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Synergizing Learning Resources and Online Experience: The Pivotal Role of Digital Lecturing Skill in Higher Education

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ABSTRACT

Objective - This article aims to examine the relationship between learning resources toward online learning experiences. This is an attempt to examine the impact of personal persistence, collaborative learning, and digital lecture skills on e-satisfaction as well as on learning engagement

Methodology/Technique - This article has collected and analysed perceptual responses from 106 students of selected private universities in Nigeria. Data were collected with a purposive sampling approach. The data was calculated by using the Smart PLS application. The second-order construction was applied to the research model and hypothesizes testing.

Findings – The results showed that learning engagement was strongly influenced by e-satisfaction and indirectly by collaborative learning. Collaborative learning is influenced by personal persistence directly and digital teaching skills

Novelty - This article has found empirical facts of digital lecturing skills as an influential institutional resource that influences other resources – such as grit as a personal resource and collaborative learning as a social resource.

Type of Paper: Empirical
JEL Classification: M12, M15
Keywords: Engagement, Satisfaction, Digital Lecturing Skill
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1. Introduction

At the beginning, COVID-19 was perceived as a reflection of the black swan phenomenon (Taleb, 2007). But, with its massive impact globally both in terms of health and socio-economical life, COVID-19 becomes as a game changer in our civilization as global disruptive changes (Billon-Denis & Tournier, 2020; Jabeen et al., 2021; Saputra et al., 2020; Z. Yu et al., 2021). Especially in the field of education, the COVID-19 pandemic has changed the way of education in many aspects (Aristovnik et al., 2020; Burki, 2020), such as (a) educational processes will be increasing interconnected globally; (b) redefining the role of educators; (c) improvement of life skills in the future; and (d) opening up the wider role of technology in supporting education (Afriansyah, 2020).

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COVID-19 is actually a highway for the digital transformation on the education system from conventional to blend or fully online learning approach (Abad-Segura et al., 2020; Ali, 2020; Benavides et al., 2020).The classroom as the main learning domain has changed to a virtual learning zoom. The students are forced to attend lectures from their respective locations (Ali, 2020; Burki, 2020; Saputra, 2021). In a very short time, the whole world has changed conventional patterns of face-to-face learning in schools into distance learning, or online learning systems, by relying on digital technology massively (Abad-Segura et al., 2020; Aristovnik et al., 2020; Benavides et al., 2020).

Although learning approach turns into remote or digital, the students in higher education as social creatures still need collaboration in their learning processes (Yount et al., 2019). Collaboration has essential aspect to maintain learning motivation by openning pportunities to work together with others from different backgrounds, and to facilitate a better understanding from multiple perspectives (Ghilic-Micu et al., 2014; Magen-Nagar & Shonfeld, 2018; Shumow et al., 2013) It is in line with the implementation of Vygotsky's theory which views learning as a process in establishing meaning through social interaction and internalization (Doolittle, 1995; Vogel et al., 2021). Each individual learning experience has influenced each other as an interactive meaning formation (Chen & Kuo, 2019).

Collaboration in learning is relevant with the engagement theory (Kearsley & Shneiderman, 1998; Lan & Hew, 2020; D. Yang et al., 2018) which explains that learning engagement refers to two aspects, such as (a) activities that involve active cognitive processes and (b) students who are intrinsically motivated to learn. Learning engagement is related to the design, form, and implementation of learning activities that will trigger student's motivation to improve it in a circular and interrelated relationship. Collaboration in learning will be a predictor on learning motivation and then have positive impact on learning engagement (Cocea, 2007).

Relating to systemic approach, resources will affect process and output. Likewise with learning, learning resources will affect the learning process and learning output. Considering the framework, this article is interested to examine the relationship between learning resources and learning experience - both in terms of process and output, especially in the context of online learning. In this article, learning experience is indicated by learning engagement and e-satisfaction. Meanwhile, learning resources in the context of online learning is associated with three essential resources: (a) learning motivation or personal perseverance of a student as personal resources, (b) collaboration in learning or collaborative learning as social resources, and (c) digital lecturing skill of lecturers as digital or institutional resources.

There are two research questions to be answered in this article: (a) do learning resources – such as personal perseverance, collaborative learning, and digital lecturing skill – influence significantly on learning experience especially in e-satisfaction and learning engagement?; (b) what is the most influential resources of those three kinds of resources on online learning experience?

