

Adult and Youth Students' Perceptions of Distance vs. Face-to-Face Courses' Effectiveness in the COVID-19 Pandemic

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Abstract: On account of its contagious nature, COVID-19 has resulted in various containment measures and mandatory isolation, affecting the personal interaction between students and instructors tremendously. In the absence of face-to-face interaction and traditional classroom teaching, computer-based learning has come out as the closest substitute for offline teaching. In addition, adult and youth students' perceptions of courses' effectiveness towards online learning as compared to traditional face-to-face learning have largely been overlooked and thus should be designed based on the needs of adult learners. This paper aims to fill this void in the literature, presenting results indicating all students' positive perceptions towards e-learning and thus acceptance of this new learning system. It also empirically demonstrates the significance of e-learning in the time of this COVID-19 crisis. The results also point out surprising differences in students' perceptions of the importance of communications and collaboration, effectiveness, and self-efficacy, and surprisingly differences exist between the performances of youth and adult learner groups. Under the current debates on the cost and teaching quality of higher education, the findings herein should help educational institutions in their improvement of higher education and student enrollment and retention.

Key words: Student perceptions, online learning, adult learner, COVID-19, traditional classroom learning.

1. Introduction

The swift improvement of information technology and Internet in recent years has hugely changed the manner that people learn, and this trend will not subside [1]. Under the prevailing scenario of the COVID-19 pandemic, momentum has been achieved by the contribution of information technology on account of closures of educational institutions, thus raising challenges for students' learning. At the same time, the number of adult learners has been growing on campuses in Taiwan. Such learners are seeking courses that are flexible and fast paced and that allow them to meet their educational goals while still balancing work and family responsibilities. Online education has emerged as an effective and increasingly common alternative to face-to-face instruction in post-secondary education [2], [3]. Web-based pedagogy is thus a critical factor affecting institutes of continuing education in Taiwan. As technology has improved, the delivery of online learning has changed significantly, and online distance education is appealing to non-traditional adult learners due to the benefit of being able to study at any time and at any place. In uncomplicated terms, online learning relates to a form of distance education where all courses are entirely

delivered to the learners via the Internet [4]. In this respect, this type of teaching differs from traditional face-to-face learning where students must be in a classroom physically.

The number of students who enroll in distance courses has been rising dramatically and steadily during the COVID-19 pandemic. Potential opportunities to open new markets up for higher education institutions are provided by distance education. Khan *et al.* indicated that students are anxious for more possibilities to employ technology in their learning surroundings [1]. While online courses bring new opportunities, they also bring new challenges to both teachers and students. Many adult learners enjoy the flexibility when they have to balance work, study, and family responsibilities. Most of the literature concerning students' perception of distance courses, both blended and entirely online, involves students who have enrolled in online courses. Some articles address comparisons of perceptions between face-to-face and online students regarding distance education [2], [5]. However, scant studies have been conducted that only address adult and youth students and that cover many aspects of the online experience [5], [6]. Thoroughly investigating this topic should stimulate an ongoing discussion of effective practices that can enhance universities and faculty success in transitioning to teach online for different age groups in the context of the coronavirus pandemic.

An important aspect of effective online instructional design is the development of learning activities that stimulate students' learning motivation. Studies of students' perceptions of online courses can be divided roughly into two spheres: those that argue that learners' perceptions are influenced mainly by instructor quality, and those that argue that learners' perceptions are more affected by course design quality [7], [8]. There have been many vigorous debates and in-depth studies on the differences between online and face-to-face classroom teaching, but this is not a focus of the present study. Instead, this study's focus is on examining the positive aspects and adult and youth students' perceptions of distance and face-to-face courses' effectiveness and how they have been implemented successfully. In doing this, it is hoped that this will stimulate an ongoing discussion of effective practices that can enhance universities and faculty success in transitioning to teach online in the context of the coronavirus pandemic.

