A STUDY OF SELF-EFFICACY OF STUDENTS OF HIGHER EDUCATION INSTITUTIONS TOWARDS ONLINE TECHNOLOGIES

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Introduction:

In recent years we have seen a wave of innovation and development in the field of communication technology that has touched every spheres of our life. Education sector is not an exception. It has changed the way the students access information, create and share information .it also changed the way the parents, educators and students communicate with each other.

The development in the field of technology also brought many challenges. One of the challenges is related to Cyber Security. Every connected devise can and will be hacked, if not implemented proper security measures. There is a need to incorporate basic security tips while using internet

The success of any e-learning and online learning depends on student's and teacher's efficacy in using technology. Self-efficacy is the belief "in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1997, p. 3). According to Bandura the self-efficacy has a predictive power which determines the utilisation of technology by students effectively one who knows the capabilities they possess, will be more successful than who are not aware about. Appropriate attitude towards the internet is a prerequisite for access of internet-based instruction services. The educators worldwide believe that internet-based instruction can engage and motivate student learning and help in self-regulated learning (Tsai, 2001: Chole & Tsai 2002: Peng, Tsai &Wu, 2006). According to Bandura there are four ways to develop self-efficacy i.e. mastery experiences, social modelling, social persuasion, and lastly states of physiology.

Perceived usefulness of online learning systems influences positively on online learning acceptance and student satisfaction (Lee& Mendlinger, 2011).

Teachers' beliefs are also a significant factor in determining the success of integrating technology in teaching learning process. The self-efficacy beliefs influence integration of instructional strategies by teachers (Albion, 1999).

Online Student Attributes:

Researchers have attributed many student related factors such as self-regulated learning, self-directed learning, locus of control, and academic self-efficacy that play an important role in student performance, readiness and success in online learning.

The results of the study made by Cascio, Botta & Anzaldi, 2013, show that "Self-Regulated Learners (SRLs) are able to activate and to sustain cognitions, behaviours, and emotions in a systematic way to reach learning

goals in DL" one of the factors leads to self-regulated learning is self-efficacy of technology. The author argued that people with a strong sense of self-efficacy develop a strong interest in learning activities and recover faster from setbacks and overcome the challenges easily than others. Self-efficacy has emerged as a highly effective predictor of students' motivation and learning. (Zimmerman, 2000; Pajares, 2002).The students with low self-efficacy tend to believe that they cannot succeed on specific tasks ,will superficially attempt them, give up quickly, or some time avoid the tasks or activities (Margolis, & McCabe, 2006). Students enter the classroom activities with their prior knowledge and experiences and it directly affects the initial development of self-efficacy (Schunk, 1985). Hence the prior knowledge of student's self-efficacy in using technology is very important factor in success of any instructional services provided through technology

Computer Usage:

Self-efficacy is associated with one's beliefs and behaviour. This belief also have influence of usage and adaption of technology. Individual who believes that computers are very difficult to use may develop a negative attitude towards technology. The confidence in using any technology using computers will improve the use of that technology. Computer self-efficacy refers to a judgment of one's capability to use a computer. Makri-Botsari, et al. 2004 study found that higher the computer self-efficacy higher the self-perception of academic self-confidence. Computer self-efficacy is greatly influenced by encouragement of others, management support, organisational support, etc. (Compeau & Higgins, 1995; Henry and Stone, 1994; Fagan and Neil,2003)

Internet self-efficacy

Internet self-efficacy (ISE), or the belief in one's capabilities to organise and execute internet-based services, is an important factor in online learning, e-services, digital learning, and any web-based services. Prior experience in internet service and use of internet have positive impact on self-efficacy of internet. (Eastin, & LaRose, 2000; Hsu, & Chiu, 2004) Livingstone & Helsper, 2010 research indicated that age, internet opportunities also influence positively on internet self-efficacy. People with higher self-efficacy shows positive attitude towards technology than those with negative attitude towards technology (Kuo et al 2014).

Communication and interaction:

The recent development in ICT has made the use of synchronous mode of communication more popular than asynchronous mode of communication. Today's digital users use social media sites, instant messaging services, online discussion forums more often. The support needed by students in asynchronous and synchronous mode of communication is differ in terms of interaction (Ng, 2007) Research also shows significant positive relationship between IT self-efficacy and students' academic achievements and online learning performances (Abulibdeh & Hassan, 2011; Chen, 2014)). The development in web conferencing tools positively impacted the use of synchronous mode of communication. A Person who is a presenter can simultaneously use other online tools along with screen sharing. The presenter can use white board, chat even communicate with the participants using microphone. Hence the self-efficacy in using tools is also an

important factor for online learning. Many platforms today use both asynchronous and synchronous mode of communication for better usage of technology and its effectiveness (Wang, Jaeger, Liu, Guo & Xie 2013).

