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TECHNOLOGY USAGE AND ATTITUDE INFLUENCE ONLINE LEARNING SELF-EFFICACY

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Abstract: The outbreak of the novel coronavirus has created quite a restless situation globally. Though the pandemic outbreak has invited much confusion, it has also generated many opportunities like learning to effectively use technology in every walk of life. Online learning has become inevitable in the era of COVID-19. The study examines the influence of media, technology usage and attitude towards online learning self-efficacy. Further, the study examines the relationship between online learning self-efficacy, psychological distress, and resilience in university students during the COVID-19 pandemic that brought a sudden shift from conventional teaching to online teaching in Universities in India. The study was conducted among 257 students studying in colleges and universities in India between 18 to 30 years of age. The findings showeda significant gender difference in online learning self-efficacy and media technology usage, in which male studentswere significantly higher than female students on media and technology usage and female students were significantly higher than male students on online learning self-efficacy. Multiple regression analysis was carried out to assess the relationship between online learning self-efficacy with media and technology usage and attitude towards media and technology. It was found that attitude towards media and technology positively predicted online learning self-efficacy. The findings were discussed with implications for future research, practice, and policy making.

Keywords: Online Learning Self-Efficacy, Media and Technology Usage, Psychological Distress.

INTRODUCTION

As a result of COVID-19, schools and colleges were closed globally, and online teaching was vigorously employed worldwide to educate students. Education has modified intensely, with the characteristic growth of e-learning, and was commenced distantlyon digital platforms. Online

learning has been shown to unfold retention of information and take less time (Cathy & Lalani, 2020). While countries are at totally different points in their COVID-19 infection rates, worldwide, there are presently over one point two billion kids in 186 countries tormented by school closures due to the pandemic. In Denmark, kids up to the age of eleven are returning to nurseries and colleges once after closing on March 12, 2020. However, in South Korea, students respond to roll calls from their lecturers online (Cathy & Lalani, 2020). In India, COVID-19 accelerated the adoption of digital technologies to deliver education. Education institutions moved toward blended learning and encouraged teachers and students to upgrade their skills in the use of technology. Soft technology, online, webinars, virtual classrooms, teleconferencing, digital exams and assessments became common phenomena due to pandemic, which would otherwise have come into practical use only a decade or more later (Mary & Pothula, 2021).

With this explosive shift, remote from the classroom in several areas of the planet, some are sceptical whether or not the implementation of online learning can still preserve post-pandemic, and therefore this means of shift would influence the universal education market. However, there are challenges to overcome. It becomes a struggle to participate in digital learning for the students without reliable internet access and/or technology; this gap is seen across countries and between income groups within countries. In the U.S., there is a significant gap between those from privileged and disadvantaged backgrounds: while virtually all 15-year-olds from a privileged background said that they had a computer to figure on, nearly 25% of those from disadvantaged backgrounds did not (Cathy & Lalani, 2020). In India, the digital world was a dilemma for the teachers who were experts in book, talk, chalk and classroom methods. They had to be trained to meet the challenges of the present situation and go ahead with online teaching. Further, many students struggled to obtain the gadgets needed for digital learning (Mary & Pothula, 2021).

Online learning self-efficacy is a person's perception of his or her abilities to successfully complete specific tasks required of online learners. Self-efficacy (Bandura, 1989) refers to individuals' belief about their capacity to execute behaviors that are needed to produce specific performance attainments in prospective situations and is a part of the

self-system that comprises of attitude, belief and cognitive skills. Self-efficacy is a vital area of human motivation and behavior that influences actions that can affect one's life (Wood & Bandura, 1989). Alqurashi (2016) examined the relationship between self-efficacy and online learning environments and found a positive and significant relationship between computer self–efficacy and prior experience with online learning. People with a robust sense of self-efficacy view challenges as tasks to be mastered. It creates deeper interest and a strong sense of commitment in activities. And also helps to recover from setbacks and disappointments.

