Ubuntu Accessibility Orientation

Erik Hill
Department of Educational Technology
University of Hawaii at Mānoa
1776 University Ave., Wist Hall 232
Honolulu, HI 96822
USA
erikhill@hawaii.edu

Abstract: Linux has generated a lot of interest in higher education due to its flexible license and low cost. However, material to orient Information Technology (IT) personnel on essential accessibility functionality is sparse. This paper describes the development and evaluation of a web-based instructional module intended to orient IT personnel in higher education in the configuration and facilitation of the use of accessibility features of the Ubuntu Linux operating system. The module featured uniformity in visual design across sections, a combination of static and dynamic multi-modal presentation of information, and an innovative multi-survey response collection linking method, among others. The learning effect of the module was evaluated based on participants’ pre- and post self-confidence ratings on their ability to facilitate and administer specific accessibility features of Ubuntu. Twenty-four IT professionals in higher education reviewed the module by going through each section in the module in a self-paced manner. Results showed, using 17 usable data points, that on average participants rated themselves lower than 2 on a 5-point scale on all pre-survey target confidence items, but rated themselves above 4 on each of the corresponding post-survey items, indicating the module was successful in promoting learners’ confidence utilizing Ubuntu accessibility features.

Introduction

The Ubuntu Operating System (OS) is a collaborative, community based project to create an operating system which is based on the Linux kernel and associated software. The Ubuntu operating system's liberal license, which allows modification, copying, and reuse without additional permission or license fees, makes Ubuntu a potentially attractive choice for higher educational institutions for at least two reasons: the savings in license fees is attractive to typically budget-limited higher educational institutions, and the freedom offered by the license is fundamentally compatible with the mission of most educational institutions, which place value on experimentation, access to the inner workings of a system for greater understanding, and "standing on the shoulders of
giants”—the ability to reuse the "materials of creation" to build upon existing accomplishments to achieve higher or different aims.

In choosing an OS for educational purposes, such as a lab computer, accessibility must be taken into account. If the license is free and the software is of high quality, an educational institution may still pass over a choice if it has poor accessibility support, in order to prevent the limiting students with disabilities from participating fully in the educational process. A learning module was created; the purpose of the learning module was to orient Information Technology (IT) personnel in higher education to Ubuntu accessibility features.

Simple lack of awareness of the available accessibility features of Ubuntu or any Linux OS may be sufficient to pass them over, because of the ubiquitous presence of Microsoft’s Windows line of operating systems and Apple’s Mac OS X in higher education. With large companies supporting Mac OS X and Windows, IT personnel in higher education may simply assume that accessibility support in these two OSs is more thorough or more effective. However, at least for Windows, existing research that compares operating system accessibility features and includes Ubuntu does not support the idea that Ubuntu’s accessibility support is less complete or less effective.

González, Mariscal, Martínez, and Ruiz (2007) performed a comparative study highlighting the strengths and weaknesses of Ubuntu 6.10 and Windows XP accessibility features. As part of their study, they tested each OS’s ability to support specific common tasks accessibly, such as managing files and folders. They found that Ubuntu presented fewer scenarios which blocked the test user from successfully completing common tasks under accessibility constraints than Windows XP, passing 64 tests to Windows XP’s 61.

Furthermore, the flexibility of the open-source license of Linux (in general) and Ubuntu (specifically) can allow avenues of customized support for universal design and accessibility support that would be difficult to implement under the typical licensing restrictions for proprietary software. An entire Linux distribution with the goal of facilitating low vision students has been created, based on Ubuntu (Caruso, Dini & Ferlino, 2008) which worked well in addressing the problems of low vision students while not interfering with normal vision students.

Documentation on Ubuntu’s accessibility features exists primarily in the form of web pages in several non-centralized locations on the Internet, with some being available on Ubuntu’s web site (Ubuntu community, 2011), the Gnome website (Gnome development community), or project websites for specific accessibility features within Ubuntu, such as Orka, which has several documentation websites (see, e.g., Gnome development community, Use & Using Orka). However, none appears to be designed specifically as an instructional module, some are very technical in nature, and it is not clear that an IT personnel would know where to look before knowing the name of the feature (not always obvious, for example, “Orka” is the name of the screen reader).

