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ENHANCING STUDENT ENGAGEMENT THROUGH BLENDED LEARNING: THE IMPACT OF TECHNOLOGY-INFUSED HYBRID MODEL OF TEACHING-LEARNING (HMTL) ON THE GEN Z LEARNERS

Dr.S.G. Mohanraj¹, Dr.S. Sreejana², Dr.R. Marudhachalam³

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Abstract

The ever-changing behavioural patterns of the learners serve to be a challenging aspect in the instructional models followed in higher education institutions all over the world. This mandates every educational institution to explore a better instructional model to make the teaching-learning process effective and meaningful in order to ensure better engagement of Gen Z learners. There are various factors like the development of technology, enforcement of restrictions because of the Covid-19 pandemic situation, change in learning style and attitude of the learners, wanting of the new generation to explore the unknown possibilities and much more affect the effectiveness of learning in the present scenario. This subsequently necessitates integration of technology to the fullest possible extent in the teaching model adopted to ensure efficacy. Hybrid Model of Teaching-Learning (HMTL), which is a combination of online mode of learning and physical face-to-face mode of learning, serves to be the effective pedagogical model to cater the needs of the present generation learners. The present experimental study proves that HMTL strives to overcome the restrictions in both online and physical mode of learnings and provides a conducive learning environment.

Keywords: Hybrid Learning, Pedagogy, Online Class, Teaching-Learning Process.

^{1,2} Assistant Professor II, Kumaraguru College of Technology, Coimbatore, TN. India.

³ Associate Professor, Kumaraguru College of Technology, Coimbatore, TN. India.

¹ sgmohanraj@gmail.com, ² sreejanasasikumar@gmail.com

³ marudhachalam.r.sci@kct.ac.in

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1. Introduction

In the present scenario, there is a drastic change in the teaching-learning process and the role of teacher. In the past times, the role of teacher was completely teacher centered where the teacher organizes the teaching modules, and every lecture goes systematically. In the present time, the role of teacher has been changed to facilitator and it has become students centered where the modules are designed systematically by the teacher and the teacher-student discussions forum, one to one conversation are of paramount importance in doubt clearing and problem solving. In a traditional, teacher-centered model of teaching, the lecturer transmits knowledge to students, with little input from those students (Harden and Crosby, 2000; Prosser et al., 2005). However, the shift to less traditional classes has coincided with a greater focus on more student-centered learning, with the lecturer facilitating or managing the students' learning, rather than simply transmitting information (Balluerka et al., 2008).

“Traditionally the role of the teacher has been as a purveyor of information: the teacher was the fount of all knowledge. This suggests a picture of students sitting in rows in front of the teacher who is talking and passing information to students with the aid of a blackboard, while the students either listen passively or, if the teacher is lucky, take their own notes. This, of course, is not true anymore. The modern teacher is a facilitator: a person who assists students to learn for themselves. Instead of having students sitting in rows, they are likely to be in groups, all doing something different; some doing practical tasks, some writing, some not even in the room but in another part of the building using specialist equipment or looking up something in the library. All of the students might well be at different stages in their learning and in consequence, the learning is individualized to suit individual requirements and abilities” (Dr. A. H. Sequeira, 2012).

2. Background

The new realm in the Covid-19 pandemic has necessitated many changes in the lifestyle of people and has also warranted changes in the government policies. It has also questioned the cultural and social behaviour of people. Many countries around the globe have implemented policy changes in the

last few months (Cheng et al., 2020). This in turn has changed the lives of billions of people. The most common policy changes were travel restrictions, both from one country to the other and within the country. The second major policy decision taken by the governments all around the globe was the closure of schools and other educational institutions followed by curfews and restrictions of non-essential businesses in order to maintain social distancing. Large gatherings were also banned during the pandemic outbreak. All these were found to be mandatory enforcements rather than being optional (Flaxman et al., 2020). All these changes had their own impacts on the financial markets, environment, mental wellbeing of people and the physical health condition (Cheng et al., 2020).

