

SELF-REGULATED ONLINE LEARNING SELF-EFFICACY & COVID-19: A HIGHER EDUCATION PERSPECTIVE

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ABSTRACT

This study aims at exploring students' online learning self-efficacy when face-to-face learning is hampered due to COVID-19 pandemic. Online learning is the only hope for students. This study investigates students' online learning Self-Efficacy with the help of Goal Setting, Environmental Structuring, Time Management, Help Seeking and Task Strategies. In order to scale development and data collection; Online Self-Regulated learning Scale (OSLQ) and Self-Efficacy were adopted and merged according to the scope of the study. The total number of participants is 207. Hypotheses were developed and relationships were checked with the help of Structure Equation Modeling (SEM). Self-efficacy was measured with the help of OSLQ variables; inter-relationship hypotheses of OSLQ variables were also tested. Results indicate that, while doing online self-regulated learning students' still facing problem in goal setting and task strategies. It is quite difficult for them to set short term and long term learning goals. It is difficult for them to execute their learning strategies such as taking hand written notes while online learning, being attentive is difficult, raising questions & instant doubt solving etc. are the major issues students' are facing.

(Key Words: COVID-19, Self-Efficacy, Online Self-Regulated Learning, Higher Education and OSLQ)

Introduction

Online learning is a popular term worldwide. Large number of students across the globe accessing through formal or informal platforms, and it is gaining popularity in India also. In India, students of higher educational institutions are accessing various online sites and resources as a supporting element to their regular classroom learning which is known as blended learning(Serrano, Dea-Ayuela, Gonzalez-Burgos, Serrano-Gil, & Lalatsa, 2019). Online learning is free from temporal and endemic issue, which is associated with classroom learning(Panigrahi, Srivastava, & Sharma, 2018). Online learning makes easy and timeless accessibility learning and learning resources. MOOCs and other sites provides online learning and face to face learning through use of technology, other sites are also available that provides learning beyond of time and place bound(Williams & Jacobs, 2004). Online learning and online executive training has shown positive impact both in academic and industry(Chang, 2016). In online learning students can manage, control and access the content of learning. Online Learning Management Systems is becoming the integral part of learning(Pardo, Han, & Ellis, 2016). Online learning has limitations like dumping of information, lack of proper feedback systems, engaging students is difficult, it is difficult to measure learning outcome and missing of human interaction(Baxter, 2015).

With the efforts of government, private companies and individual facilitators' online learning are supporting to classroom learning in India. Students were getting benefited by it. But India is not in a position to substitute classroom learning through online learning. The pace of adoption of online learning compare to the world was slow due to various reasons. Due to COVID-19 pandemic face-to-face teaching-learning and student evaluation got hampered. Universities and colleges were closed in India and across the globe. Online learning is the only substitute to continue student's learning. Things happened so fast and students in India are not ready to tackle with such sudden change. The major hurdles for doing online learning in India has student's attitude, technology acceptance and infrastructural challenges for online learning.

Here, in this paper we will try understand the students' readiness towards online learning, and challenges face by them while doing online learning. We also check their self determination or willingness for online learning. The study is restricted to students of higher education in India. Online Self-Regulated Learning Questionnaire has been merged with Self-Efficacy scale to study the students' online learning readiness and online learning

effectiveness. The CFA (confirmatory factor analysis) has been derived from the SEM (Structural Equation Modeling). The study is gone through various stages and based on pre-established theories and literature review, the research has gone through following steps i.e research model & hypotheses development, scale development, model measurement, hypotheses testing, outcome analysis and discussion, conclusion and limitation & future research discussion.