According to the findings of Sun and Chen, future research should also be conducted on student experiences, motivators for participation, and perceptions of relative strengths and weaknesses of various aspects of online education [3]. The purpose of this study is to compare and analyze adult (at least 26 years old) and youth (25 years old and younger) students' perceptions of the effectiveness of online courses in an institute of continuing education. Specifically, the researchers sought to explore learners' perceptions of what are the useful and challenging components in learning online. Course effectiveness was analyzed using the following concepts: flexibility, user interface, navigation, getting started, technical assistance, course management, universal design, communications, online instructional design, and content. This study continues with a review of the literature related to online learning and presents the research design and methodology, as well as the model and hypotheses used in this work. It then gives the results of this work, followed by a discussion of them, as well as the implications of this work and suggestions for further research.

2. Literature Review and Hypotheses

Online learning, a major subset of distance education, encompasses a set of flexible teaching and learning tactics that seek to provide greater access to learning for all students through the use of technology [2], [9]. In order to accommodate an increased number of learners and greater demands for flexibility, universities in Taiwan are delivering a growing number of their courses via the Internet.

2.1. Adult and Youth Online Learners

Adult learners and the ways in which they learn best have been topics of studies since the 1920s, when

adult education became a professional field of practice [10], [11]. Adult learners bring to the learning environment a wealth of experience, as well as very clear ideas about themselves as learners, their expectations from the learning situation, and pre-conceived ideas about what constitutes learning and teaching. Sun and Chen, in their study of online adult learning, pointed out that cognitive presence in adult learners was about how they perceived their learning satisfaction [3]. They return to education seeking specific identifiable goals and usually expect an education that is either related to a job or a life situation and which stresses the application of knowledge rather than theory [12], [13]. In contrast, youth learners have the characteristics of being subject- and future-oriented and are more likely to accept new information without trying it out or seriously questioning it. They obtain an education that prepares them for an often unclear future and thus accept postponed application of what is being learned.

Studies of student perceptions of online courses that require them to reflect on their experiences have yielded varied results. In a follow-up study, Lampitt and Crawford-Ferre & Wiest highlighted the need to consider individual differences, to include students' learning styles, learning orientations, preferences, and needs in learning to enable them to engage in and be responsible for their own learning, to retain information longer, to apply the knowledge learned more effectively, to have positive attitudes towards the subject, to be more interested in learning materials, to achieve higher scores, and to have a greater level of intrinsic motivation [14], [15]. Therefore, an effective instructor should recognize learners' individual characteristics.

According to Chou and Capdeferro & Romero, perceptions of online course communication and collaboration refer to opinions and feelings about the skills needed so that they are able to transfer their information, knowledge, and learning from theoretical forms to real life experiences [16], [17]. Student attitude is a significant predictor of frustration. Moreover, computer-mediated instruction requires students to take responsibility for their own learning more than traditional instructional approaches [18], [19]. Therefore, the following is hypothesized.

Hypothesis 1: There is a significant difference between adult and youth learners' satisfaction with online course communication and collaboration.

Experiential learning is a concept central to continuing education. Adults bring to the learning environment a wealth of experience. Indeed, Cercone, Bane and Zhang & Zheng indicated that the teaching of adults should be grounded in learners' experiences, so that they can see the possible future implications of what they are learning [20]-[22]. Therefore, the following is hypothesized.

Hypothesis 2: There is a significant difference between adult and youth learners' who do not have any prior online learning experience.

2.2. Perceptions of Online Learning Effectiveness

Previous research has found that students who have a positive opinion of their online experiences are more inclined to enroll in additional online courses [2], [23]. The debate about learner perceptions of online courses can be divided roughly into two spheres: those that argue that learner perceptions are influenced mainly by instructor quality, and those that argue that learner perceptions are more affected by course design quality [8], [24]. Although numerous studies have stated that the effectiveness and perceptions of online education are important issues, few have explored learners' perceptions of online learning, particularly in terms of perceived strengths and weaknesses.