2. Literature Review

Online learning has some positive sides, such as the availability of freedom in determining the place and even time to study and also the opportunity to re-watch recordings of learning sessions. However, online learning also has some weakness, such as declining quality of learning as a consequence of the limited social interaction during the learning process. It is exacerbated by the absence of self-directed learning capability during online learning for some students (Ali, 2020; Halverson & Graham, 2019; Saputra, 2021). Learning engagement explains the involvement of students in the learning process behaviorally, cognitively, and emotionally (Farrell & Brunton, 2020; Lan & Hew, 2020). Learning engagement of higher education student is generally measured by retention rate, score of learning achievement, and quality of graduation. High learning engagement is reflected in the intensity of student involvement before, during, and after the learning process, whether this is facilitated by the lecturer or not (R. Speight & Kucharczyk, 2021; S. Speight et al., 2020).

Besides being represented by learning engagement, online learning experience in this article is also explained by the aspect of satisfaction during the online learning process. The satisfaction is conceptualized

with the e-satisfaction construct. In the general conceptualization, e-satisfaction is consumer satisfaction toward experience in consuming or utilizing services and products (Santika & Pramudana, 2018) as well as user attitudes in evaluating products and/or services (Pradnyaswari & Aksari, 2020). Meanwhile, satisfaction in online learning, or e-satisfaction is defined as a psychological condition which is a student's conclusion about the overall learning processes from some perspectives, such as (a) communication and usability, (b) instructional content, (c) teaching process, and (d) interaction and evaluation (Ilgaz & Gülbahar, 2015).

E-satisfaction of the higher education student is closely related to the design of interactive virtual classes with various learning methods, which may stimulate learning motivation of students, to provide room for discussing learning subjects from various perspectives, to inspire students to gain new perspectives, and to support students in strengthening their contribution to the society (Afriansyah, 2020; Kauffman, 2015; Shuck et al., 2013). Previous study by involving 844 university students in the first year across different disciplines, has revealed that satisfaction has positively correlated toward engagement (Rajabalee & Santally, 2021). Based on the study, this article develop hypothesis that e-satisfaction impact positively and significantly on learning engagement

H1: *e-Satisfaction have positive effect on learning engagement significantly*

To deal with sudden changes in the learning system, students face many problems and difficulties. For this reason, the ability to collaborative learning as collaborative problem solving will greatly affect the ability of students to adapt to these changes (Lockee, 2021). Collaborative learning is defined essentially as a process for gaining knowledge or expertise by learning together (Handhika et al., 2018). It is an instructional approach that organizes students to work in groups to aim common academic goals (Goodsell, 1992). Collaborative learning is learning activities that direct the students to complete their work in small groups based on the "exchange ideas and active participation" approach (Lang & Evans, 2006).

Collaborative learning is in line with the principle that the path to success is mostly achieved through collaboration, because other learners will be a source of inspiration, support, and valuable feedback (Søndergaard & Mulder, 2012). In collaborative learning context, every individual is responsible and interdependent for each other, by using specific communication media or directly face-to-face (Kusnandar et al., 2021). Collaborative learning provides foundation level of learning, analytical thinking, common understanding, and retaining learned material in the long term. It also opens changes for positive attitude, social and communication skill development. It also provides opportunities for developing social and communication skills, developing positive attitudes toward co-members (Kreijns et al., 2003; Ruys et al., 2012).

Previous study with involved 132 students in Chile revealed that collaborative learning has positive effect significantly on learning involvement (Vega-Abarzua et al., 2022). Another study with analyzing perceptual responses from 698 students in online case-based courses has found that the ultimate predictors of student satisfaction were the interactivity among participants and trainer (Wengrowicz et al., 2018). Collaborative learning approach influenced strongly on satisfaction of course participants. Based on both studies above (Vega-Abarzua et al., 2022; Wengrowicz et al., 2018), this study is supposed to make hypotheses that collaborative learning has positive and significant effect on learning engagement and e-satisfaction

H2: *Collaborative learning has positive effect on learning engagement significantly*

H3: *Collaborative learning has positive effect on e-satisfaction significantly*

Because problems and failures are inseparable parts of life, that's why perseverance becomes is the key personal quality. It is an ability to get up after a fall by focusing on looking for solutions continuously to achieve higher productivity even from the condition before the fall (Sengupta-Irving & Agarwal, 2017). However, in some cases, perseverance may be construed as defiance, or a perception of stubbornness (Powell & Myers, 2017). The existence of personal perseverance is pivotal in online learning where learner is demanded to be self-directed in doing discoveries, solving problems, and developing personal knowledge bases (Buzzetto-Hollywood et al., 2019).