Literature Review

Online learning became emergency remote teaching methodology due to COVID-19, it is important to understand the well planned and systematic executed online learning is meaning and effective for students (C. Hodges, Moore, Lockee, Trust, & Bond, 2020). Due to COVID-19 campuses are closed and online learning became only media to continue education, it is important to follow the basic principles of online learning i.e online instructional design, standard online instructional information, support teaching and staff, high quality participation of students and contingency plan for unexpected incidents while dealing with IT devices (Bao, 2020). To do learning strong and effective self-regulation required and self motivation is one of important aspect of online learning (Bruso, Stefaniak, & Bol, 2020). Blended face-to-face learning with online learning provides better understanding of concept and it leads to creation of positive learning environment as well as positive learning outcomes (Serrano et al., 2019). Online learning enabled with face to face learning becoming more prominent form of teaching and learning in recent days, there is a sharp rise in use of online learning mostly in higher education. Online learning is helpful in students engagement like face perceived academic challenges, learning gains, satisfaction and develop positive learning habits, face to face learning helps in development of positive learning environment, faculty interaction and student collaboration in educational institution (Paulsen & McCormick, 2020). Cloud-based virtual learning environment offer flexibility in online learning, it is helpful in provide learning resources, storage space, on demand access and virtual collaboration for learners (Yim, Moses, & Azalea, 2019). E-learning is a effective platform for tertiary institutions or students, it is an effective medium of providing education and training (Mahande, Jasruddin, & Nasir, 2019). Learning is not a fixed object task, it is a continuous initiative by learner to acquire information & knowledge and teacher is not limited to delivering lecturers only. Teachers are playing the role of guide and facilitators also. They facilitates students in online learning and plays constructive role in knowledge and skill development (Reid-Martinez & Grooms, 2018). Web 2.0 is based two way communication process enhances collaborative learning through online platforms which promotes informal learning among students (Holland, 2018). Online learning community get benefited by integrating virtual reality and digital media platforms, it helps in generating more powerful, interactive and effective learning medium for learners (Huang & Liaw, 2018). Prior preparation of learning content improves the learners' understanding when learning is done through self-regulated environment (Nakabayashi, 2018). Online learning proposed new dimensions to learning, it integrates collective conscious based self learning (Bai, Li, & Chen, 2018). For a student or learner self controlled learning is important aspect of enhance learning because grasping skill of every student is not same, for better understanding of concepts self administered or controlled learning enhances learning ability. Online learning helps to a teacher or an institution to create better environment of learning (Blaschke, 2018). Interaction through internet and web based medium created virtual world of learning which requires learner's cognitive, meta-cognitive engagement (Pardo, Han, & Ellis, 2016). MOOCs and internet based online learning became the major source of professional learning and development (Jansen, van Leeuwen, Janssen, Kester, & Kalz, 2017). Online blog learning must be integrate with university learning management system to improve student's learning (Williams & Jacobs, 2004). Students technology adoption and self-regulated skill development influences their learning effectiveness (Martinez-Lopez, Yot, Tuovila, & Perera-Rodríguez, 2017). Large number students of higher education are equipped with smart phones, so M(Mobile)-learning thrives higher education into new direction of learning readiness through the theory of planned behavior (Yeap, Ramayah, & Soto-Acosta, 2016). Millennial are quite familiar and use to of online media tools of engagement and it can be one of motivational and useful source of learning (Alt, 2015). Online social networking tools enables students, teachers and universities across the globe to interact and enhance learning though collaborative effort (Hamid, Waycott, Kurnia, & Chang, 2015). While doing learning online, self-regulated goal setting, developing learning plan and continuously monitoring the pace influences the learning progress (Cho & Heron, 2015). Teaching and learning are the general process of skill and knowledge development, infusing mobile communication technology stimulates the effectiveness and quality of learning of students (Ferdousi & Bari, 2015). In traditional teaching method where one teacher teaches many students, in that case individually accessing student's performance and providing feedback became difficult things, "Web-based Assessment and Test Analysis System (WATA system) is one the effective system; were student's assessment and providing feedback became more easy and effective which leads to learning effectiveness (T. H. Wang, 2014). Media based human engagement, technology and social changes have large implication for teaching-learning pedagogies (Lu, Yang, & Yu, 2013). High attrition rate is great concern for online learning and it can be manage by students' self determination for learning (Chen & Jang, 2010). In technology integrated education system, students' willingness and interest to learn plays major role, so it is good to know the learner's perception towards online learning (Liu, Chen, Sun, Wible, & Kuo, 2010). E-tivities are pre designed framework of

enhancing student's participation in online learning and it must be consider from course design to outcome assessment(Armellini & Aiyegbayo, 2010). For effective utilization of e-learning approach, it is important to know about the learner's perception and intention for online learning(Park, 2009). Online learning is a new philosophical and methodological shift from traditional learning to modern learning so it is important to understand the pedagogy of new educational process(Huang, 2002)

Research Model and Hypotheses Development

This study is primarily based on formulation of conceptual model and testing the hypotheses; it is based on Online Self-regulated Learning and role of self-efficacy in learning. The following sub-sections explain the relationship among the constructs in the model.

Goal Setting (GS):

Goal Setting is a feasible process of establishing standards for learning assignments, setting short term and long terms targets, self monitoring is also required to maintain the perceived learning standards(Handoko, Gronseth, McNeil, Bonk, & Robin, 2019). According to (C. B. Hodges, 2008) & (C. H. Wang, Shannon, & Ross, 2013), GS has a positive effect on Self-Efficacy (SE) and according to (Handoko et al., 2019) & (Kerr, Rynearson, & Kerr, 2006), GS has positive effect on Time Management (TM). Hence, the H1 & H6 were proposed.

H1: Goal setting has a positive effect on the self-efficacy of student's online learning.

H6: Goal setting has a positive effect on the time management of student's online learning.

Time management (TM):

An appropriate time commitment spent by learner to accomplish the specific task within specified time duration(Bruso, Stefaniak, & Bol, 2020). According to (Rebeca Cerezoa et al., 2019), (Terry & Doolittle, 2008) & (Wolters, 2017) , TM has a positive effect on Self-Efficacy (SE). Hence, the H2 was proposed.

H2: Time management has a positive effect on the self-efficacy of student's online learning.

Help Seeking (HS):

It is a process of securing additional task by acquiring information about the task by one or multiple sources to ensure the learning effectiveness(Bruso et al., 2020). According to (Dayne, Hirabayashi, Seli, & Reiboldt, 2016) & (Prior, Mazanov, Meacheam, Heaslip, & Hanson, 2016) HS has positive effect on Self-Efficacy (SE). Hence, the H3 was proposed.

H3: Help seeking has a positive effect on the self-efficacy of the student's online learning.