Researchers also observed that asynchronous mode of communication between teachers and students in an online learning environment through Audio and video classes, flipped classroom activities are very popular. .

Hence, the researchers undertook this study to facilitate their understanding of the same and enhance their role as educators.

The problem of the study is stated as follows:

A study of Self-Efficacy of students of Higher Education Institutions towards Online Technologies

Major Objectives of the Present Study:

1) To study the level of the Self Efficacy of students of Higher Education Institutions towards Online Technologies in South Mumbai.

2) To compare the level of Self Efficacy of students of Higher Education Institutions towards Online Technologies in South Mumbai with reference to their::

     i. Sex (Female and Male)

     ii. Age (25 years and below and 26 years and above)

     iii. Educational Qualifications (Undergraduate and Postgraduate)

     iv. Academic Streams (Teacher Education, Library Science and Others)

Null Hypotheses of the Present Study:

There is no significant difference in the mean scores of the Self Efficacy of students of Higher Education Institutions towards Online Technologies in South Mumbai with reference to their:

     i. Sex (Female and Male)

     ii. Age (25 years and below and 26 years and above)

     iii. Educational Qualifications (Undergraduate and Postgraduate)

     iv. Academic Streams (Teacher Education, Library Science and Others)

Research Methodology and Participants:

The present study was a descriptive research survey wherein 84 students of Higher Education Institutions were surveyed. The sample was collected randomly by administering the instrument through Google Form. The participants who volunteered and returned the instrument completely filled were taken into consideration for data analysis. A standardised instrument, the Online Technologies Self Efficacy Scale (OTSES) standardised by Crocker and Algina (1986), as described below, was selected as it served the purpose of the present research well. The entire data collection process was spread over two months.

The Research Instrument:

The Online Technologies Self Efficacy Scale (OTSES) standardised by Crocker and Algina (1986), proposes to elicit responses of students on four sub-scales, viz. a) Internet Competences, b) Synchronous Interaction, c) Asynchronous Interaction – I, and d) Asynchronous Interaction – II. The questionnaire asks

how confident he participant feels while using online technologies (such as internet, email etc.) in order to succeed in an online course

However, for the purpose of the present research study, the researchers employed a modified version of the OTSES instrument as follows:

a) Internet Competences (Using Internet), consisting of 9 items with Very Confident, Somewhat Confident, Not very Confident, and Not confident at all, scales.

b) Synchronous Interaction (Chatting "live" in a Synchronous System), Questions about chatting "live" in a synchronous chat system such as course info, first class, Net Meeting or IRC (some people call it synchronous interaction) or Social Media Chat Platforms (Whatsapp, Messenger etc.). It consisted of items 10 o 13, with Very Confident, Somewhat Confident, Not very Confident, and Not confident at all, scales.

c) Asynchronous Interaction – I, Questions about using an email system such as Gmail, Rediiffmail, Hotmail, Yahoo Mail, Pine, Netscape Mail, or Outlook to communicate with friends, instructors or other students who are not online at the same time. It consisted of items 14 o 22, with Very Confident, Somewhat Confident, Not very Confident, and Not confident at all, scales.

d) Asynchronous Interaction – II, Questions about posting a message to a newsgroup, a bulletin board, a Blog or on the discussion board of a conferencing system such as (Course in for, First Class Etc.) where participants are not online at the same time. It consisted of items 23 o 29, with Very Confident, Somewhat Confident, Not very Confident, and Not confident at all, scales.

e) Online Tools: It consisted of items 30 o 43, with Very Confident, Somewhat Confident, Not very Confident, and Not confident at all, scales.

f) For Teacher Trainees Only: Questions regarding the use online and offline materials/open source software to engage students digitally. It consisted of items i o xx, with Very Confident, Somewhat Confident, Not very Confident, and Not confident at all, scales.

g) For Library Students: Questions about using Library related online tools/management System. It consisted of items i o xii, with Very Confident, Somewhat Confident, Not very Confident, and Not confident at all, scales.

A high score on the scale indicates positive valence and a low score indicates negative valence in perceptions.