Numerous steps have been taken by the government and private sectors to overcome the situation. Many companies all over the world have adopted a work-from-home model to cope up with their business losses. A few found the transition to remote work easy whereas in numerous jobs working remotely became impossible. Working remotely has increased drastically over years in the fields like wholesale trading, information technology, finance and insurance services, and the education sector (Bick et al., 2020). Research studies carried out by firms like Gartner has come up with the result that a significant number of people who have been pushed to work from home in the new realm would continue working from home permanently. Companies may adopt this model as cost cutting measures in the new normal.

A similar situation prevails with the educational institutions too. The result of Covid-19 seemed to be suspension of physical classes by the schools, universities and colleges and adoption of online mode for conducting classes. While a few organizations adapted to the new realm with ease, a few others struggled to build the necessary online infrastructure. Even though there were debates on the effectiveness of online classes, the world was left without any option rather than getting accustomed to the new realm of online teaching-learning. Both the faculty members and the students strived to adapt themselves to the new online environment. Many universities all over the world started offering internet-based online courses and programs. The usage of online communication platforms like

Zoom, Google Meet, MS Teams, Webex, etc., increased multifold. Sharing of materials through online Learning Management Systems (LMS) also increased.

When it comes for student engagement, face-to-face learning outwits online learning because of its ability to engage the students directly (Hu & Hui, 2012). Figlio et al. (2013) came up with the fact that live lectures are conducive for the slow learners and for students getting relatively low grades. However, face-to-face classes warrant higher investments for building up the necessary infrastructure and to train the staff members. These factors along with the prevailing pandemic situation drive the educational institutions towards online learning.

Unlike conventional face-to-face classes, online learning reduces the temporal and spatial problems in learning (Panigrahi et al., 2018). It also has the flexibility of being provided in both synchronous and asynchronous environments. Another big advantage of online learning is its availability of materials anytime and anywhere, and its ability to reach many people at the same time (Panigrahi et al., 2018). Added edge of online learning is that it enables the students to learn the course at their own pace. The introduction of online courses also provide opportunity for the students to involve themselves in non-academic activities which in turn would benefit them from both academic and non-academic environments (Gomis-Porqueras & Rodrigues-Neto, 2018). It is estimated that e-learning will be comprehensively used worldwide, and its global market would reach up to 65.41 billion dollars by 2023 (Panigrahi et al., 2018).

It is obvious that an online learner is a person who belongs to an asynchronous educational environment in which the usage of the internet plays a significant part in getting engaged with fellow students and the teacher (Garrison et al., 2004). Most of the online learning happens in an asynchronous environment where the learners have the liberty to choose their own time of study. This provides them a unique educational experience in which there is a large variation in the interactive patterns among the learners and the teachers unlike the regular face-to-

face classrooms. This flexibility in the system may be used effectively by the students, and at the same time, there is a danger of a student becoming passive. Student retention in online platforms is also a major problem (Panigrahi et al., 2018) since there is a high chance for them not to respond to the instructions given in an online class. This necessitates the establishment of a new effective online learning environment in order to exhibit the full potential of the learners and to make them participate effectively in online classes. Working together with other learners increases involvement in learning and deepens understanding (Chickering & Ehrmann, 1996), but it is followed only by a limited number of students. There are numerous factors influencing the mood of an online learner. It also becomes necessary for an online learner to make role identity adjustments to indulge in an effective online discourse and to get engaged in a community of inquiry.

The quantum of study materials available online has tremendously improved in recent times. There are a number of websites providing learning materials for all the subject domains. Libraries have also been digitalized by enabling the learners to access the materials online. Exceptionally interesting digital way of learning in the form of online quizzes and learning through gaming also has been established. Online videos also play a vital role in providing a conducive learning experience. Technological advancements like breakout rooms in online platforms also ensure an effective teaching-learning process.