Task Strategies (TS):

It is a roadmap or pre-defined path by learner to achieve the desired learning goals(Bruso et al., 2020). According to (Hung, 2010) TS has positive effect on Self-efficacy (SE). According to (Lee, Watson, & Watson, 2020), TS has positive effect on Time Management (TM). According to (Tu, Sujo-montes, & Sujo-montes, 2016) & (Schworm & Gruber, 2012), TS has positive effect on Help Seeking (HS). According to (Abrami, Bernard, & Tamim, 2011), TS has positive effect on Goal Setting (GS). Hence, the H4, H7, H8 and H9 were proposed.

H4: Task strategies have a positive effect on the self-efficacy of the student's online learning.

H7: Time management has a positive effect on the task strategies of student's online learning.

H8: Task strategies have a positive effect on the help seeking of student's online learning.

H9: Task strategies have a positive effect on the goal setting of student's online learning.

Environment Structuring (ES):

It is an effort made by learner to make learning easier by arranging and creating physical and technological infrastructure(Bruso et al., 2020). According to (Su, Zheng, Liang, & Tsai, 2018) & (Lee et al., 2020), ES has positive effect on Self-Efficacy (SE). According to (Yeh, Kwok, Chien, & Sweany, 2019) & (Barnard-brak, Paton, Lan, & Barnard-brak, 2010), ES has positive effect on Task Strategies (TS). According to (Barnard-brak et al., 2010) & (Handoko et al., 2019), ES has positive effect on Goal Setting (GS). Hence, the H5, H10 and H11 were proposed.

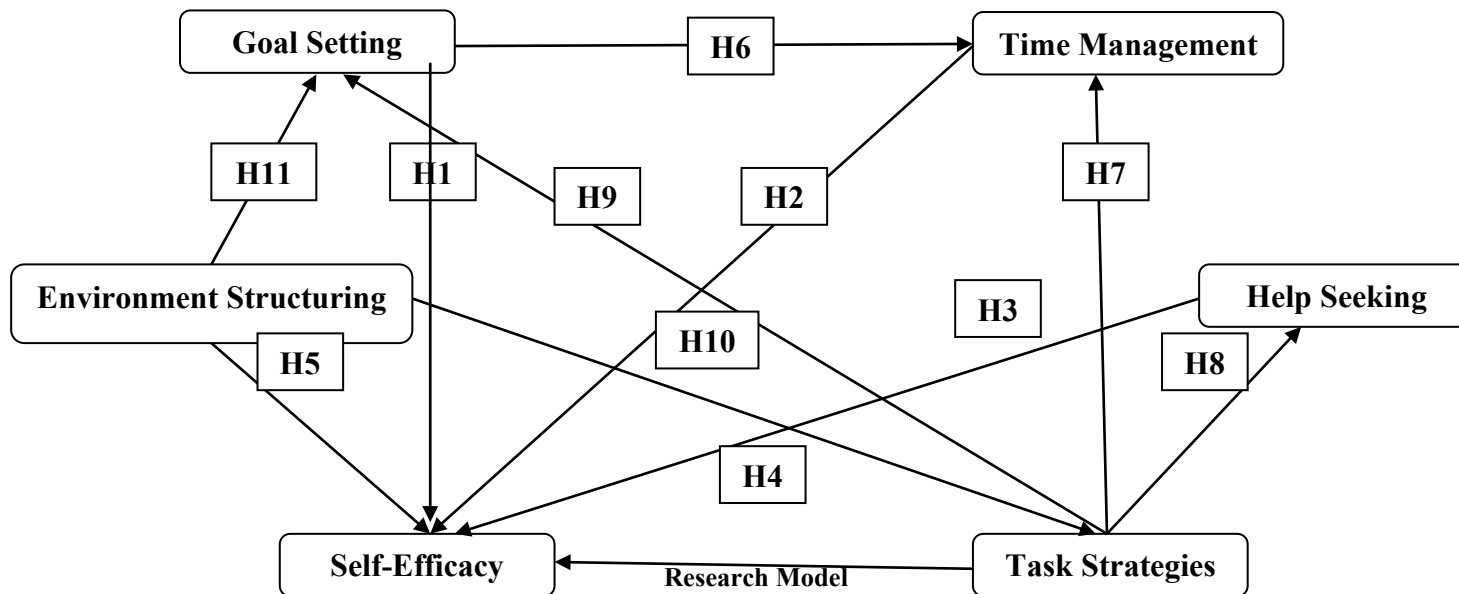
H5: Environment structuring has a positive effect on the self-efficacy of the student's online learning.

H10: Environment structuring has a positive effect on the task strategies of student's online learning.

H11: Environment structuring has a positive effect on the goal setting of student's online learning.

Self-Efficacy (SE):

In this research context, self-efficacy can be best defined as the individual's confidence and their ability to successfully accomplish the task in a self paced, online learning environment and within the online learning format (Artino & McCoach, 2008).



