Examining the Self-Efficacy for Online Learning across Young and Old Age Students of Sindh

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Abstract

This paper presents the self-efficacy for online learning during the pandemic, across two age groups young (25 and below) and old (above 25) from different schools and universities in Sindh based on five constructs of self-efficacy. These constructs include completion of online courses, social interaction among students, academic interaction among students, interaction with instructors, and handling online tools of course management. This was a quantitative study with a web-based survey. The population of the study was school and university students of Sindh aging from 18 onwards and have taken online classes. The sample (n=162) was selected conveniently. And the data were gathered using an adopted questionnaire of self-efficacy for online learning (SeQoL) which has an excellent Cronbach's alpha value (0.947). The analysis was done by exploratory, descriptive, and inferential analysis. The study results reveal that the old group has shown higher (M= 3.07; SD= 0.57) self-efficacy for online learning compared to their younger counterparts (M= 2.72; SD= 0.54). The difference was found to be significant (p<0.001) with a medium magnitude (r=0.321). Therefore, the paper concludes that both age groups have a certain level of self-efficacy for online learning. However, the older students have higher self-efficacy than their counterparts. This study presents some limitations and recommendations for policy and practice levels and future studies.

Keywords: *Self-efficacy, Online learning, Self-efficacy for online learning, Self-efficacy of young and old students*

1. Introduction

COVID-19 has resulted in numerous shifts in several aspects including lifestyles and education (Coulthard, 2020). Thus, online learning became the only way to continue the teaching-learning process amid pandemics. Other than the pandemic, it is recommended globally (Gorder, 2018) and nationally (NEP, 2009) to integrate technology within the classroom and it has become a 21st-century requirement, to produce digitally literate individuals (Blair, 2012). Technology integration and learning with technology require certain confidence and motivation, which in short, is added to self-efficacy for teaching and learning with technology (Albion et al., 1999; Womble, 2007). Similarly, with time,

technology integration was broadened to online learning; which also required certain self-efficacy to continue and succeed, with online learning (Shen et al., 2013).

Self-efficacy has become one of the key characteristics that could anticipate effective online learning outcomes, including retention, observed learning, and student satisfaction (Alqurashi, 2019; Jan, 2015; Yukselturk et al., 2014). According to Bandura (1989), self-efficacy refers to the perceptions of people for their abilities to arrange and implement learned knowledge that is required to achieve desired outcomes. However, individuals with higher levels of self-efficacy seem to be more inclined towards their studies, perhaps increasing retention and lowering dropout rates. Hence, individuals with a high degree of self-efficacy have more perceived learning and are more satisfied with online classes (Chemers et al., 2001). However, the difference in self-efficacy is not found across age groups of young (including; school, college, and undergraduate level) and old age students (including; postgraduate, doctoral, and professional level). It is assumed that age and the level of learning have a direct relation to self-efficacy towards learning and achievement (Chu & Chu, 2010). Therefore, this study purports to examine the difference of self-efficacy among students of different age groups (young and old) for online classes. Whereby, the young group included school, college, and undergraduate level students with an estimate of age range 18-25 years, and old age included post-graduation, doctoral, and professional level students with an age range of 25 and above.

This study aims to examine the self-efficacy for online learning during pandemic across two age groups young (25 and below) and old (above 25) from different schools and universities in Sindh based on five constructs of self-efficacy. These constructs include completion of online courses, social interaction among students, academic interaction among students, interaction with instructors, and handling online tools of course management. Whereas, the research Question was (a). How do students' level of self-efficacy for online classes vary across young (25 and below) and old (above 25) age groups in the context of Sindh Pakistan? The hypotheses were:
(a). H_o: There is no difference between young and old students' levels of self-efficacy for online classes.
(b). H_{A1}: There is a difference between young and old students' levels of self-efficacy for online classes.
(c). H_{A2}: Young students have a higher level of self-efficacy than old students for online classes.

2. Problem Statement
Bandura (1986) defines self-efficacy as "beliefs in one's capabilities to organize and execute the courses of actions required to produce given attainments" (p. 3). According to him, self-efficacy is a belief of a person about how well he/she can perform a certain task to achieve certain goals. Self-efficacy can impact behavior, self-management, and motivation (Bandura & Locke, 2003). People with a high sense of self-efficacy are found to accept challenges and remain consistent in achieving their goals, whereas those with low self-efficacy quit early in the face of challenges (Bandura, 1977). In other words, it can be said that the level of self-efficacy determines one's preparedness for carrying out any task.