This article uses grit to conceptualize personal perseverance. Grit is described as a blend of perseverance and persistence to reach objectives or goals, which are further described in traits level as low impulsive, persistent despite facing some problems, high self-awareness resilience, tenacious, and high self-regulation (Duckworth et al., 2007; Duckworth & Quinn, 2009). Therefore, grit can be associated to lifelong learning ability, as well as success achievement in high levels of career and education (Buzzetto-Hollywood et al., 2019). Grit is usually related to high motivation to reach higher achievement that surpass his/her talent magnitude (Duckworth et al., 2007). Educational institutions can develop grit of the students by disseminating growth mindset to broaden students' chances for achieving long-term goals by boosting learning motivation (Duckworth et al., 2007) and providing a supporting learning environment (Hochanadel & Finamore, 2015)].

Previous study by analyzing perceptual responses from 395 university students in Australia found a positive relationship between grit, engagement and academic productivity (Hodge et al., 2018). Other study with 243 employees as respondents has proven empirically that individual grit impact positively on life satisfaction (Li et al., 2018). A study among medical students in Australia found that grit has significant correlation positively with self-esteem, activity, and empathy; but correlated negatively with loneliness, hostile aggression, and impulsive sensation seeking (Isenberg et al., 2020). This result indicates that grit provides personal resources to collaborate or teamwork. Based on those empirical studies (Hodge et al., 2018; Isenberg et al., 2020; Li et al., 2018), this articles formulate hypothesizes that personal perseverance has positive impact significantly on learning engagement, e-satisfaction, and collaborative learning .

H4: *Personal perseverance has positive effect on learning engagement significantly*

H5: *Personal perseverance has positive effect e-satisfaction significantly*.

H6: *Personal perseverance has positive effect collaborative learning significantly*

The effectiveness of online learning, either onsite, blended or online learning, is determined by interactivity among lecturer and students to optimize utilization of digital learning platform (Jairak et al., 2009; S. J. H. Yang et al., 2007). A socio-technical framework proposed 12 influential factors which classified into four main aspect, such as credibility, design, socio-communicative instructor style, and security-privacy. According to speed of trust concept (Covey & Merrill, 2006), creditability or trustworthiness is developed by character and competence. This article chooses digital lecturing skill as essential element of a credible lecturer in managing online learning session. Lecturer by utilizing his/her digital lecturing competence, will support the students to optimize the use of digital technology in doing scientific works (Spante et al., 2018)]. Convenience among learners with the technology and motivation levels closely related to the social and cognitive psychology of students as well as skill of lecturer in utilizing digital technology for delivering lectures. (Yu & Yu, 2010). Lecturers are demanded to be able to design learning content more attractive with accommodating the nuances of the future (Yu & Yu, 2010)]. Digital lecturing competence in this article is reflected into three main dimensions: a) lecturing skills; b) digital attitude; and c) perceived trust of learner.

As a socio-technical systems, online learning consists of technical element (e.g. technology, processes, tasks, and structure) and also social element (e.g. relationship, attitudes, skills, and values) to transform learning input to become learning outcomes. (Upadhyaya & Mallik, 2013). Digital lecturer skill as part of social aspect of online learning play a pivotal role which influences the learning process itself and students as the learners. An empirical study in Bangladesh among 443 undergraduate students from 35 universities found that interaction between lecturer and students has positive impact on online learning satisfaction (Rahman et al., 2021). Other study with involved 410 students in technology enhanced learning found that digital skill of student has significantly correlated to learning engagement, but interestingly were not correlated to learning disengagement (Bergdahl et al., 2020). Those two studies (Bergdahl et al., 2020; Rahman et al., 2021) have explained that lecturer-students interaction and digital skill have positive impact on learning satisfaction and engagement. Other empirical study has revealed that personal resource of lecturer (e.g. self-efficacy,

intellectual intelligence, and pedagogical competence) has positive impact on student learning motivation. The study indicates that lecturer competence doesn't only impact on learning experience but also on the learner too. That's why, this article tries to formulate hypothesizes that digital learning engagement has positive and significant impact on learning engagement, e-statisfaction, collaborative learning, and personal perseverance of students.

