocol and script

**Usability Protocol**  
**By: Tasia Nakasone**

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*Modified from Usability Script- Rocket Surgery Made Easy © 2010 Steve Krug*

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**Technology Set-Up Checklist (Facilitator Computer)**

1. Facilitator should set up his/her computer and attach all cords/peripherals - make sure to use a wired mouse
2. Plug in to a power outlet (don't trust the battery)
3. Make sure computer is connected to the Internet
4. Set up audio and test - headset test
  - a. Ensure the microphone is working
  - b. Ensure the volume is at a reasonable level
5. Login to **Facilitator Zoom**
6. Contact participant and ask if participant's computer is set up and participant is ready.

After Participant computer is set up:

7. Facilitator invites participant to a Zoom
8. Facilitator can access ZoomRun a test with Zoom and test video/audio and screenshare
  - a. If it does not work, then review preparation of Facilitator's computer for Zoom and retest:
    - i. Ensure you have mic and video on and connected
9. Plug in to a power outlet (don't trust the battery)
10. Make sure computer is connected to the Internet
11. Set up audio and test - headset test
  - a. Ensure the microphone is working
  - b. Ensure the volume is at a reasonable level
12. Login to **Participant Zoom account**
13. Wait for facilitator to contact asking if ready
14. When contacted, facilitator will send invitation for Zoom via email
15. Accept invitation through Zoom.
16. Add bookmark for the URL of the website you are evaluating.

**Facilitator Script**

- ❑ ***START the Zoom Session by clicking on the red button labeled “Start broadcast”***

---

Hi, [insert participant's name]. My name is [insert facilitator's name], and I'm going to be walking you through this session today.

Before we begin, I have some information for you, and I'm going to read it to make sure that I cover everything.

I am currently asking people to try a website I created on Dungeons and Dragons in Education. I would like to see if it works as intended. The session should take no longer than an hour or less. The first thing I want to make clear right away is that we're testing the *site*, not you. You can't do anything wrong here. In fact, this is probably the one place today where you don't have to worry about making mistakes.

As you use the site, I'm going to ask you as much as possible to try to think out loud: to say what you're looking at, what you're trying to do, and what you're thinking. This will be a big help to me.

Also, please don't worry that you're going to hurt my feelings. We're doing this to improve the site, so I need to hear your honest reactions.

If you have any questions as we go along, just ask them. I may not be able to answer them right away, since we're interested in how people do when they don't have someone who can help. But if you still have any questions when we're done I'll try to answer them then.

And if you need to take a break at any point, just let me know. Do you have any questions so far?

***Allow participants to ask questions.***

OK, great. We're done with the questions, and we can start testing out the site.



❑ ***Send participant URL for website to be evaluated:***

Use the instant messaging feature of Zoom or send your participant an email with the URL for the website to be evaluated. Ask participant to open URL.

❑ ***Ask participant to begin the screenshare:***

Please start Screenshare by clicking on the 'Screenshare' on the bottom navigation of your Zoom.

❑ ***Have participants do a narrative of the website's overall appearance three or four minutes, at most:***

I'm going to ask you to look at this page and tell me what you make of it: what strikes you about it, whose site you think it is, what you can do here, and what it's for. Just look around and do a little narrative. You can scroll if you want to, but don't click on anything

yet.

❑ ***Ask participant to complete a few specific tasks based off of their scenarios sheet:***

Thanks for doing that. You did a great job. Now I'm going to ask you to try doing some specific tasks. I'm going to read each one out loud. You should have received a copy of these in your email before this study.

I'm also going to ask you to do these tasks without using any search features. We'll learn a lot more about how well the site works that way. And again, as much as possible, it will help us if you can try to think out loud as you go along.

***Allow the user to proceed from one ask to the next until you don't feel like it's producing any value or the user becomes very frustrated. Repeat for each task or until time runs out.***

**1. Ask user to find specific information**

**2. Ask user to locate certain tabs/navigation controls**

**3. Provide various task scenarios.**

- Please tell me what you think each tab will link to.
- Please locate another method of navigation on the site.

- We will now start looking through the different sections. We'll start off with the game-based learning section. What strikes you the most? Talk me through what you see and how you feel. Move on the next section (Repeat until all sections have been reviewed.)

- You're new to game-based learning and want to learn more. Where would you find this information? Can you tell me something about game-based learning?

- You are looking to learn more about Dungeons and Dragons, where would you find this information? What do you need to play Dungeons and Dragons?

- Navigate back to the home page, if you want to look up implementation strategies, which section would you look under to find this information? Name a couple of strategies.

- You have a pretty good understanding of Dungeons and Dragons but you want you're looking for additional resources, which tab might you find this information under?

- If you have an inquiry you would like to ask the creator (me), where would you go?

- Use the Search function to look up something about game-based learning.

- What do you find most striking about the site?

- What is something that might put you off?

***Thanks, that was very helpful.***

☐ ***Request from the participant that they end their screenshare by clicking on the "stop sharing"***

☐ ***Ask the observers' questions (if time permits).***

We are done with the main questions, but I have a few more general questions to ask you.

1. On a scale of 1 to 5, with 1 representing very difficult and 5 representing very easy, how would you rate your experience during today's testing?
2. After participating in this study, would you recommend this site to any of your friends or co-workers? Why?

That's the last question, Do you have any questions for me, now that we're done?

I want to thank you for your time and willingness to be a participant in this study.

☐ ***Stop the Zoom recording***

Appendix C  
Recruitment Email

Aloha,

My name is Tasia Nakasone. I am a Master's student part of the University of Hawaii at Manoa's Learning Design and Technology program. I am currently looking for individuals who may be interested in participating in a usability study on a website about Dungeons and Dragons in Education.

**What will I be doing in a usability study?**

You will be given several short tasks using a website. You will also be asked questions about your experience and perceptions of the website.

**How long is the session?**

About an hour.

**Interested in participating?**

Please fill out this pre-survey: <https://forms.gle/sQMmNDCJvR772Hh89>

Once you have completed the survey, please contact me back so that we can set up a test date and time.

If you have any questions, please do not hesitate to contact me at [tasian@hawaii.edu](mailto:tasian@hawaii.edu)

Thank you!

Tasia

Appendix D  
Pre-survey including participant demographics

QUESTIONS

RESPONSES

Section 1 of 5

## Dungeons and Dragons in Education: A Usability Study Pre-screening survey

Aloha,  
Thank you for volunteering to participate in this usability study for Dungeons and Dragons in Education. During this study, you will be tasked with several usability tasks to test the functionality of the site. Your responses will be completely anonymous. All anonymous responses cannot be tracked to their respondent. Any and all personal information you choose to disclose shall remain private.

Before proceeding with the study, please complete this survey to best of your ability before participating in the testing.

Thank you!  
Tasia Nakasone

Section 2 of 5

## Demographics

This section regards questions pertaining to you as the participant. Please answer to the best of your abilities.