Methods

The target audience for the module was IT personnel supporting an institution of higher learning. The author supposed that in all likelihood, most modern IT personnel already have some familiarity with Linux (however, the data gathered by this module did
not support this supposition). The term “IT personnel” as it applies to the target population of this project is defined as any person who makes IT decisions regarding various technology user groups at a college or University. Technology users might include faculty, students, or staff, and the kind of decisions an IT personnel might make would include choosing a type or architecture of computers in a lab setting, in classrooms, configure computers for security or accessibility, and so on. IT personnel would be anybody whose roles include making official technology decisions.

Participants were recruited by several means: A request on the Educational Technology (ETEC) and online program for Educational Technology (OTEC) mailserve, and direct requests of IT personnel at the University of Hawaii in various departments, as well as requests of acquaintances that the author knew were in the IT field and worked or had worked in higher education. Since the module did not track individual identity, there is no way to know which specifically responded to the request.

The module was written in an easy-to-understand English appropriate to the intended target population. The module was designed to address the particular needs of and common traits of IT personnel, such as having little time for learning, a usually rapid learning style for technical matters, and a desire to control the learning environment, particularly with regard to time. To cater to these needs, the module was created such that the learner could choose any lesson at any point, could review at any time, could skip whatever parts they chose, and so on. Navigation was designed to permit this, and great care was taken to insure consistency of design. For example, a consistent color scheme was used throughout, and the divisions of each lesson were exactly consistent with the divisions of every other lesson, and they were in the same order.

The module was designed such that it could be used entirely online, with no dependencies to offline instructional materials. However, as an option, the user could run a copy of Ubuntu 10.10 within a virtual machine by executing a virtual machine program and running Ubuntu 10.10 as a program on their computer. It would appear in a separate window, and the browser window and virtual machine window could be used side-by-side. This avenue was made available to enhance the experiential aspects of the module and to enable the learner to perform the skills. A link was provided in the Welcome section to an external website (not created by the author) that gave instructions on how to download Ubuntu 10.10 and set up a virtual machine (using “VirtualBox” (VirtualBox development community, 2011)). While this was meant to be helpful in understanding the module, the module was carefully designed such that a virtual machine was not essential to understanding or essential for completion.

The module was divided into five lessons, each in its own page (or section), with two categories: Visual disabilities and mobility disability. These two categories are not divided visually; rather, they are simply represented in three lessons (for visual) and two lessons (for mobility). The visual lessons are first (on the left), and the mobility next. See Figure 1 for a screenshot of the arrangement of tabs.
Each lesson is divided into exactly the same sections to facilitate navigation and learning, by creating a schema by which the learner can expect to locate information. In general, the sections flow from general to specific, from overview to detail. The sections are ordered from the top of the page to the bottom, as discussed below.

Each lesson starts with an “Overview” section that presents a paragraph of text about the problem that the current lesson is meant to address. An accessibility issue is presented along with some basic background. The “Scenario” section follows, with one or two sentences describing the target accessibility need of a fictional person with the accessibility need under focus. This is followed by “The Basics” section, which overviews the concepts underlying the technological accessibility function itself, with pictures, screenshots, or diagrams to clarify the main ideas. Next is the “What’s Available” section, which indicates the target features that Ubuntu 10.10 has to address the accessibility need in focus. Next is “Nuts and Bolts” which is an outline formatted step-by-step set of instructions on how to activate, deactivate, and use the feature in focus. “Demonstration” is a video section with narration, meant to account for various learning styles and also satisfy universal access needs for the module itself. “Check Your Understanding” has two questions, with hidden answers, to allow the learner to test their own understanding of two select concepts from within the lesson. These questions always test concepts or overview ideas, and not, for example, specific steps in the instruction. Clicking the text “click here for the answer” reveals the answer, and clicking the answer hides it again. “Go Further” has an unanswered question that the user may choose to discover on their own using VirtualBox running Ubuntu 10.10. There is no mechanism to collect the answers from “Check Your Understanding” or “Go Further”, these are meant entirely for the learners own self-driven exploration. This was designed this way to demonstrate respect for the learners self-driven initiative learning style.