H7: *Digital lecturing skill has positive effect on learning engagement significantly*

H8: *Digital lecturing skill has positive effect on e-satisfaction significantly*

H9: *Digital lecturing skill has positive effect on personal perseverance significantly*

H10: *Digital lecturing skill has positive effect on collaborative learning significantly*

3. Research Methodology

This article used cross-sectional study for examining the arguments. A survey was conducted for collecting data from selected higher education in Nigeria. There are about 79 private university form 170 universities in Nigeria. The number of fulltime undergraduate students is about 1.85 million students. Most of them attend study in federal and state university. It's only 102,500 students who attend in private university (Statista, 2022) The sampling method was convenience - a non-probabilistic approach. This study successfully involved 106 students from three private universities in Nigeria - Caritas University, Gregory University, and Madonna University. Data collection was conducted in a month, from October 5th 2021 until November 6th 2021. The respondents were equally distributed into male (51%) and female (49%). Most of them has age below than 26-year-old (80%). They are mostly in first and second semester (92%) in regular program (79%) at 200 level (23%). 300 level (25%) and graduated (23%). Table 1 shows the profile of respondents.

Table 1. Profile of Respondents.

		Frequency	Percentage	Cumulative
Gender	Male	54	51%	51%
	Female	52	49%	100%
Age	Below 19-year-old	7	7%	7%
	19 - 22-year-old	40	38%	44%
	23 - 25-year-old	38	36%	80%
	26 - 29-year-old	14	13%	93%
	above 29-year-old	7	7%	100%
Affiliation	Caritas University	13	12%	12%
	Gregory University	37	35%	47%
	Madonna University	35	33%	80%
	Others	21	20%	100%
Semester	First	39	37%	37%
	Second	58	55%	92%
	Others	9	8%	100%
Program	Diploma	5	5%	5%
	Regular	84	79%	84%
	Post-Graduate	17	16%	100%

The research model was constructed by five variables, such as: Learning Engagement (LENG), e-Satisfaction (ESAT), Personal Perseverance (GRIT), Collaborative Learning (COLE), and Digital Lecturing Skill (DLEC). Those variables are described into second order constructs which each variable is reflected into its dimensions and each dimension was measured by its items or indicators.

All variables were measured by instruments which are adapted from previous studies. LENG was reflected into three dimensions: behavioral engagement (BEHE), emotional engagement (EMOE), and cognitive engagement (COGE). It was measured by 9-indicator instruments which adopted by previous study (Lan & Hew, 2020). ESAT was captured by 8-indicator instrument (Ilgaz & Gülbahar, 2015). Personal perseverance was approached by grit concept. An instrument with 6-indicators (Angela Lee Duckworth & Quinn, 2009) was adapted for capturing GRIT. It was reflected into two dimensions: consistence of interest (COIN) and persistence of effort (POEF). For measuring collaborative learning (COLE), this article used instrument from previous study (Shimizu et al., 2020). Meanwhile for capturing digital lecturing skill (DELC), this article developed the instrument which is reflected into three dimensions, such as: lecturing skill (LECS), digital attitude (DIGA) and perceived trust of learner (PTOL). Figure 1 demonstrated the conceptual framework which is developed by considering the ten hypothesizes and second order construct of all variables all of indicators or items of measurement are attached in Appendix 1.