It is imperative that online learning effectiveness and student satisfaction should be considered as the key elements of online teaching-learning process. This would encourage the students to actively participate in the community of inquiry and would serve as a rewarding factor for student engagement (Hu & Hui, 2012). Many online learning platforms like Coursera, Udemy, edX, Khan Academy and FutureLearn highly follow these principles to make their online courses successful and sustain themselves in the industry. Apart from this, many universities, schools, colleges and other educational

institutions all over the world have pushed themselves to take live online classes using various means like Zoom, Google Meet, Microsoft Teams, Go To Meetings, Webex and other similar online platforms. Also, the usage of other Learning Management Systems like Google Classroom, Edmodo, Moodle, Schoology, etc., have increased substantially.

Assessment serves as the most significant factor that is to be considered for the success of any course. It also serves as an integral part of the teaching-learning process in order to evaluate the extent of student learning and also assessments most often help the instructors to check the achievement of stipulated course outcomes. The evident fact is that many teachers and students are worried about the quality and credibility of online assessment methodologies (Kirkwood & Price, 2015). Most effective assessment methods for online teaching will be to ask the students to solve real-world problems with the use of various activities inclusive of both individual as well as group work (Conrad & Openo, 2018)

Hypothesis

Hybrid Model of Teaching-Learning (HMTL) which is inclusive of both online learning and face-to-face interaction in physical classrooms will serve as an effective pedagogy to engage the Gen Z learners. Further to meeting the evolving learning needs and preferences of Gen Z learners, it provides a blended approach to learning which effectively enhances and provides the advantages of online and in-person instruction to the learners.

Objectives of the Study

The main aim of the study is to:

1. Identify an effective pedagogy for the present scenario to efficiently engage the Gen Z Learners.
2. Analyse the effectiveness of online learning and its limitations.
3. Analyse the effectiveness of face-to-face learning and its limitations.

4. Prove that hybrid mode of learning will serve as an effective tool in the current situation.

3. Research Design and Method

Previous studies have shown the importance of self-regulated learning (SRL) for achievement in traditional education (Pintrich and de Groot 1990; Winters et al. 2008; Zimmerman and Martinez-Pons 1986). McVay (2001) developed and validated a 13-item questionnaire to assess students' "readiness for online learning" (Bernard et al., 2004). This involved the requirement of basic skills of the students and the various components that can be delivered online. As student autonomy is greater in MOOCs than in traditional courses (Garrison 2003), it is likely that SRL is even more important for achievement in MOOCs. A 12-item questionnaire was prepared and administered to 204 students to check the effectiveness of online learning and to come up with the scope for improvement of the same. The demographic characteristics of the study were analysed via descriptive statistics using R Programming.

Participants

The questionnaire was circulated to the students pursuing their under graduation in Engineering and Technology Programme in Tamil Nadu, India. A total of 204 responses were collected. The respondents were inclusive of both males and females with a total of 78 girls and 126 boys. The age group of the respondents is between 17 and 20 years. All the respondents are from the southern parts of India predominantly from the state of Tamil Nadu.

4. Findings

The responses received for the questionnaire were analysed statistically using Descriptive Statistics to get an overview of the effectiveness of online learning, face-to-face learning and hybrid mode of learning with their advantages and disadvantages. Out of 204 students in the experimental group, 29 students preferred online learning, 78 students feel that they are comfortable only with physical face-to-face classes and 97

students are comfortable in attending a hybrid mode of class.

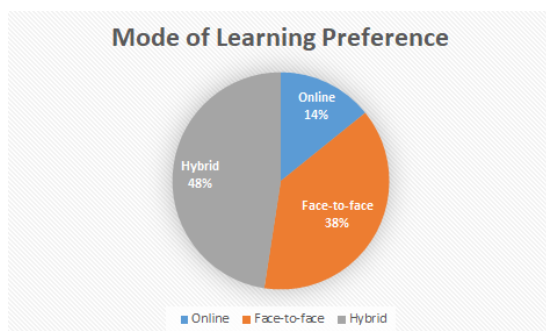


Figure 1: Learning Preference by Students

Descriptive Statistics

Descriptive statistics was conducted using R Programming to evaluate the measures of central tendency (mean, median and mode), dispersion-like variability (standard deviation), skewness (symmetry) and kurtosis (peakedness). The distribution of the data (parametric or non-parametric) was studied by analysing the results of descriptive statistics. Based on the values of skewness and kurtosis the distribution of the data was identified. If the values are nearer to zero, the distribution of the data is considered as parametric. The same was observed; and therefore, the data was considered as the parametric data.