On the left side of every page, except for survey pages, is a “sidebar” with shortcuts to each section. This served to remind the learner of the organization of the module and to provide a rapid way of moving from section to section. The video demonstration section of the site was seen as especially useful in an initial peer review and therefore has an icon (a “video reel”) to distinguish it from other links.

The module includes three surveys to evaluate its effectiveness. A demographic survey, immediately after the Welcome section, gathered information on age, gender, and whether or not the learner held a higher degree in an IT field. This was kept deliberately short to limit the length of time that the learner needed to take to complete the module. The options for the age section were given as range categories: 18-25, 26-30, 31-35, 36-40, 40-49, 50-59, and 60 and over. A presurvey (before any lesson) and a postsurvey (after all lessons) were designed to elicit participants’ perceived confidence in configuring and facilitating the use of the following target Ubuntu accessibility features: (1) adjusting screen contrast, (2) magnifying the screen, (3) setting up a screen reader for
a blind user, (4) setting up Ubuntu to need only one hand, and (5) setting up an alternative to using mouse buttons. An sample item reads as follows: *If I was helping a user with trouble seeing low contrast to use Ubuntu 10.10, I could set Ubuntu to use high contrast.* In addition, one item asked the participants’ confidence in their overall knowledge of Ubuntu mobility and visual accessibility features (i.e., *If someone asked me if Ubuntu had a specific mobility feature or visual accessibility feature, I could give them the answer they needed.*) Participants rated their confidence on a scale of 5, with 1 meaning ”Strongly Disagree” and 5 meaning “Strongly Agree”. The module was designed such that it did not require any kind of server-side identity tracking. This was to allow it to be implemented on a server that did not support specific technologies, such as PHP, that are necessary for such tracking, and to enhance the anonymity of the module. To allow for the ability for the data analyst to connect the demographic, pre, and post surveys to the same participant in such an environment, a system was implemented where the participant would retrieve a randomly produced “animal code” (produced automatically when the participants clicked a button. This system ensured anonymity by creating an identifier that could not be connected to any actual personal data related to the participant, and would allow the module to be started on one computer and completed on another. Animal codes were designed to be memorable and unique, and were created from two words, the first being an emotion word, and the second being a name of a common animal, such as “happy cat”. Emotion and animal words were individually chosen randomly and there were 40 of each, creating 1,600 unique possible codes. Emotion words were divided into 20 “positive” emotion words (such as “happy” or “joyful”) and 20 “negative” emotion words (such as “sad”, or “nervous”) to mediate the potential effect of the emotion words on the performance of the participant. See Figure 2 for a screenshot of the animal code instructions and button, and a sample animal code.

The actual mechanisms for navigation are accomplished by the use of a “tab bar”

![Animal Code Interface](image)

**Figure 2.** The animal code interface

Across the top of each page which includes introduction (“Welcome”), the three surveys and the five lessons. The student is not expected to move from left to right but should perform each task. The first tab, which comes up automatically when the site is first accessed, details these instructions to the participant. Data was gathered through the JotForm (Interlogy, L.L.C.) online survey service, which gathers form entry data using a web interface and integrating into an existing website, and allows it to be downloaded as a spreadsheet. With each form submission entry, JotForm appends IP address information. The three forms (Demographics, Presurvey, and Postsurvey) were created as three separate JotForm forms and were downloaded at the end of a ten day data...
gathering time frame. The method for identifying that all three forms (demographic and the two surveys) should be considered to be from the same learner was as follows: If the IP address of the three forms matched and were unique within the total entry database, then they were considered to be a set. If the IP addresses did not match but animal code identifiers did, then the three were considered to be a set. This could occur if, for example, the learner started the module on one machine and finished on another. Only one disambiguation scenario had to be resolved, one where two separate individuals, with different animal codes but the same IP address, had each completed all three forms. In any case where there was not a clear match, the entry was not included in the evaluation.