One way of addressing the quality concerns of online instruction is to survey the perceptions of online learners taking these courses. Online learning can occur through meaningful interactions with other students and the lecturer using online communication facilities. Students typically are actively encouraged to engage with the online learning materials within a predetermined structure. However, Maxfield found students were frustrated with the instructors' poor online skills, lack of course expectations, information

overload, impersonal communication, and tardy feedback [25]. Mortagy & Boghikian-Whitby and Eichelberger & Ngo evaluated students' perceptions in three distinct areas: faculty-student relationship, satisfaction with course activities, and student-to-student interactions [26], [27]. Perceived effectiveness was chosen, because of the difficulties of measuring learning, and perceived learning contributes to our knowledge of learning effectiveness. Thus, in this work we analyzed students by age (adult and youth) and the impact of their perception of curriculum and instruction, course structure, and technology course elements. According to Kirby & Sharpe and Eichelberger & Ngo, as the demand for online learning has grown, some researchers have directed their efforts toward better understanding the characteristics and perspectives of online learners [27], [28]. Therefore, we propose the next hypothesis.

Hypothesis 3: There is a significant difference between adult and youth learners' perceptions of online course effectiveness.

According to Siragusa, Dixon, and Dixon, the key factors in the success of online students include persistent effort, internal locus of control, and self-efficacy [29]. Imhof, Vollmeyer and Beierlein suggested that individuals with higher computer self-efficacy tried more different actions (as opposed to repeating the same steps over and over) and had a higher probability of solving a task than individuals with lower self-efficacy scores [30]. Therefore, the following is hypothesized.

Hypothesis 4: There is a significant difference between adult and youth learners' satisfaction in the level of self-efficacy with regard to online courses.

3. Research Design and Methodology

3.1. Research Conceptual Framework

We compared different students' perceptions of online courses as well as their satisfaction with learning via online distance education. Our article profiles the evolution of a fully online course designed for adult and youth learners in our university's institute of continuing education in Taiwan. This research integrated elements of the effectiveness models in Coman *et al.*, Eichelberger & Ngo and Kirby & Sharpe [23], [27], [28]. Based on our own observations and experiences teaching adult and youth learners online, we examined whether the online learning environment presents different challenges and opportunities for adult and youth learners. The model used in this work and the hypothesized causal links are explained in detail below.

3.2. Measure Development

To better understand the importance of the perceptions of online course effectiveness, the subsequent review has been organized into the following sections: introduction of an assertion concerning online courses and practices of online learning; students' perceptions of online course effectiveness; and instructors' perceptions of online course effectiveness. All of the survey items employed a five-point Likert scale multiple choice response format, with values of strongly agree, agree, normal, disagree, and strongly disagree.

3.2.1. Perceptions of online course communications and collaboration

An 11-item scale was included in the survey, based on Barnard, Paton, and Rose, to assess student perceptions of online course communication and collaboration [31]. Examples are: "Online communication with my instructor helped with the learning process in the online course", "Online communication with my classmates helped with the learning process in the online course", "I felt like I was part of a community with my classmates in my online course", and "I will keep in contact with some of my classmates when my course/degree is finished".

3.2.2. Experiential learning

Ertmer and Ottenbreit-Leftwich and Ismail *et al.* noted that students in different disciplines tend to have

different beliefs about what it means to learn [32], [33]. The four-item scale included in the survey was based on Rodriguez, Ooms, and Montañez was used to assess the experiential learning component of student online course [34]. The items were as follows: "I have many experiences with online courses", "How many online courses have you taken?", "Do you feel that courses delivered entirely online meet the same quality standards as classroom courses?", and "Would you consider registering for another online course if the topic was of interest to you?"

3.2.3. Learners' perceptions of online course effectiveness and satisfaction

The effectiveness of online course communications and collaboration was measured using the following statements adapted from O'Malley and McCraw: "Most people believe that online courses are more effective than traditional methodologies", "In a course with both traditional and online course methodologies, I learn better through the online course portion", "I prefer online courses to traditional courses", "I believe that I can learn the same amount in an online course as in a traditional course", and "I believe that I can achieve the same grade in an online course as in a traditional course" [35].

