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Technology Tools for Disabled Online Learners

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Abstract

Technology tools for disabled online learning have been considered in Vietnam to improve four skills for disabled learners at the elementary level. The paper discusses, examines, and analyzes the two research questions: Why is universal design for learning (UDL) a framework for disabled online learning environments? Why is creating accessible education materials (AEMs) easier for disabled online learners when they use them? Data was collected from two class reviews conducted on courses A and B through naturalistic observation and participant observation

qualitative methodology, and the author observed students through two tests: a pre-test and a post-test in one month using Universal Design for Learning (UDL) and accessible educational materials (AEMs). The results indicate multiple means of engagement, including students being active and fond of learning English (using UDL) and students creating accessible videos in order to find the students' treatment. Therefore, it is suggested that Vietnam promotes technological tools for disabled online learners.

Keywords: Disabled Online Learners, Universal Design for Learning (UDL), Accessible Educational Materials (AEMs), Technology Tools

1. Introduction

In inclusive environments, English language teachers must deliver an equitable education to all students. Many students with various disabilities now have access to programs and learning resources that were previously out of their reach or difficult to obtain thanks to online learning (Burgstahler, 2012) ^[4]. Teachers may unintentionally create hurdles for students with disabilities when they fail to take the required steps to make digital spaces as accessible as feasible (Anderson 2020 ^[1]; Burgstahler 2020). It is our duty as educators to comprehend the steps we must take to make sure we can accommodate all of our students in digital learning settings. The article's opening section defines disabled online learning, why online learning for disabled learners is popular, and type of technology tools. The next section focuses on the principles of the Universal Design for Learning (UDL). The final section shows the accessible educational materials (AEMs).

2. Literature Review

In this literature review, the article consists of definitions of disability, why online learning for disabled learners is popular, and types of online technology tools for engaging disabled learners.

2.1 Defining Disability

A variety of opposing definitions have existed historically (Davis 2018) ^[9], some of which were created for legal objectives and others for medical ones. Davis shows that "disability is an unavoidable outcome of living" (1995, 8) and similarly, Dolmage has written "there is no perfect body or mind. And there is no normal body or mind" (2008, 17). In other words, Davis, 2008 states, "everyone faces limitations, and some might face more-severe limitations at different times in life through age, illness, or other unexpected occurrences". As a result, no one is completely "able", students with disabilities have the common curriculum in the general education classroom (Bryant, Bryant, and Smith 2019; Mastropieri and Scruggs 2017) ^[3, 14]. I used Murray Schultz and Cabrera's (2016, 116) ^[16] definition for this article since it encompasses psychological, mental, and physical impairments, all of which might affect a student's performance on academic tasks:

The term "*disability*" refers to various variances in physical, sensory, learning, medical, and psychological abilities that are referred to as disabilities. Physical impairments can be present at birth or develop later in life and include conditions like spine and acquired amputation. Vision and hearing are both affected by sensory impairments. Learning difficulties, such as dyslexia, attention disorder, and hyperactivity disorder, have an impact on how information is gathered, processed, and communicated.

Medical conditions that affect one or more body systems include epilepsy and diabetes. Depression, illness, and post-traumatic stress disorder are examples of psychological disorders.

2.2 Why Online Learning for Disabled Learners is Popular

Online instruction was once considered an expertise that, as it were; instructors with specialized preparation could carry out. Whereas it could still be genuine that online learning can make strides through preparation and access to certain sorts of gear, with the current state of innovation and common access to it, most instructors can presently do and carry out online classes reasonably effectively. Indeed, in face-to-face classes, computerized advances are frequently a portion of the course (Hashey and Stahl 2014) [12].

Online classes might communicate with educators and other online classes through a learning administration framework (LMS); first, these classes might communicate about almost

every course by means of social media, and the teachers might yield assignments through an LMS or e-mail. The later, broad switch to online instruction has propelled numerous teachers headlong into learning how to effectively carry out online instruction. While these students are receiving or upgrading abilities for instructing online, they ought to give consideration to understanding how to accommodate students with disabilities in a computerized learning environment. When these online classes do not force all students, a few students are in learning situations. We offer backs for all needs, with or without disabilities (Anderson, 2020) [1].