Research Methodology

Procedure

The data was collected through online mode completely, due to Covid-19 all the educational institutes were closed and learning was happening through online mode across the nation. The data was collected from the students of higher education (Graduation, Post Graduation and Research) in India from various universities. Planned questionnaire surveys were used to collect the data. The survey questionnaire was based on a seven-point Likert scale. The total 223 respondents were provided their feedback through questionnaire form drafted in Google form, out of which 16 were incomplete responses and deleted. Finally 207 responses were taken into consideration for data analysis. Two-step approach was opted for data analysis, i.e. assessment of measurement and structural model. For the data analysis and model measurement, Partial Least Square-Structural Equation Modeling (PLS-SEM) technique was used through the SmartPLS-3.0 software. To run SEM in SmartPLS 3.0, the minimum suggested sample size is ten times of the largest number of formative indicators used to measure the latent constructs. For this research, we used a maximum of seven latent constructs to measure the variable self-efficacy. So, the sample size must be equal to or more than 70 must be considered (Chin, Marcolin, & Newsted, 2003; Joe F. Hair, Ringle, & Sarstedt, 2011), and our sample size for this research is 207.

Respondents

Various classifications were done to categorize the respondents apart from demographic details and online learning self-efficacy. There were 207 respondents for this study, out of which 128 (62%) were male and 79 (38%) were female respectively. 113 (54.5%) were from management stream, 55 (26.5%) were from engineering stream, 23 (11.11%) were from social sciences stream and 16 (7.7%) were from research stream respectively. At present time, smartphones became the major source of getting information and learning from online. 159 (76.8%) respondents were doing online study through smartphone alone, 41 (19.8%) were using laptops, 5 (2.4%) using desktops and 2 (1%) were using tablets respectively. It is also interesting to know that the maximum number of respondents study online through YouTube only, which is 119 (57.5%) of out of 207, rest respondents were using 34 (16.4%) their institute website or resources, 18 (8.7%) from SWAYAM/NPTEL, 18 (8.7%) from foreign e-learning sites, 15 (7.2%) from Indian e-learning sites and 3 (1.4%) from foreign universities respectively. All our respondents were from higher educational institutions and are computer literate; know the use of internet for self study through online portals & sites.

Scale Development

To measure the online learner self-efficacy latent variable (Artino & McCoach, 2008) (07 items, SE1 to SE7) at the time of Covid-19 studying from home. Five latent variables Goal Setting (06 items, GS1 to GS6), Environmental Structuring (06 items, ES1 to ES6) Time Management (05 items, TM1 to TM5), Help Seeking (07 items, HS1 to HS7), Task Strategies (07 items, TS1 to TS7) were taken and modified as per our research objective. (Barnard, Lan, To, Paton, & Lai, 2009), who developed the Online Self-regulated Learning Questionnaire (OSLQ) scale. Merging and modifying five latent variables from OSLQ with Self-efficacy outcome latent variable scale has been developed. The constructed scale has total 38 items. The scale is based on seven point Likert scale ranging from 7 (Strongly Agree), 6 (Agree), 5 (slightly Agree), 4 (Neutral), 3 (Slightly Disagree), 2 (Disagree) and 1 (Strongly Disagree). Respondents were requested to indicate their level of agreement with statement provided. Structure Equation Modeling (SEM) was used to run Confirmatory Factor Analysis (CFA) (Yeap, Ramayah, & Soto-Acosta, 2016) to established the relationship and outcome measurement.

For the final model assessment, we deleted few items those were cross load to each other and 31 items were taken to into consideration for final data analysis out of 38. Goal Setting (06 items), Time Management (05 items), Help Seeking (03 items), Task Strategies (04 items), Self-Efficacy (07 items) and Environment Structuring (06 items) were there in final model construct.

Measurement Model Assessment

The outer loading or outer model in the measurement model, elaborates the relationship strengths within the constructs' indicators. To measure the model first reliability, convergent and discriminant validity must be confirmed (Joseph F. Hair, G. Tomas M. Hult, Christian M. Ringle, 2017). Reliability has been measured through Cronbach's Alpha and Composite reliability (CR). From the Table.1, it can be seen the reliability of the scale is much higher than the minimum acceptance values of both Cronbach's Alpha and CR i.e 0.60 (P. Bagozzi & Yi, 1988) or 0.7 (Cronbach, 1951).

To measure the Convergent Validity of the model, factor loading and average variance extracted (AVE) are being used, which is also reflected in Table 1. Factor loading of 0.5 or above, are considered as accepted (Joseph F. Hair, Risher, Sarstedt, & Ringle, 2019; Hulland, 1999) and AVE, all above of 0.5 were accepted, which means construct explains at least 50% of the variance of items. For the measurement of discriminant validity, "Heterotrait-Monotrait Ratio (HTMT)" was used. Discriminant validity is the shared variance among latent variables and, indicators of variables. The value of latent variance (In the top column of respective variable) provided in Table 2, must be greater than other latent variables (Hulland, 1999), and it measured the discriminant validity significantly. In the Table 3 we can see that the HTMT ratio's values were below the suggested or standard value 0.90 (Fornell, C., & Larcker, 1981). After establishing the measurement model, next step is to assessment of the structural model.