For the final survey construct of satisfaction with online learning, a two-item scale was adapted from a scale designed by Walker and Leary: "Overall, to what extent are you dissatisfied or satisfied with the online course(s) you have taken?" and "What do you like most about taking online courses?" [36]

3.2.4. Self-efficacy

Self-efficacy is defined as people's judgments of their capabilities to organize and execute the courses of action required to attain designated types of performances (Berenson, Boyles and Weaver, 2008). A five-item scale included in the survey was based on Siragusa *et al.* and used to assess self-efficacy, containing the following items: "I am willing to speak up when I have a problem with my online learning", "I expect to achieve good results for my assignments", "I believe I will complete my studies", "I interact effectively with peers in the online environment", and "I take more responsibility for my own learning when studying online" [29].

3.3. Research Context

A total of 112 undergraduate students from the University of Kaohsiung, Taiwan took part in the study. Each of the students in the sample signed up for and completed one or more online courses since entering university in 2010. Two classes of students who enrolled in a course called "Introduction to Management" made up the sample. Class A had 54 (youth) students without any work experience, and class B had 58 (adult) students with five to 10 years of work experience. The two classes had the same instructor, and the web-based learning lasted for 18 weeks. During the online learning, students signed up in groups of about five as a team, collaborating in learning the instructional content, finishing the tasks assigned on the worksheet for each unit, and accomplishing a final research project to fulfill the course requirements. In the online discussion forums, students were able to respond to information posted to specific individuals or the group. With regard to the analysis of students' characteristics in relation to their web-based actions, the primary data sources used in this study were from the postings of online discussion forums. Students' interactions with their peers and their instructor were documented for further content analysis. To reference the responses, the students' postings were coded according to their ID numbers followed by their group number and date of posting.

4. Methodology

4.1. Data Collection Procedure

Two groups participated in this study: instructors teaching community college-level online courses and students enrolled in community college-level online courses. Of the 556 students in the sample, 541 were

successfully contacted and interviewed during the autumn 2020 semester, for a response rate of 97%. In addition to the five dimensions outlined above, the questionnaire also included some open-ended questions to gather details of the respondents' background information and intentions to continue studying the online course. The questionnaires were administered by online education lecturers in the school and were completed by the students in the lecture class during the two-week intensive course. The lecturers were provided with a guide to ensure that the questionnaires were properly administered and completed. They were specifically requested not to interfere in any way with the students' answers.

The characteristics of the participants in the study include having taken at least one course that was taught primarily online. In this study, 541 learners participated in the survey, 278 of the participants were aged under 26 years old, and the remaining 263 were 26 years or older. There were 247 (45.7%) females and 294 (54.3%) males. Among those interviewed, 296 students (54.7%) had completed high school online distance courses, and the remaining 245 (45.3%) had not. There were significant differences between subjects in age (youth and adult) with regard to completing online courses (X^2 Test p value is 0.003).

4.2. Data Analysis

Analysis of the pre-test/post-test data was completed using SPSS 23.0, based on the frequency and percentage distributions. Frequencies were run to determine the distribution of the demographic profile and mean values for the Likert-type questions. First, the reliability of each of the multi-item constructs included on the survey was estimated using Cronbach's α coefficient of reliability. Next, a one-way ANOVA was used to measure mean differences between adult learners and youth learners. The survey data were entered into the program, and repeated measures of ANOVA were performed to identify responses with statistical significance ($p < 0.05$).

5. Results and Analysis

5.1. Reliability and Validity Tests

Table 1 lists the mean scores and Cronbach's α values for each of the composite variables assessed by the survey. In each case, Cronbach's α values for the latent constructs were 0.70 or better, indicating a high degree of inter-item reliability and acceptable standard of agreement for this type of research (Nunnally, 1978). Specifically, Cronbach's α of each construct was greater than 0.9172, which indicates a strong reliability for the survey instrument. Since the item-to-total correlations of each measure was at least 0.6535, the criterion validity of each scale in this study is considered to be satisfactory. Table 1 shows the descriptive statistics for each dimension.

