Online Self-Efficacy, Self-Regulation and Learning Satisfaction among Online Learners: Learner-Instructor Interaction as Mediator

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Abstract

This study explored how online self-efficacy (confidence in navigating online learning) and self-regulation (managing learning goals) influence student satisfaction in a Pakistani online learning context. Using a survey research design with 300 university students, the research found that both self-efficacy and self-regulation positively predicted student satisfaction. Furthermore, instructor-learner interaction emerged as a potential mediating factor, suggesting that students with higher self-efficacy and self-regulation may be more likely to engage with instructors, leading to greater satisfaction. The study also revealed gender differences, with boys scoring higher in online self-efficacy and girls exhibiting stronger self-regulation skills. However, student satisfaction did not differ significantly by gender. The findings highlight the importance of fostering both self-efficacy and self-regulation skills among online learners and the potential benefits of promoting frequent interaction with instructors. Limitations and recommendations for future research are discussed.

Keywords: Self-Regulation, learning satisfaction, Interaction Satisfaction

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Introduction

The COVID-19 pandemic forced a global shift to online education (Mailizar et al., 2020; Kaur, 2020). This presented challenges for students, who needed strong self-efficacy (belief in their ability to succeed) and self-regulation (managing goals and behaviors) to navigate this new system. Bandura's theory (1997) highlights self-efficacy's role in human achievement, including online learning. Online self-efficacy refers to a student's confidence in their ability to learn effectively in an online environment, including managing time and technology. Pintrich (2000) emphasizes self-regulation as a process where learners set goals and regulate their actions and thinking to achieve them. Both self-efficacy and self-regulation were crucial for students' success in online education during the pandemic.

Literature Review

The shift to online education due to COVID-19 makes online self-efficacy, a student's confidence in their ability to learn effectively online, a crucial factor in student satisfaction (Kuo et al., 2014).

In distance learning environments like online education, student satisfaction is paramount, as it directly impacts their performance and the overall success of the online system (Kuo et al., 2014). Research shows a clear link between student satisfaction and academic achievement (Chang & Smith, 2008; Noel-Levitz, 2011). Student satisfaction reflects their engagement with the learning experience, their perception of its value, and ultimately, program outcomes (Liao & Hsieh, 2011). Furthermore, satisfaction is linked to student retention and program success (Koseke & Koseke, 1991), with higher satisfaction leading to lower dropout rates (Ali & Ahmad, 2011). Studies by Horzum & Cakir (2009) highlight the importance of student understanding in managing technology and interacting with instructors. Additionally, research by Hodges (2008) confirms that self-efficacy is a key factor for success in online learning environments. Several studies support the link between self-efficacy and online learning success. Shen et al. (2013) found a connection between self-efficacy and prior online learning experience, suggesting that past success can boost confidence in future endeavors. Lim (2001) further highlights the importance of technology self-efficacy, which refers to a student's comfort using online tools and devices. This comfort level positively impacts student satisfaction and success in online courses. Similarly, Zimmerman and Kulikowich (2016) reported a direct relationship between high self-efficacy and academic achievement. While Alqurashi (2016) identified a lack of prior research on self-efficacy in online learning, the existing studies clearly demonstrate its significance.

Self-efficacy is a critical factor in online learning environments, impacting factors like student retention (Yukselturk et al., 2014), perceived learning outcomes (Alqurashi, 2019), and overall course satisfaction (Cho & Heron, 2015). Unlike traditional learning, online environments require a different kind of confidence – the belief in one's ability to navigate the online platform, manage their learning process, and interact effectively. Students lacking this confidence, often due to limited experience with online learning, may struggle with participation and ultimately become dissatisfied (Liang & Tsai, 2008; Tsai et al., 2011). While online programs often provide opportunities for discussion, successful participation hinges on self-regulation – the ability to set goals, manage time, and stay motivated (Sun & Rueda, 2012). Students with low self-regulation skills may encounter difficulties that lead to dissatisfaction with online learning. Self-efficacy and self-regulation are intertwined concepts that significantly impact learning success (Bandura, 1991; Zimmerman, 1990). Self-efficacy fuels self-regulation, the process of setting goals, evaluating progress, and adapting learning strategies (Zimmerman, 1990). Research suggests that self-efficacy isn't just about academic achievement; it's also a strong predictor of self-regulation (Pintrich & DeGroot, 1990). Students with high self-efficacy are more likely to be determined and persistent in pursuing their learning goals (Bandura, 1991). In essence, both self-efficacy and self-regulation are powerful tools that educators can leverage to enhance the teaching and learning experience.