Age

☐ 18-22

☐ 23-28

☐ 29-34

☐ 35 and up



## Gender

- ☐ Male
- ☐ Female
- ☐ Other
- ☐ I choose not to disclose

## Years in education

- ☐ Less than 1 year
- ☐ 2-3
- ☐ 4-5
- ☐ 6+

## Section 3 of 5

## Technology

This section regards a few questions regarding your technology situation and how comfortable you are with using technology.

Do you own a computer?

- ☐ Yes
- ☐ No

How comfortable are you with using a computer?

1 2 3 4 5

Not very ☐ ☐ ☐ ☐ ☐ Very comfortable

How comfortable are you navigating online?

1 2 3 4 5

Not very ☐ ☐ ☐ ☐ ☐ Very comfortable

## Section 4 of 5

## Game-Based Learning

This section will ask you questions pertaining to game-based learning. Please answer the best of your ability.

Do you know what game-based learning is?

- ☐ Yes
- ☐ No

Would you like to learn more about game-based learning?

- ☐ Yes
- ☐ No
- ☐ Maybe

How knowledgeable are you of game-based learning?

	1	2	3	4	5	
Not very	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very

Have you ever used game-based learning?

- ☐ Yes
- ☐ No

Briefly explain your experience with game-based learning.

Long answer text

How interested are you in game-based learning in education?

1 2 3 4 5

Not very interested ○ ○ ○ ○ ○ Very interested

## Section 5 of 5



## Dungeons and Dragons

This section pertains to your knowledge of Dungeons and Dragons and role-playing games. Please answer the following questions below to the best of your ability.

What do you know about role-playing games?

	1	2	3	4	5	
Not much	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	A good amount

Have you ever played a role-playing game?

- ☐ Yes
- ☐ No

If yes, please explain your answer. What kinds of role-playing games have you played?

Long answer text

What do you know about Dungeons and Dragons?

	1	2	3	4	5	
Not much	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	A good amount

Have you ever played Dungeons and Dragons?

- ☐ Yes
- ☐ No

If yes, please briefly describe your experience.

Long answer text

How interested are you in learning about Dungeons and Dragons?

	1	2	3	4	5	
Not very interested	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very interested

Do you think Dungeons and Dragons can be used in education?

- ☐ Yes
- ☐ No
- ☐ Maybe

## Appendix E

### Consent Forms



#### **Consent Form (Adult)**

I agree to participate in the study involving the usability testing of the web-based resource site on Dungeons and Dragons in Education.

I understand that participation in this usability study is voluntary and I agree to immediately raise any concerns or areas of discomfort during the session with the study administrator.

Please sign below to indicate that you have read and you understand the information on this form and that any questions you might have about the session have been answered.

**Date:** \_\_\_\_\_

**Please print your name:** \_\_\_\_\_

**Please sign your name:** \_\_\_\_\_

**Thank you!**

We appreciate your participation.

### Consent to Participate in Research

You are being asked to participate in a research study.

Before you agree, the investigator must tell you about (i) the purposes, procedures, and duration of the research; (ii) any procedures which are experimental; (iii) any reasonably foreseeable risks, discomforts, and benefits of the research; (iv) any potentially beneficial alternative procedures or treatments; and (v) how confidentiality will be maintained.

Where applicable, the investigator must also tell you about (i) any available compensation or medical treatment if injury occurs; (ii) the possibility of unforeseeable risks; (iii) circumstances when the investigator may halt your participation; (iv) any added costs to you; (v) what happens if you decide to stop participating; (vi) when you will be told about new findings which may affect your willingness to participate; and (vii) how many people will be in the study.

If you agree to participate, you must be given a signed copy of this document and a written summary of the research.

You may contact Tacia Nakasone at [tacian@hawaii.edu](mailto:tacian@hawaii.edu) any time you have questions about the research.

You may contact the UH Human Studies Program at 808.956.5007 or [uhirb@hawaii.edu](mailto:uhirb@hawaii.edu) to discuss problems, concerns and questions; obtain information; or offer input with an informed individual who is unaffiliated with the specific research protocol. Please visit <https://www.hawaii.edu/researchcompliance/information-research-participants> for more information on your rights as a research participant.

Your participation in this research is voluntary, and you will not be penalized or lose benefits if you refuse to participate or decide to stop.

Signing this document means that the research study, including the above information, has been described to you orally, and that you voluntarily agree to participate.

\_\_\_\_\_  
signature of participant

\_\_\_\_\_  
date

\_\_\_\_\_  
signature of witness

\_\_\_\_\_  
date

## Appendix F

### Post-Survey

The screenshot shows a survey interface with a dark green header bar. On the left, it says 'Section 1 of 6'. On the right, there are tabs for 'QUESTIONS' and 'RESPONSES', and a 'Total points' box showing '0'. The main content area has a title 'Dungeons and Dragons: A Usability Study Post-Survey' and a message from Tasla Nakasone.

Section 1 of 6

QUESTIONS RESPONSES

0  
Total points

## Dungeons and Dragons: A Usability Study Post-Survey

Aloha!

Thank you for participating in this survey. Please take a few moments to answer the questions below regarding your experience. This feedback will survey to help the overall betterment of the Dungeons and Dragons in Education website. Any and all personal information you choose to disclose shall remain private.

Thank you!  
Tasla Nakasone

## Demographics

This section will ask questions pertaining to you as the participant.

Age

☐ 18-22

☐ 23-28

☐ 29-30

☐ 30 and up

Gender

☐ Male

☐ Female

☐ Other

☐ Prefer not to say

Years working in

☐ Less than a year

☐ 2-3

☐ 4-5

☐ 6+

## Navigation



The following questions will ask you to rate the website's navigability. Please answer to the best of your ability.

Navigating the site was very

	1	2	3	4	5	
Not really	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very easy

I could find the information I needed

	1	2	3	4	5	
Not really	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very easily

I could identify what each tab was

	1	2	3	4	5	
Not really	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very easily

I was able to locate specific sections

	1	2	3	4	5	
Not really	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very easily



## Information

The following questions will ask you to rate the information provided on the website. Please answer to the best of your ability.

The information provided was very clear.

1 2 3 4 5

Not really ○ ○ ○ ○ ○ Very clear

I was able to find relevant information under each section.

- ☐ Strongly Agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly disagree

The website had sufficient information about game-based

1      2      3      4      5

Strongly disagree      ○      ○      ○      ○      ○      Strongly agree

The website provided clear and easily understandable information about Dungeons

1 2 3 4 5

Strongly disagree ☐ ☐ ☐ ☐ ☐ Strongly agree

## Visual Design

The following questions will ask you to rate the visual design of the website. Please answer to the best of your ability.

The website was

	1	2	3	4	5	
Not very organized	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very organized

The layout of the

- ☐ Strongly agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly disagree

Did you find the videos,

	1	2	3	4	5	
Not very relevant	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very relevant

Did you find the videos,

	1	2	3	4	5	
Not very useful	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very useful

Did you like the color scheme

- ☐ Yes
- ☐ No
- ☐ Maybe

## Satisfaction

The questions below will ask you to rate the your satisfaction with website. Please take your time and answer the questions to the best of your ability.