Table-1. Model Measurement Results

S. No.	Variables	Items	Factor Loading	Cronbach's Alpha	Composite Reliability(CR)	AVE
1	Environment Structuring	ES1	0.815	0.852	0.891	0.581
2		ES2	0.851			
3		ES3	0.845			
4		ES4	0.628			
5		ES5	0.643			
6		ES6	0.760			
7	Goal Setting	GS1	0.709	0.877	0.907	0.621
8		GS2	0.730			
9		GS3	0.877			
10		GS4	0.856			
11		GS5	0.759			
12		GS6	0.784			
13	Help Seeking	HS3	0.895	0.746	0.852	0.662
14		HS4	0.893			
15		HS7	0.623			
16	Self-Efficacy	SE1	0.809			

17		SE2	0.839	0.927	0.941	0.696
18		SE3	0.865			
19		SE4	0.856			
20		SE5	0.844			
21		SE6	0.845			
22		SE7	0.777			
23		Time Management	TM1			
24	TM2		0.848			
25	TM3		0.789			
26	TM4		0.881			
27	TM5		0.865			
28	Task Strategies	TS1	0.802	0.847	0.897	0.686
29		TS2	0.831			
30		TS3	0.846			
31		TS6	0.832			

Table-2. Discriminant Validity (Fornell-Larker Criterion)

	Environment Structuring	Goal Setting	Help Seeking	Self-Efficacy	Task Strategies	Time Management
Environment Structuring	0.763					
Goal Setting	0.725	0.788				
Help Seeking	0.482	0.418	0.814			
Self-Efficacy	0.620	0.564	0.706	0.834		
Task Strategies	0.643	0.566	0.697	0.715	0.828	
Time Management	0.626	0.614	0.692	0.814	0.769	0.830

Table-3. Hetrotrait-Monotrait Ratio (HTMT)

	Environment Structuring	Goal Setting	Help Seeking	Self-Efficacy	Task Strategies	Time Management
Environment Structuring						
Goal Setting	0.824					
Help Seeking	0.595	0.492				
Self-Efficacy	0.694	0.623	0.807			
Task Strategies	0.758	0.650	0.840	0.805		
Time Management	0.718	0.685	0.823	0.895	0.888	

Structural Model Assessment

The structural model itself defines the relationship between the latent constructs (Joseph F. Hair, G. Tomas M. Hult, Christian M. Ringle, 2017). In SmartPLS 3.0 software; we run algorithm and Bootstrapping to test the hypotheses & model determination, the reliability and validity test were conducted with to understand the factor analysis value. In Table 4, Figure 2 and figure 3 we can see the outcomes of the data analysis. The hypothesis testing and coefficient of determination (R^2) result can be seen. In outcome we see that, except H1 and H4 all the hypotheses were accepted, these two hypotheses were not accepted. The H2, H3, H5, H6, H7, H8, H9, H10 and H11 were supported by the empirical data and H1 and H4 were not supported by the empirical data.

The results reflected that Goal Setting(GS) not significantly influenced Self-Efficacy(SE) ($\beta=0.025$, $t=0.396$, $p>0.05$), Time Management(TM) significantly influenced Self-Efficacy(SE) ($\beta=0.107$, $t=4.055$, $p<0.01$), Help Seeking(HS) significantly influenced Self-Efficacy(SE) ($\beta=0.242$, $t=2.871$, $p<0.005$), Task Strategies(TS) not

significantly influenced Self-Efficacy(SE) ($\beta=0.062$, $t=0.535$, $p>0.05$), Environment Structuring(ES) significantly influenced Self-Efficacy(SE) ($\beta=0.130$, $t=1.980$, $p<0.05$), Goal Setting (GS) significantly influenced Time Management(TM) ($\beta=0.262$, $t=3.311$, $p<0.01$), Task Strategies (TS) significantly influenced Time Management (TM) ($\beta=0.621$, $t=8.802$, $p<0.01$), Task Strategies (TS) significantly influenced Help Seeking (HS) ($\beta=0.697$, $t=13.347$, $p<0.01$), Task Strategies (TS) significantly influenced Goal Setting (GS) ($\beta=0.170$, $t=2.585$, $p<0.05$), Environment Structuring (ES) significantly influenced Task Strategies (TS) ($\beta=0.643$, $t=7.915$, $p<0.01$) and Environment Structuring (ES) significantly influenced Goal Setting (GS) ($\beta=0.616$, $t=9.817$, $p<0.01$).

The R^2 (Joseph F. Hair, G. Tomas M. Hult, Christian M. Ringle, 2017)measure is the standard and pre-established method to examine the predictive power of the proposed structural model.