Student interaction is a crucial element for satisfaction in both traditional and online learning environments (Ali & Ahmad, 2011). In face-to-face classrooms, interaction often takes the form of direct dialogue between students and teachers. Online learning environments rely on different forms of communication to facilitate interaction (Battalio, 2007). This interaction can serve multiple purposes, such as motivating students, gauging their understanding, providing support, and fostering knowledge sharing (Moore, 1989). Research on gender differences in online learning yields mixed results. While some studies suggest boys may score higher in online self-efficacy (confidence in navigating the online environment), others report girls may outperform in self-regulation (managing learning goals). Additionally, findings on student satisfaction vary across studies (Yukselturk & Bulut, 2009). More research is needed to definitively understand how gender impacts online learning experiences.

Rationale

The COVID-19 pandemic forced the closure of educational institutions in Pakistan on March 13th, 2020 (Ali, 2020). In response, the Higher Education Commission (HEC) implemented online learning systems to ensure educational continuity (Ali, 2020). While online education is a well-established practice in many developed countries, with a steady rise in student enrollment (Poulin & Straut, 2016; Seaman et al., 2018), it was a relatively new concept for Pakistani students. This shift to online learning necessitates a closer look at its success in Pakistan, particularly how factors like online self-efficacy (confidence in navigating online learning environments) and self-regulation (managing learning goals) impact student satisfaction. This study contributes to our understanding of online learning in developing countries by examining its effectiveness in the context of Pakistan. The research will illuminate the unique challenges faced by students in this under-represented region (compared to the existing literature focused on developed countries). Furthermore, this study goes beyond existing research by exploring the mediating effect of learner-instructor interaction on student satisfaction. This unique contribution will provide valuable insights for educators and policymakers aiming to improve online learning experiences in developing countries.

The conceptual framework of the proposed research is present in Figure 1

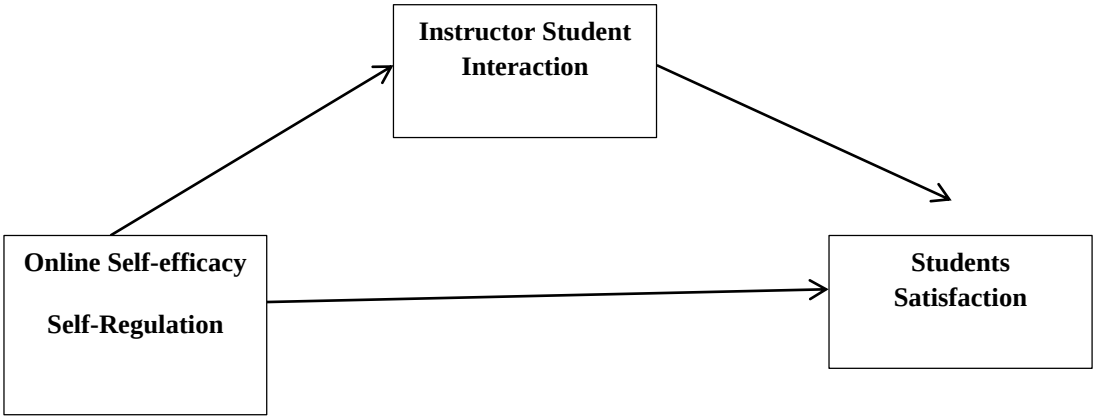


***Figure 1*.Conceptual framework of study**

Hypotheses

In view of the pertinent literature, the proposed study formulates the following hypotheses:

1. There will be significant relationship in self-efficacy, self regulation, learner instructor interaction and learner satisfaction among university students.

