MEASURING THE WALLS OF COMMUNICATION BARRIERS OF STUDENTS IN HIGHER EDUCATION DURING ONLINE CLASSES

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ABSTRACT

Purpose: The present research aims to evaluate the influence of online classes on higher education students' achievement and the communication barriers they encountered while attending the classes. The study's constructs were online learning vs. offline learning, communication barriers, and effective learning outcomes.

Design/ Methodology/Approach: The research study explores the relationship between the constructs through an exploratory descriptive research design. The present research study collected data through structured questionnaires using established scales. The data was collected through google form from UG and PG students. G* power was used to analyse the required sample size for the study. Data analysis was undertaken through SmartPLS software using SEM for analysing the structural model of the study and to test the hypothesis.

Findings: The study high though we live in the modern age and that our students are technologically advanced, but still learning online is daunting. Students have a high preference for offline classes than online classes. They were confronted with a variety of communication barriers (both verbal and nonverbal), including personal, physical, psychological, and emotional barriers. According to students, a teacher's physical presence is needed for a better understanding of the topics. It is unrealistic for them to absorb the entire syllabi of each subject in virtual mode, so they choose offline classes. Personal analytical abilities and speech skills, they believe, have also deteriorated in online classes.

Practical Implications: The findings suggested that more Faculty Learning programs should be initiated to up-skill educators, as well as, more hands-on training should be provided for new software. Students' feedback should be recorded on a daily basis to check the effectiveness of online classes, and an asynchronous and synchronous learning mechanism should be set up for two-way communication between the students and the teachers.

Originality Value: The research would undoubtedly assist in identifying the communication barriers that students face in online classes, as well as paving the way for new approaches to make online classes more effective for learning.

*Keywords***:** Online Classes, Offline Classes, Communication Barriers, Effective Learning, COVID-19.

INTRODUCTION

Communication is a basic requirement of life; we have been communicating ourselves since birth. Every individual communicates uniquely, and the addition of technology has made it much easier and more convenient. There are unique barriers that hinder people's ability to articulate themselves. The primary aim of this research is to identify communication barriers in higher education students' online classes and to evaluate the effectiveness of online lectures on their learning outcomes.

The rise of online learning is not only fuelled by modern forms of communication, but the

Pandemic has also given students a compelling reason to do so. Covid-19 has made a significant shift in the style of teaching and learning.

Before Covid-19, though we had an online class system, but it was more limited to distant online courses or MOOCs like SWAYAM, COURSERA, and others. During the pandemic, when it was mandatory for students to attend online classes, it was found that students were not deeply interested in them. Even those who are more interested in physical classes did not seem to be as involved and active in the online class mode. This research aims to identify the roadblocks that discourage students from attending lectures. This study aims to know about students' perceptions toward online classes and to evaluate their degree of tolerance of both online and offline modes.

Importance of the Problem and Rationale for the Study

The students taking online courses or taking online classes have risen exponentially and will continue to rise. This is attributable not only to the pandemic but also to the fact that students have a variety of online platforms to choose from for different classes. The government provides several E-learning platforms and resources, but as we look at student preferences or learning outcomes, we find that there are very different perspectives.

This research aims to learn about students' attitudes toward online classes, as well as the challenges they encounter, their expectations, and what new can be done in this field.

There is a limited amount of research that offers a comprehensive and scientific examination of the communication barriers that higher education students confront in online courses. This research aims to recognize the challenges that students face and their effectiveness as assessed by learning outcomes, as well as to make recommendations for enhancing the online learning environment.

LITERATURE REVIEW

(Monkhouse, 1992) research showed the perspectives of Chief Academic Officers in order to find answers to fundamental questions regarding Massive Open Online Courses (MOOCs). Academic leaders have voiced their concerns over the need for online students to be disciplined as well as lower retention rates, suggesting that online learning would not be sufficient for all students.

(Abu, Kiramat, & Xu, 2020) in their work "The effect of communication barriers on distance learners' achievements" has postulated that communication barriers such as social barriers, cultural barriers, temporal barriers, technological barriers, psychological barriers, contextual barriers, and collaborative barriers are the significant challenge in distance education, impacting the success and achievements of distance learners. Such problems also overlap and increase the complexity and anxiety of distance learners, impacting the success and achievements of distance learners.