I am satisfied with the information

1 2 3 4 5

Not very satisfied ○ ○ ○ ○ ○ Very satisfied

I have learned a lot about

- ☐ Strongly agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly disagree

I have learned a lot about

- ☐ Strongly agree
- ☐ Agree
- ☐ Neutral
- ☐ Disagree
- ☐ Strongly Disagree

My overall impression of the

	1	2	3	4	5	
Not very positive	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very positive

How likely are you to recommend this site to

	1	2	3	4	5	
Not very likely	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very likely

## Appendix G

### Post-Interview Questions

Note: These questions will be asked at the end of the usability testing session. This interview should take no longer than 5-10 minutes. Participants will be asked several open-ended questions.

#### **Interview Questions**

Introduction: Hello! Thank you for participating in this study. Before we conclude this session, I want to briefly go over a couple of follow up questions with you. This will take about 5-10 minutes. I will be keeping my phone on to record audio so that I may use your responses as feedback.

1. Overall, how did you feel about this experience?
2. Are there any concerns or additional questions you have about this usability study?
3. What are some things you liked most about this website?
4. What are some things you think could be improved on?
5. Would you recommend this website to friends, co-workers, and/or family?

Okay, that concludes our session for today. Thank you so much for your time. I will be sending a post-survey to your email for you to complete within 2-3 days time. Please let me know if you have any additional comments or questions.

Thank you!

*Figure G.* Screenshot of the post-interview script consisting of five questions

## Appendix H

### Wireframe

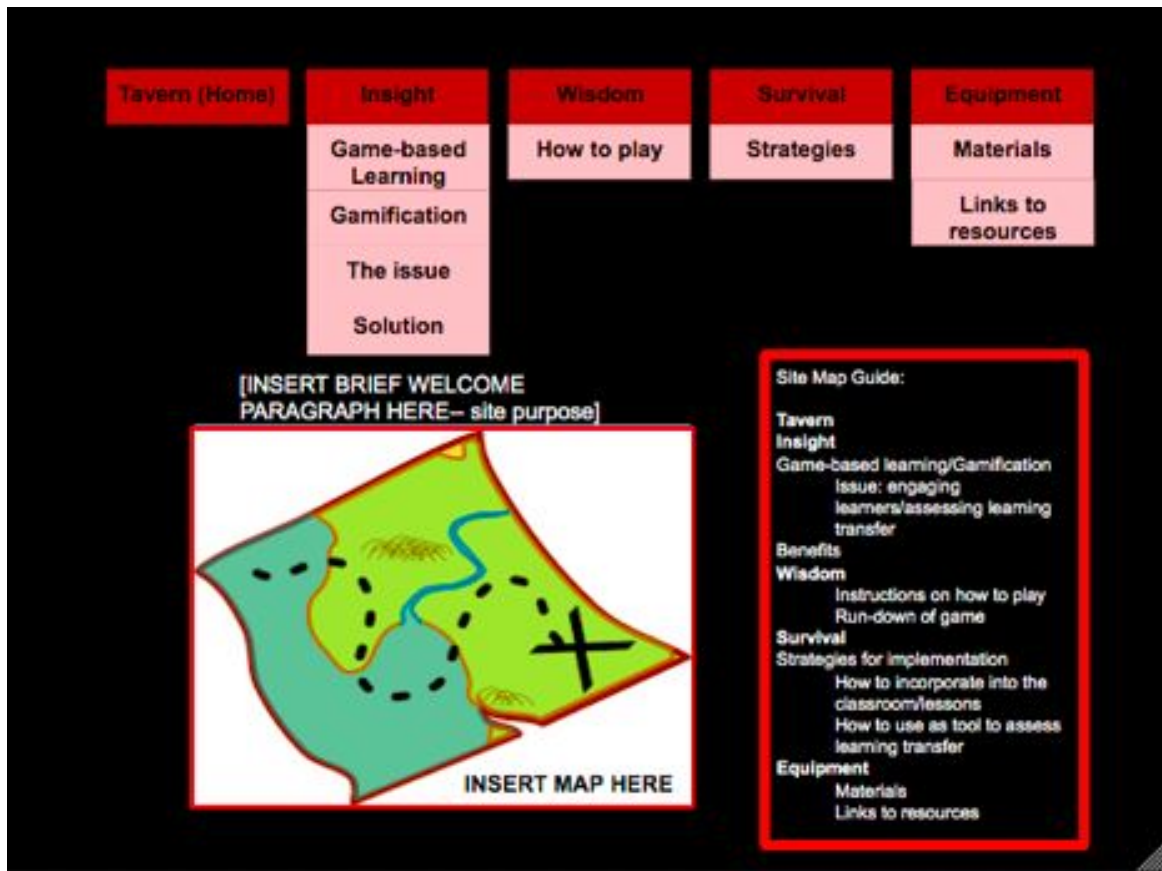


Figure H. Wireframe of the initial layout of the website that included drop-down tabs.