The Major Findings of the Present Study:

The collected data was tabulated and analysed both through descriptive and inferential analysis (t-test). The relevant descriptive statistics with reference to the sex and age of the student participants and their educational qualifications (EQ) and Academic Streams is given below in Table – 1:

Table-1:

Descriptive Statistics

	Females	Males	25 years & Below	Above 25 years	Under-graduate (UG)	Post-graduate (PG)	Teacher Education Stream	Library Science Stream	Other Stream
Mean	97.65	96.28	97.43	97.11	96.09	99.76	98.92	97.10	95.35
Median	2.49	89.00	99.00	95.00	91.00	101.00	99.00	93.00	90.00
Mode	98.00	89.00	89.00	89.00	89.00	95.00	89.00	120.00	89.00
Standard Deviation	20.20	18.89	20.57	17.50	20.35	18.89	19.78	19.57	20.66
Kurtosis	-0.95	-0.24	-1.01	0.03	-0.74	-1.37	-0.32	-1.44	-1.00
Skew	-0.22	-0.01	-0.21	-0.04	-0.19	-0.10	-0.46	0.21	-0.08
Count	66	18	65	19	55	29	37	21	26

T-Test Interpretations:

1. The mean score for the Female students on the variable 'Online Technologies Self Efficacy' (M = 97.65, SD = 20.20) did not differ statistically significantly (t = 0.26, df = 82, two-tailed ρ = 0.80) from that of the Male students (M = 96.28, SD = 18.89). Thus, the null hypothesis (H$_0$-1) is supported. The p-value indicates that the probability that the observed results are due to random chance is high.

2. The mean score for the students of age 25 years and below, on the variable 'Online Technologies Self Efficacy' (M = 97.43, SD = 20.57) did not differ statistically significantly (t = 0.06, df = 82, two-tailed ρ = 0.95) from that of the students of age above 25 years (M = 97.11, SD = 17.50). Thus, the null hypothesis (H$_0$-2) is supported. The p-value indicates that the probability that the observed results are due to random chance is high.

3. The mean score for the Undergraduate students on the variable 'Online Technologies Self Efficacy' (M = 96.09, SD = 20.35) did not differ statistically significantly (t = 0.80, df = 82, two-tailed ρ = 0.42) from that of the Postgraduate students (M = 99.76, SD = 18.89). Thus, the null hypothesis (H$_0$-3) is supported. The p-value indicates that the probability that the observed results are due to random chance is high.

4. Analysis of variance found that there was no statistically significant difference between the three educational streams (F = 0.25, p > 0.05). The means for Teacher Education, Library Science and Other Streams (98.92, 97.10 and 95.35 respectively) were not statistically significantly different from each other. Thus, the null hypothesis (H$_0$-4) is supported. The p-value indicates that the probability that the observed results are due to random chance is high.

Conclusions:

1. There is no statistically significant difference in the Online Technologies Self Efficacy with reference to the sex of the students of Higher Education Institutions. Thus, sex of the students does not seem to be a contributor towards a favourable Online Technologies Self Efficacy.

2. There is no statistically significant difference in the Online Technologies Self Efficacy with reference to the age of the students of Higher Education Institutions**.** Thus, age of the students does not seem to be a contributor towards a favourable Online Technologies Self Efficacy.

3. There is no statistically significant difference in the Online Technologies Self Efficacy with reference to the educational qualifications of the students of Higher Education Institutions**.** Thus, educational qualifications of the students does not seem to be a contributor towards a favourable Online Technologies Self Efficacy.

4. There is no statistically significant difference in the Online Technologies Self Efficacy with reference to the academic streams of the students of Higher Education Institutions**.** Thus, academic streams of the students does not seem to be a contributor towards a favourable Online Technologies Self Efficacy.

Summary of Major Findings of the Study:

1) Sex of the students of Higher Education Institutions does not seem to be a contributor towards a favourable Online Technologies Self Efficacy.

2) Age of the students of Higher Education Institutions does not seem to be a contributor towards a favourable Online Technologies Self Efficacy.

3) Educational qualifications of the students of Higher Education Institutions does not seem to be a contributor towards a favourable Online Technologies Self Efficacy.

4) Academic streams of the students of Higher Education Institutions does not seem to be a contributor towards a favourable Online Technologies Self Efficacy.

Scope and Delimitations of the Present Study:

The above major findings of the study are constrained by the limited scope and delimitations of the research which were beyond the control of the researchers. These need to be taken into account, viz.:

- Standardised ready-made instrument (scale) has been employed for the ease of study.
- Paper-pencil test has been employed.
- Volunteering students of Higher Education Institutions participated in the study.
- Time period for data collection has been limited.
- Google Form for online data collection has been adhered.
- Most of the students completed the scale at their convenience.
- Only here streams (Teacher Education, Library Science and Other Streams) were taken up for the study.