2.3 Types of Online Technology Tools for Engaging Disabled Learners

This article assumes Table 1. Technology tools for engaging disabled online learners.

Table 1: Technology tools for engaging disabled online learners ((Rapp, 2014; Coombs, 2010; National Center on Accessible Educational Materials 2020; Kolb, 2017; Nilson and Goodson, 2018; Bruce *et al.* 2013; Hasley and Stahl, 2014; Pawan, 2016)) [20, 7, 17, 13, 18, 2, 12, 19]

Names of online technology tools	Functions of online technology tools to engage disabled online learners
Google classroom/ Canvas/ Schoology	Assign work, post class announcements, collect student work, and post grades.
Kahoot	Quiz students on recently learned material.
Quizlet	Make interactive flashcards.
Flipgrid	Share videos on various topics.
Google docs	Give learners a platform for written collaboration.
Socrative	Provide students a platform for teamwork, collaboration, and instant feedback.
YouTube	Access and post educational videos.
Zoom	Videoconference with your learners.
Jamboard	Collaborate on a share whiteboard space.
Nearpod	Create polls and quizzes, solicit response to open-ended questions, and access pre-created lessons.
Padlet	Communicate via an online digital bulletin board for purposes such as group discussions, collaborative brainstorming, and problem-solving activities.

2.4 Universal Design for Learning (UDL)

UDL is an instructive system based on the building concept of an all-inclusive plan, in which spaces are built to be as open as conceivable (Mt. SAC Library 2022) [15]. UDL employs an assortment of strategies and methods to provide learning for all students, not just those with disabilities (Coombs 2010; Gilbert 2019; Rapp 2014; Scott and Edwards 2019) [7, 11, 20, 21]. (For a discussion of UDL standards within the English dialect classroom alongside thoughts for making a difference for students with learning incapacities, see Sowell and Sugisaki 2020 [22]. Online learning is one of the platforms that benefits from UDL (Coombs 2010) [7].

2.5 Accessible Educational Materials (AEMS)

AEMS (also called available directions materials) are learning materials and innovations outlined to supply learning for all learners. AEMs could be designed to be open from the beginning, or they can be altered for openness (National Center on Available Instructive Materials, 2020). Making AEMS is fairly simple, in spite of the fact that it requires a small amount of additional exertion (Clark 2002) [6]. Once making AEMs gets scheduled, in any case, it may be an ability that will appear as ordinary planning learning materials.

3. Methodology

3.1 Aim of the Study

This article examines and analyzes the two research questions.

1. Why is universal design for learning (UDL) a framework for disabled online learning environments?
2. Why is creating accessible education materials (AEMs) easier for disabled online learners when they use them?

3.2 Qualitative Approach Methodology

Qualitative approaches-naturalistic observations and participant observations-are subjective investigation strategies.

The qualitative approach, observations, is utilized as an instrument for an in-depth comprehension of this field of inquiry to meet the study’s objectives and goals. According to Murray, Schultz, and Cabrera (2016) [16], the qualitative investigation strategy is the finest strategy for investigating social and social wonders since it concerns understanding individuals and the social and social settings in which they live, as well as why individuals carry on the way they do: their information, states of mind, convictions, and fears. According to Murray, Schultz, and Cabrera (2016) [16], utilizing the qualitative procedure is the perfect way to assess and analyze essential and auxiliary materials since it is, as it were, the choice that can be considered in creating quality and rectifying it. The representation of disabled online characters of learners in observations (naturalistic observations) when disabled online learners respond to their technology tools (see Table 1) in a "real-life" setting when these students do not influence their behavior in any way In addition, the researcher immerses herself in the participant group for one month when they use technology tools in English.

3.3 Qualitative Research Design

To assemble pertinent data for this pondering, qualitative methodologies were utilized. According to Murray, Schultz, and Cabrera (2016) [16], qualitative research could be a common investigation procedure in social inquiry, in which the investigation starts with an insider's perspective on social activity. This strategy was chosen for an assortment of reasons, including that it emphasizes the respondent's point of view, considers people's elucidations, permits adaptability, is sensitive, does not emphasize issues such as unwavering quality or decency in its research, and centers on forms instead of results. In any case, one of its inadequacies is that it is subjective; one cannot generalize using this approach.