Appendix I  
First Iteration of the website

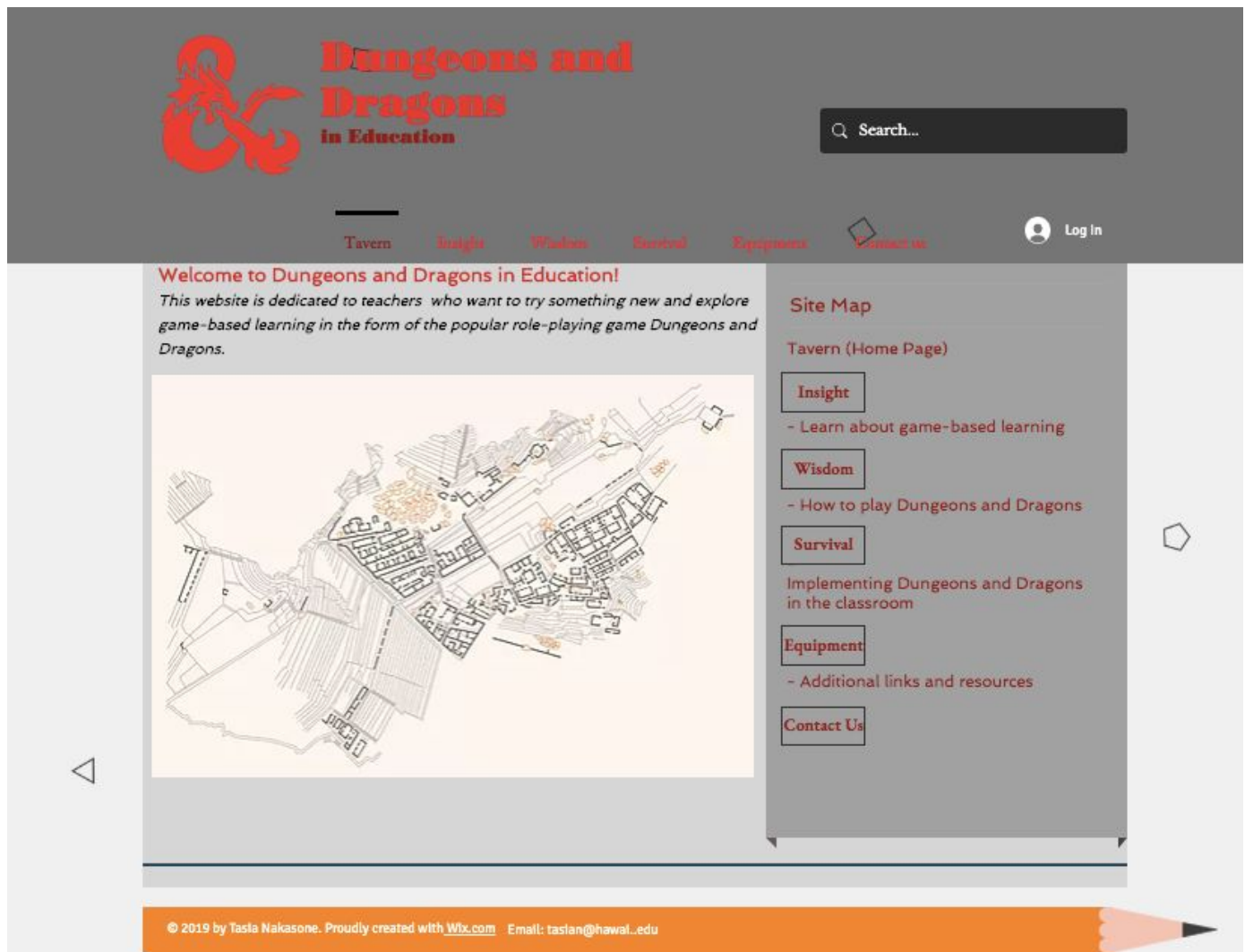




Figure 11. D&D in Education website homepage for the first iteration of the site



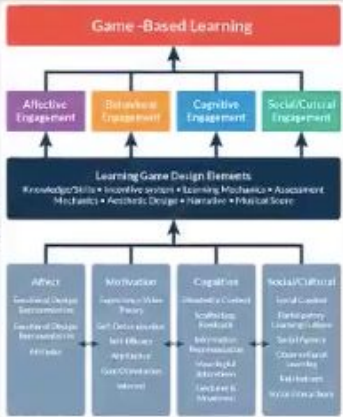
# Dungeons and Dragons In Education

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## What is game-based learning?

Game-based learning is an approach to teaching that is designed to balance subject material with gameplay. Students explore learning concepts in the form of gameplay. When implementing game-based learning, it is important to consider the following forms of engagement: Affective, behavioral, cognitive, and social/cultural.



```

graph TD
    A[Game-Based Learning] --> B[Affective Engagement]
    A --> C[Behavioral Engagement]
    A --> D[Cognitive Engagement]
    A --> E[Social/Cultural Engagement]
    B --> F[Learning Game Design Elements]
    C --> F
    D --> F
    E --> F
    F --> G[Affect]
    F --> H[Motivation]
    F --> I[Cognition]
    F --> J[Social/Cultural]
    G --> K[Goal-oriented Design]
    G --> L[Emotional Connection]
    G --> M[Gameplay Mechanics]
    G --> N[Feedback]
    H --> O[Intrinsic Motivation]
    H --> P[Extrinsic Motivation]
    H --> Q[Self-Determination]
    H --> R[Flow]
    I --> S[Problem Solving]
    I --> T[Critical Thinking]
    I --> U[Decision Making]
    I --> V[Communication]
    J --> W[Social Interaction]
    J --> X[Collaboration]
    J --> Y[Teamwork]
    J --> Z[Leadership]
  
```

**Affective:** Focuses on the emotions and beliefs of the the learners. This aspect is very important as it lays a sort of foundation for the learning experience for the learners and feeds into the behavioral, cognitive, and social/cultural aspects of game design as well.

**Behavioral:** This focuses on learners' motivation and engagement with the material. It has been thought that games have a way of interesting people and keep people engaged for longer periods of time due to incentives whether that be in the form of gold stars, medals, points, or trophies.

**Cognitive:** Cognitive focuses on how learners think, reason, and remember. In short, how information is processed. The concept of play pushes learners to develop symbolic thinking through being exposed to various representations of reality. Ex: A child can pretend a box is a race car while knowing it is not an actual car. Game-based learning pushes for students to seek out deeper meaning through interacting within the game's context.

**Social/Cultural:** Inclusion of social engagement with peers. There is focus on learning through participating in groups and using collective knowledge to accomplish a goal. Integrating cultural and social influences the learners' self-perception as well as their perception of others.

When implementing game-based learning or any sort games in the classroom, it is important to consider the WHO, WHAT, and WHY-- The three 'WH' questions.

Before planning, consider WHO your learners are and WHAT gets them interested. Game-based learning is often used as a means to engage students in class activities.

However, rather than playing a game for the sake of playing a game, you have to think about WHY they are playing this game and WHAT they are supposed to learn. Think of objectives the students are supposed to meet and incorporate them into the game design.

## Why use game-based learning?

Game-based learning, at its core, is geared toward teaching through repetition, failure, and accomplishment of goals. Students work towards a goal, choose actions to complete objectives, and experience the consequences for their actions in a controlled, safe environment. Incorporating games into the classroom allows students to explore and apply concepts they have learned in a low-stakes setting.

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Figure I2. Game-Based learning section of the website





# Dungeons and Dragons in Education

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## What is Dungeons and Dragons?

*Dungeons and Dragons is a tabletop, role-playing game. Games are run by a GM (Game Master) who serves as the storyteller.*



## What do you need?

- A set of polyhedral dice
- Character sheets
- Pencil/pen
- Notebook
- A story
- Imagination



Polyhedral dice



Character sheets

## How do you play?

Step 1: Create a story (The GM will create a general storyline for players to follow)

Step 2: Create characters (It is important to know the world setting of the story in order to create characters that best fit the setting)

Step 3: Play the game

Step 3a: The GM sets the tone and starts things off with details of where the characters are and the general gist of what the world is like and possible goals to accomplish.