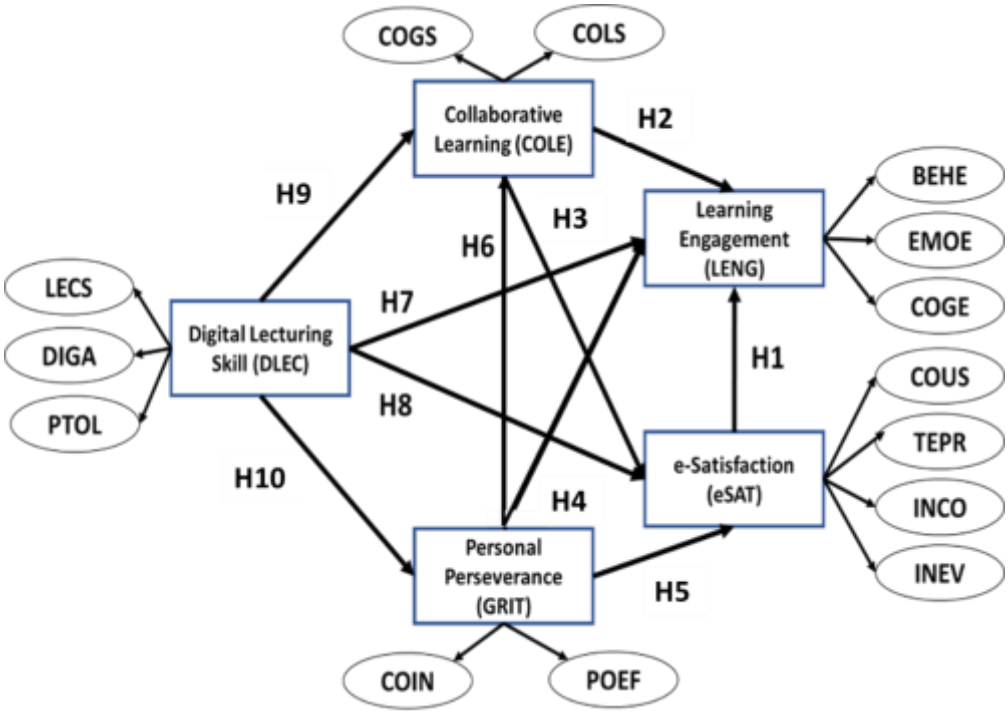


Figure 1 Conceptual Framework

4. Results & Discussion

Based on five variables and 10 hypothesizes, the research model is constructed. The collected data was used for testing the research model. Two types of analysis was applied:PLS algorithm and bootstrapping. Result of PLS algorithm analysis was used for validity and reliability analysis. Table 2 displays several parameters such as outer loading (OL), Cronbach's alpha (CA), composite reliability (CR) and Average Variance Extracted (AVE) score. For validity of indicator, OL score is used. An indicator is valid when the OL score more than 0.70.

Table 2. Validity and Reliability Analysis

Dimension	Item	OL	AVE	CA	CR
LEARNING ENGAGEMENT			0.58	0.81	0.86
Behavioural Engagement (BEHE)	LE02	0.91	0.78	0.72	0.88
	LE03	0.86			
Emotional Engagement (EMOE)	LE04	0.92	0.80	0.76	0.89
	LE05	0.87			
Cognitive Engagement (COGE)	LE06	0.91	0.72	0.79	0.88
	LE07	0.92			
	LE08	0.69			
e-SATISFACTION			0.51	0.73	0.82
Communication & Usability (COUS)	ES01	0.82	0.59	**0.30**	0.74
	ES02	0.71			
Teaching Process (TEPR)	ES03	0.86	0.79	0.73	0.88
	ES04	0.91			
Instructional Content (INCO)	ES05	0.79	0.73	0.63	0.84
	ES06	0.91			
Interaction and Evaluation (INEV)	ES07	1	1	1	1

Note:
OL = Outer Loading, CA = Cronbach's Alpha
AVE = average variance extracted, CR = Composite Reliability

Dimension	Item	OL	AVE	CA	CR
PERSONAL PERSEVERANCE			0.55	0.78	0.85
Consistence of Interest (COIN)	GR01	0.58	0.62	**0.69**	0.83
	GR02	0.84			
	GR03	0.91			
Persistence of Effort (POEF)	GR05	0.75	0.65	**0.47**	0.79
	GR06	0.81			
COLLABORATIVE LEARNING			0.51	0.72	0.82
Cognitive Skill (COGS)	CL01	0.77	0.57	**0.63**	0.80
	CL02	0.74			
	CL03	0.74			
Collaborative Skill (COLS)	CL04	0.97	0.94	0.94	0.97
	CL06	0.97			
DIGITAL LECTURING SKILL			0.52	0.79	0.86
Lecturing Skill (LECS)	DL01	0.85	0.79	0.75	0.88
	DL02	0.93			
Digital Attitude (DIGA)	DL05	0.94	0.88	0.86	0.93
	DL06	0.94			
Perceived Trust of Learner (PTOL)	DL07	0.93	0.82	0.79	0.90
	DL08	0.83			

Because of all indicators have OL score more than 0.70; all indicators are valid. For validity of variables and dimensions, AVE score must be more than 0.50. AVE score of all variables and its dimensions are more than 0.500. All variables and its dimensions are valid too. For reliability of variables and dimensions, CA or CR score must be more than 0.70. Although CA score of several dimensions such as e-satisfaction and personal perseverance are less than 0.70; but their CR scores are more than 0.70. It means that all variables and its dimensions are reliable. Based on validity and reliability analysis, the research model is built by indicators, dimensions, and variables which are valid and reliable.

