

Best Practices for Creating E-learning Courses for Diverse Adult Audiences

Brandi Goff

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Introduction

Designing e-learning that is available to the general public is difficult in that the audience is diverse and therefore must accommodate a wide variety of learners. Diversity, as described in this paper, is defined as the varying racial, ethnic, and cultural backgrounds, as well as languages, socio-economic status, abilities, and learning style preferences that exist within a group. There is an abundance of literature on best practices for designing accessible courses, as well as research on designing courses for culturally/linguistically diverse audiences. This paper seeks to converge existing research and literature in order to identify best practices for creating e-learning courses for diverse adult populations.

Audience Analysis

Before an instructional designer can successfully address a problem, they must fully understand the instructional issue(s) through analysis. During analysis, particularly in the ADDIE model, the instructional designer gathers information to better understand how to approach all other aspects (design, development, implementation, and evaluation) of course design. Understanding the audience, or the population, for which the course will be designed is a crucial step that informs how instruction will be framed. In the case of developing a course for a diverse audience, the audience analysis should shed light on characteristics such as the population's age, education, language and culture, socio-economic status, and abilities/disabilities. "Learner variability comes in many forms and applies to all students and includes individual and personal attributes of students that impact how they experience schooling."¹ Ultimately, every result of the audience analysis should have an effect on the design of the course.² In some cases it may be determined that the audience is of a consistent educational background, socio-economic status, etc. In other cases, the analysis may show that the audience has *diverse* backgrounds, socio-economic statuses, abilities, and so on. It is the latter that leaves no clear path for instructional designers. To some level, instructional designers should be able to predict through analysis the ways in which the audience may vary, and create content that best serves the diverse group.³ There are a number of considerations and practices that should be taken into account once it is determined that the audience is 'diverse' and thus has diverse needs.

Accessibility Considerations

When discussing a diverse audience, often one of the first things that is examined is accessibility. The term "accessibility," in the context of online course development, is used to describe the degree to which an individual with a disability (visual, mobile, cognitive, etc.) is able to readily access and interact with course materials. While an audience analysis may determine that there is unlikely to be individuals in the course with disabilities, designers should also understand that not all disabilities are reported or will come up during analysis. For this reason, applicable laws and recommendations must be followed. Laws such as the Americans with Disabilities Act of 1990 and 2010, and Section 508 of the Rehabilitation Act of 1973 provide regulations on creating resources

¹ Rao, K. & Meo, G. "Using Universal Design for Learning to Design Standards-based Lessons." *Sage Open*, 6, no. 4 (2016). <https://doi.org/10.1177/2158244016680688>.

² Hodell, C. "ISD from the ground up: A no-nonsense approach to instructional design." Alexandria, VA: Association for Talent Development, 2015.

³ Rao, K. & Meo, G. "Using Universal Design for Learning to Design Standards-based Lessons." *Sage Open*, 6, no. 4 (2016). <https://doi.org/10.1177/2158244016680688>.

that are accessible particularly when they are created by Federal, State, or local governments. While there is no law that covers accessibility for other contexts, many organizations set their own thresholds for creating accessible online content, with many conforming to Web Content Accessibility Guidelines or (WCAG) 2.0. WCAG 2.0 sets forth “layers of guidance” and “conformance requirements” which web content must meet in order to be considered Level A through Level AAA.⁴ It is important to note that there is no perfect threshold or checklist for developing content, but instead “there may be degrees of accessibility that can be dependent on disability.”⁵ Instructional designers must take the appropriate regulations into account when designing a course, and may wish to err on the side of caution when developing materials. Researchers highlight the benefit of engaging in a proactive approach to accessible course design “taking into consideration the needs of diverse learners (in age, gender, backgrounds, learning styles, abilities and disabilities.”⁶ In effect, developing content in which all learners have the opportunity to succeed, regardless of disability, is recommended.

Accessibility is just one factor that must be considered when designing e-learning, but especially for a diverse audience.