(Aynur, Tülay, & Zülfiye, 2015) in their research on Communication Barriers in Online Teaching and Online Learning with Digital Media, in the Framework of Teaching and Learning Theory Approaches suggested that the conventional in-class teaching environment is favoured by learners because of the social nature of human beings and the traditional educational environment of learners. Teachers and other fellow learners are involved in this environment and face-to-face interaction can take place. It was observed that both learners and teachers seem to be in need of observing the gestures and behavior of the other. Moreover, for both teachers and learners, technological and cultural challenges are likely to remain troubling.

(Muilenburg & Berge, 2005) in their work on Student Barriers to Online Learning: A Factor Analytic Study, highlighted eight factors: (a) administrative problems, (b) social interaction, (c) academic skills, (d) technical skills, (e) motivation of learners, (f) study time and support, (g) internet costs and connectivity, and (h) technical issues. The most significant barrier to students studying online was the lack of social interaction, the findings were that social interaction is closely linked to satisfaction of online learning, online learning effectiveness, and the chances of attending another online class. It seems obvious, therefore, that enhancing social interaction in online learning will lead to a more successful and enjoyable learning experience that students would like to repeat.

(Abramenka, 2015) projected students concern over the barriers of online and hybrid environments. Engagement and cooperation, communication with the instructor and collaboration with peers, as well as confusing layout, were reported by them.

(Kaushal Kumar Bhagat, Leon Yufeng Wu, & Chun-Yen Chang ,2016) focussed that instructors have multiple roles, ranging from the delivery of meaningful learning to the students' active involvement. The social presence will help educational developers to maintain the standard of the online learning experience, student-centred course design is included in the educational design element, which would inspire students to engage in online learning environments

(Dabaj, 2011) highlighted that the communication barriers of distance learning are the physical distance between members, the challenges in coping with new media, time constraints and restrictions, prior experience of distance learning, incompetence of technical abilities, and the extent of interactivity level. Put all together, the method of successful distance education becomes almost difficult. In different organizations and with different delivery systems used, the levels of these barriers are different.

(Aytekin & Fahriye, 2005) suggested that communication barriers are exposed through the perspectives of both students and teachers at Eastern Mediterranean University (EMU) online programs and courses, based on the data obtained from qualitative and quantitative study methods technological, physical, semantic, psychological barriers are concerned with those barriers.
(Kebritchi, Lipschuetz, & Santiague, 2017) in their research identified three key categories of outcomes: problems relating to online learners, teachers, and the creation of content. The challenges faced by learners included the expectations, readiness, identity, and participation of learners in online courses. The challenges of teachers included changing faculty roles moving from face-to-face to online, time management, and methods of teaching. Content concerns included the role of teachers in the production of content, the incorporation of multimedia into content, the role of instructional strategies in the creation of content, and content development

considerations. Higher education institutions need to provide professional development for instructors, training for learners, and technical assistance for curriculum development in order to overcome these issues in the area of online education.

(Khanna & Prasad, 2020) the study findings showed that most of the people faced internet challenges and did not have the knowledge to use and solve technology-related issues. "There is a propensity to exhibit overtrading by retail investors in the state of fear of no investment knowledge and lack of convenience due to news in smartphones," (Shiva, Narula, & Shahi, 2020) stated in their research. (Gilitwala & Nag, 2020) highlighted that users' confidence, perceived usefulness, confirmation, perceived risk, and satisfaction with the product or service all influenced their intention to use near field communication in the future.

(Marks, Sibley, & Arbaugh, 2005) in their study on "A Structural Equation Model of Predictors for Effective Online Learning" highlighted that the interaction between teacher and student is most important, doubling to that, the interaction between student and student; and also, some interaction between student and content is significantly linked to perceived learning.