Corporate America started using PowerPoint to reinforce company presentations. Technology was moving forward with video games and other multimedia programs (Aranda, 2006). As these technological advances expanded, the primary sort of online education began within the mid-1990. The millennium would mark a replacement period for technologywith online education courses designed and developed for online learning. E-learning with online education options became common within both universities and industries. Online education was assisted with streaming media, accessibility to online videos access, and fast internet site servers. Online education and Internet training have led to the finding of a better replacement option for classroom education for students (Aranda, 2006).

Several recent studies have observed a link between social media use and certain psychological (mental state) problems, including anxiety and depression. Several studies converge on the observation that social media use positively correlates with anxiety and depression (Seabrook et al., 2016; Ridout & Campbell, 2018; Cotton et al., 2012), while some rely on the negative correlation of social media and depression (Lauckner et al., 2020; Hampton & Rainie, 2015). Technology continues to enhance many aspects of lifestyle. Various technological developments have also improved the observation of psychological state of men in a positive way (Reysen, 2017). Fishblin and Ajzen (1975) have noted to separate the concept of attitude from behavioral intentions and actual behaviors, both of which are hospitable, a spread of sources of influence. Various authors have emphasized that a positive attitude towards technology predicts psychological well-being (Baring & Lee, 2017; Beul & Ziefle, 2011).

Theoretically, resilience has been conceptualized from different perspectives and based on several contexts. The most frugal definition of resilience is to "bounce back" from any adversities, risks, or failure. The analysis of the individual attributes that can be attributed to the 'resilient' personality, which was characterized as invulnerable, was the subject of earlier conceptualizations of resiliency. Little is known about gender differences in resilience. Nevertheless, Bezek (2010) has reported that there are no significant gender differences in resilience among emerging adults. Sun and Stewart (2007) suggest that any existing gender differences in literature need further investigation since these differences are susceptible to change over time. A large body of research suggests the relationship between resilience and personality traits (Cohan & Stein, 2006; González et al., 2011; Nakaya et al., 2006; Oshio et al., 2018; Westphal & Bartone, 2008). A consensus regarding the negative correlation with neuroticism and positive correlation with extraversion, agreeableness, and conscientiousness was widely observed (Martin et al., 1983; Hamburger & Ben-Artzi, 2000). Cohan and Stein (2006) have reported a relationship of resilience to personality dimensions and, coping styles and results showed a negative association with neuroticism and a positive correlation with extraversion and conscientiousness.

The literature review contains studies on online learning self-efficacy, attitude towards media and technology, technology usage and resilience, psychological distress, and the impact of COVID-19 on Education. Reviews related to online learning self-efficacy showed that there is a positive and significant relationship between self-efficacy and online learning environments. Students who have prior experience with online learning have more self-efficacy. Studies related to attitude towards media and technology showed that students having positive attitudes paved the way for maximum utilization of media and technology. Studies related to technology usage and resilience indicated there is a positive association between the two. Furthermore, studies based on technology usage and psychological distress also suggested a relationship between the two.

METHOD

The study examines the relationship between online learning self-efficacy and the usage and attitude towards media and technology. Further, the study examines the relationship between online learning self-

efficacy, psychological distress, and resilience in university students during the COVID-19 pandemic.

Sample

Several undergraduate, postgraduate, and Ph.D. students from various universities and colleges in India were selected as participants for the study. The inclusion criteria for selecting participants in the sample include (1) Individuals studying in university or college (2) Individuals in the age group 18-30. The exclusion criteria for the participants include (1) Those suffering from physical or psychiatric problems and (2) Refusal to give informed consent. The sample for the study consisted of (N = 257) students (Males = 87: Females = 170) in the age group 18 to 30 years (M = 21.75, SD = 2.69). About 54.3% of the sample were Hindus, 14.7% were Christians, 29.1% were Muslims, and 1.6% were atheists. Out of the 257 students, 4 are higher secondary students, 114 are undergraduate students, and 139 are postgraduate students. The data for the present study were collected only through online mode. Google forms were sent to participants through WhatsApp, Facebook, Instagram, and other social media. The participants were asked to read out the informed consent given at the beginning of the survey, and if they provide the consent, they could participate in the survey.