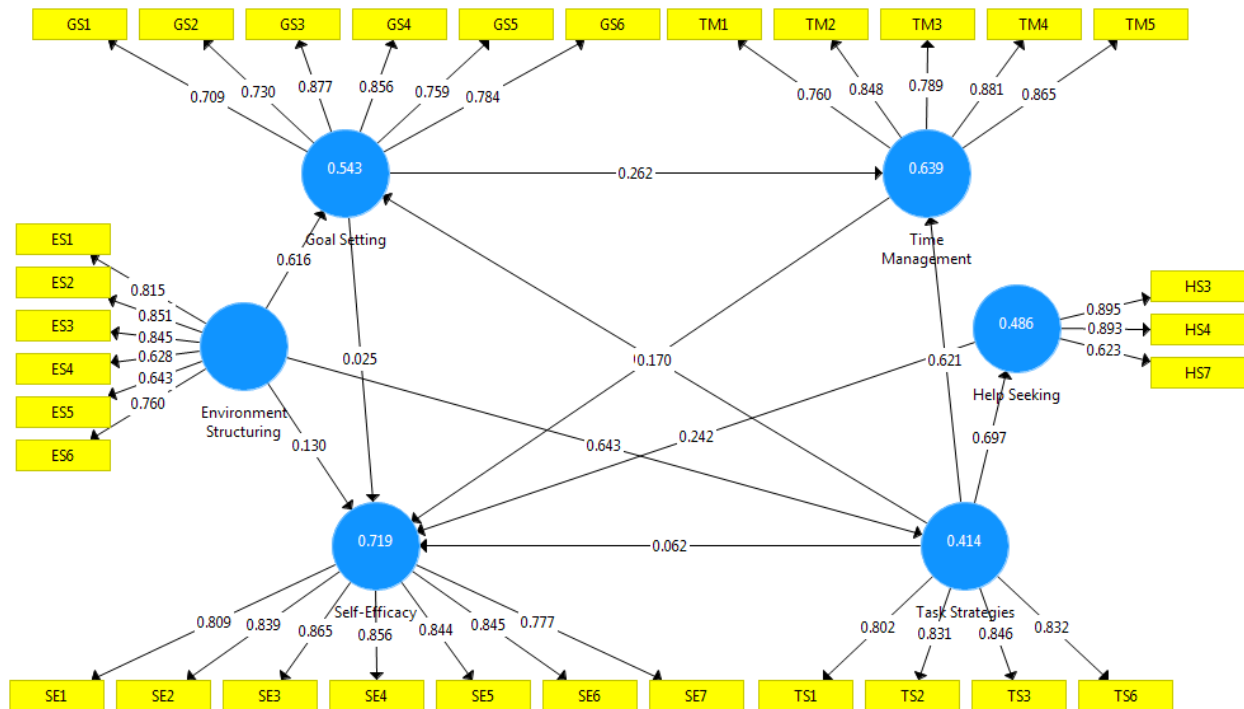


Figure 2: Path Coefficient Results

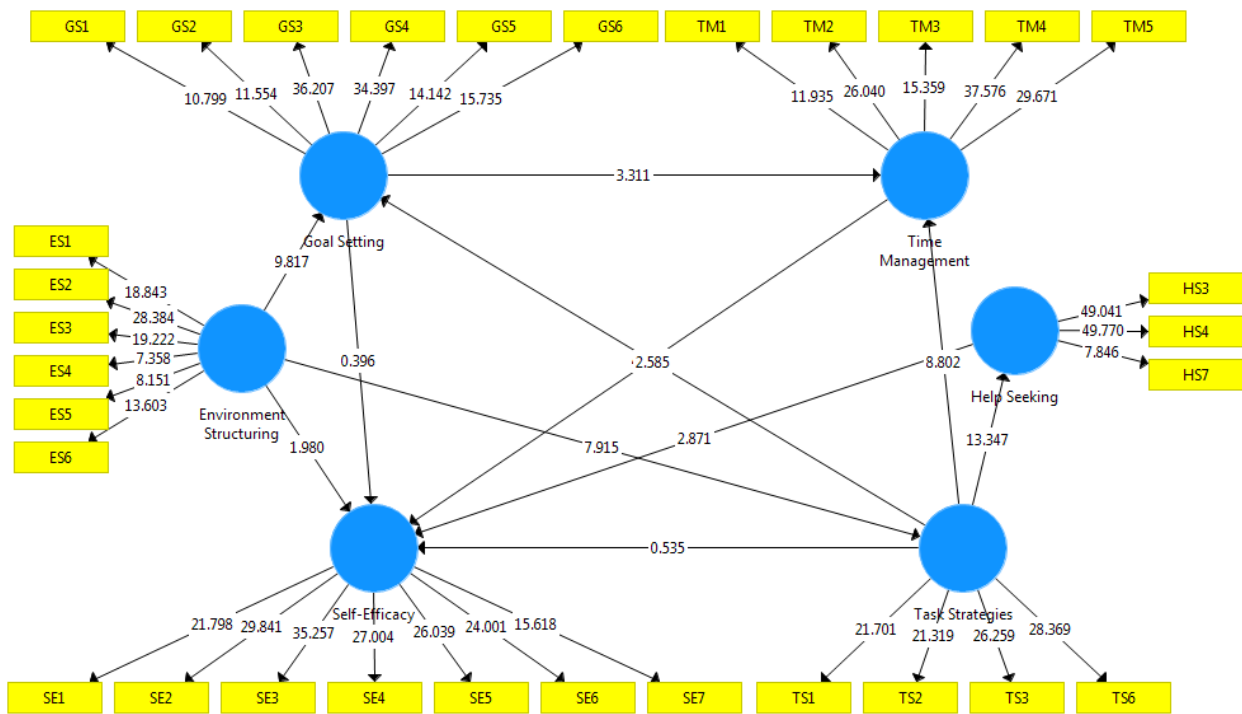


Figure 3: Bootstrapping Results

Table-4: Hypotheses Testing Results

H	Relationships	Beta	t-value	p-value	Decision
H1	Goal Setting -> Self-Efficacy	0.025	0.396	0.692	Not Supported
H2	Time Management -> Self-Efficacy	0.107	4.055	0.000	Supported
H3	Help Seeking -> Self-Efficacy	0.242	2.871	0.004	Supported
H4	Task Strategies -> Self-Efficacy	0.062	0.535	0.593	Not Supported
H5	Environment Structuring -> Self-Efficacy	0.130	1.980	0.048	Supported
H6	Goal Setting -> Time Management	0.262	3.311	0.001	Supported
H7	Task Strategies -> Time Management	0.621	8.802	0.000	Supported
H8	Task Strategies -> Help Seeking	0.697	13.347	0.000	Supported
H9	Task Strategies -> Goal Setting	0.170	2.585	0.010	Supported
H10	Environment Structuring -> Task Strategies	0.643	7.915	0.000	Supported
H11	Environment Structuring -> Goal Setting	0.616	9.817	0.000	Supported

Discussion:

Our prime objective was to understand the students’ self-efficacy towards online learning practices, which started largely among the students of higher education in India due to COVID-19 pandemic. To access the students self-efficacy, we took Online Self-regulated Learning Questionnaire (OSLQ) variables and developed 11 eleven hypotheses. Our H1 to H5 measures the relationship with self-efficacy directly from OSLQ scale variables i.e goal setting, time management, help seeking, task strategies and environment structuring. Rest hypotheses H6 to H11 were measuring inter relationship within the variables. Due to COVID-19, students are completely depended on online mediums for their learning. The shift was so fast and quick that students did not get chance to adopt as per the situation. Willingly or unwillingly they have to opt online learning mode which was earlier blended learning mode, earlier the more dependency was on face-to-face learning than online learning.

Hypotheses (H1-H5)

Here, we found that goal setting is not able to predict self-efficacy and the relationship was not established, which is an important source to predicting students self-efficacy while learning online(Handoko, Gronseth, McNeil, Bonk, & Robin, 2019). It may be difficult for a student to deal with sudden shift from face-to-face

learning to complete dependency on online learning. Goal setting helps students in setting learning vision, learning planning and tactic importance to use information communication tools for learning purposes, 'Hairy' goal is a term which reflects "difficult to deal with the situation when change was so fast"(Bjaalid, Laudal, & Mikkelsen, 2015)s. Shifting from blended learning to completely online learning students may be effect by Hairy goals problem and setting goal for online learning became difficult for them.