CONCEPTUAL FRAMEWORK
Covid-19 and modern forms of communication have significantly changed the teaching and learning system, especially because of physical distancing, communication failure has been experienced by many of us. In many ways online teaching-learning is also covered under this. Expectations and understanding from teachers and students have increased in such pandemic and uncertainty. Threats related to the virus and the impact that the Covid-19 had on the human psychology increased the inconvenience on student and teacher. Keeping all these parameters, the proposed research framework has been conceptualized (figure 1). From the Students' point of view, constructs such as online learning over offline learning, barriers of communication and Effective learning outcome were considered.
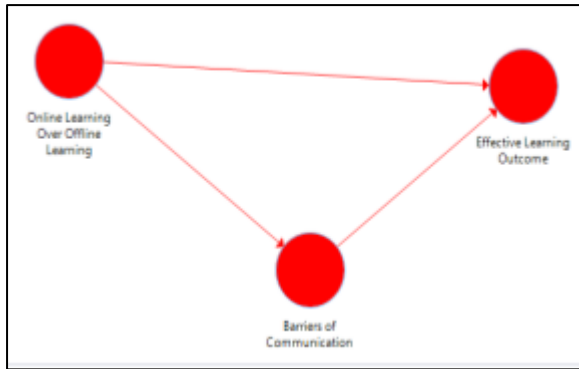
Figure 1: Conceptual Framework

RESEARCH HYPOTHESES

The following hypotheses were developed for this research work:

H1: There is no significant difference in online and offline learning for the students.

H2: There are no barriers of communication faced by instructors and students.

H3: The effective learning outcome is the same in both cases.

techniques of convenient sampling and snowball technique. The adequacy of the sample size was determined by G Power software 3.1.9.2. the G- power software estimates the required sample size for the study based on the number of predictors and the desired effect size and probability error. With two predictors the estimated sample size by the software was 262, as such sample size for the study is considered as adequate based on which further analysis can be undertaken. The data collected was analysed through Smart PLS SEM. The latest software is gaining a lot of popularity amongst researchers to the ease in analysis and the presentability of results.

DISCUSSION AND CONCLUSION

The demographic profile based on gender showed that 50.33% were male respondents (228 participants) followed by 49.67% female (225 participants). The demographic profile
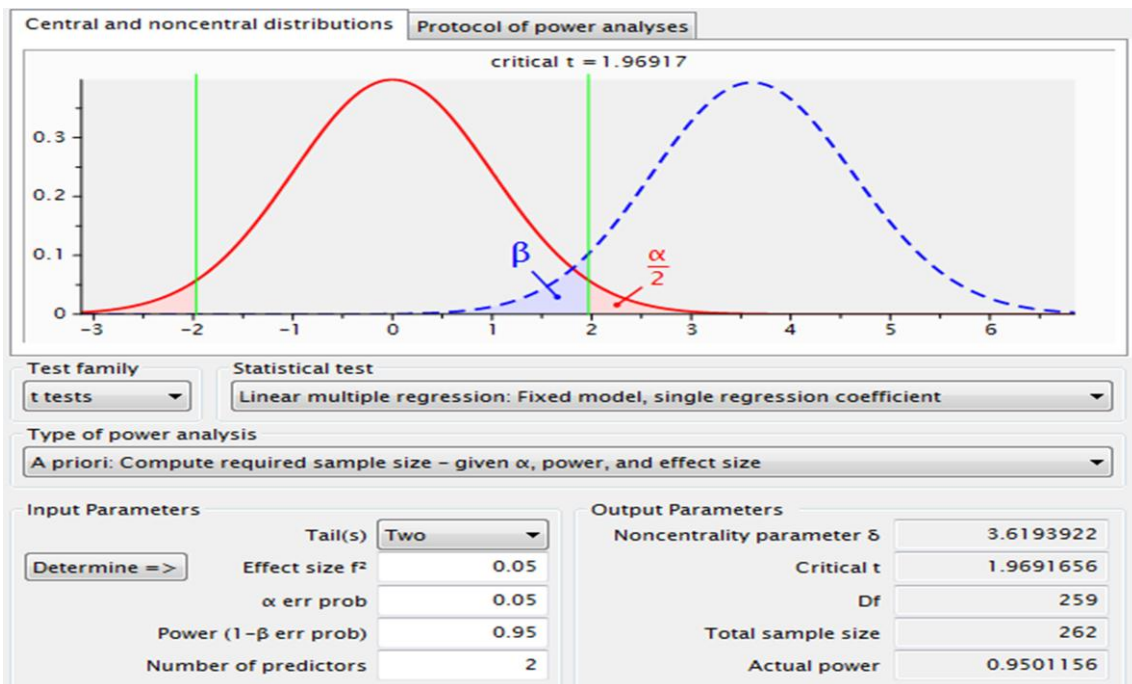

Figure2: G* Power Analysis

Source: Author's own calculations.