Learner Tendency Toward Online Learning

While carrying out the Descriptive Statistics, the following considerations were made to check the effectiveness of the online classes. If a candidate has attended more than 20 hours of online classes per week, it was considered as more convinced since the candidate has put more efforts in attending online classes and is also seemed to be interested in attending the same. The allotted timetable / online classes among the respondents were the same, but the students attending more than 20 hours of online classes per week seem to have registered for additional online courses out of their interest. This validates our consideration of having them as more convinced in the analysis. Among these candidates, 63% of them seem to be comfortable with the online mode of teaching and 67% of them are comfortable with online platforms like MS Teams, Google Meet, Google Classroom, Zoom Meetings, etc. Also, 58%

of the candidates find themselves comfortable with the course contents provided through these online platforms.

The candidates who attended 10 to 20 hours of online classes were considered to be equally convinced with both online learning and face-to-face learning. These candidates are deemed to have attended most of the scheduled online classes, but they have not taken any extra effort to attend more classes through online mode of learning. Their fascination with attending conventional face-to-face classes also seems to be everlasting mostly because of the interaction that happens with their tutors and peers. Most of them (68% of learners) seem to be satisfied with the online platform that they use for their academic purposes. A 56% of them are comfortable with the mode of online learning and also it was noted that 54% of this type of learners found themselves to be satisfied with the course content provided in both online learning and physical classes. The category of less convinced learners with online learning is given to the candidates who attended less than 10 hours of online classes per week. Even though the class schedule is same for these learners, they lack interest in attending their classes and finally end up in attending less number of classes. The reasons for their lack of interest vary from one individual to another which are discussed in Table 2. This type of learners seems to be comfortable with the course content provided and the online learning platforms that are used for the classes. This is evident with 62% of them showing their comfort level towards the same. Their area of botheration seems to be attending their online classes, which is reflected with 48% of them are only comfortable with attending online classes to a certain extent and 52% seem to be unwilling to attend online classes.

Table 1: Components that Create Successful Online Learning Environments

Category of Students	Components
More convinced with online learning	course content (58%), comfort with online learning (63%), Online learning platform (67%)
Equally convinced with online learning and Conventional learning	course content (54%), comfort with online learning (56%), Online learning platform (68%)

Less convinced with online learning	course content (62%), comfort with online learning (48%), Online learning platform (62%)
Overall	course content (58%), comfort with online learning (56%), Online learning platform (66%)

There are numerous challenges faced by the online learners in the form of network problem, nonavailability of devices, lack of access to internet, distractions, inability to attend classes in home environment, lack of self-discipline, sense of isolation, inability to manage more screen-time, lack of interaction, etc. The reason differs from one candidate to another as mentioned earlier in the study. More prominent reasons which can be seen as obstacles for a healthy online learning environment as per the study are network problem and lack of interaction during the class. Among the more convinced learners, 32% of them feel that they face network issues while attending their classes. Also, 23% of the learners feel that the interaction which is there in the physical mode is missing. The trend of these problems seems to be prominent with the other 2 categories of the learners also. Equally convinced learners feel that 48% of them face network problem and also lack of interaction seems to be an issue for 52% of them. There is an increase in this trend with the less convinced learners where 50% of them face network-related issues and 67% of them have a tendency that there is lack of interaction in online classes.