Instruments

Media and Technology Usage and Attitudes Scale

The Media and Technology Usage and Attitude Scale (Rosen et al., 2013) purports to assess the usage of media and technology and assessing attitudes toward technology. There are 66 items concerning technology and media usage, along with 16 additional items assessing attitudes toward technology. The media and technology usage scale consists of 11 subscales representing smartphone usage, general social media usage, Internet searching, emailing, media sharing, text messaging, video gaming, online friendships, Facebook friendships, phone calling, and watching television. The attitude scale consists of four attitude-based subscales: positive attitudes, negative attitudes, technological anxiety or dependence, and attitude towards task switching. A 10-item frequency response scale was used for these items. Five additional questions queried Facebook users on the number of friends on Facebook, the number of Facebook friends known in person, the number of people met online but never met in person, the number of people regularly

interacting online but never met in person, and the number of close friends online never met in person. Each of these was answered on a 9-point numerical scale. Sixteen items were included to assess attitudes toward technology with responses on a five-point Likert scale. The attitude scale consists of 4 subscales called Positive attitudes, anxiety about being without technology, Negative attitudes, and Preference for task switching. These items included attitudes towards the importance of finding any information online, the importance of being able to access the Internet any time, the importance of keeping up with technology, getting anxious without the availability of a cell phone, getting anxious without the availability of the Internet, feeling dependent on technology, believing that technology will provide solutions to our problems, believing that with technology anything is possible, believing that more gets accomplished due to technology, believing that technology is easy to use, enjoying using technology as soon as it hits the market, believing that technology makes people waste their time, believing that technology makes life more complicated and believing that technology makes people more isolated. The Cronbach's alpha of scale on the present sample was found to be .95.

Online Learning Self-Efficacy scale

Online Learning Self Efficacy Scale purports to determine university student's self-efficacy perceptions in online learning environments (Zimmerman & Kulikowich, 2016). The original form of the scale consists of 22 items and three factors. The three factors are learning in the online environment, time management, and technology usage. There are ten statements that correspondto learning in an online environment, five statements for time management, and seven statements for technology usage. A sample item for learning in the online environment is *"Navigate online course materials efficiently*." A sample item for time management is *"Manage time effectively*." A sample item for technology use is *"Communicate effectively with technical support via email, telephone, or live online chat*." Each item on the scale is provided with five response options. The score for learning in the online environment subscale ranges from 9 to 45, the time management subscale ranges from 5 to 25, and the technology use subscale ranges from 7 to 35. The highest score on learning in the online environment means that the participant has high capability and interest to learn online. The highest score on the time management subscale indicates the learner can manage time

effectively and the highest score on technology use indicates the learner is using technological resources well. The total score can range from 21 to 105. The highest score on the online learning self-efficacy scale indicates that the learner has high confidence, expectation, and self-awareness in usingthe web. The Cronbach's alpha of scale on the present sample was found to be .93.

Depression, Anxiety and Stress Scale (DASS)

The Depression Anxiety Stress Scale (DASS) is a widely used instrument developed by Lovibond and Lovibond (1995) to measure anxiety, depression, and stress. This self-reported questionnaire has 42 items. Each of the three DASS-42 scales contains 14 items, divided into subscales with similar content. The depression scale assesses dysphoria, hopelessness, devaluation of self, self-deprecation, lack of interest/involvement, anhedonia, and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset/ agitated, irritable/ over-reactive, and impatient. A sample item for the depression is "*I couldn't seem to experience any positive feeling at all*." A sample item for anxiety is, *"I was aware of dryness of my mouth*." A sample item for stress is, *"I found it hard to wind down*." Each item on the scale is provided with four response options. The score for all the subscales ranges from 0 to 42. The highest score on each scale indicates evidence of depression, anxiety, and stress. The Cronbach's alpha of scale on the present sample was found to be .97.