3.4 Research Procedure

Method of the Research

A research approach is utilized in this consideration since it is an endeavor to analyze disabled online learners' elementary level in four skills: listening, reading, speaking, and writing in significant speculations. The social background and individual behavior of disabled online learners' characters in learning four skills with technology tools (Table 1) are inspected utilizing scholarly hypotheses. The impacts of disabled online learners' socialization forms on the elementary level in four skills with technology tools are explored. Murray, Schultz, and Cabrera (2016) [16] characterizes accounts as verbal acts comprising somebody educating somebody else that something happened, in spite of the fact that Murray, Schultz, and Cabrera (2016) [16] acknowledge that the term story can apply to any talked-about or composed introduction.

Place and Time Research

This investigation will be conducted in the classroom of a junior disabled online school in Ho Chi Minh City for disabled online English learners at the elementary level in four skills with technology tools (Table 1). The writers selected this school because other analysts never watched it. The study will be conducted in April 2022.

Population and Sample

The population is a set of all cases, circumstances or people who share in most characteristics. The investigation of this investigation will be conducted by disabled online learners at elementary level in four skills with technology tools (Table 1). The test is an arbitrary test. This school has eleven classes, but the analyst will take two classes from the 2nd review conducted on course A and B; that's lesson A comprised of 40 students on the test course and lesson B comprised of 40 students for the controlled course (Using UDL and AEMs to answer two research questions).

The Research Instrument

In this article, the author observes that beginning disabled learners in one month with two tests and posts are pre-test and post-test. Pre-test will be given for some time. Recently, the author is taking the treatment within the course, and a post-test will be given after the author wraps up taking the

treatment within the lesson by using technology tools (Using UDL and AEMs to answer two research questions). So, the author knows there are contrasts some time recently and after treatment or not. The test given by the author to the students: clearing of the table with the meaning and the sentences approximately the words. The test is given to degree students' lexicon authorities.

The Technique of Data Collecting

The analyst will collect the information utilized on the instruments, and there are tests with technology tools.

The analyst will utilize this technique to get information from the students. Tests could be a strategy of measuring a person's capacity, information or execution in a given space. A few test degree common capacity, whereas others center on exceptionally specific competencies or objectives (Murray, Schultz, and Cabrera, 2016) [16]. The test will utilize to degree the students' levels.

The analyst will utilize tests to relate to English learners' levels. The test will be displayed to the students who learn English skills. The analyst will utilize pre-test and post-test. For the pre-test, the analyst will inquire about the students' levels at the beginning of a one -month course with technology tools in four skills and after that the analyst will inquire about students around the test on another day. For the post-test, the analyst will give a few papers with columns and columns and ask the students to fill in the test in four skills using technology skills that they get in the lesson and, after that, the students ought to make a few sentences similar to the key points in the test, after that the analyst will inquire the students approximately the key points they get on the another day (Using UDL and AEMs to answer two research questions).

Data and Sources of Data

In conducting this consideration, the analyst will conduct some observations on them. And doing a few tests in the classroom.

3.5 Data Analysis

All students in my study were evaluated using watching, listening, and interacting with students at the elementary level on four skills through technology tools, especially when the students using technology tools gave a pre-test and post-test. Validity and reliability, in particular, were validated prior to this investigation.

4. Results and Discussion

The two sub-sections of observations are naturalistic observations and participants' observations collected from collecting data using students' senses, especially looking and listening in a systematic and meaningful way" by students (Murray, Schultz, and Cabrera, 2016) [16].

The topic stands out with two research questions:

1. *Why is universal design for learning (UDL) a framework for disabled online learning environments?*

This section explains the reasons for using UDL as a framework for disabled online learners.