2. Learner instructor interaction will mediate the relationship between self-efficacy and learners satisfaction.

3. Learner instructor interaction will mediate the relationship between self-regulation and learners satisfaction.

4. There would be significant gender differences among study variables.

Research Design

Cross-sectional survey research design was used in the current research.

Sample

For this study convenience sampling technique were used. The study sample were comprised on (N = 300) students of different universities of Punjab and belonging to different academic disciplines.

Instruments

The following instruments were used for data collection:

The Demographic Sheet was constructed by the researchers to get basic demographic information

Online Self Efficacy

In the year 2016, Zimmerman and Kulikowich created the OLSES scale. The online self-efficacy scale consists of 22 items with three factors, named online learning environment (10 items), management of time (5 items) and usage of technology (7 items). It has 6-point rating response format ranging from 1 = would perform task poorly 6 = would perform task at an expert level. The Online Self-Efficacy Scale has no reverse items. The total scale of online Self-Efficacy is computed by adding all the items of the subscale. The Cronbach alpha of the total scale is 0.81 (Zimmerman & Kulikowich, 2016).

Self-Regulation

A scale of Learning Questionnaire (MSLQ) by Pintrich et al. (1993), its sub scale of self-regulation was used in the study. The scale has 12 items and 7-point rating scale was used. The range was from 1 (not at all true of me) to 7 (very true of me). It assesses the degree to which learners used preparation, tracking, and controlling techniques during the learning process. Its Cronbach alpha reliability was .79

Students Satisfaction Scale

Satisfaction of students were measured a scale developed by (Kuo et al., 2009). The instrument has five items ranging from 1 (strongly disagree) to 5 (strongly agree). The Cronbach's coefficient was .93 (Kue, 2010).

Interaction Scale

Interaction was measured by a scale named learner-instructor interaction by Kuo, Eastmond, Schroder, and Bennett (2009).Basically it was a subscale with six items. It is five point likert scale ranges from 1(Strongly disagree) to 5 (Strongly agree), with alpha reliabity of .80 (Kuo, Eastmond, Schroder, & Bennett, 2009).

Procedure

The permission to conduct this research was obtained from the concerned authorities.. Students were contacted and informed about the nature of the research and their ethical considerations. Written informed consents were obtained. After that demographic sheet along with questionnaire were administered.

Findings

After collecting data, data was analyzed. SPSS 25 software was used for data analysis. Correlation, regression t test and mediation analysis were applied on the data.

Table 1. Descriptive statistics, inter-scale correlations, and alpha coefficients of the scales (***N*** = 300)

Variables	*M*	*SD*	*A*	1	2	3	41	5	6	7	Range		Sk
											Actual	Potential	
1.ONSE	71.60	20.13	.95	-	.94***	.91***	.93***	.53***	.50***	.52***	21- 126	22 - 132	.26
2.Learn	29.92	9.21	.89	-	-	.83***	.83***	.48***	.46***	.51***	9-54	10 - 60	.32
3.Time	17.69	5.31	.85	-	-	-	.77***	.53***	.47***	.45***	5-30	5- 30	.09
4.Tech	23.99	6.94	.87	-	-	-	-	.48***	.48***	.48***	7-42	7- 42	.07
2. SR	55.45	11.86	.84	-	-	-	-	-	.29***	.33***	23 -84	12- 84	-.43
3. SST	15.20	4.56	.86	-	-	-	-	-	-	.70***	5 -25	1- 25	-.19
4. LII	19.25	4.90	.85	-	-	-	-	-	-	-	6 - 30	6-30	-.38

Note. ONSE = Online Self Efficacy Scale; SR = Self-Regulation; SS = Student Satisfaction; LII = Learner Instructor Interaction.