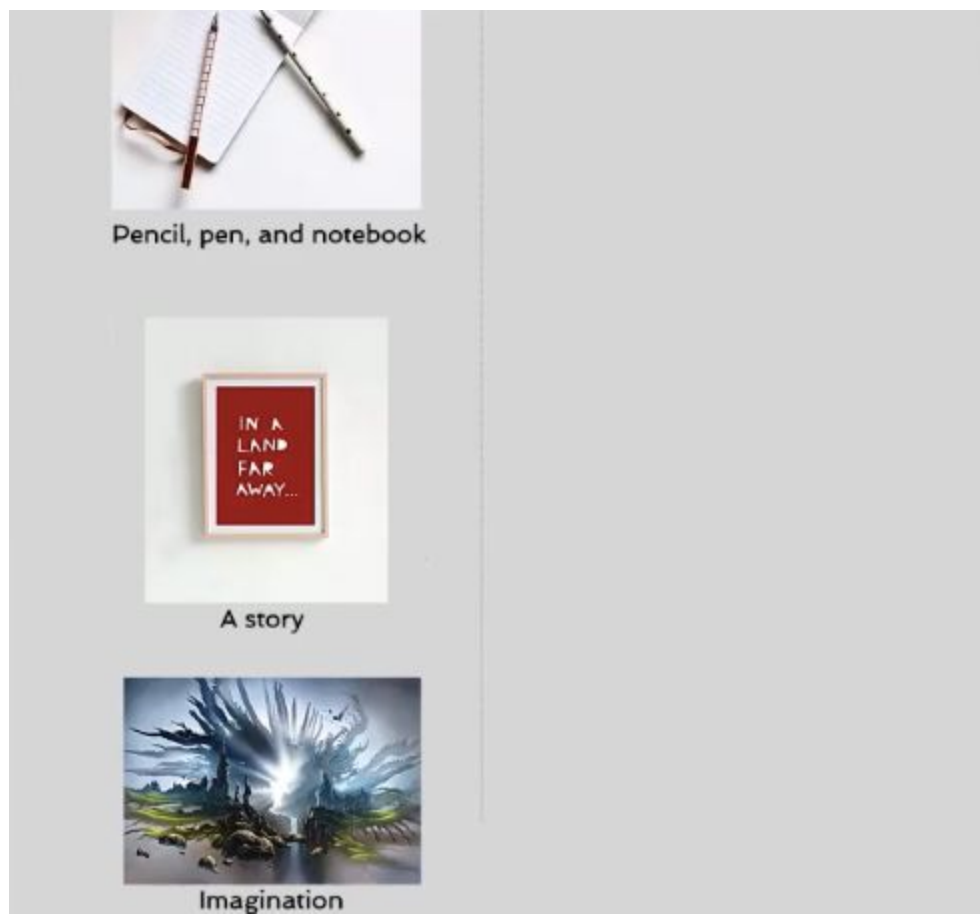
Step 3b: Players decide their actions to move the story along.

Gameplay ultimately relies on players making various decisions that move the plot along. Every action and choice has a direct effect on the story and could potentially change the original intended course.

All players roll die (typically the 20-sided dice) in order to determine how well they execute their actions. It is up to the DM to decide if the players roll high enough to succeed on an action or fail.

**\*\*Tip:** Keep it simple! If you're just getting into the game, keep it simple. Warm up with an easy game and a short, simple storyline. Plot a couple of puzzles, set goals for players to achieve along the way, and most of all, have fun!





*Figure I3.* Dungeons and Dragons information page of the website including “how to play” and materials

## Implementation

*Finding out how to implement games is always a challenge. Here's some tips and strategies for integrating D&D into instruction.*

### English

- Have students to develop background for their characters where they will need to write a short paper on who their characters are. (Describe what character looks, their motivations, history, etc)
- Have students keep a journal to record events that happened during the game and have them reflect on what happened, what they would do differently next time or what worked out well.
- Develop and write a set of rules and instructions for sessions, have students demonstrate their understanding and comprehension through gameplay.
- Integrate vocabulary words into the adventure to test students understand the meaning of the words

### Math

- Develop math problems for students to solve during their quests (Ex: When in combat, if players move in increments of 5 feet and the max movement is 30 feet. How many times can the player move?)
- Use basic mathematic concepts throughout game (Ex: Give your players' characters' a set amount money to keep in their pockets, when they need to purchase an item, have them solve the amount to give and the proper change.)

### Social Studies

- Develop characters and setting appropriate for specific time period according to social studies theme. (EX: If you're teaching a lesson on the pilgrims, you may consider using Cape Cod as your setting. You, along with your students, will develop characters suited for that time period)
- Develop potential obstacles for students that may have been a challenge for those during that time period.
- Social studies follows a linear path. Students will need to understand and develop chronological thinking and awareness to follow the story itself.

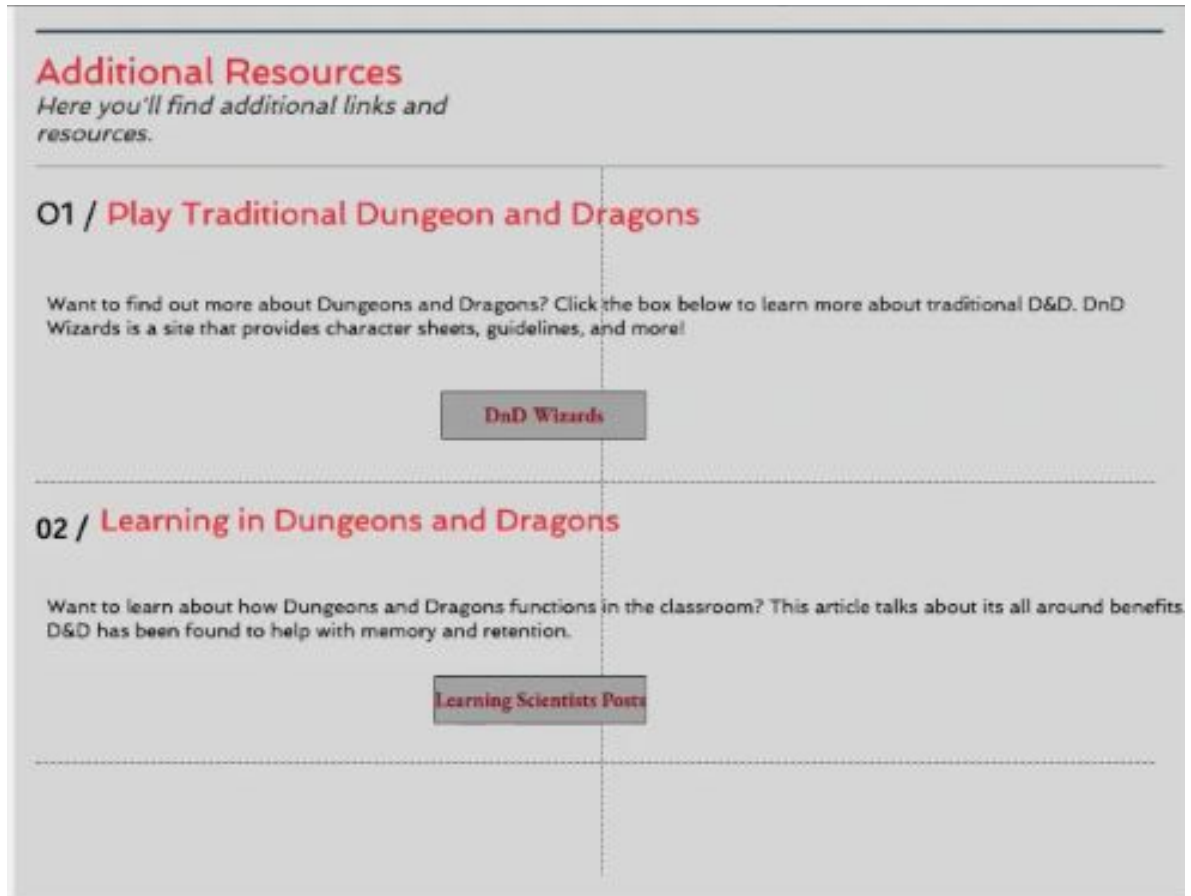
### Science

- Develop riddles for students to solve in order to progress forward
- Incorporate science elements into quests and gameplay (Ex: flora/fauna identification)