Table 3. PLS Algorithm Analysis for Measurement Model

Variables	Dimensions	Beta	*t*-Statistics	*p*-Value	Result
Learning Engagement	Behavioural Engagement	0.77	11,53	0.00	Significant
	Cognitive Engagement	0.80	11,02	0.00	Significant
	Emotional Engagement	0.84	14,83	0.00	Significant
e-Satisfaction	Communication and Usability	0.58	5,99	0.00	Significant
	Teaching Process	0.87	25,13	0.00	Significant

Variables	Dimensions	Beta	*t*-Statistics	*p*-Value	Result
	Instructional Content	0.86	13,62	0.00	Significant
	Interaction and Evaluation	0.45	2,69	0.01	Significant
Personal Perseverance	Consistence of Interest	0.95	46,02	0.00	Significant
	Persistence of Effort	0.91	38,17	0.00	Significant
Collaborative Learning	Cognitive Skill	0.86	20.73	0.00	Significant
	Collaborative Skill	0.82	7,66	0.00	Significant
Digital Lecturing Skills	Lecturing Skill	0.54	3,82	0.00	Significant
	Digital Attitude	0.91	22,62	0.00	Significant
	Perceived Trust of Learner	0.88	20.26	0.00	Significant

Table 3 demonstrates other result of PLS algorithm analysis on measurement model. All of path coefficients or beta have t-statistics more than 1.98 or p-values less than 0.005. The results indicates that all variables are reflected significantly by its dimension. Table 4 and Figure 2 demonstrate the result of bootstrap calculations with 500 sub-samples. The results was considered for hypothesis testing. Because of beta or path coefficient scores have t-statistics more than 1.98 or p-value less than 0.05, four of ten hypothesizes are accepted. But six hypothesizes are rejected. Accepted hypothesizes are H1, H3, H6, and H10.

Table 4. Structural Model Analysis for Testing Hypothesizes

	Hypotheses	Beta	*t*-Statistics	*p*-Value	Conclusion
H1	e-Satisfaction ==> Learning Engagement	0.64	3.95	0.00	Accepted
H2	Collaborative Learning ==> Learning Engagement	0.12	0.89	0.38	*Rejected*
H3	Collaborative Learning ==> e-Satisfaction	0.40	3.05	0.00	Accepted
H4	Personal Perseverance ==> Learning Engagement	0.06	0.32	0.75	*Rejected*
H5	Personal Perseverance ==> e-Satisfaction	0.28	1,34	0.18	*Rejected*
H6	Personal Perseverance ==> Collaborative Learning	0.86	4.74	0.000	Accepted
H7	Digital Lecturing Skill ==> Learning Engagement	0.16	0.92	0.36	*Rejected*
H8	Digital Lecturing Skill ==> e-Satisfaction	0.33	1.89	0.06	*Rejected*
H9	Digital Lecturing Skill ==> Collaborative Learning	0.22	1.20	0.23	*Rejected*
H10	Digital Lecturing Skill ==> Personal Perseverance	0.84	10.97	0.00	Accepted

Figure 2 visualizes accepted hypothesis with black line and rejected one with red line. Learning engagement is affected positively and significantly by e-Satisfaction (H1). On the other sides, e-satisfaction is affected by collaborative learning significantly (H3). Personal perseverance has significant impact on collaborative learning (H6), and digital lecturing skill influences personal perseverance significantly (H10).