Results

A total of 24 participants reviewed the learning module (excluding an early testing entry), judged by a combination of unique IP address and animal codes. The data from participants who failed to complete all three surveys (i.e., presurvey, demographic survey, and postsurvey) were not included in the analysis. One person did not complete any survey; two missed the post-survey, and four skipped the demographic survey. All together, there were 17 usable data entries in the analysis. Within this dataset, two points were missing: One participant left the result for Setting up screen reader blank, another participant left Text and Screenshots were helpful blank. The computations were conducted without these values.

The median age range for the participants was 40-49 with 14 (82.4%) being at least 31, and only 2 (11.8%) 50 or older. The majority of the participants were male (n = 10, 58%). Nine (52.9%) held a higher education degree in IT.

Table 1 shows the descriptive statistics for target confidence items. The abbreviations of the target items were listed in the first column. Mean, standard deviation, and median ratings of each item on pre- and post surveys are presented.

<table>
<thead>
<tr>
<th>Abbreviated Item Question</th>
<th>Pre Mean</th>
<th>Pre SD</th>
<th>Pre Med.</th>
<th>Post Mean</th>
<th>Post SD</th>
<th>Post Med.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjusting Contrast</td>
<td>1.59</td>
<td>0.94</td>
<td>1</td>
<td>4.59</td>
<td>0.94</td>
<td>5</td>
</tr>
<tr>
<td>Magnifying the screen</td>
<td>1.71</td>
<td>1.10</td>
<td>1</td>
<td>4.53</td>
<td>0.94</td>
<td>5</td>
</tr>
<tr>
<td>Setting up screen reader</td>
<td>1.71</td>
<td>1.10</td>
<td>1</td>
<td>4.56</td>
<td>0.81</td>
<td>5</td>
</tr>
<tr>
<td>For Ubuntu to need only one hand typing</td>
<td>1.53</td>
<td>0.80</td>
<td>1</td>
<td>4.47</td>
<td>1.01</td>
<td>5</td>
</tr>
<tr>
<td>An alternative to using mouse buttons</td>
<td>1.59</td>
<td>0.94</td>
<td>1</td>
<td>4.53</td>
<td>0.94</td>
<td>5</td>
</tr>
<tr>
<td>Overall confidence</td>
<td>1.47</td>
<td>0.94</td>
<td>1</td>
<td>4.59</td>
<td>0.62</td>
<td>5</td>
</tr>
</tbody>
</table>

For every item, the median was the minimum possible for the presurvey and the maximum possible for postsurvey. Only one standard deviation exceeded 1 (one hand typing) for the postsurvey, suggesting that for most items, responses were tightly grouped.
Other Presurvey Results

Table 2 shows the descriptive statistics for items in the presurvey which were not part of the matched confidence items. Columns 2 through 4 present mean, standard deviation, and median for each item.

<table>
<thead>
<tr>
<th>Abbreviated Item Question</th>
<th>Mean</th>
<th>SD</th>
<th>Med.</th>
</tr>
</thead>
<tbody>
<tr>
<td>“A lot” of IT experience (Demographic)</td>
<td>3.71</td>
<td>1.26</td>
<td>4</td>
</tr>
<tr>
<td>Care about OS accessibility features</td>
<td>3.59</td>
<td>1.50</td>
<td>4</td>
</tr>
<tr>
<td>Understand OS accessibility features</td>
<td>3.00</td>
<td>1.32</td>
<td>3</td>
</tr>
<tr>
<td>Comfort with OS accessibility features</td>
<td>2.82</td>
<td>1.24</td>
<td>3</td>
</tr>
<tr>
<td>Familiar with Ubuntu</td>
<td>1.71</td>
<td>0.77</td>
<td>2</td>
</tr>
</tbody>
</table>

The participants were invited to offer open-ended comments for both the pre and postsurveys, which are included in Appendix A.

Other postsurvey results

Table 3 shows the descriptive statistics for items in the postsurvey which were not part of the matched confidence items.