### Collaboration/ Communication

- Have students work in teams to accomplish goals
- Encourage students to share their opinions and concerns with their peers or brain storm possible strategies.
- Work as a class to develop house rules for gameplay
- Before beginning a journey, design gameplay as a class, review basic concepts, and establish setting, main objectives, and characters to ensure smoother gameplay.

Figure 14. Implementation section of the website including tips for integration across subjects



*Figure 15.* Additional Resources page from the website

Appendix J  
Second Iteration of the website

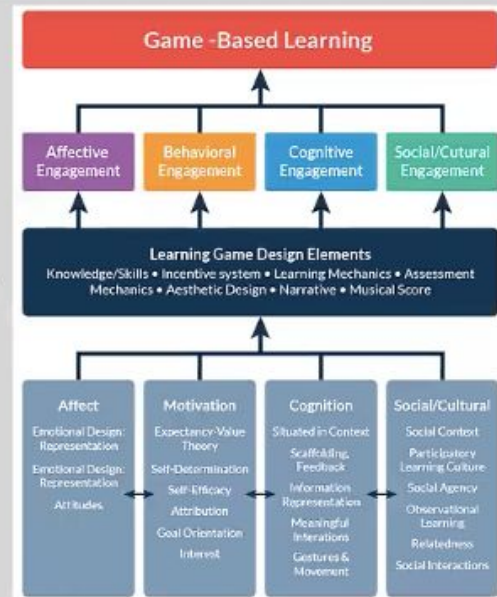


*Figure J1.* Homepage of the website for the second iteration. The site map was changed with added clickable buttons on the map, including color scheme, fonts, and navigation tab labels.

### What is game-based learning?

*Game-based learning is an approach to teaching that is designed to balance subject material with gameplay.*

*Students explore learning concepts in the form of gameplay. When implementing game-based learning, it is important to consider the following forms of engagement: Affective, behavioral, cognitive, and social/cultural.*



**Affective:** Focuses on the emotions and beliefs of the learners. This aspect is very important as it lays a sort of foundation for the learning experience for the learners and feeds into the behavioral, cognitive, and social/cultural aspects of game design as well.

**Behavioral:** This focuses on learners' motivation and engagement with the material. It has been thought that games have a way of interesting people and keep people engaged for longer periods of time due to incentives whether that be in the form of gold stars, medals, points, or trophies.

**Cognitive:** Cognitive focuses on how learners think, reason, and remember. In short, how information is processed. The concept of play pushes learners to develop symbolic thinking through being exposed to various representations of reality. Ex: A child can pretend a box is a race car while knowing it is not an actual car. Game-based learning pushes for students to seek out deeper meaning through interacting within the game's context.

**Social/Cultural:** Inclusion of social engagement with peers. There is focus on learning through participating in groups and using collective knowledge to accomplish a goal. Integrating cultural and social influences the learners' self-perception as well as their perception of others.



When implementing game-based learning or any sort games in the classroom, it is important to consider the **WHO**, **WHAT**, and **WHY**— The three 'WH' questions.

Before planning, consider **WHO** your learners are and **WHAT** gets them interested. Game-based learning is often used as a means to engage students in class activities.

However, rather than playing a game for the sake of playing a game, you have to think about **WHY** they are playing this game and **WHAT** they are supposed to learn. Think of objectives the students are supposed to meet and incorporate them into the game design.

#### **Why use game-based learning?**

Game-based learning, at its core, is geared toward teaching through repetition, failure, and accomplishment of goals. Students work towards a goal, choose actions to complete objectives, and experience the consequences for their actions in a controlled, safe environment. Incorporating games into the classroom allows students to explore and apply concepts they have learned in a low-stakes setting.

*Figure J2.* Game-Based learning section for the website with bolder font and emphasis on keywords and sections.

## What is Dungeons and Dragons?

*Dungeons and Dragons is a tabletop, role-playing game. Games are run by a GM (Game Master) who serves as the storyteller.*



## What do you need?



Polyhedral dice



Character sheets



Pencil, pen, and notebook

## How do you play?

**Step 1: Create a story** (The GM will create a general storyline for players to follow)

**Step 2: Players and GM create characters** (It is important to know the world setting of the story in order to create characters that best fit the setting)


**Step 3: Play the game**

**Step 3a: The GM sets the tone and starts things off with details of where the characters are and the general gist of what the world is like and possible goals to accomplish.**


**Step 3b: Players decide their actions to move the story along.**

Gameplay ultimately relies on players making various decisions that move the plot along. Every action and choice has a direct effect on the story and could potentially change the original intended course.

All players roll die (typically the 20-sided die) in order to determine how well they execute their actions. It is up to the GM to decide if the players roll high enough to succeed on an action or fail.



**A story**



**Imagination**

succeed on an action or fail.

**\*\*Tip: Keep it simple! If you're just getting into the game, keep it simple. Warm up with an easy game and a short, simple storyline. Plot a couple of puzzles, set goals for players to achieve along the way, and most of all, have fun!**

Figure J3. Dungeons and Dragons information section of the website reformatted.



**Implementation**

*Finding out how to implement games is always a challenge. Here's some tips and strategies for integrating D&D into instruction.*

**English**

- Have students to develop background for their characters where they will need to write a short paper on who their characters are. (Describe what character looks, their motivations, history, etc)
- Have students keep a journal to record events that happened during the game and have them reflect on what happened, what they would do differently next time or what worked out well.
- Develop and write a set of rules and instructions for sessions, have students demonstrate their understanding and comprehension through gameplay.
- Integrate vocabulary words into the adventure to test students understand the meaning of the words

**Math**

- Develop math problems for students to solve during their quests (Ex: When in combat, if players move in increments of 5 feet and the max movement is 30 feet. How many times can the player move?)
- Use basic mathematic concepts throughout game (Ex: Give your players' characters' a set amount money to keep in their pockets, when they need to purchase an item, have them solve the amount to give and the proper change.)