Furthermore, self-efficacy is critical to learning and performance therefore in a challenging learning environment i.e. online learning the presence or absence of self-efficacy plays an important role (Peechapol, 2018). Various researchers have explored that the current need and usability of an online learning environment emphasized the need for enhanced self-efficacy, as high levels of self-efficacy increase positive experience to a greater sense of learning opportunities in online education (Hong et al., 2017). Additionally, in online learning environments, the drop-out rate is higher compared to the face-to-face learning environment (Prior et al., 2016). This drop-out rate in the online learning environment can be reduced with the help of developing self-efficacy among all stakeholders surrounding the teaching and learning processes (Peechapol, 2018). Considering this, understanding the self-efficacy in online education is crucial and it can prove to be a key component of academic success in online education.

3. Research Methodology

3.1. Research Design

As the study aims to examine self-efficacy among students of different age groups (young and old) for online classes, it followed a quantitative approach which allows researchers to investigate, compare and quantify the characteristics and behaviors of people (Kleining & Witt, 2001). Under the quantitative paradigm, survey research has been used to define essential details of a group, statistically. Because it enables to investigate of the relationship between two or more variables (Kraemer, 1991). Also, it employs to receive personal opinions of people wherein the results can be extrapolated to the entire population. Thus, a cross-sectional survey design was employed to carry out this study since data were collected from a pool of students by using a survey questionnaire at one point in time (Owens, 2002).

3.2. Characteristics of the Sample

The targeted population of the study was students having aged above 18 and who have taken online classes. The research participants were recruited using the convenience sampling technique as it allows to reach the targeted population on a convenient basis (Sedgwick, 2013). Altogether, the sample of 162 participants was taken based on volunteer participation with informed consent. Table 1 illustrates the sample of the study.

Table. 1: Sample of Study

Student Gender		Age Group		Institution	
Male n (%)	Female n (%)	≤25 years n (%)	>25 years n (%)	University students n (%)	School students n (%)
62 (38)	97(60)	110 (68)	52 (32)	119 (73)	43 (27)

Evidently, female students were higher in number (n=97; 60%) as compared to male (n=63; 38%) counterpart. Furthermore, the percentage of students in the young age group that is less than and equal to 25 was higher (n=110; 68%) than in the old age group which includes participants having ages greater than 25 years (n=52; 32%). The comparison of

a number of research participants across institutions depicts that more university students (n=119; 73%) participated in the study than school students (n=43; 27%).

3.3. Data Collection Tool

A self-efficacy questionnaire for online learning (SeQoL) was adopted for the study which aimed to depict the complexities of online learning environments and the abilities required to succeed in such (Shan et al., 2013). There were 120 items in the initial item pool. Shen et al. used an 11-point Likert scale, with 0 indicating "cannot do" and 10 suggesting "can do". While the review of items from content specialists was completed, the chosen items were given to 406 online students (301 females, 104 males, and 1 not indicated) for piloting. In terms of the level of study, the participants were students of undergraduate (37%), graduate (60%), and other students (3%). Shen et al. (2013) discovered that 30 items evaluated five aspects of self-efficacy in online learning by using exploratory factor analysis. These dimensions are a) self-efficacy to complete an online course (8 items), b) self-efficacy to interact socially with classmates (5 items), c) self-efficacy to use course management system tools (6 items), d) self-efficacy to interact with instructors in an online course (5 items) and e) self-efficacy to interact with classmates for academic purposes (6 items). Cronbach's alpha was 0.93, 0.92, 0.93, 0.94, and 0.93 for each dimension, respectively. When the Cronbach's alpha for every domain was excellent, it depicted that the items in that domain consistently measure the same self-efficacy dimension.

Furthermore, SeQoL was analyzed by Tsia et al., (2020) based on psychometric properties. For this, different validities and confirmatory factor analyses were conducted. Though the tool was found to be valid and reliable for measuring self-efficacy for online classes (Tsia et al., 2020), 5-items from Shen et al.'s originally developed SeQoL were removed. This revised 4-point Likert scale (ranging from 1 – strongly disagree to 4 – strongly agree) SeQoL consisting of (25-Items) was adopted for this study. Table 2 depicts five constructs along with Cronbach's Alpha values.

This table illustrates that SeQoL was overall found to be reliable, as it has an excellent Cronbach's alpha (0.947). Additionally, the construct COC had the highest number of items (n=7) which intended to investigate learners' self-efficacy to meet course expectation and complete it timely and had an excellent Cronbach's alpha (0.865). On the other hand, construct HOT contained the least number of items (n=3) of items used for measuring learners' self-efficacy for handling course management tools such as initiating and contributing to a discussion, had an excellent Cronbach's alpha (0.879).