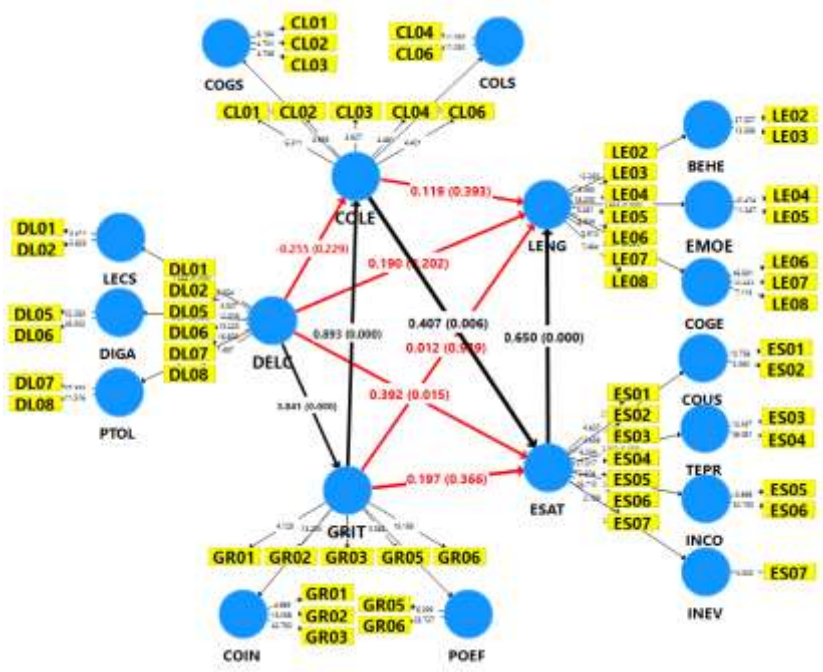


Figure 2 Result of Bootstrapping Analysis

Based on the results of hypothesis testing, online learning experience is strongly influenced by learning resources. The online learning experience in higher education is largely determined by learning engagement and satisfaction. More specifically, e-satisfaction as a representation of learning satisfaction is a predictor of learning engagement. Meanwhile, learning resources affect the online learning experience in a serial, not parallel manner. Digital lecturing skills are the most fundamental resource. Digital lecturing skills will have a strong and positive effect in encouraging and motivating the development of personal perseverance and students. Then personal perseverance is what drives students to be involved in collaborative learning and through this collaborative learning approach, students get learning satisfaction and ultimately learning engagement.

5. Conclusion

For creating and maintaining a positive learning experience in online learning in higher education; learning engagement and satisfaction could be considered as the main parameters. Learning engagement and satisfaction with online learning are influenced by learning resources. Digital lecturing skill is a foundation that will impact other learning resources. Digital lecturing skills will influence strongly on personal perseverance of students. A student with high personal perseverance will be eager to participate actively in collaborative learning. Collaborative learning as group resources will help students to be satisfied and then engaged with online learning.

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Appendix 1

List of indicators or items for measuring all variables

LEARNING ENGAGEMENT (LENG)	
LE01	I follow the rules of the online course.
LE02	I can consistently pay attention when I am taking the online course.
LE03	I complete my homework on time.
LE04	The online classroom is a fun place to be.
LE05	I feel happy when taking an online course.
LE06	I study at home even when I do not have a test.
LE07	I try to look for some course-related information from other sources
LE08	When I read the course materials, I ask myself questions to make sure I understand what it is about.
e-SATISFACTION (ESAT)	
ES01	Online communication channels are helpful and useful for your online learning
ES02	Lecturers have used the online system to delivery massage the material and other assignment
ES03	The online courses are insightful learning experiences
ES04	My level of learning that takes place in this course is of the highest quality.
ES05	Overall, the instructor for this course meets my learning expectations
ES06	Overall, this course meets my learning expectations.
ES07	I have two ways interaction according to online time course.
ES08	As a result of my experience with online course, I would like to take other online courses in the future
PERSONAL PERSEVERANCE (GRIT)	
GR01	I often set a goal but later choose to pursue a different one
GR02	New ideas and projects sometimes distract me from previous ones.
GR03	I have been obsessed with a certain idea or project for a short time but later lost interest
GR04	I have overcome setbacks to conquer an important challenge
GR05	I finish whatever I begin
GR06	Setbacks do not discourage me
COLLABORATIVE LEARNING (COLE)	
CL01	Online learning improves me in searching for new knowledge
CL02	Online learning endorses me in analysing the problem
CL03	Online learning support me in making learning report or presentation
CL04	Online learning makes me easily to accepting the interpersonal differences
CL06	Online learning improves my listening skill
DIGITAL LECTURING SKILL (DLEC)	
DL01	Lecturers can make complex concept explanation easily-to-be-understood
DL02	Lecturers motivate the learner to learn more
DL05	Lecturers can utilize digital technology for delivering more effective learning
DL06	Lecturers are knowledgeable about current digital technology
DL07	Lecturers bring the content of the future in their teaching
DL08	Learners are digital savvy while many lecturers are digital immigrants