Best practices

Cross-cultural e-learning

Whether a course is developed for learners in one geographic region or for an international audience, there is likely to be a mix of learners from various cultural backgrounds. It is important to keep in mind that culture is more than the superficial or surface-level aspects of culture. This presents a need for materials that are designed for cross-cultural audiences “rather than those designed for a particular culture but are applied or used by learners from yet a different culture.”⁷

Before discussing the ways in which cross-cultural design can be accomplished, it is important to address the various dimensions of culture. Hofstede’s model defining the five dimensions of cultural difference include: high/low power distance cultures, high individualism/collectivism, masculine/feminine societies, high/low uncertainty avoidance cultures, and long-term/short-term orientation cultures.⁸ *Table 1* further defines each of these dimensions.

⁴ Web Content Accessibility Guidelines Working Group. “W3C Recommendation.” W3C. <https://www.w3.org/TR/WCAG20/> (accessed May 9, 2019).

⁵ Savi, O.C., Savenye, W. & Rowland, C. “The Effects of Implementing Web Accessibility Standards on the Success of Secondary Adolescents.” *Journal of Educational Multimedia and Hypermedia* 17, no. 3 (2008): 387-411.

https://eric.ed.gov/?redir=http%3a%2f%2fwww.editlib.org%2findex.cfm%3ffuseaction%3dReader.ViewAbstract%26paper_id%3d25272

⁶ Boateng, J.K. “Accessibility Considerations for E Learning in Ghana.” *Journal of Education and e-Learning Research* 3, no. 4 (2016): 124-129. <https://files.eric.ed.gov/fulltext/EJ1148508.pdf>

⁷ Olaniran, B. “Discerning Culture in e-learning and in Global Workspaces.” *Knowledge Management & E-learning: An International Journal* 1, no. 3 (2009): 180-195.

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.703.5258&rep=rep1&type=pdf>

⁸ Dunn, P. & Marinetti, A. “Beyond Localization: Effective Learning Strategies for Cross-cultural E-learning.” In *Globalized E-learning Cultural Challenges*, edited by M. Potter et. al., 255-266. Hershey, PA: Information Science Publishing, 2007.

In High Power Distance (High PDI) cultures, the less powerful members of society accept that power is not equally distributed.	In Low Power Distance (Low PDI) cultures, there is a general acceptance that power should be equally distributed.
High Individualism (High IDV) cultures show few ties beyond those of the nuclear family.	In High Collectivism (Low IDV) cultures, people belong to strong, cohesive in-groups.
In Masculine societies (High MAS) , men are assertive, tough, and concerned with winning material success, whereas women are more modest and interested in quality of life.	In Feminine societies (Low MAS) , both men and women are equally concerned with quality of life.
In High Uncertainty Avoidance cultures (High UAI) , people feel more threatened by uncertain or unknown situations, leading to a need for formality and clear rules.	Low Uncertainty Avoidance cultures (Low UAI) are more comfortable in managing uncertainty, and are generally informal.
Long-term Orientation (High LTO) cultures value perseverance and thrift, and generally regard time as overlapping (synchronous).	Short-term Orientation (Low LTO) cultures think more short-term and generally regard time as linear and sequential.

Table 1: Hofstede's five dimensions of cultural difference⁹

Understanding the various dimensions of culture allows for a better understanding of how students may interact and participate in class discussion. In some cultures, students may take more responsibility for their learning and some may more readily collaborate.¹⁰ Meanwhile, other cultures may result in students being more hesitant to respond, only speaking up if they believe their comment is meaningful and worthwhile to discuss.¹¹

Gaining input from potential users prior to design is one way in which cultural challenges can be addressed.¹² A working group that reviews for cultural challenges can be implemented prior to final development or during a pilot of the course, dependent on resources and timelines. In some instances, instructional designers may be developing a course that is available to the general public. In this scenario, it may not be practical to gain thorough input due to the variety of cultures that may consume materials. If possible, designers may wish to focus on a primary target audience and gain input from select members of that group.

Localization allows e-learning materials to be exported and adapted for other cultures.