Bharathiar University Resilience Scale (BURS)

The Bharathiar University Resilience Scale was used to assess psychological resilience as a dispositional measure (Annalakshmi, 2009). Resilience was operationalized as the capacity of people to cope with stress and catastrophe and used to indicate a characteristic of resistance to future negative events. The short version of the Bharathiar University Resilience Scale consists of 10 items. Seven domains of resilience were identified based on a detailed review of relevant literature, and items about the operationalization of the construct were generated. The scale assessed resilience in terms of time taken to get back to normalcy, reaction to negative events, response to risk factors (specifically

disadvantaged environment) in life, perception of the effect of past negative events, defining 'problems,' hope/confidence in coping with future and openness to experience and flexibility. The maximum and minimum scores possible on the scale are 50 and 10, respectively. A high score indicates a high level of resilience. The Cronbach's alpha of scale on the present sample was found to be .56.

Statistical Analysis

Analysis of Variance (ANOVA) was carried out for comparing the genders (Male and Female) and areas of residence (Rural, Small town, City, Metro) on the study variables. A multiple regression was carried out to investigate whether gender, media and technology usage, and attitude towards media and technology significantly predict online learning self-efficacy. Also, multiple regression was carried out to investigate online learning self-efficacy and gender predict psychological distress and resilience.

RESULTS

A one-way between-subjects ANOVA was carried out to find the difference between genders on study variables. It is found that there was a significant difference between males and females in Media and Technology usage, F (1,255) = 4.73, p = .03. The mean score for males (M = 253.54, SD = 64.41) was significantly higher than females on media and technology usage (M = 234.63, SD = 66.79). Further, there was a significant difference between males and females in online learning self-efficacy, F (1,255) = 3.95, p = .05. The mean score for females (M = 74.43, SD = 15.29) was significantly higher than males on online learning self-efficacy (M = 70.49, SD = 14.47).

One-way ANOVA showed that there was no significant difference between males and females in Attitude towards media and technology [F (1,255) = 1.29, p = .26], psychological distress [F (1,255) = 2.56, p = .11], and resilience [F (1,255) = .79, p = .38].

A one way between subjects ANOVA carried out to find the difference between areas of residence on the study variables showed that there was no significant difference between areas of residence in Media and Technology Usage [F (3,253) = .67, p = .57], attitude towards media and technology [F (3,253) = 1.04, p = .37], online learning self-efficacy [F

(3,253) = 2.02, p = .11], psychological distress [F (3,253) = .88, p = .45] and resilience [F (3,253) = 1.17, p = .32].

Table 1: Summary of multiple linear regression analysis of Media and Technology Usage (MTU), Attitude towards Media and Technology (ATS) and gender as a predictor of online learning self-efficacy (OLS) in College and University students

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	49.74	5.79		8.59	.001
Media and technology usage	.02	.02	.10	1.58	.12
Attitude towards technology	.28	.10	.18	2.74	.007
Gender	3.98	1.97	.13	2.02	.04

Note: R^2 = .067, *Adj* R^2 = .056, F (3,253) = 6.024, p < .001

A multiple regression was carried out to investigate whether media and technology usage, attitude towards media and technology and gender could significantly predict online learning self-efficacy. Attitude towards media and technology β = 0.18, p<0.007 significantly and positively predict online learning self-efficacy. Gender (β = 0.13, p<0.04) significantly and positively predict online learning self-efficacy. The model of multiple regression shows that it is significant, R^2 = 0.67, F (3,253) = 6.024, p<0.001, and it accounts for 6.7% of the variance in online learning self-efficacy among college and university students. Media and technology usage did not emerge as a significant predictor of online learning self-efficacy.