Time management predicts the students' online learning self-efficacy in this study. Time management is students' self disciplined and time commitment to complete the task in adequate time devoted. Previous literatures (Michinov, Brunot, Le Bohec, Juhel, & Delaval, 2011) & (Zimmerman & Kulikowich, 2016) also support the idea that time management is an important predictive variable to understand students online learning self-efficacy.

Help seeking predicts the students' online learning self-efficacy in this study. Lear needs helps while doing online learning, it may from pear group, instructors and any outsiders. It enhances learners' understanding for the learning concepts and systematic arranging the resources. This outcome is also supported by the previous literature (Bruso, Stefaniak, & Bol, 2020).

Task strategies is not able to predict the students' online learning self-efficacy and relationship was not established between them, which is an important aspect of identifying students online learning self-efficacy by previous literatures (Muljana & Luo, 2019), (Çakiroğlu & Öztürk, 2017) & (You, 2016) to achieve learning objective, students should not deviate from self regulated guidelines and it helps them to be motivated and maintain the self regulatory learning objectives with the help of well executed strategy(Muljana & Luo, 2019). For successful online learning, these three aspects of online learning strategies are important(Bruso et al., 2020), (a) Meaningful sense about the information or content to be presented, (b) Sense of bond or relationship with the information or content to be presented and (c) Learners' engagement with the information or content to be presented. In this study; failure of these three important aspects of online learning strategy leads to, failure of task strategies to predict online learning self-efficacy.

Environment structuring predicts the students' online learning self-efficacy. Environment structuring is generally providing proper environment where learner can concentrate and focus on learning. This outcome is also supported by the previous literatures(Su, Zheng, Liang, & Tsai, 2018) & (Barnard-brak, Paton, Lan, & Barnard-brak, 2010).

Hypotheses (H6-H11)

Apart from checking students' self-efficacy, we also checked inter relationship of the latent variables any try to generalize the outcomes as follows.

Goal setting predict the time management. In online learning learner must set their learning goals and strategically management their time to achieve the pre established short term and long term goals. This outcome is also supported by the previous literature (Terry & Doolittle, 2008).

Task strategies predict the time management. In online learning self-efficacy, time management strategies play major role while managing time. Working in same time and same pace has positive impact on online learning process. It also helps in arranging content, scheduling and engaging dialog in online context. This outcome is also supported by the previous literature(Song, Singleton, Hill, & Koh, 2004) & (Hill, 2002).