“Research suggests that unless the values of the various cultures for which the learning is intended are taken into account to start with, the quality of the learning experience may be compromised . . . E-learning’s starting point should be an effective learning strategy, developed with cultural diversity in mind.”¹³

Furthermore, “human localization” is a model that can be used in facilitator-led courses as it allows the opportunity for the facilitator or moderator to adapt learning resources to the local needs of

⁹ Dunn, P. & Marinetti, A. “Beyond Localization: Effective Learning Strategies for Cross-cultural E-learning.” In *Globalized E-learning Cultural Challenges*, edited by M. Potter et. al., 255-266. Hershey, PA: Information Science Publishing, 2007.

¹⁰ Ibid.

¹¹ Olaniran, B. “Discerning Culture in e-learning and in Global Workspaces.” *Knowledge Management & E-learning: An International Journal* 1, no. 3 (2009): 180-195.

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.703.5258&rep=rep1&type=pdf>

¹² Ibid.

¹³ Dunn, P. & Marinetti, A. “Beyond Localization: Effective Learning Strategies for Cross-cultural E-learning.” In *Globalized E-learning Cultural Challenges*, edited by M. Potter et. al., 255-266. Hershey, PA: Information Science Publishing, 2007.

culturally diverse learners.¹⁴ This model may be beneficial when a course is developed for one region, and resources allow it to be transitioned for delivery in another region. In this case, the facilitator does need to have awareness of various cultures in the region where the course is to be delivered. Additionally, the facilitator can encourage a “community of practice” within the classroom ultimately allowing the students to negotiate meaning of the content through discussion and in their own cultural context.

Technology can also be utilized to improve communication and collaboration. In a learning environment, but particularly an e-learning environment, it is important to recognize cultural differences and then associate technology use with the existing cultural values.¹⁵ “Cultural difference influence and affect communication interaction such that participation and collaboration over technology media are directly affected.”¹⁶ By providing communication tools, such as virtual classrooms for peer support, e-learning can better serve diverse audiences.¹⁷

Learning style preference

Learning style preference refers to a preferred way in which material is presented (visually, verbal, aural, etc.). Related to culture, research shows that learning style preferences differ across the globe and “failure to recognize some of the specific cultural learning differences can defeat the goal of any education and e-learning.”¹⁸ Within diverse groups, greater variations of learning style preferences exist.¹⁹ Instructional designers “should try to use appropriate instructional strategies considering learners’ different learning styles.”²⁰ Supporting this idea, one study looked at learning style preferences of learners with diverse backgrounds, specifically in an e-learning course focusing on language.

“Language learners are forced to encounter unexpected situations for learning their second language and cross-cultural experiences in language learning environments. Thus, online learning environments need to support second language learners with opportunities to reflect on their cultural background and the culture of the language they are learning.”²¹

The study found that with regard to language learning “there are considerable cases for possibilities of failed communication across cultures between learners and online learning systems as well as among learners.”²² The findings of this study were consistent with previous research that has shown culture “has an impact on the learning style preference that is comparable to that of some of

¹⁴ Dunn, P. & Marinetti, A. “Beyond Localization: Effective Learning Strategies for Cross-cultural E-learning.” In *Globalized E-learning Cultural Challenges*, edited by M. Potter et. al., 255-266. Hershey, PA: Information Science Publishing, 2007.

¹⁵ Olaniran, B. “Discerning Culture in e-learning and in Global Workspaces.” *Knowledge Management & E-learning: An International Journal*. 1, no. 3 (2009): 180-195.

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.703.5258&rep=rep1&type=pdf>

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Ibid.

¹⁹ Song, D. & Oh, E. “Learning Styles Based on the Different Cultural Background of KFL Learners in Online Learning.” *Multimedia-Assisted Language Learning*, 14, no. 2 (2011): 133-154.

<https://pdfs.semanticscholar.org/56a2/859aadd40b26bc27c0abae141f1f623bd943.pdf>

²⁰ Ibid.

²¹ Ibid.