<table>
<thead>
<tr>
<th>Abbreviated Item Question</th>
<th>Mean</th>
<th>SD</th>
<th>Med.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module was helpful.</td>
<td>4.29</td>
<td>0.92</td>
<td>5</td>
</tr>
<tr>
<td>Navigation was useful</td>
<td>4.18</td>
<td>0.73</td>
<td>4</td>
</tr>
<tr>
<td>Text and Screenshots useful</td>
<td>4.44</td>
<td>0.63</td>
<td>5</td>
</tr>
<tr>
<td>Too much information</td>
<td>2.12</td>
<td>0.99</td>
<td>2</td>
</tr>
<tr>
<td>Videos helpful</td>
<td>4.47</td>
<td>0.72</td>
<td>5</td>
</tr>
<tr>
<td>Able to setup</td>
<td>4.47</td>
<td>0.72</td>
<td>5</td>
</tr>
<tr>
<td>Able to assist</td>
<td>4.47</td>
<td>0.94</td>
<td>5</td>
</tr>
<tr>
<td>Refresh with module</td>
<td>4.53</td>
<td>0.94</td>
<td>5</td>
</tr>
<tr>
<td>Ask about specific feature</td>
<td>4.59</td>
<td>0.62</td>
<td>5</td>
</tr>
</tbody>
</table>

Six participants (35%) reported a maximal positive change in confidence (by reporting “Strongly Disagree” (1) to all confidence questions in the presurvey and all “Strongly Agree” (5) in the postsurvey). Excluding missing data, every participant gained at least one confidence point in every matched confidence item. The least gain was a participant who gained one point in every postsurvey item except one left blank.

Four participants left comments in the presurvey and fourteen left comments in the postsurvey. Comments were divided into meaning units (pre- n=9, post- n=30). Meaning units in the presurvey referred to the participant’s lack of experience, familiarity or lack of recent experience with Ubuntu (n=6), enthusiasm (n=1), problems with the animal code system (n=1), and previous experience with learners with a disability (n=1). The postsurvey meaning units consisted of reports of minor technical issues (n=4), typos and awkward language (n=2), complaints (n=5), suggestions for future improvement (n=9), and positive feedback (n=10).
Discussion

For the matched target questions in the pre- and postsurvey that tested confidence, the results above show that learner confidence improved for each of the matched questions in the pre and post surveys. The first five of the matched questions cover each of the specific lessons presented in the module, and they showed similar and high levels of improvement in confidence. Finally, for question 11, which tests the learners’ self-perceived domain level confidence (their confidence about knowing about what they do and what they do not know) also showed clear improvement from pre to post survey. This result is consistent with the idea that module was successful in promoting learners’ confidence utilizing Ubuntu accessibility features.

The dataset of complete responses was very small—only 17 entries. Therefore, I will use median as a measure of central tendency as it is less influenced by outliers. The participants were homogeneous in terms of age, since almost all ages fell within a tight range. Gender appears to be confounded with IT experience (with males answering I have a lot of IT experience with a median of four and a mode of five, whereas female participants answered with a median of three and a mode of three). The validity of using IT experience as an estimate of IT expertise was conducted by correlating higher IT degree status with the question, I have a lot of IT experience. As expected, those who held a degree had more experience; both median and mode were five compared to nonholders in which both were three.

Certain themes emerged from the postsurvey comments. Videos were mentioned often, both in complaints about syncing and the cutting off of words at the end and in praise (praise, n=4) (with one participant stating that they so preferred the videos that they skipped much of the rest of the module). Another comment suggested promoting the video such that it would be seen first. While not explicitly praise, it suggests that the videos are important. These comments imply that the module was still useful despite being used in a flexible, unexpected way, and that the videos were helpful (see also the postsurvey item Videos helpful, mean=4.47, SD=0.72, median=5).

Two comments imply that the participant did not want to make use of the virtual machine (VM). These comments were made even though the virtual machine was explicitly optional, which implies that the VM option was seen quite negatively by the participants. It may be noteworthy that the VM did not receive any positive comments.

Conclusion

In conclusion, this instructional module was effective in improving the confidence of IT personnel in higher education in both skill-specific and a general sense of confidence of the subject of Ubuntu accessibility features. The results show that the learners gained confidence in using Ubuntu accessibility features and their ability to actually assist students with specific needs-based uses of a specific technology within Ubuntu in the context of a lab setting or similar setting in higher education.