Table. 2: *SeQoL - Five Constructs*

Construct	Example of Item	No. of Items	Cronbach's Alpha
Self-efficacy to complete an online course (COC)	I was willingly adapting my learning styles to meet course expectations.	7	0.865
Self-efficacy to interact socially with classmates (SIC)	Apply different social interaction skills depending on the situation.	4	0.863
Self-efficacy to use course management system tools (HOT)	Post a new message on a discussion board.	3	0.879
Self-efficacy to interact with instructors in an online course (II)	Seek help from instructor when needed.	5	0.913
Self-efficacy to interact with classmates for academic purposes (AIC)	Effectively communicate with my classroom.	6	0.906
Overall		25	0.947

Moreover, construct SIC having 5-items was considered for measuring learners' self-efficacy to practice social interaction skills based on the requirement of the situation, which was excellent in terms of Cronbach's alpha (0.863). Also, construct II having 5 items, pondered to measure learners' self-efficacy to interact with instructors in an online course either for seeking help or sharing concerns/opinions, had an excellent Cronbach's alpha (0.913). Additionally, construct AIC having 6-items was intended to measure learners' self-efficacy to effectively communicate with classmates for academic purposes, also had an excellent Cronbach's alpha (0.906). Altogether, SeQoL was an excellently reliable tool for consistently measuring learners' self-efficacy for online classes.

3.4. Data Collection
This was a web-based survey, where the tool (SeQoL) was generated on Google forms because it is user-friendly and can easily be accessible. That link of Google forms was circulated among peers and faculty members. So that, the link was shared by all the peers and faculty among students of Sindh including schools and universities of both public and private sectors via social media apps (i.e., emails, WhatsApp, and Facebook). It contained some predetermined instructions and consent for voluntary participation along with the aim of collecting data, which makes it more self-explanatory for participants. It took about 10-days to collect the targeted number of responses.

3.5. Analytical Strategies
The data were analyzed employing the Statistical Package of Social Science (SPSS, 23).

3.5.1. Data Importing
The collected data were in Google sheets, which were later imported into SPSS. For this, some of the demographics (gender, level of study, and institutions) along with age group as independent and self-efficacy as dependent variables were predetermined. These variables were coded; gender (0 for male and 1 for female), level of study (1 for school and 2 for university), institutions (1 for government and 2 for private), and age (1 for young and 2 for old).

3.5.2. Data Cleaning
The data obtained from research participants were cleaned by running frequencies. No major errors were found in the data.

3.5.3. Exploratory Analysis
As the data was error-free, the following two steps were undertaken i.e. (a). Computing New Variables: The first step of the exploratory analysis was computing new variables. In this, the overall/total (OSE_Total) mean of self-efficacy, followed by, the mean of each construct (COC, SIC, HOT, II, and AIC) was calculated; and (b). Checking Assumptions: The second step of the exploratory analysis was checking the assumptions of parametric tests (i.e., independent sample T-test). In this, the first assumption was "outcome variable should be continuous". This assumption was fulfilled; as self-efficacy was measured on a scale. The second assumption which is "normality of data across two groups" was checked by calculating skewness. Table 3 presents the normality of the data.

3.5.4. Descriptive Statistics
Descriptive analysis was employed to compute mean and standard deviation of both young and old age groups were calculated in SPSS.

3.5.5. Inferential Statistics
As the second assumption of parametric test (i.e., independent sample T-test) was not fulfilled. The alternative which is Mann-Whitney U test (non-parametric test) was chosen. It was performed through SPSS along with computing the effect size by using the formula $(r = \frac{z}{\sqrt{n}})$.

Table 3 revealed that the data of the young group was normal. However, it was slightly negatively skewed in the old group. Thus, the second assumption of normality was not met to employ a parametric test (i.e., independent sample T-test). Therefore, the non-parametric test (Mann Whitney U test) was used.

Table. 3: *Normality Table*

Name of Construct	Value of Skewness		Comment	
	Young	Old	Young	Old
Overall OSE	-0.33	-1.30	Normal	Skewed
COC	-0.29	-1.47	Normal	Skewed
SIC	-0.27	-0.66	Normal	Skewed
HOT	-0.51	-0.98	Normal	Skewed
II	-0.37	-0.87	Normal	Skewed
AIC	-0.46	-0.77	Normal	Skewed

4. Results and Discussion

The results revealed that self-efficacy of the old group is higher than the younger group. Table 4 illustrates the results of differences in self-efficacy for online learning across age groups.