²² Ibid.

the demographic variables.”²³ It is important to note that learning style preference is not dictated by culture and no one preferred learning style works for all students regardless of if they are from the same ethnic or cultural group.²⁴

Regardless of learning style preference, instructional designers must be sure to keep Dual Coding Theory in mind in order to avoid one particular hemisphere of the brain from being overloaded. Students will retain more information if they consume material that is presented in varied learning styles, rather than just one that they prefer.²⁵ Instructional designers can accommodate a broad range of learning styles by “[moving] beyond text-based interactions and [including] visual or kinesthetic modalities, as well as intuition and thinking exercises.”²⁶

Ethical practices

Instructional designers may go through an ethical dilemma when developing course materials. There is potential for one individual to feel excluded and ostracized because they cannot access a course. Equal access extends past accessibility as it refers to abilities. Instructional technologies are constantly evolving, but not all individuals have the same infrastructure in place to be able to access courses in the same way once developed. A conflict arises between accessibility and innovation. “Instructional technology, as a powerful tool to enhance knowledge acquisition and transform the global information infrastructure, can be used to achieve the goals of closing power gaps as well as widening gaps.”²⁷ Societal inequities can be minimized and removed if technology based learning is accessible to everyone.²⁸ Technologies can also be used inappropriately, however, increasing inequities and widening power gaps between those that have resources and power and those that do not.²⁹ In one study of technologists, participants noted that instructional designers/technologists must take the lead on ethical issues when developing innovative courses.³⁰ “We can really do something cool if we don’t care about accessibility, but we have to make sure it is 100% accessible,” one participant noted.³¹ Additionally, “some participants stressed the importance of making materials accessible to a wider array of learners over the importance of using ‘cool’ or fancy instructional techniques. They underscored the ethical obligation of addressing the special needs of people with disabilities.”³²

²³ Song, D. & Oh, E. “Learning Styles Based on the Different Cultural Background of KFL Learners in Online Learning.” *Multimedia-Assisted Language Learning* 14, no. 2 (2011): 133-154.

<https://pdfs.semanticscholar.org/56a2/859aadd40b26bc27c0abae141f1f623bd943.pdf>

²⁴ Mestre, L. “Accommodating Diverse Learning Styles in an Online Environment.” *Reference and User Services Quarterly* 46, no. 2 (2006): 27-32. DOI: <http://dx.doi.org.proxy-um.researchport.umd.edu/10.5860/rusq.46n2.27>

²⁵ Danziger, B. “The Surprising Truth About Learning Styles.” Math Giraffe.

<https://www.mathgiraffe.com/blog/the-surprising-truth-about-learning-styles> (accessed May 5, 2019).

²⁶ Mestre, L. “Accommodating Diverse Learning Styles in an Online Environment.” *Reference and User Services Quarterly* 46, no. 2 (2006): 27-32. DOI: <http://dx.doi.org.proxy-um.researchport.umd.edu/10.5860/rusq.46n2.27>

²⁷ Lin, H. “The Ethics of Instructional Technology: Issues and Coping Strategies Experienced by Professional Technologists in Design and Training Situations in Higher Education.” *Educational Technology Research and Development* 55, no. 5 (2007): 411-437. <https://doi.org/10.1007/s11423-006-9029-y>

²⁸ Ibid.

²⁹ Ibid.

³⁰ Ibid.

³¹ Ibid.

³² Ibid.

As a result of the aforementioned study, strategies to cope with ethical situations were compiled based on frequency of adoption by technologists.³³ The following strategies can be utilized by instructional designers when developing courses, particularly for diverse audiences:

Team communication. Team communication was reported as being the most commonly used strategy to address ethical concerns.³⁴ This strategy involves “setting up a team environment to facilitate collaboration, information sharing, and the discussion of ethical issues.”³⁵

Laws and policies. The second most frequently adopted strategy involves “referencing laws and policies to ensure that rules and guidelines are followed.”³⁶

Management consultation. Instructional designers may wish to consult with their managers “involving effective communication between managers and practitioners, the expertise of the managers, and the chain of command in design and training.”³⁷ Consulting with a higher authority, particularly when laws or policies are unclear, is important in making sure everyone is on the same page with regard to resolving ethical issues.