Table 1. Mean Scores and Cronbach's α Values for Composite Variables

Variable (Number of items per dimension)	Cronbach's α	Mean Scores		
		Youth learners	Adult learners	Total
Communications and Collaboration (11)	0.9172	3.1513	3.3521	3.2416
Experiential Learning (4)	0.9322	2.9121	2.8147	2.8314
Perceived Effectiveness (5)	0.9301	3.0559	3.5219	3.3472
Perceived Satisfaction (2)	0.9179	3.2995	3.1653	3.2015
Self-efficacy (5)	0.9295	3.4529	3.0152	3.1982

5.2. Differences in Students' Perceptions of Online Course Effectiveness

The mean scores for each of the survey constructs were very similar for the adult and youth learners.

Overall, the survey respondents tended to perceive themselves as effective learners with high levels of self-efficacy with regard to their participation in online education courses.

Turning to learners’ perceptions of online course communication and collaboration, the overall score of 3.24 for this variable suggests that the respondents held a slightly positive view of the communication and collaboration occurring in online courses. Youth learners in the online course had a significantly lower mean satisfaction rating (3.15) than the adult learners (3.35). A similar score of 3.20 for perceptions of satisfaction with online education suggests that the learners who participated in the study were more or less satisfied with their distance education course experiences. The youth learners in the online course had a significantly higher mean satisfaction rating (3.29) than adult learners (3.16).

With regard to the self-efficacy behaviors assessed by the survey, the students most strongly agreed that they tended to regulate their learning environments when taking an online course. They also agreed that they proactively set goals for their learning in such courses. They also interacted effectively with their peers in the online environment, and most agreed that they used self-regulated learning strategies, such as taking more responsibility for their learning.

The results of the ANOVA indicate that there were significant differences between the adult and youth learners on all of the measures included in this study. The findings of the survey are presented below, with most of the evaluation measures focusing on the subjects’ perceptions of the online course.

Table 2. Significant Differences between Youth and Adult Learners

Variable	F value	P value
Communications and Collaboration	7.95	0.005**
Experiential Learning	3.01	0.082
Perceptions of Effectiveness	12.59	0.000***
Perceptions of Satisfaction	4.13	0.051
Self-Efficacy	9.78	0.001**

*p < 0.05; ** p < 0.01; *** p < 0.001*

To see if any significant differences exist between the youth and adult learners, analyses were undertaken with regard to the items examining communication and collaboration, experiential learning, perceptions of effectiveness, perceptions of satisfaction, and self-efficacy. It is notable that the p value is very close to the 0.05 significance level for the construct measuring student perception of distance course satisfaction. Therefore, H1, H3, and H4 are supported, while H2 is not. The results showed significant differences in perceptions of communication and collaboration, effectiveness, and self-efficacy. The respondents indicated that technical problems, a perceived lack of sense of community, and difficulties in understanding the objectives of the online courses were all seen as challenges. However, significant differences were found when the students were analyzed with their regard to their different ages.

5.3. Differences in Students’ Performance

Students’ performance was evaluated based on their weekly assignments, mid-term exam, and final project. The results are shown in Table 3.

The students’ final scores were obtained from the weekly assignments (30%), mid-term exam (30%), and final project (40%), and the mean scores are in Table 3. It can be seen that there were no significant differences between the youth and adult learners in their final scores. In contrast, the youth learners had a significantly higher mean score (81.5) in the weekly assignments than adult learners (76.4). However, adult learners had a significantly higher mean score (81.3) than youth learners (76.9) in the final project.

Table 3. Assessment of Youth and Adult Learners' Performance

Task	Mean scores		F value	P value
	Youth learners	Adult learners		
Weekly assignments	81.5	76.4	8.61	0.006**
Mid-term	79.3	78.5	4.23	0.073
Final project	76.9	81.3	9.11	0.002***
Final score	79.6	79.1	2.15	0.19

$p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

6. Conclusion

6.1. Discussion

Due to its contagious nature, COVID-19 demanded containment and enforced isolation that tremendously affected personal interaction of teachers and students. While learning online is expected to grow, it still faces a number of challenges. Over the past decades, most institutions have expanded the list of courses being offered online, and growing numbers of students now favor online courses over traditional face-to-face courses. In the absence of traditional classroom teaching and one-to-one interaction, computer-based learning has emerged as the closest substitute for off-line teaching. This is due in part to the flexibility that online courses provide, the convenience, and a host of other factors. Respondents in this study indicated that offering more online courses would be highly advantageous to students.