Table 2: Components that Create Obstacles in Online Learning Environments

Category of Students	Components
More convinced with online learning	Network problem (32%), Lack of Interaction (23%)
Equally convinced with online learning and Conventional learning	Network problem (48%), Lack of Interaction (52%)
Less convinced with online learning	Network problem (50%), Lack of Interaction (67%)
Overall	Network problem (43%) and Lack of Interaction (47%)

Face to Face

When it comes to face-to-face learning, if a candidate has attended more than 25 hours of face-to-face learning per week, it was considered as more convinced since the students are physically present for the class. If a candidate attended less than 15

hours of face-to-face learning per week, it was considered less convincing since he was not regular to the class on physical mode.

Table 3: Components that Create Successful Face-to-Face Learning Environments

Category of Students	Components
More convinced with face-to-face learning	course content (43%), comfort with face-to-face teaching (79%), Classroom learning environment (73%)
Equally convinced with face-to-face learning and online learning	course content (55%), comfort with face-to-face teaching (73%), Classroom learning environment (77%)
Less convinced with face-to-face learning	course content (34%), comfort with face-to-face teaching (56%), Classroom learning environment (67%)
Overall	course content (44%), comfort with face-to-face teaching (69%), Classroom learning environment (72%)

When analyzing the components that create successful face-to face learning environments, under the category of more convinced with face-to-face learning, it has been noticed that 43% of the students are more convinced with course content in face-to-face learning whereas 79% of the students mentioned that they are comfortable with face-to-face teaching. When it comes to classroom learning environment, it has been noted that 73% of the students are more convinced.

Under the category of equally convinced with face-to-face learning and online learning, 55% of the students mentioned that they are comfortable with the course content provided in both the modes of learning. Under this category, when it comes to comfort with face-to-face teaching, it has been noted that 73% of the students are contented. When it comes to the classroom learning environment, 77% of the students feel that they are comfortable on face to face and online learning.

When analyzing the less convinced with face-to-face learning, it has been noted that only 34% of the students are comfortable with course content. Comfort with face-to-face teaching has 56% and the classroom learning environment has 67%.

Table 4: Components that Create Obstacles in Face-to-Face Learning Environments

Category of Students	Components
More convinced with face-to-face learning	Commuting (76%), Physical Presence (24%), Expenditure (71%)
Equally convinced with face-to-face learning and online learning	Commuting (78%), Physical Presence (59%), Expenditure (67%)
Less convinced with face-to-face learning	Commuting (83%), Physical Presence (67%), Expenditure (86%)
Overall	Commuting (79%), Physical Presence (50%), Expenditure (75%)

When analyzing the Components that create obstacles in face-to-face learning environments, under the category of more convinced with face-to-face learning, 76% of the students have problems with commuting in the physical mode. 24% of the students have problems with physical presence and it has been noted that 71% of the candidates face difficulty in expenditure.

Under the category of Equally convinced with face-to-face learning and online learning, it has been noted that 78% of the students face difficulty with commuting whereas 59% of the students face difficulty in physical presence. 67% of the students mentioned that they find it difficult with expenditure.

Under the category of less convinced with face-to-face learning, it has been noted that 83% of the students find it difficult in commuting, 67% of the students face difficulty with physical presence and 86% of the students face difficult with expenditure.

Hybrid Learning

The learners who attend more than 25 hours of physical classes and who indulge in more than 10 hours of online learning every week for accessing the course materials and other relevant learning materials were considered to be more convinced learners in hybrid learning. These learners were comfortable with course contents provided and with the mode of attending both physical and online classes. This is reflected when 84% of learners are comfortable with the course content and 92% of learners are comfortable with attending classes through hybrid mode of learning. Candidates attending less than 15 hours of face-to-face learning per week and indulging in less than 5 hours of online

learning per week were considered as less convinced with hybrid learning. The number of candidates convinced with course content from this category of learners seem to be 69% and learners comfortable with attending the classes in hybrid mode are 73%. This trend is comparatively high related to online learning and physical mode of learning individually.