Postsurvey comments suggesting an alternative to the virtual machine, such as the use of Flash, give a possible future avenue of module improvement. Another future avenue for this module is the addition of sections for learning and hearing disabilities.
References


Appendix A: List of demographic and survey questions and options, with notes and selected tallies of specific responses. This appendix includes all participant comments.

T signifies “Total of all demographic surveys submitted”, where “S signifies only those entries which were part of a complete set of entries of demographic, pre and post surveys.

Demographic survey questions

1. I consent to participate in this study.

Note: If this check-box option was not selected, the entry was automatically refused by the survey software.

2. What is your animal code?

Note: This code was given to the learner in response to a button-click at the top of the demographic survey page. They were instructed to use this code on each of the three surveys so that their answers could be collected as a single set of responses even without an identifying name or without depending on the web-servers ability to track and identify the learner through any sort of web cookie or any other identifier.

2. What is your age?

Responses were a radio-button style:

a. 18-25 (T:1 S:1)
b. 26-30 (T:2 S:2)
c. 31-35 (T:4 S:4)
d. 36-40 (T:0 S:0)
e. 40-49 (T:10 S:8)
f. 50-59 (T:2 S:2)
g. 60 or over (T:1 S:0)

3. What is your gender?

Responses were a radio-button style:

a. Female (T:8 S:7)
b. Male (T:12 S:10)

4. Do you have a higher degree in an IT related field?

Responses were a radio-button style:

a. Yes
b. No
5. Enter the message as it’s shown:
Participants were asked to enter a “capcha” to eliminate non-human responders, such as automated scripts designed to spam any sort of entry form.

Presurvey Questions

Questions 2-11 use a Likert scale from 1 to 5 where 1 is labeled “Strongly Disagree” and 5 “Strongly Agree”. These are implemented as a radio-button. Question1 (the animal code entry) is implemented as a single-line text field, and Question 12 (the question to gather miscellaneous feedback) is implemented as a multi-line textbox.

1. What is your animal code?
2. I have a lot of IT work experience.
3. I care about operating system level accessibility features.
4. I understand operating system level accessibility features well.
5. I am comfortable working with operating system level accessibility features.
6. I am familiar with the Ubuntu operating system.
7. If I was helping a user with trouble seeing low contrast to use Ubuntu 10.10, I could set Ubuntu to use high contrast.
8. If I was helping a user with trouble seeing detail to use Ubuntu 10.10, I could set up Ubuntu to magnify the screen.
9. If I was helping a blind user to use Ubuntu 10.10, I could set up Ubuntu's screen reader for them.
10. If I was helping a user with trouble using both hands to use Ubuntu 10.10, I could set up Ubuntu to need only one hand typing.
11. If I was helping a user with trouble using the mouse buttons to use Ubuntu 10.10, I could set up Ubuntu to let them use an alternative to using mouse buttons.
12. If someone asked me if Ubuntu had a specific mobility feature or visual accessibility feature, I could give them the answer they needed.
13. Please enter any starting comments or questions, if any.

Postsurvey Questions

Questions 2-13 use a Likert scale from 1 to 5 where 1 is labeled “Strongly Disagree” and 5 “Strongly Agree”. Like the presurvey questions, these are implemented as a radio-button. Also like the presurvey, question1 (the animal code entry) is implemented as a single-line text field, and Question 12 (the question to gather miscellaneous feedback) is implemented as a multi-line textbox.