Table 1 shows mean shows the mean, standard deviation, alpha reliability, and correlation among all study variables. The results showed that all scales of this study are internally consistent as alpha coefficients of all scales are satisfactory. Online self-efficacy has significant relationship with self-regulation, student satisfaction and learner instructor interaction. Self-regulation has positive relationship with student's satisfaction and learner instructor interaction. Student satisfaction has positive relationship with learner instructor interaction.

Table 2

Regression Analysis for online Self Efficacy and Self-Regulation Predicting Students Satisfaction (N = 300)

	Students Satisfaction		
Predictor Variable	*β*	R^2	*F (Model)*
Self-Efficacy	.50***	.25	49.62***
Self-Regulation	.03		

Table 2 shows simple linear regression is computed with student's satisfaction as outcome variables and online self-efficacy and self-regulation as a predictor variable. Table shows that online self-efficacy was a strong positive predictor of student satisfaction ($\beta = .64$, $t = 14.47$, $p < .001$) whereas self-regulation gave non-significant results ($\beta = .03$, $t = .57$, $p > .05$).Overall the

model was significant with 25% variance in student satisfaction {ΔR^2 = .25, F (1, 298) = 49.62, p < .001}.

Table 3

Direct and Indirect Effect of Self-Regulation on Student's Satisfaction (*N* = 300)

		95 % *CI*	
Effects	*B*	*LL*	*UL*
Total	.11***	.07	.15
Direct	.02	-.008	.05
Indirect	.09	.06	.12

***p < .001

Table 3 shows total direct and indirect mediation effects of self-regulation on student's satisfaction through instructor student interaction. The R^2 value .11 indicates that self-regulation explained 11 % variance in teacher student interaction with F (1,298) = 36.32, p < .001. The R^2 value .49 indicates that ISI and self-regulation explained 49 % variance in teacher student interaction with F (2,297) = 147.44, p < .001. The R^2 value of .08 indicates that total model explained 8 % variance in teacher student ISI with F (1,298) = 26.86, p < .001. The indirect and direct effects confirmed the full mediation effect of ISI between self-regulation and students satisfaction.

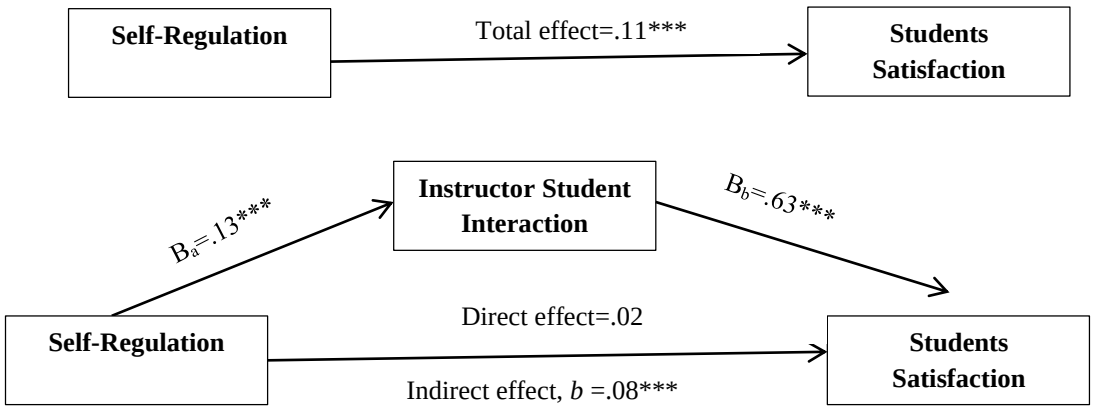


Figure 2. Mediating Role of Instructor Student Interaction between Self-regulation and students satisfaction.

Table 4

Direct and Indirect Effect of Online Self-Efficacy on Student's Satisfaction (*N* = 300)

		95 % *CI*	
Effects	*B*	*LL*	*UL*
Total	.11***	.09	.13
Direct	.04**	.02	.06
Indirect	.07***	.009	.05

****p* < .001

Table 4 shows total direct and indirect mediation effects of online self-efficacy on student's satisfaction through instructor student interaction. The R^2 value .26 indicates that online self-efficacy explained 26 % variance in teacher student interaction with F (1,298) = 108.69, p < .001. The R^2 value .52 indicates that ISI and ONSE explained 49 % variance in ISI with F (2,297) =160.86, p < .001. The R^2 value of .24 indicates that total model explained 24 % variance in ISI with F (1,298) = 26.86, p < .001. The indirect and direct effects confirmed the partial mediation effect of ISI between self-regulation and students satisfaction.