Table 2: Summary of multiple linear regression analysis of Gender and Online Learning Self Efficacy (OLS) as a predictor of Psychological Distress in College and University students

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	39.65	8.89		4.46	.001
Gender	5.99	3.78	.10	1.59	.12
Online Learning Self-efficacy	-.003	.12	-.002	-.03	.98

Note: R^2 = .01, *Adj* R^2 = .002, F (2,254) = 1.27, p < .281

A multiple regression was carried out to investigate whether online learning self-efficacy and gender could significantly predict psychological distress. The model of multiple regression shows that it is not significant, R^2 = 0.01, *F (2,254)* = 1.27, p<0.281. Gender β = 0.10, p<0.12 *and* Online learning self-efficacy β = -0.002, p<0.98is not significant and does not predict psychological distress among college and university students. Thus, gender and online learning self-efficacy are not associated with psychological distress.

Table 3
Summary of multiple linear regression analysis of Online Learning Self-Efficacy and Gender as a predictor of Resilience in College and University students

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	27.86	1.37		20.34	.001
Gender	.25	.58	.03	.42	.67
Online Learning Self-efficacy	.07	.02	.24	3.89	.001

Note: R^2 = .059, *Adj* R^2 = .052, F (2,254) = 8.017, p < .001

A multiple regression was carried out to investigate whether online learning self-efficacy and gender could significantly predict resilience. The model of multiple regression shows that it is significant, R^2 = 0.059, F (2, 254) = 8.017, p<0.001. Online learning self-efficacyβ = 0.24, *p<0.001* significantly and positively predicts resilience, and it accounts for 5.9% of the variance in resilience among college and university students. Gender did not emerge as a significant predictor of resilience.

DISCUSSION

The study showedthat there is a significant gender difference in online learning self-efficacy. The mean score for the female is significantly higher than male on online learning self-efficacy. Females have higher online learning self-efficacy than males. This may be due to the Indian socio-cultural context. Males get more chances to get admissions in reputed institutions while females are restricted due to familial pressure and cultural factors. So, when it comes to online learning, females can learn and educate themselves more freely without crossing the boundaries. This may be the reason why females have more online

learning self-efficacy. Various authors have emphasized that males have higher levels of online self-efficacy than the female community (Fallan & Opstad, 2016; Lockridge, 2018). The results of both studies contradict the present study so, future research should longitudinally examine gender differences in online learning self-efficacy to determine the prevalence of gender differences in different cultures.

The study showed that there is a significant gender difference in media and technology usage. The mean score for the males is significantly higher than for the females on media and technology usage. In the context of usage of Information Technology, which includes computers, email services, and electronic data management systems, gender acts as a persuading factor in technology adoption as men are found to be more technologically proficient than women (Goswami & Dutta, 2016).

The results showed no gender difference in psychological distress, attitude towards media and technology, and resilience which means irrespective of the gender psychological distress, attitude towards media and technology and resilience is equal for all. There is a consistently remarkable similarity in men and women, which can be described as the gender similarity hypothesis. That is, we are far more alike than being different. There is universality among human beings in psychological distress, attitude towards media and technology, and resilience. In this competitive world, men and women experience stress, disappointments, and failures irrespective of gender, leading to psychological distress. Thus, everyone is resilient enough to withstand this stressful condition. Resilience serves as one of the most important resources to deal with stress, anxiety and depression.

The result showed no significant difference between areas of residence in online learning self-efficacy, psychological distress, media and technology usage, attitude towards media and technology, and resilience. Online learning self-efficacy is equal for male and female communities irrespective of the place of residence. There is a well-known agreement between the scholars on the above variables and the link between areas of residence. Zhang et al. (2015) concluded that self-efficacy was related to age and educational levels rather than a place of residence. Probst et al. (2006) observed that the occurrence of psychological distress in rural and urban areas; after regulating the rural/urban population

characteristics. However, the likelihood of depression did not fluctuate by residence.