1. What is your animal code?
2. The navigation system of this module was useful.
3. The text and screenshots helped me learn.
4. There was too much information. [sic.]
5. The videos were helpful.
6. I am able to setup Ubuntu's accessibility features.
7. I am able to assist a user with using Ubuntu's accessibility features.
8. If I was helping a user with trouble seeing low contrast to use Ubuntu 10.10, I could set Ubuntu to use high contrast.
9. If I was helping a user with trouble seeing detail to use Ubuntu 10.10, I could set up Ubuntu to magnify the screen.
10. If I was helping a blind user to use Ubuntu 10.10, I could set up Ubuntu's screen reader for them.
11. If I was helping a user with trouble using both hands to use Ubuntu 10.10, I could set up Ubuntu to need only one hand typing.
12. If I was helping a user with trouble using the mouse buttons to use Ubuntu 10.10, I could set up Ubuntu to let them use an alternative to using mouse buttons.
13. If someone asked me if Ubuntu had a specific mobility feature or visual accessibility feature, I could give them the answer they needed.
14. What changes would have made this module better, if any?

Presurvey comments (open ended question responses). One cell represents one participant response. Meaning units have been divided by the author with brackets ([]). Excess space was removed.

| [Never heard of Ubuntu before this module.] [From context I gather it is a Linux variation.] |
| [Not a ton of experience]. [did some work in ubuntu years ago, prior to 10.10.] [Also started as something giraffe, but lost the code name, restarting as happy turtle] |
| [I am not familiar with Ubuntu.] [but happy to give this module a go!] |
| [I have never seen UBANTU before this.] [though i work with special needs (hearing impaired) often.] |

Postsurvey comments (open ended question responses). One cell represents one participant response. Meaning units have been divided by the author with brackets ([]).

| [First of all, great job!] [Great module], [easy to follow.] [In my opinion, there are several things can be changed to make this even better. 1)Make the system font size larger so it is easy to see in the screen] |
| [2)Put some icons or shortcuts on the desktop for easy demonstration, such as for mouse Click and Magnifier features] |
| [3)for High Contrast feature, Before effect also need to be shown in addition to the After effect] |
| [4) Organize the content in a easier way to follow. Put youtube video before the detail description of how to do set this feature. In this way, people can save some time reading the details if they already learned in the video.] |

<p>| [Seeing detail second paragraph typo &quot;detalis&quot; should be details] |
| [Awkward sentence revise Not every computer program has been written correctly in order to deal with larger text settings anyway.] |</p>
<table>
<thead>
<tr>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>[if you can come up with a interactive practice application without installing any heavy special softwares for the user, that could be a big bonus.] [like a flash game?]</td>
</tr>
<tr>
<td>[figure out a way to use the virtual machine without having to download and install any new, useless programs to my computer.]</td>
</tr>
<tr>
<td>[The video tutorial demonstrations were very helpful.] [however, some of them ended abruptly and perhaps sooner than it should.]</td>
</tr>
<tr>
<td>[The videos were too long.]</td>
</tr>
<tr>
<td>[The videos were the best part.] [After the first couple tabs I skipped a lot of the working just to watch the video.]</td>
</tr>
<tr>
<td>[The show correct answer feature was not active.]</td>
</tr>
<tr>
<td>[some words were chopped off at the very end of the video.]</td>
</tr>
<tr>
<td>[Nice job!]</td>
</tr>
<tr>
<td>[No indication from the outset that audio speakers will be needed along with the visual. Some systems may not be configured with speakers.] [Under High Contrast, its seemed the demonstration was specific in the procedure for changing the &quot;Themes Tab&quot; in relation to contrast.. The &quot;Font tab&quot; was not discussed, although was in the visual. To me the written text should reinforce the visual presentation., not leave it up to the user to fill in the gaps, etc.]</td>
</tr>
<tr>
<td>[The Orka video demo seemed to be out of sync with the audio, not intuitive on how to follow along.] [Over all good.]</td>
</tr>
<tr>
<td>[It would be good to have turned &quot;Click here to see the answer&quot; in another color (or bolded) when you hover over it. It wasn't clear that I could click on it, or that it's a working link.]</td>
</tr>
<tr>
<td>[The places to click to get answers below the video should be links instead of just static looking text.] [That was the only confusing part to me.]</td>
</tr>
<tr>
<td>[This was amazing!] [I really found the videos helpful, especially with the audio narrative.] [Also, many of the &quot;hot keys&quot; for UBANTU are used in programing an regular computer use, so it is easy to learn for people with some exposure to using &quot;hot keys&quot;]</td>
</tr>
</tbody>
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