**Social Studies**

- Develop characters and setting appropriate for specific time period according to social studies theme. (EX: If you're teaching a lesson on the pilgrims, you may consider using Cape Cod as your setting. You, along with your students, will develop characters suited for that time period)
- Develop potential obstacles for students that may have been a challenge for those during that time period.
- Social studies follows a linear path. Students will need to understand and develop chronological thinking and awareness to follow the story itself.

**Science**

- Develop riddles for students to solve in order to progress forward
- Incorporate science elements into quests and gameplay (Ex: flora/fauna identification)

**Collaboration/ Communication**

- Have students work in teams to accomplish goals
- Encourage students to share their opinions and concerns with their peers or brain storm possible strategies.
- Work as a class to develop house rules for gameplay
- Before beginning a journey, design gameplay as a class, review basic concepts, and establish setting, main objectives, and characters to ensure smoother gameplay.

Figure J4. Implementation section of the website reformatted

**Learning in Dungeons and Dragons**

Want to learn about how Dungeons and Dragons functions in the classroom? This article talks about its all around benefits. D&D has been found to help with memory and retention.

Learning Scientists Posts

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**Play Traditional Dungeon and Dragons**

Want to find out more about Dungeons and Dragons? Click the box below to learn more about traditional D&D. DnD Wizards is a site that provides character sheets, guidelines, and more!

DnD Wizards

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**D&D generators**

Need a quick and easy way to create maps, characters, settings, etc? This resource allows you to create simple maps, generate characters, adventures, and more.

donjon

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**D&D Adventures**

A great way to get students interested in the game is to try out some fun, simple ones to familiarize students with D&D rules and basics. Below is a resource with a variety of pre-generated stories you can modify to fit your class.

DnD Adventures for Kids

Figure J5. Resources section of the website reformatted with added resources

Appendix K  
Current Iteration of the website

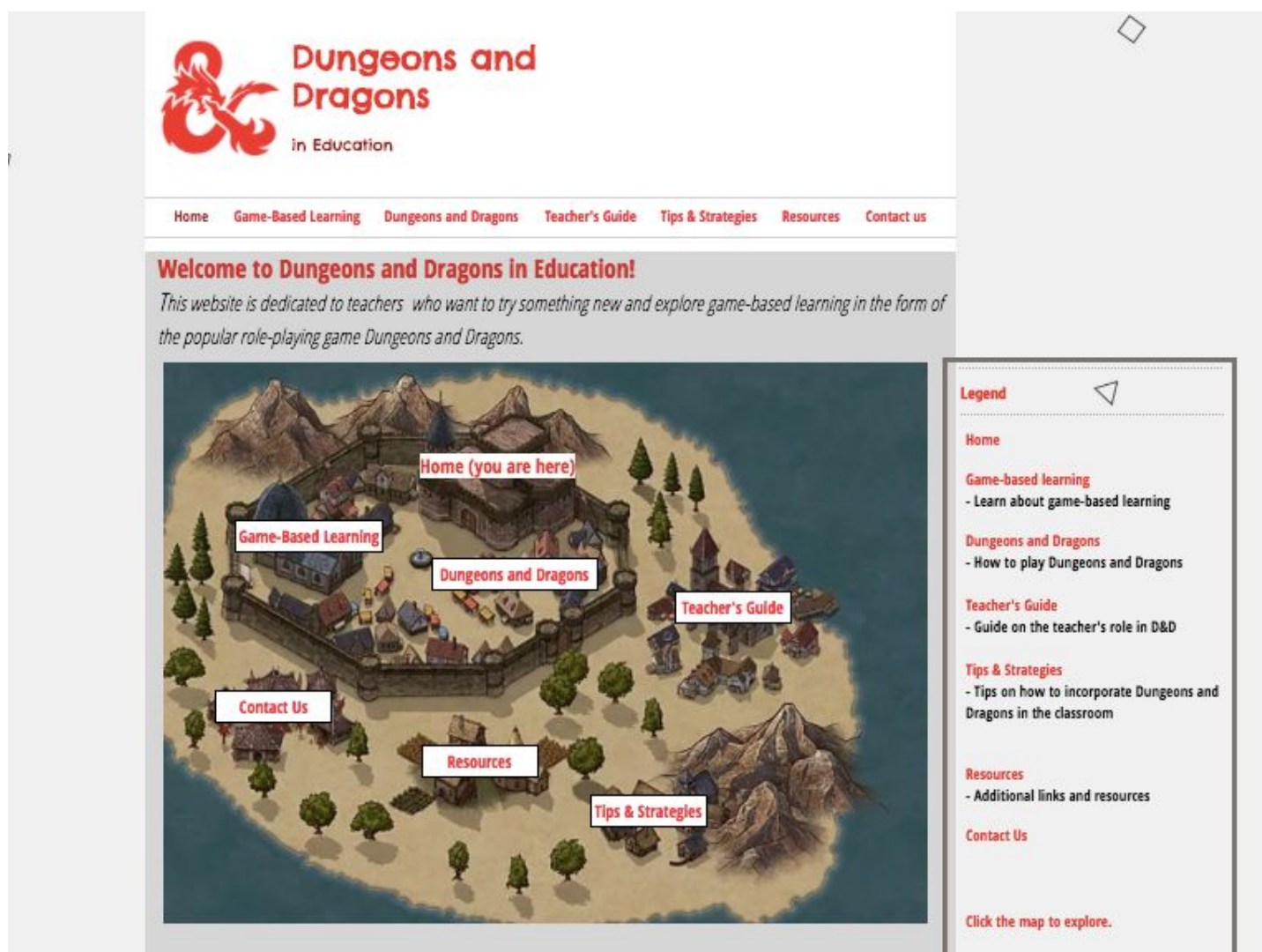


Figure K1. Homepage of the current iteration that includes a detailed map with clickable buttons. Color scheme and fonts were also changed. A Teacher's Guide section was added.

### What is game-based learning?

*Game-based learning is an approach to teaching that is designed to balance subject material with gameplay.*

*Students explore learning concepts in the form of gameplay. When implementing game-based learning, it is important to consider the following forms of engagement: Affective, behavioral, cognitive, and social/cultural.*



**Affective:** Focuses on the emotions and beliefs of the learners. This aspect is very important as it lays a sort of foundation for the learning experience for the learners and feeds into the behavioral, cognitive, and social/cultural aspects of game design as well.

**Behavioral:** This focuses on learners' motivation and engagement with the material. It has been thought that games have a way of interesting people and keep people engaged for longer periods of time due to incentives whether that be in the form of gold stars, medals, points, or trophies.

**Cognitive:** Cognitive focuses on how learners think, reason, and remember. In short, how information is processed. The concept of play pushes learners to develop symbolic thinking through being exposed to various representations of reality. Ex: A child can pretend a box is a race car while knowing it is not an actual car. Game-based learning pushes for students to seek out deeper meaning through interacting within the game's context.

**Social/Cultural:** Inclusion of social engagement with peers. There is focus on learning through participating in groups and using collective knowledge to accomplish a goal. Integrating cultural and social influences the learners' self-perception as well as their perception of others.