This article has reviewed several aspects of adult learning, especially in relation to the online learning environment. The results first indicate that there were significant differences between subjects in the two classes based on age (25 and under, and 26 and older) with regard to completing online courses, but they are consistent with the findings obtained by Crawford-Ferre & Wiest and Khan *et al.*, Overall, the survey respondents tended to perceive themselves as effective learners with the skill of self-efficacy [1], [15]. Their responses indicated that they had a sense of competence with regard to their participation in online education courses. The results also showed significant differences in their perceptions with regard to communication and collaboration, effectiveness, and self-efficacy. The findings thus imply there is a need for flexible online learning programs, and that the demand for such courses can be expected to grow. The majority of students perceived their online experience as being positive despite multiple problems in the online courses, including lack of instructional materials, poor organization, limited faculty access, and poor technological infrastructure.

Second, the present examination discovered no significant difference in students' perceptions of the individual course aspects across preparedness of students for an on-line course. Namely, students' perception of the course aspects was independent of whether they perceived to be prepared for this online course. This finding does not appear to be consistent with previous discoveries of students' perception of online learning varies based on their experience with online learning [27]. Experienced learners particularly tended to rate course quality elements as more significant than intermediate on-line learners. It has also been proposed that those understanding the online learning environment and those having more experience would be more successful in their online courses than those lacking such experience. Another interpretation could be that instructors' effective utilization of online teaching strategies could have mitigated students' perception of being novice or experienced online learners. Further study should be directed to confirm these explanations and findings.

Third, our findings reflect those of Alsaaty *et al.* and Kuo & Belland [37], [38]. Therefore, the self-efficacy learning behaviors that are frequently linked to positive experiences and outcomes in online education

courses were equally apparent in all of the participating university students, regardless of whether or not they had previously studied online. It is possible, as was indicated in a previous study by Chittur, that adult students may report themselves as showing a higher level of confidence in performing basic computer or software skills and Internet browsing actions in comparison to advanced computer skills or Internet tasks [39]. That student perception of the course aspects with the exception of student interactions differing between the younger groups and the older group may show that age does matter while structuring the curriculum, instruction, course, and the usage of technology. While understanding if students are prepared to take an online course can be vital for instructors when (re-)designing or (re-)planning an online course, it may not affect their overall perception of course effectiveness. Other variables such as instruction and curriculum, course structure, and technology may influence their online learning experience and student awareness and may compensate for the limited online course preparedness of students when a course is carefully designed. The success of an online course depends on an effective course design using a student-centered model, delivery, and assessment.

Finally, the dramatic growth of the adult learner population is making distance learning an increasingly popular choice. Further study of adult learners should examine them as whole group, and thus they should be considered as more than simply a processor of cognitive information, as this will help institutions develop course materials and techniques appropriately [9], [38]. Additionally, computer attitude and computer anxiety have a significant influence on computer and Internet self-efficacy among Taiwan undergraduate students. All students with high levels of computer attitudes showed higher computer and Internet self-efficacy than those with low levels of computer attitudes. These results are in alignment with previous research that indicated a positive relationship of computer self-efficacy with computer attitude, but a negative relationship with computer anxiety [38], [40].

6.2. Future Research

This study has a number of limitations that provide some avenues for future research. First, this study surveyed students in only business courses, and thus the results cannot be generalized to non-business students. In addition, sample characteristics are an issue here, because we included only university students, who are a highly selective group. Thus, more research is needed to clarify to what extent the results can be generalized to other kinds of learners. Finally, the sample size was small, and there are no previous validity and reliability tests to use on the survey.

Future research may consider the correlation between the number of online courses taken and student support for online education. Students who have never enrolled in an online class may have different perceptions about online education compared to students who have taken an online course, and this should also be investigated. The study indicates that e-learning technology enables easy information access, leading to positive attitude formation of students towards it. This finding is based on usefulness, self-efficacy, ease of use, and the behavior of students in regards to e-learning. This includes providing a structured yet comfortable classroom environment and communicating with different students in a consistent, thoughtful, and personal way. With the advancement of technology, researchers need to study the roles that a variety of technological tools play in promoting more effective social interaction and growth of a learning community - for example, audio and/or video conferencing via Google Hangout and Instagram, social network media, and virtual reality environments.