It is also evident from the study that there is no difference in the areas of residence, media, and technology usage. The result has got in such a manner because the study population is of college and university students. Nowadays, most of the students get access to media and technology for their educational and recreational purposes, so that much difference in areas of residence and technology usage are not observed. Contrary to the current result, Calvert et al. (2010) have found that Urban respondents were more likely than rural ones to use most devices. Therefore, further research should focus more on the relationship between areas of residence, media, and technology usage. The result shows no significant differences in the areas of residence and attitude towards media and technology. González et al. (2015) have got a similar result while conducting an exploratory study regarding aging and attitude towards media and technology. The study found no significant correlations between areas of residence and attitude towards computer usage.

The study results show no significant difference in the areas of residence and resilience, which may be due to the population selected for the study is students. Rapaport et al. (2018) found a contradicting result that rural villages are a strong predictor of community resilience, as well as the socio-demographic categories: being older, sufficient or higher income and more religious.

The result shows that media and technology usage and attitude towards media and technology are associated with online learning self-efficacy. Any change in the media and technology usage would impact online learning self-efficacy as it is positively associated. Mikusa (2015) investigated self-efficacy and attitude towards technology usage as they affect technology implementation in the classroom and also obtained similar results that, through the online learning self-efficacy, participants indicated high engagement with technology for personal use.

The study shows that online learning self-efficacy is not associated with psychological distress. Arslen (2017) found the relationship between emotional self-efficacy and educational stress by a structural equation

model. Findings obtained from the model indicate that emotional self-efficacy negatively predicts educational stress. This means that when the self-efficacy of an individual increases, there is a lesser chance for psychological distress. In the present study, the association between self-efficacy and psychological distress was not evident. So further research should focus more on it.

The study shows that online learning self-efficacy is associated with resilience. Benright and Bandura (2017) reviewed several studies on individuals recovering from various types of traumas, including natural disasters, assault, spousal loss, and others. They found that self-efficacy played a role for individuals in post-trauma recovery. Further, the researchers state thatbuilding self-efficacy can lead to resilience.

CONCLUSION

The outbreak of the novel corona virus has created quite a hectic situation globally. The misconception and myths have further intensified mental distress and fear among human beings. The pandemic outbreak has invited many confusions though generated many opportunities comprising self-introspection for peaceful coexistence of all creatures. Online learning has become an inevitable thing in the era of COVID-19. As higher education adapts to teaching and learning at a distance, the workload, and the learning load of adopting a new delivery mode are taking a huge toll on the lives of those in higher education. This is an immense problem that is growing rapidly. While there are some students who are thriving through online learning, the toll of the virus, isolation, increased workloads and other associated effects and this situation rises among many students. The present study enables the importance of online learning self-efficacy for building resilience and bouncing back to normal. Since the online teaching “migration” is implemented quickly during the outbreak of COVID-19, students' anxiety needs to be relieved in various ways to ensure that they can actively and effectively engage in online learning. The study also accounts for the psychological distress associated with online learning and how self-efficacy could decrease the distress.

Limitation

Data were collected with an online form. Due to the inability to determine the sincerity of participant statements, only volunteering

participants were asked to fill the form. Another limitation of the present study was the selection of adequate electronic device owners as participants since the study was conducted online during the pandemic. Individuals who did not have access to electronic devices most probably could not participate in the study due to a lack of the required facilities. The limitation of the present study associated with the participants was the fact that, although individuals from all regions in India participated in the study, most were from the Southern regions.

Implication

The present study hosts several opportunities for future research by adding more variables such as well-being, social anxiety, academic resilience etc. The present study gives an idea to cope with the challenges faced during online education in the pandemic period. The factors that facilitate education during the COVID-19 pandemic and similar extraordinary cases are the adequacy of technological infrastructure and free internet access. Thus, educational institutions and organizations should improve the infrastructure and develop various solutions for internet access. To ensure equal opportunity in distance/online education, different socio-economic levels of the students should also be considered.

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