RESEARCH METHODOLOGY

The research study follows an exploratory descriptive research design. The universe of the study is Bhopal, Madhya Pradesh. The sampling units of the study are the students of UG and PG in Bhopal, Madhya Pradesh. For data collection, structured questionnaire using established scales were used. The data was collected through non-probability sampling

based on program showed that the highest educational level of respondents is bachelor degree (UG) with 95.81% (434 participants) followed by master's degree (PG) with 4.19% (19 participants). Of the 434 UG respondents 219 participants were male representing 50.46% and 215 respondents were female representing 49.54% of 434 UG participants. Of the 19 PG respondents 9 participants were

male representing 47.37% and 10 participants were female representing 52.63% of 19 PG participants. Majority of the respondents were from UG I Year representing 41.50% (188 participants) followed by UG III Year 29.14% (132 participants), UG II Year 25.17% (114 participants), PG I semester 2.65% (12 participants) and only seven respondents were there from PG III semester representing 1.54% of the total 453 respondents.

Confirmatory Composite Analysis
The measurement model was analysed for the reliability of the constructs. For the purpose of the study Cronbach's Alpha with a threshold value of 0.7 was analysed. Composite
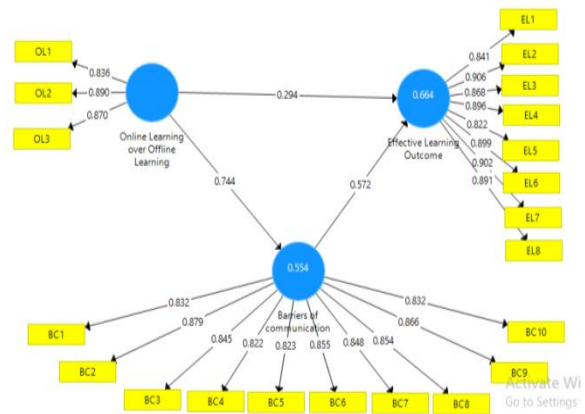

Figure -3: Measurement Model

Table 1: Summary Analysis of the Demographic Features Using Frequency, Percentage, and Cumulative Percentage

Demographic Factors	Frequency	Percent	Cumulative Percent
Gender			
Male	228	50.33	50.33
Female	225	49.67	100.00
Total	**453**	**100.00**	
Program			
UG	434	95.81	95.81
PG	19	4.19	100
Total	**453**	**100.00**	
UG Male	219	50.46	50.46
UG Female	215	49.54	100.00
UG Total	**434**	**100.00**	
PG Male	9	47.37	47.37
PG Female	10	52.63	100.00
PG Total	**19**	**100.00**	
Class			
UG I Year	188	41.50	41.50
UG II Year	114	25.17	66.67
UG III Year	132	29.14	95.81
PG I Semester	12	2.65	98.46
PG III Semester	7	1.54	100.00
Total	**453**	**100.00**	

reliability was also analysed with a threshold value of 0.7. Although a value of 0.5 is considered adequate for Average Variance Extracted (AVE), the value of AVE was more than 0.7 for all the three constructs (Table 2).

The table above presents the results of the Cronbach Alpha, roh_A, Composite Reliability and Average Variance extracted. The data shows all the criteria for analysing the reliability of the constructs are met in the model.

Table 2: Results of Confirmatory Composite Analysis, Average Variance Extracted, and Construct Reliability

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Barriers of communication	**0.956**	**0.957**	**0.962**	**0.715**
Effective Learning Outcome	**0.958**	**0.959**	**0.964**	**0.772**
Online Learning over Offline Learning	**0.832**	**0.833**	**0.900**	**0.749**

Source: Authors own work.

DISCRIMINANT VALIDITY

To analyse that the variables under the study are truly different to each other discriminant validity was undertaken. Fornell-Larcker Criterion (1981) and HTMT criteria was applied to test discriminant validity. Fornell-Larcker Criterion is the traditional method based on the degree to shared variance that is there between the variables to evaluate the degree of shared variance that exists between the latent variables. Table 3 presents Fornell-Larcker Criterion results which indicate that the square root of average variance extracted is higher than crossed correlation constructs, thereby establishing discriminant validity of the constructs of the study. HTMT is latest method which has gained popularity amongst researchers to calculate discriminant validity of the constructs. SmartPLS SEM enables to analyse discriminant validity through HTMT. The threshold value for HTMT is suggested as 0.85 (Kline., 2011, Henseler et al., 2015) and 0.95 (Teo et al., 2008, Gold et al., 2001). The results of the analysis presented in Table 4 are as per the criteria suggested. The results again reaffirm the discriminant validity of the constructs through HTMT. Thus, results establish discriminant validity of the constructs and indicates that further analysis can be undertaken. Table 5 represents Model fit summary and indicates that the model is fit as SRMR is 0.051 which is less than 0.08 and NFI is 0.871 which is near to 0.90.