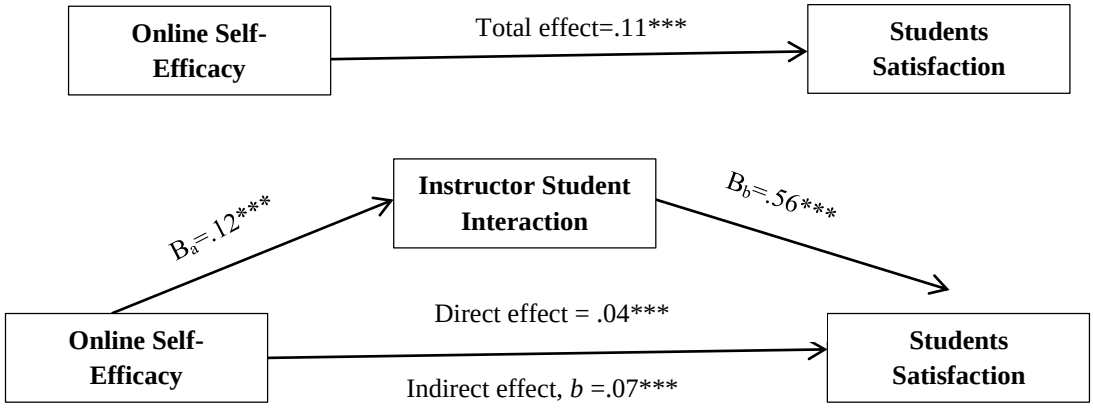


Figure 3. Mediating Role of Instructor Student Interaction between Online Self-Efficacy and student's satisfaction.

Table 5

Comparison of Males and Females on Online Self Efficacy, Self-Regulation, Students Satisfaction and Learner Instructor Interaction (N = 300)

	Boys (n = 108)		Girls (n = 192)			95% CI		Cohen's d
Variables	*M*	*SD*	*M*	*SD*	*t*(298)	*LL*	*UL*	
1.ONSE	71.28	19.13	70.08	21.88	.20**	5.25	4.28	0.05
2.Learning	29.92	9.71	29.91	8.94	.005	5.25	4.28	-
3.Time	17.51	5.81	17.59	5.01	.42	2.17	2.19	-
4.Technology	23.86	7.79	24.06	6.42	.24**	.98	1.53	0.02
5. SR	56.63	12.44	56.47	11.42	.20	-5.63	-.05	0.23
6. SST	15.81	4.83	14.85	4.38	1.74	-.12	2.03	-
7. LII	19.48	5.55	19.13	4.51	.59	-.81	1.51	-

Note. ONSE = Online Self Efficacy Scale; SR = Self-Regulation; SS = Student Satisfaction; LII = Learner Instructor Interaction.

*p .05. **p < .01.

Results in Table 5, demonstrate the mean gender differences and effect size on study variables. Results indicate significant mean differences on online self-efficacy {t (198) = .20, p < .05)}. The findings shows that boys scored high on online self-efficacy (M = 71.28, p < .05) as compared to girls (M = 70.08, p < .05). Subscale of online self-efficacy scale learning showed non-significant results with {t (198) = .005, p > .05)} and timing also showed non-significant results {t (198) = .42, p > .05)}. Technology a subscale of online self-efficacy showed significant results with {t (198) = .07, p < .05)}. The findings shows that boys scored high on technology usage (M = 24.06, p < .05) as compared to girls (M = 23.86, p < .05). Next variable was self-regulation which also shows significant mean differences with {t (198) = .20, p < .05)}. The findings shows that girls scored high on self-regulation (M = 56.47, p < .05) as compared to boys (M = 53.63, p < .05).Next variables were students satisfaction {t (198) = 1.74, p >.05)}, and learner instructor interaction t (198) = .59, p >.05)} which shows non-significant results.