Table 2: Reasons for using UDL as a framework for disabled online learners

	Reasons	Examples	Notes
Provide multiple means of engagement	Learners respond to learning tasks and situations through technology tools (Table 1).	Different types of assignments and interaction patterns (Nearpod, Padlet, Google classroom, Canvas, Schoology, Kahoot)	Changing activities or methods every ten minutes.
	Learners are provided with multiple ways to be active through technology tools (Table 1)	Share videos (Flipgrid, Youtube, Zoom) Share flashcards (Quizlet) Share a platform (Google docs, Socrative, Jamboard)	For example, do not show a video because it is fun (it helps achieve a learning goal)

Students use Universal Design for Learning (UDL) as a framework for online learning environments for disabled students to provide multiple means of engagement. First, students achieve a lot of diversity in engagement in their courses depending on technology tools (Table 1), for which the author analyzes two reasons with examples of technology tools. Besides, the author gives two important notes about activities through technology tools. The learners change activities or methods every ten minutes. In addition, the author warns about sharing videos and technological tools with disabled online learners.

2. Why is creating accessible education materials (AEMs) easier for disabled online learners when they use them?

Creating education materials (AEMs) is necessary for disabled online learners at elementary levels in four skills with technology skills (Table 1).

The author guide to creating accessible education materials (AEMs) is an easier way for disabled online learners to use the accessible education materials below:

Creating Accessible Videos

Utilizing recordings could be an awesome way to personalize online learning (Nilson and Goodson 2018) [18]. This area addresses ways to ensure beyond any doubt that your recordings are open to all students.

Length of recordings including closed captioning for your recordings. Closed captioning makes your recordings available to a larger group of onlookers. Captioning, not as it were, makes a difference to students who are hard of hearing or hard-of-hearing, but it also makes a difference. All students should survey and keep in mind.

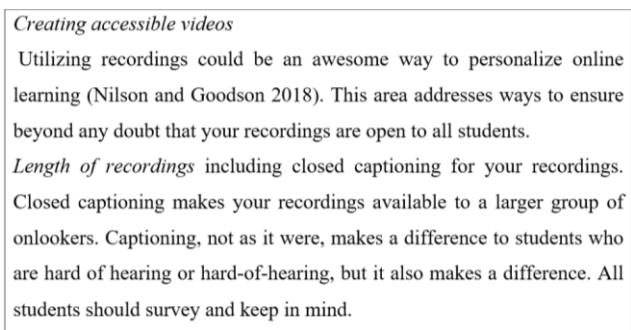


Fig 1: Pre-test and post-test sections heading created in Styles

In this research, the author employed observations in the pre-test and post-test to get the information. Two classes are included in this inquiry. They are a test class and a control class. The author explores a course composed of the students who get treatment. However, the control lesson was not. Both classes received a pre-test for whatever instrument was utilized to assess the effect of the observations.

Recently, treatment has been given. To make this research clearer, the writer provides the inquiry as follows:

Table 3: Observations in the pre-test and post-test

S. No	Class	Pre-test	Treatment	Post-test
1	Test class	X	X	X
2	Control class	X	0	X

5. Conclusion

Numerous of us as teachers may not have gotten pre-service or in-service training to prepare to give compelling instruction for students with inabilities; definitely, in spite of the fact that most of us will have students with incapacities in our classes, there may be more students with incapacities on online courses than face-to-face classes. Indeed, in the event that we are not taking online classes, we will most likely utilize a few innovations in our education. We ought to make sure beyond any doubt that the choices we make give equal access to learning for all students and do not cause obstructions for any understudy. Utilizing UDL and AEMs as a system, we will plan lessons, exercises, and materials that oblige as widely as possible. This article was composed to provide the basics for accommodating students with disabilities in online settings. As teachers, we ought to grasp the challenge of ceaselessly learning how we will best lock in and bolster students in four skills with technology tools (Table 1) and create the results (Tables 2, 3 and Fig 1).