When implementing game-based learning or any sort games in the classroom, it is important to consider the **WHO**, **WHAT**, and **WHY**—The three 'WH' questions.

Before planning, consider **WHO** your learners are and **WHAT** gets them interested. Game-based learning is often used as a means to engage students in class activities.

However, rather than playing a game for the sake of playing a game, you have to think about **WHY** they are playing this game and **WHAT** they are supposed to learn. Think of objectives the students are supposed to meet and incorporate them into the game design.

### Why use game-based learning?

Game-based learning, at its core, is geared toward teaching through repetition, failure, and accomplishment of goals. Students work towards a goal, choose actions to complete objectives, and experience the consequences for their actions in a controlled, safe environment. Incorporating games into the classroom allows students to explore and apply concepts they have learned in a low-stakes setting.

Figure K2. Game-based learning section of the website was reformatted.



## What is Dungeons and Dragons?

*Dungeons and Dragons is a tabletop, role-playing game. Games are run by a GM (Game Master) who serves as the storyteller.*

*The game involves puzzles, strategizing, collaboration, and lots of imagination.*



### What do you need?



**Polyhedral dice**

### How do you play?

Step 1: Create a story (The GM will create a general storyline for players to follow)

Step 2: Players and GM create characters (It is important to know the world setting of the story in order to create characters that best fit the setting)

Step 3: Play the game



**Character sheets**




**Pencil, pen, and notebook**

Step 3a: The GM sets the tone and starts things off with details of where the characters are and the general gist of what the world is like and possible goals to accomplish.


Step 3b: Players decide their actions to move the story along.

Gameplay ultimately relies on players making various decisions that move the plot along. Every action and choice has a direct effect on the story and could potentially change the original intended course.

All players roll die (typically the 20-sided dice) in order to determine how well they execute their actions. It is up to the GM to decide if the players roll high enough to succeed on an action or fail.



**A story**



**Imagination**

**\*\*Tip:** Keep it simple! If you're just getting into the game, keep it simple. Warm up with an easy game and a short, simple storyline. Plot a couple of puzzles, set goals for players to achieve along the way, and most of all, have fun!

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**Why D&D? What is the point?**

Dungeons and Dragons and other various role-playing games give learners the opportunity to explore and apply learned concepts, increase interest, and facilitate collaboration and communication.

Utilizing this method of teaching, encourages students to be self-motivated and self-driven by presenting the learning material as something enjoyable through participating in goal-oriented gameplay.

*Figure K3.* Dungeons and Dragons section of the website reformatted and with an added section on what the point of D&D is.

*In this section, you will learn how to be a Game Master (GM) and understand the benefits of game-based learning games like Dungeons and Dragons in the classroom.*

### What does it take to be a GM?

The GM is responsible for guiding the players on their journey and creating the world for the players to immerse themselves in. This, of course, means planning is needed.



### Planning a D&D session, is similar to planning a lesson

- Consider your learning objectives
  - What do you want your students to learn?
  - How do you want them to demonstrate that knowledge?
- Consider the materials you'll need
  - Maps, short readings, pictures, videos, etc. (See Resources for pre-generated material)
- Plan to incorporate obstacles and problems (lessons)
  - Present these as learning opportunities.
    - What do they need to do here? How do they overcome this obstacle? (These will help your students build upon their skills and gain experience)



- Give your students choices
  - For younger students, it may be difficult trying to give them full reign over their choices, however, is important that students have the ability to choose their actions

- Incorporate "dungeons" or "puzzle rooms"
  - Consider these your tests/quizzes to check how much your students have absorbed
- Create a story/world
  - Your job as the DM is not to get your students actively involved in this adventure you have planned for them. You will work together to collaboratively tell this story.
    - Actions directly affect the story and evolve based on choices
    - It is important to emphasize teamwork/collaboration
  - You don't have to "reinvent the wheel"
    - Check Resources for pre-generated materials and modify to fit your lessons and class
      - D&D is very flexible and is essentially what YOU make out of it

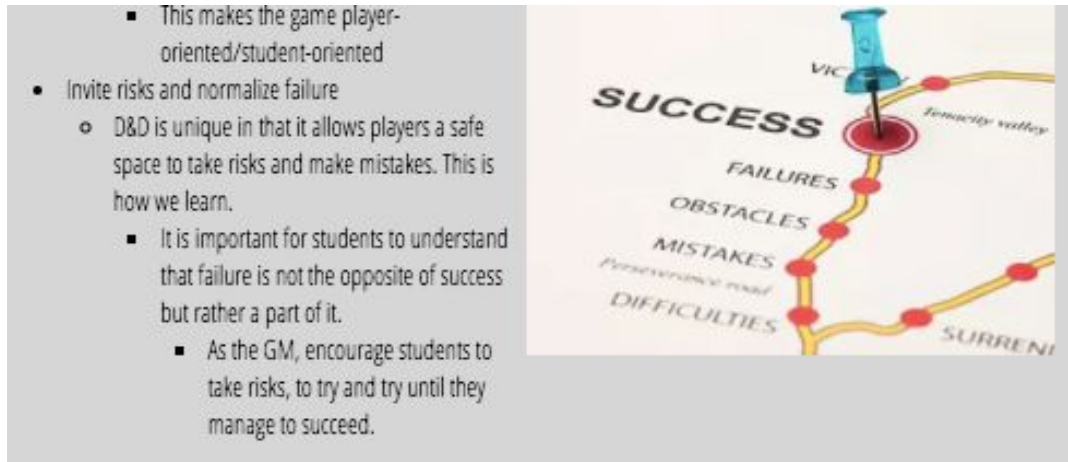


Figure K4. Teacher's Guide section of the website detailing the teacher's role as a Game-Master



**Tips and Strategies**

*Finding out how to implement games is always a challenge. Here's some tips and strategies for integrating D&D into instruction.*

**English**

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- Have students keep a journal to record events that happened during the game and have them reflect on what happened, what they would do differently next time or what worked out well.
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**Math**

- Develop math problems for students to solve during their quests (Ex: When in combat, if players move in increments of 5 feet and the max movement is 30 feet. How many times can the player move?)
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**Science**

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**Collaboration/ Communication**

- Have students work in teams to accomplish goals
- Encourage students to share their opinions and concerns with their peers or brain storm possible strategies.
- Work as a class to develop house rules for gameplay
- Before beginning a journey, design gameplay as a class, review basic concepts, and establish setting, main objectives, and characters to ensure smoother gameplay.

Figure K5. Tips and Strategies section renamed from Implementation and reformatted.

**Additional Resources**  
*Here you'll find additional links and resources.*

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Want to learn about how Dungeons and Dragons functions in the classroom? This article discusses what it is, how it relates to the classroom, and how it helps with memory retention.

[Learning Scientists Posts](#)

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[DnD Wizards](#)

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[donjon](#)

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[DnD Adventures for Kids](#)

Figure K6. Additional Resources section of the website reformatted.