Discussion and Recommendations

The present study postulated online self-efficacy and self-regulation as predictors, student's satisfaction as outcomes variable. Furthermore, the study also explored the relation of interaction between teacher and students as mediator between self-efficacy and students satisfaction. Current study reflected upon the effects of gender on aforementioned variables.Before checking the relationship between variables alpha reliability was computes which shows that scales were internal consistent. The study supported the hypothesis that online self-efficacy is positively related to student satisfaction. This means students with higher confidence in their ability to navigate online learning environments reported greater satisfaction with their learning experience. This finding aligns with previous research demonstrating the link between self-efficacy and satisfaction in educational settings (Chemers et al., 2001; Schunk, 1991). Students with low self-efficacy may struggle to persevere through challenges, potentially leading to decreased satisfaction and higher dropout rates.

Similar to online self-efficacy, self-regulation also exhibited a positive correlation with student satisfaction. This indicates that students who effectively manage their learning goals and strategies reported higher satisfaction with their online learning experience. Self-regulation allows students to stay organized and focused on their studies, which can contribute to increased satisfaction (Artino, 2007; Puzziferro, 2008). The study explored learner-instructor interaction as a mediating variable in the relationship between online self-efficacy/self-regulation and student satisfaction. The findings suggest that online self-efficacy and self-regulation may indirectly influence student satisfaction through increased interaction with instructors. Students with higher self-efficacy and self-regulation likely feel more confident approaching instructors for help and clarification, leading to richer interactions and ultimately, greater satisfaction (Chen & Tian, 2011). Similar to the findings of Chu & Chu (2010), where internet self-efficacy mediated the connection between internet use and satisfaction, this study suggests that learner-instructor interaction might play a mediating role. In other words, students with higher online self-efficacy and self-regulation may be more likely to engage in frequent interaction with instructors. This richer interaction, in turn, could lead to increased student satisfaction with online learning.

The study explored gender differences in online self-efficacy and self-regulation. The results indicated that boys may score higher in online self-efficacy, while girls may exhibit stronger self-regulation skills. This partially aligns with prior research, such as Cooper (2006) who found higher internet self-efficacy scores in boys. However, it's important to consider that gender differences in online learning can be complex and influenced by various factors beyond technical skills. For example, Harvey et al. (2017) reported no significant gender differences in student satisfaction.

This study's limitations include the focus on students from a single university, limiting the generalizability of findings. Future research could benefit from a more diverse sample encompassing students from various universities and educational backgrounds, as well as incorporating the perspectives of instructors. Additionally, while the current sample size was adequate, a larger and more inclusive sample could further strengthen the results. Future investigations could also explore the factors influencing student satisfaction in online learning environments (antecedents) and the potential outcomes of high satisfaction (consequences), such as student engagement, learning outcomes, and dropout rates.

Conclusion

This study contributes to the understanding of online learning in Pakistan by demonstrating the positive impact of online self-efficacy (confidence in navigating online learning environments) and self-regulation (managing learning goals) on student satisfaction. The study also suggests that frequent interaction with instructors may play a mediating role, potentially amplifying these benefits. These findings highlight the importance of fostering online self-efficacy and self-regulation skills among students. Educators can achieve this by providing clear instructions, scaffolding learning activities, and promoting opportunities for student interaction. By empowering students in these areas, online learning experiences can be optimized for increased satisfaction and achievement.

Implication of the Study

Since student satisfaction is a key factor in educational success, this study offers valuable insights for educators and administrators in Pakistan, where online learning is a relatively new experience for many students. The findings emphasize the importance of fostering online self-efficacy (confidence in navigating online learning environments) and self-regulation (managing learning goals) skills among students. By implementing mechanisms that support these skills, such as providing clear instructions, scaffolding learning activities, and promoting opportunities for student interaction, educators can create a more positive and productive online learning experience for students. This, in turn, can contribute to advancements in educational psychology by illuminating effective strategies for optimizing online learning environments in developing countries.