References

- [1] Khan, M. A., Vivek, M. K., Khojah, M., & Tahir, M. (2021). Students' perception towards e-learning during COVID-19 pandemic in India: An empirical study. *Sustainability*, 13, 57.
- [2] Fidalgo, P., Thormann, J., Kulyk, O., & Lencastre, J. A. (2020). Students' perceptions on distance

- education: A multinational study. *International Journal of Educational Technology in Higher Education*, 17, 18.
- [3] Sun, A., & Chen, X. (2016). Online education and its effective practice: A research review. *Journal of Information Technology Education: Research*, 15, 157-190.
- [4] Smith, C., Hoderi, M., & Mcdermott, W. (2020). A preliminary study of students perception and learning from different delivery methods. *Academy of Educational Leadership Journal*, 23(2).
- [5] Dobbs, R., Carmen, A., & Waid-Lindberg, C. (2017). Students' perceptions of online courses: The effect of online course experience. *The Quarterly Review of Distance Education*, 18(1), 98-109.
- [6] Horspool, A., & Lange, C. (2012). Applying the scholarship of teaching and learning: Student perceptions, behaviors and success online and face-to-face. *Assessment & Evaluation in Higher Education*, 17(1), 73-88.
- [7] Muzaffar, A. W., Tahir, M., Anwar, M. W., Chaudry, Q., Mir, S. R., & Rasheed, Y. (2020). A systematic review of online exams solutions in e-learning: Techniques, tools, and global adoption.
- [8] Robinson, M. R. (2009). Learner perceptions of online courses. *Encyclopedia of Distance Learning*.
- [9] Brown, J. L. M. (2012). Online learning: A comparison of web-based and land-based courses. *Quarterly Review of Distance Education*, 13(1), 39-42.
- [10] Anderson, T., & Rivera-Vargas, P. (2020). A critical look at educational technology from a distance education perspective. *Distance Education*, 37, 208-229.
- [11] Ke, F. (2010). Examining online teaching, cognitive, and social presence for adult students. *Computers & Education*, 55, 808-20.
- [12] Darling-Hammond, L., Flook, L., Cook-Harvey, C., Barron, B., & Osher, D. (2019). Implications for educational practice of the science of learning and development. *Applied Developmental Science*, 24(2), 97-140.
- [13] Organization for Economic Development (OECD). (2003). Beyond rhetoric: Adult learning policies and practices. Paris, France: OECD Publications.
- [14] Lampitt, D. (2017). A comprehensive study of the learning styles of student athletes and academic advisors at three institutions in the american athletic conferences and the tools and resources used to ensure academic success. *Electronic Theses and Dissertations*, 2004-2019.
- [15] Crawford-Ferre, H. G., & Wiest, L. R. (2012). Effective online instruction in higher education. *Quarterly Review of Distance Education*, 13(1), 11-14.
- [16] Chou, P. N. (2012). Teaching strategies in online discussion board: A framework in higher education. *Higher Education Studies*, 2(2), 25-30.
- [17] Capdeferro, N., & Romero, M. (2012). Are online learners frustrated with collaborative learning experiences? *The International Review of Research in Open and Distance Learning*, 13(2), 26-44.
- [18] Nfor, S. K. (2015). Online Versus face-to-face nutrition courses at a community college: A comparative study of learning outcomes. *Theses & Dissertations*, 29.
- [19] Alkharusi, H., Kazem, A., & Al-Musawai, A. (2010). Traditional versus computer-mediated approaches of teaching educational measurement. *Journal of Instructional Psychology*, 37, 99-111.
- [20] Cercone, K. (2008). Characteristics of adult learners with implications for online learning design. *Association for the Advancement of Computing in Education Journal*, 16(2), 137-159.
- [21] Bane, T. M. (2017). Assessing learning styles of adult students in online, classroom, and combination learning environments. *Walden Dissertations and Doctoral Studies*
- [22] Zhang, C., & Zheng, G. (2013). Supporting adult learning: Enablers, barriers, and services. *Proceedings of the 14th Annual ACM SIGITE Conference on Information Technology Education*.
- [23] Coman, C., Țîru, L. G., Meseșan-Schmitz, L., Stanciu, C., & Bularca, M. C. (2020). Online teaching and learning in higher education during the coronavirus pandemic: students' perspective. *Sustainability, MDPI, Open Access Journal*, 12(24), 1-24.
- [24] Swan, K., & Richardson, J. (2017). Introduction to the special issue spotlighting papers from the AERA special interest group on online teaching and learning. *Online Learning Journal*, 21(4).
- [25] Maxfield, R. J. (2008). Online education for nontraditional adult students: perceptions and attitudes of emergency services workers in asynchronous learning environments. *Graduate Theses and*