Table. 4: *Self-efficacy Comparison across age Groups*

Constructs	Young Group Mean (SD)	Old Group Mean (SD)	Differences	Magnitude of difference
Overall	2.72 (0.54)	3.07 (0.57)	U = 1721.000; z= 4.088; p< 0.001	r = -0.321
COC	2.66 (0.59)	3.08 (0.58)	U = 1563.500; z= -4.666; p< 0.001	r = -0.366
SIC	2.55 (0.76)	2.76 (0.75)	U = 2357.500; z= -1.814; ns	
HOT	2.88 (0.82)	3.35 (0.69)	U = 1863.000; z= -3.643; p< 0.001	r = -0.286
II	2.73 (0.78)	3.10 (0.65)	U = 1987.000; z= -3.156; p< 0.002	r = -0.248
AIC	2.82 (0.66)	3.08 (0.74)	U = 2161.500; z= -2.518; p< 0.012	r = -0.197

The results revealed that the old group has demonstrated higher (M=3.08; SD=0.58) self-efficacy for completing online courses as compared to the younger group (M= 2.66; SD=0.59). The data seem to be less spread among both groups with a slightly higher dispersed in old than young age group. The difference was found to be significant (p<0.001] with a medium magnitude (r= -0.366). Most of the older students appeared to be able to successfully adapt to online classrooms by grasping complicated ideas, assuring timely submission of assignments, and meeting the expected learning targets and outcomes.

On the other hand, the old group has demonstrated slightly higher (M=2.76; SD=0.75) self-efficacy for social interaction with classmates as compared to the younger group (M=2.55; SD=0.76). Here, the spread seems to be a bit high in both groups with a slight high in the young group. The difference was not found to be significant (p>0.005). Here, both the young and the old were able to engage in social interactions that were contextually relevant. It favored both groups in general, with the old group having a little advantage because they portrayed an amiable relationship with their peers.

Besides, the old group has demonstrated higher (M=3.35; SD=0.69) self-efficacy for handling online course management tools as compared to the younger group (M=2.88; SD=0.82). The scores of the young group seem to be more spread than the old group. The difference was found to be significant (p<0.001) with a medium magnitude (r= -0.286). The inferences that may be formed here are considerably more in favor of the old group pupils since they show slightly more skill in handling the virtual learning environment. The students in the old groups were able to exchange emails and participate in virtual learning platforms, a powerful kind of online education that allows students to discuss key topics and share their knowledge.

Likewise, the old group has demonstrated higher (M=3.10; SD=0.65) self-efficacy for interacting with instructors as compared to the younger group (M=2.73; SD=0.78). The scores seem to be more spread in the young than the old group. The difference was found to be (p<0.002] with a slightly small magnitude (r= -0.248). As students from both old and young groups participated in the course, online contact between students and course instructors was an issue. It is worth noting, however, that a little difference has revealed a difficulty in obtaining advice from course teachers as well as in telling them of any urgent situations in a timely and appropriate manner.

Moreover, the old group has demonstrated higher (M=3.08; SD=0.74) self-efficacy for academic interaction with classmates as compared to the younger group (M=2.82; SD=0.66). Here, the scores seem to be more spread in the old group than young. The difference was found to be significant (p<0.012) with a small magnitude (r= -0.197). The exhibited scores of both the old and young groups of students revealed a lack of synchronization among classmates, with genuine concerns about retaining self-respect while engaging in meaningful dialogues and extending assistance to one another.

The overall comparison demonstrated that the old group has shown higher (M= 3.07; SD= 0.57) self-efficacy for online learning as compared to their counterparts in the younger group (M= 2.72; SD= 0.54). The scores of the older group seem to be more spread than the younger group. The difference was found to be significant (p<0.001) with a medium magnitude (r=0.321). On a broad level, it may be concluded that students in both age groups (old and young) were capable of making a seamless transition to online learning. The old students had stronger self-efficacy to complete online courses through connecting socially and academically with their classmates, as evidenced by their scores on the five dimensions depicted on the five-point Likert scale. When it came to academic interactions with the lecturer and classmates, the difference was minor.