References

Ali, A., & Ahmad, I. (2011). Key Factors for Determining Student Satisfaction in Distance Learning Courses: A Study of Allama Iqbal Open University. *Contemporary Educational Technology*, 2(2), 118–134. https://doi.org/10.30935/cedtech/6047

Ali, N. (2020). Students disappointed with online teaching system amid COVID-19. *Retrieved from Daily Times: https://dailytimes. com. pk/587446/students-disappointed-with-online-teaching-system-amid-covid-19*.

Almanthari, A., Maulina, S., & Bruce, S. (2020). Secondary school mathematics teachers' views on E-learning implementation barriers during the COVID-19 pandemic: the case of Indonesia. *Eurasia Journal of Mathematics, Science and Technology Education*, *16*(7), em1860.

Alqurashi, E. (2016). Self-efficacy in online learning environments: A literature review. *Contemporary Issues in Education Research (CIER)*, *9*(1), 45-52.

Alqurashi, E. (2019). Predicting student satisfaction and perceived learning within online learning environments. *Distance Education*, *40*(1), 133-148.

Artino Jr, A. R. (2007). Online military training: Using a social cognitive view of motivation and self-regulation to understand students' satisfaction, perceived learning, and choice. *Quarterly Review of Distance Education*, *8*(3), 191.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavior change. *Psychological Review*, *84*, 191-215. http://dx.doi.org/10.1037/0033 295X.84.2.191

Bandura, A. (1997). The anatomy of stages of change. *American Journal of Health Promotion: AJHP*, *12*(1), 8-10.

Battalio, J. (2007). Interaction online: A reevaluation. *Quarterly Review of Distance Education*, *8*(4).

Chang, S. H. H., & Smith, R. A. (2008). Effectiveness of personal interaction in a learner-centered paradigm distance education class based on student satisfaction. *Journal of research on technology in education*, *40*(4), 407-426.

Chemers, M. M., Hu, L. T., & Garcia, B. F. (2001). Academic self-efficacy and first year college student performance and adjustment. *Journal of Educational psychology*, *93*(1), 55.

Cho, M. H., & Heron, M. L. (2015). Self-regulated learning: the role of motivation, emotion, and use of learning strategies in students' learning experiences in a self-paced online mathematics course. *Distance Education*, *36*(1), 80-99.

Harvey, H. L., Parahoo, S., & Santally, M. (2017). *Should Gender Differences be Considered When Assessing Student Satisfaction in the Online Learning Environment for Millennials? Higher Education Quarterly*, *71(2), 141–158*.doi:10.1111/hequ.12116

Hodges, C. B. (2008). Self-efficacy in the context of online learning environments: A review of the literature and directions for research. *Performance Improvement Quarterly*, *20*(3-4), 7-25.

Horzum, M. B., & Cakir, O. (2009). Cevrim ici teknolojilere yonelik oz-yeterlik algisi olcegi Turkce formunun gecerlik ve guvenirlik calismasi [Validity and reliability study of the Turkish version of the online technologies self-efficacy scale]. *Educational Sciences: Theory & Practice*, *9*(3), 1327-1356.

Kaur, G. (2020). Digital Life: Boon or bane in teaching sector on COVID-19. *CLIO an Annual Interdisciplinary Journal of History*, 6(6), 416-427.

Kaur, G. (2020). Digital Life: Boon or bane in teaching sector on COVID-19. *CLIO an Annual Interdisciplinary Journal of History*, 6(6), 416-427.

Kuo, Y. C., Walker, A. E., Schroder, K. E., & Belland, B. R. (2014). Interaction, Internet self-efficacy, and self-regulated learning as predictors of student satisfaction in online education courses. *The internet and higher education*, *20*, 35-50.

Kuo, Y. C., Walker, A. E., Schroder, K. E., & Belland, B. R. (2014). Interaction, Internet self-efficacy, and self-regulated learning as predictors of student satisfaction in online education courses. *The Internet and Higher Education*, *20*, 35-50.