Professional integrity. While there is no code of ethics as in some professional fields “[maintaining] a sense of right or wrong helps to handle issues with ethical implications appropriately.”³⁸

The adoption of these coping strategies can ensure that ethical dilemmas are handled in a way that puts the learners at the forefront of design decisions.

Adaptive e-learning system

Creating more flexible learning environments allows learning content to more easily reach and connect to diverse individuals. An adaptive e-learning system is “an interactive system that personalizes and adapts e-learning content, pedagogical models, and interactions between participants in the environment to meet the individual needs and preferences of users if and when they arise.”³⁹ Learning experiences in an adaptive e-learning system are tailored to the student’s needs, and can also be configured based upon pre-defined criteria not limited to: education, socio-economic status, time, and user-satisfaction.⁴⁰

Most e-learning systems do not account for students’ varying needs and capabilities and instead provides one version of materials to all. Adaptive e-learning systems allows either a user or system input which then allows the e-learning system to “render its components and interface according to the different requirements.”⁴¹ This ultimately allows content to change based on the identified

³³ Lin, H. “The Ethics of Instructional Technology: Issues and Coping Strategies Experienced by Professional Technologists in Design and Training Situations in Higher Education. *Educational Technology Research and Development* 55, no. 5 (2007) 411-437. <https://doi.org/10.1007/s11423-006-9029-y>

³⁴ Ibid.

³⁵ Ibid.

³⁶ Ibid.

³⁷ Ibid.

³⁸ Ibid.

³⁹ Beldagli, B., & Adiguzel, T. “Illustrating an Ideal adaptive E-learning: A Conceptual Framework.” *Procedia - Social and Behavioral Sciences* 2, no. 2 (2010): 5755-5761. <https://doi.org/10.1016/j.sbspro.2010.03.939>

⁴⁰ Ibid.

⁴¹ Ibid.

preferences. There are four main approaches to adaptive e-learning systems: macro-adaptive, aptitude-treatment, micro-adaptive, and constructivist-collaborative.⁴²

Macro-adaptive. Utilizing the student's profile "learning goals or levels of detail, delivery systems, intellectual abilities and prior achievement, cognitive and learning styles, academic motivation, and personality" are defined.⁴³

Aptitude-treatment. Simply put, this approach adapts instructional strategies to students' aptitudes.⁴⁴ Prior knowledge and performance impact how this approach is implemented.

Micro-adaptive. "This approach requires monitoring the learning behavior of the student while running specific tasks and adapting the instructional design afterwards, based on quantitative information."⁴⁵ Response errors, delays, and emotions may be measured in this approach in order to how material should be adaptive based upon learning behavior.⁴⁶

Constructivist-collaborative. Unlike the previous three approaches, this approach utilizes collaborative technologies, a prominent component in e-learning.⁴⁷ "This approach focuses on how the student actually learns while sharing her/his knowledge and activities with others."⁴⁸

There are two technologies which allow for adaptive e-learning: intelligent tutoring systems and adaptive hypermedia systems. Intelligent tutoring systems use artificial intelligence to generate individual feedback and adapt instruction.⁴⁹ Intelligent tutoring systems are not led by a teacher but "attempt to simulate the 'teacher', who guides the student's lesson flow and uses pedagogical methods appropriate to students."⁵⁰ Adaptive hypermedia systems have three components: data collection, user modeling, and adaptation.⁵¹ After the system collects data to model the user, it then analyzes the user model to determine the student's classification or type, and determines the final adaptation that is presented to the student. Materials can either be adapted at a page level or content level, or adapted by adjusting the behavior of hyperlinks.⁵²

It is important to note that utilizing adaptive e-learning technologies may be cost prohibitive. Adaptations of this "adaptive" system could be retrofitted by using branching and "choose-your-own-path" interactive lessons.