Furthermore, Table 5 demonstrated that the self-efficacy among the old group is higher than that of the younger group. However, self-efficacy in terms of its constructs is found to be higher in completing online courses within a time frame along with reaching to desired learning outcomes. It shows the consistency of old-age students to remain focused on achieving desired outcomes while completing courses timely. Additionally, the self-efficacy for handling online tools was found to be greater in old as compared to young. This could be due to having more exposure of using academic-related online tools among the old than the young. Besides this, the older group seems to be more self-efficient in seeking guidance from the course instructors as well as informing them about any immediate situation timely and in an appropriate manner than the young group. On the other hand, both groups presented a lack of coordination among their classmates with the apprehensions of maintaining self-respect while making meaningful discussions and offering help to each other. As old group of students is found to be having a higher level of self-efficacy for online learning than the young group, the null hypothesis (H$_o$) and alternative hypothesis (H$_{A2}$) are rejected.

The key findings of this study revealed that old-age students are more self-efficient in terms of continuing with online learning platforms, along with having a proper interaction with instructors and peers for both academic and social purposes and handling digital tools. The results coincide with Jan (2015), she also found that the upper age group students showed consistency with continuing and achieving their desired learning outcomes, in an online learning platform, with having self-efficacy for academic, computer, and online learning. The findings are also consistent with the findings of Okello (2021), revealing that students above the age of 25, have a higher self-efficacy for online learning with a high effect size (0.72).

However, the young age group is more prone to technology use in their daily lives, and is assumed to be more self-efficient with online learning but is found less self-efficient in online learning. It raises the question of *why old ones are self-efficient and not young ones.?* It could be due to the fact that age brings maturity, and students with an increase in age realize their responsibility of independent learning or learning by themselves, whereas the young age group could be dependent on teachers and/or institutions for enabling them to learn (Saeid & Eslaminejad, 2017), thus, leading to the difference in self-efficacy among both groups.

Additionally, a more personal trait can also be highlighted that the young age group students, sometimes show careless and non-serious attitudes toward learning, as their long-term goals are less likely set. However, relatively, old age students, are more serious about achieving certain predetermined goals of theirs, either in terms of degree completion to achieve long-term goals or for professional learning for promotions. Having said that, with a pre-set goal, people from any age group can have a higher self-efficacy for learning, in general, and for online learning, particularly (Fritea, 2015).

Interestingly, this very element of technology prone is associated with the preferable purposes for the use of technology (Margaryan et al., 2011). Whereby, the young age group is more likely involved in using technology for communication, networking, and

entertainment purposes, thus, their quantitative technology use is not enough to support online learning, contrarily, those students [old age group] being involved in more of academic and professional use of technology, tend to be more self-efficient in online learning, that is evident from the findings of this study as well.

5. Conclusion

Concluding, considering the transition of educational activities to virtual learning platforms during pandemics, this study examined the self-efficacy for online learning among young and old-age students. It found that both groups had a certain level of self-efficacy for online learning. However, the old age group was found to be having more self-efficacy than the younger group. Though the difference between both groups is mediocre, it is significant. The difference could be due to the academic and professional attributes of both groups along with the preferable frequent use of technology and possessing short and/or long-term goals. Therefore, with these findings, this study suggests that for ensuring the effectiveness of online learning, the instructors and institutions need to work on students' self-efficacy which directly affects students' academic achievement.

6. Limitations and Recommendations

Certainly, this study is limited to the context of Sindh only. Also, only focuses on self-efficacy across age groups. Besides, it is also limited for generalizability, as the data were collected using non-probability (convenient) sampling.

6.1. For Policy and Practice

This study has certain recommendations for policy and practice levels. It recommends policy makers to include productive integration of ICTs in education policy and curriculum along with ensuring the proper professional development of teachers from educational technology experts and tools. Also, it recommends designing ICTs integration with respect to different content areas, based on the relevance and nature of the topic, where technology can be integrated productively. Likewise, learning management systems need to be built in educational institutions along with proper orientation for both instructors and students to ensure its productive application integrated with day-to-day classroom tasks.

6.2. For Future Studies

However, it should be done in other contexts as well to explore self-efficacy for online learning. Also, the whole nationwide study should be conducted for investigating self-efficacy along with factors affecting it among students and a comparative study across different provinces should be done. Whereas it is recommended to explore other factors including gender, level of study, sectors of institutions, and contexts/regions of Pakistan. Thus, the probability sampling technique is recommended which would allow for generalizing the results to a larger population. Moreover, a similar sort of study needs to be conducted either with mixed-method or qualitative approach to explore the supporting and hindering factors behind greater and lower self-efficacy for online learning.

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