Task strategies predict the help seeking. Task strategy includes positive collaborations and interaction with peer group or superiors. Better learning outcome, it is important to integrate help seeking with task strategy. Help seeking enables learner with better understanding and problem-solving attitude, learner must be able to face challenges. It further enhances learners' online learning self-efficacy. This outcome is also supported by the previous literature(Du, Xu, & Fan, 2015).

Task strategies predict the goal setting. In self regulated online learning, goal setting become important and integral part of learning. Acquiring learning outcomes or goal attainment, the learning strategies must be equipped with active, self-directed, self-controlled and cognitive process. Goal setting and goal attainment requires a cognitive and meta-cognitive strategy which helps in monitoring, controlling and regulating or adjusting the pace of learning to achieve the learning goals. This outcome is also supported by the previous literatures (C. H. Wang, Shannon, & Ross, 2013) & (Pintrich & Zusho, 2002).

Environment structuring predicts the task strategies. To execute successful task strategy and self learning goal attainment, physical and technological environment must be integrated successfully. Environment structuring

(network tools, person and resources) must be networked properly. It leads to better execute the task strategy. This outcome is also supported by the previous literature (Tu, Sujo-montes, & Sujo-montes, 2016).

Environment structuring predicts the goal setting. Self regulated online learning goal is an integration of various sub-goals. To achieve learning goals, the learning environment structuring must be systematically planned and must be in proper place. It may either physical environment or technological environment. Acquiring goals became easy when environment structuring is properly done. This outcome is also supported by previous literature (Kirmizi, 2013).

Conclusion

Prior research has accessed and identified the importance of students' self regulated online learning self-efficacy. The present study extends the research to illustrate the students' self-efficacy with the help of Goal Setting, Time Management, Help Seeking and Task Strategies in the context of online line learning in higher education. Due to COVID-19 pandemic when educational institutes across the nation are closed and education shifted to online mode. By the early access to the information about the students' online learning self-efficacy, we can understand the learners' present learning situation. It is further helpful to enhance students' learning by better understanding and fixing the issues and challenges face by students while doing learning though online media. it is also illustrated that goal setting and making task strategies are major problematic area for students while doing self regulated online learning. Due to COVID-19 pandemic students are forced to shift from blended learning to self regulated online learning mode. Developing online learning culture, creating positive attitude and becoming inhabitants of system and information technology(Panigrahi, Srivastava, & Sharma, 2018) are major areas to improve for achieving students' self-regulated online learning self-efficacy in higher education in India.

Limitations and Future Work

Although the present research demonstrates the online learning self-efficacy of students of higher education of India and demonstrates the online learning patterns and issues when educational institutes were closed due to COVID-19 pandemic, several limitations should be noted. First, it is a cross sectional multi discipline specialization study. Different branch or specialization or gender based study can be done. Second, Study is limited to higher educational students only. This study can be replicate on K-12 level students also. Third, the study can be done for longer period of time to access the students learning outcome. Fourth, students are learning from home so impact of information technology infrastructure and online learning self-efficacy can also be measured. Fifth, same study can be replicate from teachers' point of view to understand the online teaching-efficacy of teachers.

Annexure

S. No.	Variables	Items
1	Goal Setting	I set standards for my assignments in online courses.
2		I set short-term (daily or weekly) goals as well as long-term goals (monthly or for the semester).
3		I keep a high standard for my learning in my online courses.
4		I set goals to help me manage studying time for my online courses.
5		I don't compromise the quality of my work because it is online.
6		My online learning goals are based on my career goals
7	Environment Structuring	I choose the location where I study during online learning to avoid too much distraction.
8		I find a comfortable place to study for online learning.
9		I know where I can study most efficiently for online courses.
10		I choose a time with few distractions for studying for my online courses.
11		I use head sets to reduce external noise during online courses
12		I keep the writing pad and pen/pencil next to my online learning device for ease in taking notes
13	Task Strategies	I try to take more thorough notes for my online courses because notes are even more important for learning online than in a regular classroom.

14		I read aloud instructional materials posted online to fight against distractions.
15		I prepare my questions before joining in the chat room and discussion.
16		I post / mail questions to the instructor before the topic class so that instructor addresses the same during the regular class.
17	Time Management	I allocate extra studying time for my online courses because I know it is time-demanding.
18		I try to schedule the same time everyday or every week to study for my online courses, and I observe the schedule.
19		Although we don't have to attend daily classes, I still try to distribute my studying time evenly across days.
20		I have a daily schedule to manage my online learning and off line learning
21		I make priority of learning tasks to ensure optimal time management
22	Help Seeking	If needed, I try to meet my classmates face-to-face or have a one-on-one video conference
23		I am persistent in getting help from the instructor through e-mail.
24		I ignore the doubts during online learning sessions
25	Self-Efficacy	I ask myself a lot of questions about the course material when studying for an online course.
26		I communicate with my classmates to find out how I am doing in my online classes.
27		I communicate with my classmates to find out what I am learning that is different from what they are learning
28		I utilize the instructor quizzes provided for self evaluation
29		I solve questions from competitive & other examinations to evaluate my learning of an online course
30		I ask questions to the discussion group as a way to examine my understanding of what I have learned
31		I answer queries raised on this topic on the discussion group and e-mails send by other participants.

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