Universal design for learning

Universal design for learning (UDL) "provides the student with multiple means of accessing the course based on three overarching principles: presentation; action and expression; and

⁴² Beldagli, B., & Adiguzel, T. "Illustrating an Ideal adaptive E-learning: A Conceptual Framework." *Procedia - Social and Behavioral Sciences* 2, no. 2 (2010): 5755-5761. <https://doi.org/10.1016/j.sbspro.2010.03.939>

⁴³ Ibid.

⁴⁴ Ibid.

⁴⁵ Ibid.

⁴⁶ Ibid.

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ Ibid.

⁵⁰ Ibid.

⁵¹ Ibid.

⁵² Ibid.

engagement and interaction.”⁵³ This approach to design can be used to identify how lessons can be structured in a way that minimizes barriers and supports mastery of objectives.⁵⁴ UDL has been shown to “[enhance] pedagogy and instructional practices used for students with and without disabilities.”⁵⁵

UDL implementation in e-learning courses can be broken down by the three previously indicated principles. With regard to presentation, or the way in which learners take in information: content should be created prior to design, navigation should be simple and consistent, font and colors should be chosen carefully, and accommodation statements should be provided.⁵⁶ Backwards design allows for keeping the learner at the forefront, allowing the designer to incorporate multiple teaching methods/assessment strategies.⁵⁷ An accommodation statement is typically included in the course syllabus, and encourages self-identification by students requesting assistance, as the onus is on the student to identify their accommodation needs.⁵⁸ In a university setting, the office of Accessibility and Disability Services (or office of similar name and function) would be responsible for providing any assistive technology to a student.⁵⁹ Other organizations may have set policies for handling accommodations. If no policy exists, instructional designers should consult with management in order to determine how their organization handles accommodation requests, with the ultimate goal of creating a formal policy that can be referenced in the future.

When demonstrating what students know, or the action and expression principle, modeling and teaching proper discussion board etiquette is an essential step for implementing UDL.⁶⁰ Students should understand the importance of keeping discussion boards organized and consistent—those using accommodations or assistive technology benefit, but also all students benefit from discussion boards that are organized and lacking extraneous content.

Finally, steps related to engagement and interaction include: carefully choosing Learning Management System (LMS) tools, providing accessible documents, converting PowerPoint presentations to HTML, and making auditory content visual and vice versa.⁶¹

Course design considerations

When designing and developing course materials, there are a number of design best practices to keep in mind.

⁵³ Dell, C.A., Dell, T.F & Blackwell, T.L. “Applying Universal Design for Learning in Online Courses: Pedagogical and Practical Considerations. *Journal of Educators Online – JEO* 13, no. 2 (2015): 166 - 192.

<https://files.eric.ed.gov/fulltext/EJ1068401.pdf>

⁵⁴ Rao, K. & Meo, G. “Using Universal design for Learning to Design Standards-based Lessons.” *Sage Open* 6, no. 4 (2016). <https://doi.org/10.1177/2158244016680688>

⁵⁵ Dell, C.A., Dell, T.F & Blackwell, T.L. “Applying Universal Design for Learning in Online Courses: Pedagogical and Practical Considerations. *Journal of Educators Online – JEO* 13, no. 2 (2015): 166 - 192.

<https://files.eric.ed.gov/fulltext/EJ1068401.pdf>

⁵⁶ Ibid.

⁵⁷ Ibid.

⁵⁸ Ibid.

⁵⁹ Ibid.

⁶⁰ Ibid.

⁶¹ Ibid.

Accessibility

Templates. By creating accessible templates from which to work, the ease of creating accessible content is streamlined. “Typically, teachers use a standard format which has been developed based on a number of years’ experience in delivering material. It is believed that both making the template accessible and following up with a strict process on the content will fuel more accessible content.”⁶² Templates also allow for accessible content development to become routinized.