STRUCTURAL MODEL ASSESSMENT

Structural Model assessment for the study was done through bootstrapping process in PLS SEM. To analyse the predictive power of the model and to test the hypothesis 5000 bootstraps were employed through the bootstrapping process. The results of the analysis are presented in figure 4 and table number 6.
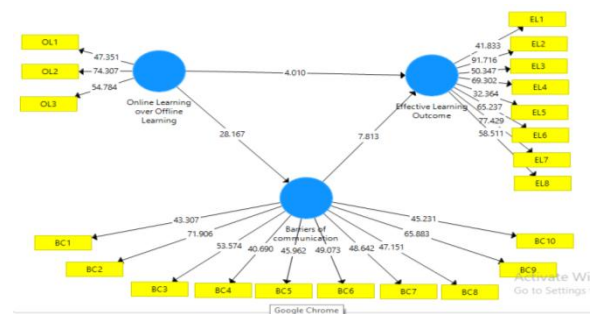

Figure 4: Structural Equation Model

Table 3: Discriminant Validity

Fornell-Larcker Criterion

	Barriers of communication	Effective Learning Outcome	Online Learning over Offline Learning
Barriers of communication	**0.846**		
Effective Learning Outcome	0.791	**0.879**	
Online Learning over Offline Learning	0.744	0.720	**0.866**

Source: Authors own work.

Table 4: HETEROTRAIT-MONOTRAIT RATIO (HTMT)

Heterotrait-Monotrait Ratio (HTMT)

	Barriers of communication	Effective Learning Outcome	Online Learning over Offline Learning
Barriers of communication			
Effective Learning Outcome	0.822		
Online Learning over Offline Learning	0.830	0.803	

Source: Authors own work.

Table-5

Model Fit Summary

	Saturated Model	Estimated Model
SRMR	0.051	0.051
d_ULS	0.606	0.606
d_G	0.503	0.503
Chi-Square	1281.149	1281.149
NFI	0.870	0.870

Source: Authors own work.

Table 6: Hypotheses Testing Results of the Structural Model

	Original Sample (O)	T Statistics (|O/STDEV|)	P Values
Barriers of communication -> Effective Learning Outcome	0.572	7.813	**0.000**
Online Learning over Offline Learning -> Barriers of communication	0.744	28.167	**0.000**
Online Learning over Offline Learning -> Effective Learning Outcome	0.294	4.010	**0.000**

TABLE 7: STANDARDIZED DIRECT, INDIRECT AND TOTAL EFFECTS OF VARIOUS CONSTRUCTS

Dependent Variables ↓		Independent Variables↓	
		Online Learning over Offline Learning	Barriers of Communication
Barriers of Communication	DE	0.744	-
	IE	-	-
	TE	**0.744**	-
Effective Learning Outcome	DE	0.294	-
	IE	0.426	-
	TE	**0.720**	**0.572**

Source: Author's own work.

Notes: DE: Direct Effects, IE: Indirect Effects, and TE: Total Effects

CONCLUSION

The barrier may occur at any stage during the communication process (Sending, Encoding, Transmission, Decoding, or Receiving). Since this research was undertaken during the COVID-19 time frame, when students were supposed to attend online classes, it revealed the different barriers to communication that they experienced. The research uncovered communication barriers among students who prefer offline classes to online classes.

PHYSICAL BARRIER- Face-to-face conversation aids in an excellent understanding of the topic. Students become more alert and active in class with the reflection of the teacher's body language and facial expressions. The physicality of an instructor, according to students, is essential for a better understanding of the subject. Due to the distance, students believe that responding to teachers through the use of the internet is not as quick as it is in person.