Kuo, Y. F., Wu, C. M., & Deng, W. J. (2009). The relationships among service quality, perceived value, customer satisfaction, and post-purchase intention in mobile value-added services. *Computers in human behavior*, *25*(4), 887-896.

Liang, J. C., & Tsai, C. C. (2008). Internet self-efficacy and preferences toward constructivist Internet-based learning environments: A study of pre-school teachers in Taiwan. *Journal of Educational Technology & Society*, *11*(1), 226-237.

Liao, P. W., & Hsieh, J. Y. (2011). What influences Internet-based learning? *Social Behavior and Personality: An International Journal*, *39*(7), 887-896.

Lim, C. K. (2001). Computer self-efficacy, academic self-concept, and other predictors of satisfaction and future participation of adult distance learners. *American Journal of Distance Education*, *15*(2), 41-51.

Mailizar, Almanthari, A., Maulina, S., & Bruce, S. (2020). Secondary school mathematics teachers'views on e-learning implementation barriers during the Covid-19 pandemic: The case of Indonesia. *Eurasia Journal of Mathematics, Science and Technology Education*, 16(7), em1860.

Noel-Levitz, Inc. (2011). 2011 Cost of Recruiting an Undergraduate Student benchmarks for four-year and two year institutions. Retrieved from https://www.noellevitz.com/documents/shared/Papers_and_Research/2011/2011%20Cost%20of%20Recr uiting%20Undergraduate%20Students.pdf

Pintrich, P. & De Groot, E. (1990) Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, Vol. 82, No. 1, pp. 33-40

Pintrich, P. R. (2000). Multiple goals, multiple pathways: The role of goal orientation in learning and achievement. *Journal of Educational Psychology*, *92*(3), 544.

Pintrich, P. R., Smith, D. A., Garcia, T., & McKeachie, W. J. (1993). Reliability and predictive validity of the Motivated Strategies for Learning Questionnaire (MSLQ). *Educational and psychological measurement*, *53*(3), 801-813.

Poulin, R., & Straut, T. T. (2017). Distance Education Price and Cost Report. *WICHE Cooperative for Educational Technologies (WCET)*.

Puzziferro, M. (2008). Online technologies self-efficacy and self-regulated learning as predictors of final grade and satisfaction in college-level online courses. *The Amer. Jrnl. of Distance Education*, *22*(2), 72-89.

Schunk, D. H. (1991). Self-efficacy and academic motivation. *Educational psychologist*, *26*(3-4), 207-231.

Shen, D., Cho, M. H., Tsai, C. L., & Marra, R. (2013). Unpacking online learning experiences: Online learning self-efficacy and learning satisfaction. *The Internet and Higher Education*, *19*, 10-17.

Sun, J. C. Y., & Rueda, R. (2012). Situational interest, computer self-efficacy and self-regulation: Their impact on student engagement in distance education. *British journal of educational technology*, *43*(2), 191-204.

Tsai, C. C., Chuang, S. C., Liang, J. C., & Tsai, M. J. (2011). Self-efficacy in Internet-based learning environments: A literature review. *Journal of Educational Technology & Society*, *14*(4), 222-240.

Tsai, C. C., Ho, H. N. J., Liang, J. C., & Lin, H. M. (2011). Scientific epistemic beliefs, conceptions of learning science and self-efficacy of learning science among high school students. *Learning and Instruction*, *21*(6), 757-769.

Yukselturk, E., & Bulut, S. (2009). Gender differences in self-regulated online learning environment. *Journal of Educational Technology & Society*, *12*(3), 12-22.

Yukselturk, E., Ozekes, S., & Türel, Y. K. (2014). Predicting dropout student: an application of data mining methods in an online education program. *European Journal of Open, Distance and E-learning*, *17*(1), 118-133.

Zimmerman, W. A., & Kulikowich, J. M. (2016). Online learning self-efficacy in students with and without online learning experience. *American Journal of Distance Education*, *30*(3), 180-191.