Pre-recorded videos. Live video streams may need to be avoided, as the cost for live-captioning/live-subtitling is substantial.⁶³ Instead, prerecorded videos are more cost-effective during delivery as they can be captioned/subtitled in advance, and provide the opportunity for the learner to access notes about the video, which may be developed and provided in advance by the course designer or instructor. Lecture videos should have closed captions added and should be broken into smaller segments when possible.⁶⁴

Other considerations

Exclusive language. Analogies, examples, and scenarios should be chosen with care. “Avoiding the use of analogies, examples and scenarios that are exclusive to non-disabled learners have been found to be helpful. For example, using examples like ‘riding a bicycle’ might not be perceived well by learners who are unable to ride bicycle because of their disability.”⁶⁵ Similarly, examples that may be restricted by a disability, such as visuals or audio, may not engage learners that are not able to experience the examples in the same way. “Avoiding use of such examples, scenarios and analogies and using the kind that all learners (both disabled and non-disabled ones) can relate to, helps in enhancing learning attainment.”⁶⁶

Language can hold an exclusive tone with regard to culture. Certain colors, such as red or white, may hold different meaning in various cultures. The color red used as a corrective marking in Western culture is considered inappropriate in some East-Asian cultures, and white symbolizes mourning in Japanese culture, while representing peace and tranquility in other contexts.⁶⁷

Materials that are culturally neutral will best accommodate a diverse audience. Designers should be sure that the content they design is “understandable and relatable, but also respectable to a diverse

⁶² Goodwin, M., Sutherland, I., Roarson, F., & Drange, T. “Assessing the Accessibility of E-learning. *Proceedings of Norsk konferanse for organisasjoners bruk av informasjonsteknologi*: NOKOBIT (2012): 145-158.

<https://ro.ecu.edu.au/cgi/viewcontent.cgi?article=1176&context=ecuworks2012>

⁶³ Ibid.

⁶⁴ Guo, Z. & Wheat, M. Best Practices in Course Design for Diverse Learners. *University of Alabama at Birmingham*. <https://www.uab.edu/elearning/canvas/93-faculty/872-best-practices-in-online-course-design-for-diverse-learners>. (accessed May 4, 2019)

⁶⁵ Boateng, J.K. “Accessibility Considerations for E Learning in Ghana.” *Journal of Education and e-Learning Research* 3, no. 4 (2016): 124-129. <https://files.eric.ed.gov/fulltext/EJ1148508.pdf>

⁶⁶ Ibid.

⁶⁷ Olaniran, B. “Discerning Culture in e-learning and in Global Workspaces.” *Knowledge Management & E-learning: An International Journal* 1, no. 3 (2009): 180-195.

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.703.5258&rep=rep1&type=pdf>

audience,” a practice that instructional technologists report they maintain in order to cope with possible ethical issues.⁶⁸

Interactivity. Interactivity within e-learning is a double-edged sword. That is, there are both positive and negative attributes. Interactive lessons are typically more engaging for learners; however, they may not accommodate a diverse audience and should therefore be planned carefully. “Providing interactive multimedia that allows [students] to choose their topics and customize their paths online may motivate and engage them more.”⁶⁹ By integrating interactivity with other best practices, content can be designed to be both engaging and accommodating.

Conclusion

Instructional designers developing e-learning courses for diverse learners have a number of considerations to keep in mind. Accessibility remains the most prominent aspect when developing courses for diverse groups. However, diversity extends past abilities and designers must consider culture, linguistics, socio-economic status, and other factors such as learning style preference when developing course content. Ethical issues should be addressed early in the design process, maintaining a focus on creating relatable and respectful course content. Utilizing best practices in course design alongside adaptive e-learning and universal design, instructional designers can ensure that their course materials are beneficial to a diverse audience.

⁶⁸ Lin, H. “The Ethics of Instructional Technology: Issues and Coping Strategies Experienced by Professional Technologists in Design and Training Situations in Higher Education. *Educational Technology Research and Development* 55, no. 5 (2007): 411-437. <https://doi.org/10.1007/s11423-006-9029-y>

⁶⁹ Mestre, L. “Accommodating Diverse Learning Styles in an Online Environment.” *Reference and User Services Quarterly* 46, no. 2 (2006): 27-32. DOI: <http://dx.doi.org.proxy-um.researchport.umd.edu/10.5860/rusq.46n2.27>