Dissertations. Utah State University.

- [26] Mortagy, Y., & Boghikian-Whitby, S. (2010). A longitudinal comparative study of student perceptions in online education. *Interdisciplinary Journal of E-Learning and Learning Objects*, 6, 23-44.
- [27] Eichelberger, A., & Ngo, H. T. P. (2018). College students' perception of an online course in special education. Presented at TCC 2018 Worldwide Online Conference.
- [28] Kirby, D., & Sharpe, D. (2011). Intention, transition, retention: examining high school distance e-learners' participation in tertiary education. *International Journal of Information and Communication Technology Education*, 7(1), 21-32.
- [29] Siragusa, L., Dixon, K., & Dixon, R. (2006). Learner attributes in online environments: The impact of the individual on the outcome. AARE 2006 International Education Research Conference.
- [30] Imhof, M., Vollmeyer, R., & Beierlein, C. (2007). Computer use and the gender gap: The issue of access, use, motivation, and performance. *Computers in Human Behavior*, 23(6), 2823-2837.
- [31] Barnard, L., Paton, V., & Rose, K. (2008). Perceptions of online course communications and collaboration. *Proceedings of Society for Information Technology & Teacher Education International Conference*, (pp. 213-215). Chesapeake, VA: AACE.
- [32] Ertmer, P. A., & Ottenbreit-Leftwich, A. T. (2010). Teacher technology change: How knowledge, confidence, beliefs, and culture intersect. *Journal of Research on Technology in Education*, 42(3), 255-284.
- [33] Ismail, S. A. A., Al-Awidi, H. M., & Almekhlafi, A. G. (2012). Employing reading and writing computer-based instruction in english as a second language in elementary schools. *International Journal of Business and Social Science*, 3(12), 265-274.
- [34] Rodriguez, M. C., Ooms, A., & Montañez, M. (2008). Students' perceptions of online-learning quality given comfort, motivation, satisfaction, and experience. *Journal of Interactive Online Learning*, 7(2), 105-125.
- [35] O'Malley, J., & McCraw, H. (1999). Student perceptions of distance learning, online learning and the traditional classroom. *Online Journal of Distance Learning Administration*, 2(4).
- [36] Walker, A., & Leary, H. (2007). Problem based learning: A meta analytic review of problem and implementation types across disciplines and educational levels. Association for Educational Communications and Technology Annual Conference, Anaheim, CA.
- [37] Alsaaty, F. M., Carter, E., Abrahams, D., & Alshameri, F. (2016). Traditional versus online learning in institutions of higher education: minority business students' perceptions. *Business and Management Research*, 5(2), 31-41.
- [38] Kuo, Y.-C., & Belland, B. R. (2019). Exploring the relationship between African American adult learners' computer, internet, and academic self-efficacy, and attitude variables in technology-supported environments. *Journal of Computing in Higher Education*.
- [39] Chittur, D. (2018). A phenomenological study of professors and instructional designers during online course development leading to enhanced student-centered pedagogy. Theses and Dissertations.
- [40] Hong, K. S., Chai, M. L., Tan, K. W., Hasbee, U., & Ting, L. N. (2014). ESL teachers' computer self-efficacy, attitudes toward computer and classroom computer use. *Social Sciences & Humanities*, 22(2), 369-385.

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