TECHNICAL BARRIER (NOISE) Technical barriers are generated by digital disruptions to Internet access, such as glitches or screen lag, visibility and audibility problems, a lack of technical expertise, inadequate preparation, and unfamiliarity with learning software's creates technical barriers.

TIMINGS Students have often expressed the opinion that online tutorials do not allow enough time for practical topics, which require a great deal of personal guidance and practice.

INFORMATION OVERLOAD Many of the respondents have seen this barrier because they have to attend lectures on different subjects three to four times a day for 45-55 minutes with a short break, which leaves them paralyzed due to the overload of learning.

FAULTY PLANNING Since each subject necessitates a different set of materials and teaching styles, some topics include handouts or worksheets, and others necessitate audio, video, or other activities, online classes fall short of meeting these requirements.

ENVIRONMENTAL SETTINGS
Surroundings are crucial because, in an online setting, each student is seated in a different physical environment, which can be peaceful or distracting. The traditional classroom setting provides all the students with a common physical environment, which not only helps them to concentrate on their studies but also motivates them to work together.

PERSONAL BARRIERS Students have claimed that taking online classes has raised their costs (internet data, smartphone, etc).

The use of a computer has weakened their eyesight, and the repetition of the same body postures for extended periods has resulted in mental health problems, sadness, and an indiscipline routine. Students complained about interruptions while studying at home and expressed dissatisfaction with the class size. Students believed that teachers lacked expertise in online learning tools for delivering classes, as well as class participation skills. Online learning is not tailored to the needs of students, there is a shortage of academic advisors due to the online system, and online course materials are not delivered on time. They also reported difficulty in contacting academic or administrative staff and online activities are difficult than offline activities

PSYCHOLOGICAL BARRIERS Students have shared feelings of unfairness, un-belongingness, and a lack of motivation, as well as the fact that classes are more difficult and less pleasant, and that it is better suited for active students rather than introverts. They also claimed that online classes necessitated the help of family and friends.

PERCEPTIONAL BARRIERS In online courses, the learning environment is demotivating, and personal analytical abilities, speaking skills, expression of thoughts, and confidence have all deteriorated. Online courses lack the opportunity to link academia and business, and practical principles are less clear. Online classes do not have much in the way of skills enhancement because they are dull. Overall, online classes do not have an appropriate learning environment.

RECOMMENDATIONS
To eliminate the problem of long physical distance, a personal touch should be present; for technological errors, good internet connectivity and equipment should be ensured to avoid lags and glitches. Institutes should provide instructors with faculty development programs and ready reckoners to ensure that classes run smoothly. Time management and scheduling can be conducted in such a way that practical or difficult subjects can be accommodated, and students can stay focused in class.
These barriers can be overcome by systematic planning for lectures, by preparing the study material that is rich in content, imaginative, and easy to understand, by communicating in

a way that motivates responses and tries to get immediate feedback from students, and by developing the class in a more interactive way so that students can learn more effectively. Off-screen time should be provided, and some online physical activities or ice-breaking sessions should be added.

The class size should be structured in such a way that specific groups can be handled individually. For the timely availability of class counseling services and study materials, both asynchronous (educational video conferences, virtual webinars, chat-based online discussions) and synchronous (phone calls or video meetings) approaches should be used. To make the learning process easier for students and prevent misunderstanding, a unified LMS should be developed, and a common forum should be used by all faculty members. Students should be given the same amount of time to express themselves. Class schedules should not be irregular or inconvenient for students.

Students' presentations and class engagement activities should be made a prerequisite in all colleges. To avoid the issue of information overload and to facilitate effective listening, an online class should be a combination of both formal and informal interactions.

LIMITATIONS AND FURTHER STUDY
Since this research is limited to student's experiences, data from educators should be collected as well to learn about the challenges they face. Data from primary and secondary schools are not collected, limiting the scope of this report. The information for this study was gathered primarily from residents of Bhopal and the surrounding area, and it was limited to Madhya Pradesh. Furthermore, data was gathered using a Google Form and distributed to people who were either directly or indirectly acquainted with the researcher.

The study overlooked a broader segment of society, such as people from remote regions, people from other states in the country, and people from all over the world. Their online learning experiences would almost certainly have affected the findings of this report. Furthermore, the analysis avoids constructs that may have explained the relevance of the current study, suggesting the likelihood of conducting rigorous research on those

constructs in the future using cross-country longitudinal data.

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