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7. References

1. Anderson G. Accessibility suffers during pandemic. Inside Higher Ed, 2020. <https://www.insidehighered.com/news/2020/04/06/remote-learning-shift-leaves-students-disabilities-behind>
2. Bruce D, Di Cesare DM, Kaczorowski T, Hashey A, Boyd EH, Mixon T, et al. Multimodal composing in special education: A review of the literature. Journal of Special Education Technology. 2013; 28(2):25-42.
3. Bryant DP, Bryant BR, Smith DD. Teaching students with special needs in inclusive classrooms. 2nd ed. Los Angeles: SAGE, 2019.
4. Burgstahler S. "Working Together: People with Disabilities and Computer Technology." Disabilities, Opportunities, Internetworking, and Technology Center. University of Washington, 2012. <https://www.washington.edu/doi/working-together-people-disabilities-and-computer-technology>

5. _____. A Tutorial for Making Online Learning Accessible to Students with Disabilities. Disabilities, Opportunities, Internetworking, and Technology Center. University of Washington, 2020. <https://www.washington.edu/doit/tutorial-making-online-learning-accessible-students-disabilities>
6. Clark J. Building accessible websites. Indianapolis: New Riders, 2002.
7. Coombs N. Making online teaching accessible: Inclusive course design for students with disabilities. San Francisco: Jossey-Bass, 2010.
8. Davis LJ. Enforcing normalcy: Disability, deafness, and the body. New York: Verso, 1995.
9. Davis LJ, ed. Beginning with disability: A primer. New York: Routledge, 2018.
10. Dolmage J. Mapping composition: Inviting disability in the front door. In Disability and the teaching of writing: A critical sourcebook, ed. C. Lewiecki-Wilson and B. J. Brueggemann. Boston: Bedford/St. Martin's, 2008, 14-27.
11. Gilbert RM. Inclusive design for a digital world: Designing with accessibility in mind. New York: Apress. Guo, P. J., J. Kim, and R. Rubin. 2014. How video production affects student engagement: An empirical study of MOOC videos. In Proceedings of the first ACM conference on Learning at Scale. New York: Association for Computing Machinery, 2019, 41-50. <http://up.csail.mit.edu/other-pubs/las2014-pguo-engagement.pdf>
12. Hashey AI, Stahl S. Making online learning accessible for students with disabilities. Teaching Exceptional Children. 2014; 46(5):70-78.
13. Kolb L. Learning first, technology second: The educator's guide to designing authentic lessons. Portland, OR: International Society for Technology in Education, 2017.
14. Mastropieri MA, Scruggs TE. The inclusive classroom: Strategies for effective differentiated instruction. 6th ed. New York: Pearson, 2017.
15. Mt. SAC Library. Universal Design for Learning (UDL), 2022. <https://mtsac.libguides.com/udl>
16. Murray TA, Schultz SM, Cabrera NL. Choice versus transition: The college choice process for students with disabilities. Journal of the First-Year Experience & Students in Transition. 2016; 28(2):115-135.
17. National Center on Accessible Educational Materials. Top 10 Tips for Creating Quality Video. Accessed June 5, 2022, 2020. <https://aem.cast.org/binaries/content/assets/common/publications/aem/tips-quality-video-2020.pdf>
18. Nilson LB, Goodson LA. Online teaching at its best: Merging instructional design with teaching and learning research. San Francisco: Jossey-Bass, 2018.
19. Pawan F. Applying universal design for learning to inclusive teacher education in an intensive online workshop. In Pedagogy & practice for online English language teacher education, ed. F. Pawan, K. A. Wiechart, A. N. Warren, and J. Park. Alexandria, VA: TESOL Press, 2016, 29-44.
20. Rapp WH. Universal design for learning in action: 100 ways to teach all learners. Baltimore, MD: Paul H. Brookes, 2014.
21. Scott SS, Edwards WA. Disability and world language learning: Inclusive teaching for diverse learners. New York: Rowman & Littlefield. Simpson, E. 2013. Clearing up accessibility for distance education administrators: Accommodating the new students. Evollution, February 19, 2019. <https://evollution.com/opinions/clearing-up-accessibility-for-distance-education-administrators-accommodating-the-new-students/>
22. Sowell J, Sugisaki L. Universal design for learning as a framework in online contexts. Difference and Disability Matters: The Newsletter of Supporting Students with Disabilities Interest Section. TESOL International Association. November, 2020. http://newsmanager.commpartners.com/tesolsswdis/issues/2020-11-05/3.html?fbclid=IwAR20m56rgAh-XL5T2fR88gTEpNz7YSbG-IKWJaxryf4_d2pLgcmV_a9_KU42021. Accommodating learning disabilities in the English language classroom. English Teaching Forum 59 (1): 2-11.