References:

Abulibdeh, E. S., & Hassan, S. S. S. (2011). E-learning interactions, information technology self-efficacy and student achievement at the University of Sharjah, UAE. *Australasian Journal of Educational Technology*, *27*(6).

Achim, N., & Al Kassim, A. (2015). Computer usage: the impact of computer anxiety and computer self-efficacy. *Procedia-Social and Behavioral Sciences*, *172*, 701-708.

Albion, P. R. (1999). Self-efficacy beliefs as an indicator of teachers' preparedness for teaching with technology. In *Society for Information Technology & Teacher Education International Conference* (pp. 1602-1608). Association for the Advancement of Computing in Education (AACE).

Bandura, A. (1997). Self-efficacy: The exercise of control. New York: W.H. Freeman

Bates, R., & Khasawneh, S. (2007). Self-efficacy and college students' perceptions and use of online learning systems. *Computers in Human Behavior*, *23*(1), 175-191.

Cascio, M., Botta, V. & Anzaldi, V. (2013). The role of self-efficacy and internal locus of control in online learning. *Journal of e-Learning and Knowledge Society, 9*(3),. Italian e-Learning Association. Retrieved December 20, 2020 from https://www.learntechlib.org/p/148257/.

Chen, Y. L. (2014). A study on student self-efficacy and technology acceptance model within an online task-based learning environment. *Journal of Computers*, *9*(1), 34-43.

Compeau, D. R., & Higgins, C. A. (1995a). Computer Self-Efficacy: Development of a Measure and Initial Test. MIS Quarterly, 19(2), 189–211.

Eastin, M. S., & LaRose, R. (2000). Internet self-efficacy and the psychology of the digital divide. *Journal of computer-mediated communication*, *6*(1), JCMC611.

Fagan, M., & Neill, S. (2003). An empirical investigation into the relationship between computer self-efficacy, anxiety, experience, support and usage. Journal of Computer Information Systems, Winter 200.

Girasoli, A. J., & Hannafin, R. D. (2008). Using asynchronous AV communication tools to increase academic self-efficacy. *Computers & Education*, *51*(4), 1676-1682.

Henry, J. W., & Stone, R. W. (1994). A Structural Equation Model Of End-User Satisfaction With A Computer-Based Medical Information System. Information Resources Management Journal, 7(3), 21-33

Hsu, M. H., & Chiu, C. M. (2004). Internet self-efficacy and electronic service acceptance. *Decision support systems*, *38*(3), 369-381.

Kuo, Y. C., Walker, A. E., Belland, B. R., Schroder, K. E., & Kuo, Y. T. (2014). A case study of integrating Interwise: Interaction, internet self-efficacy, and satisfaction in synchronous online learning environments. *International Review of Research in Open and Distributed Learning*, *15*(1), 161-181.

Lee, J. W., & Mendlinger, S. (2011). Perceived self-efficacy and its effect on online learning acceptance and student satisfaction. *Journal of Service Science and Management*, *4*(03), 243.

Livingstone, S., & Helsper, E. (2010). Balancing opportunities and risks in teenagers' use of the internet: The role of online skills and internet self-efficacy. *New media & society*, *12*(2), 309-329.

Makri-Botsari, E., Paraskeva, F., Koumbias, E., Dendaki, A., & Panaikas, P. (2004). Skills in computer use, self-efficacy and self-concept. *WIT Transactions on Information and Communication Technologies*, *31*.

Margolis, H., & McCabe, P. P. (2006). Improving self-efficacy and motivation: What to do, what to say. *Intervention in school and clinic*, *41*(4), 218-227.

Pajares, Frank. "Gender and perceived self-efficacy in self-regulated learning." *Theory into practice* 41, no. 2 (2002): 116-125.

Reinhart, J., & Schneider, P. (2001). Student satisfaction, self-efficacy, and the perception of the two-way audio/video distance learning environment: A preliminary examination. *Quarterly Review of Distance Education*, *2*(4), 357-65.

Schunk, D. H. (1985). Self-efficacy and classroom learning. *Psychology in the Schools*, *22*(2), 208-223.

Wang, C. X., Jaeger, D., Liu, J., Guo, X., & Xie, N. (2013). Using synchronous technology to enrich student learning. *TechTrends*, *57*(1), 20-25.

Zimmerman, B. J. (2000). Self-efficacy: An essential motive to learn. *Contemporary educational psychology*, *25*(1), 82-91.