Table 5: Components that Create Successful Hybrid Learning Environments

Category of Students	Components
More convinced with hybrid learning	course content (84%), comfort with hybrid learning (92%)
Less convinced with hybrid learning	course content (69%), comfort with hybrid learning (73%)
Overall	course content (76.5%), comfort with hybrid learning (72.5%)

The data collected regarding the obstacles in hybrid mode of learning includes various factors and predominantly factors like commuting, physical presence in the classroom, expenditure incurred, and internet network issues played major roles. With the case of more convinced learners, 65% of the candidates have issues in managing the expenditure for both physical and online classes, 63% of them face problems with commuting to college, 29% of them have network issues and 26% of the learners find it difficult to sit in the classroom. When it comes to the less convinced learners, 81% of them find it difficult to manage the expenses, 79% of the learners feel hard to commute to their classes, 68% of them are unable to manage their physical classes and 37% of the learners' face network issues.

Table 6: Components that Create Obstacles in Hybrid Learning Environments

Category of Students	Components
More convinced with hybrid learning	Commuting (63%), Physical Presence (26%), Expenditure (65%), Network problem (29%)
Less convinced with hybrid learning	Commuting (79%), Physical Presence (68%), Expenditure (81%), Network problem (37%)
Overall	Commuting (71%), Physical Presence (47%), Expenditure (73%), Network problem (33%)

5. Results and Discussion

Results indicate numerous trends in overall components seen as useful and challenges that confront learners in online, face-to-face and hybrid learning environments. The complete research questions have been used to organize the presentation of the data.

The overall result found for the components that create successful online learning environments in terms of course content is 58% whereas the comfort with online learning has a slight difference which is 56% and online learning platform is 66%. The results for the components that create obstacles in online learning environments in terms of network problem is 43% and lack of interaction is 47%. When it comes to the Components that create successful face-to-face learning environments, the overall result for the course content is 44% whereas the comfort with face-to-face teaching has a drastic growth of 69%. The overall result for the classroom learning environment is 72%. When it comes to the overall result for the components that create obstacles in face-to-face learning environments, commuting is 79%, physical presence is 50% and expenditure is 75%. As far as the overall result of the components that create successful hybrid learning environments is concerned, course content comes to 76.5% whereas comfort with hybrid learning comes to 72.5%. Coming to the Components that create obstacles in hybrid learning environments, the overall result for commuting is 71%, physical presence is 47%, expenditure is 73% and the network problem is 33%.

The above result shows that hybrid learning is the most opted mode of learning among the students, and it acts as a successful mode of teaching and learning in the present study. In the experimental study carried out, it has been noted that even though the disadvantages of both online learning and face-to-face learning are getting transferred into this hybrid model, their intensity gets minimal because of the convergence of both the modes. Also, the advantages of hybrid learning seem phenomenal thereby obliterating the shortcomings. From learners' perspective, 29 students like online learning and 78 students like face-to-face learning,

but when it comes to hybrid learning, both these categories of learners seem to be convinced since their preferred component gets integrated into it.

6. Conclusion

The above analysis clearly pictures that both online learning and face-to-face learning have merits and demerits. Although the proportion of advantages and disadvantages varies from one mode of learning to another, it is understood that there is a dire need for all the educational institutes to arrive at a new effective pedagogy to engage the 21st century learners. In this context, Hybrid Model of Teaching-Learning (HMTL), inclusive of both online learning and face-to-face interaction, serves as the best possible alternative to enhance the effectiveness of the teaching-learning process. This also ensures that each candidate is given an opportunity to interact and clarify their doubts either physically or virtually.

The advantages of this type of hybrid learning are numerous. The online platform used by the instructor serves as the best tool to provide reference materials and learning materials to the candidates. It enables the teacher to provide web resources in the form of website links so that the learners can easily access them for their learning purposes. These learning platforms can be used as discussion forum where the students can share their comments and opinions even after their regular class hours, and it also serves as a tool to encourage peer learning. Submission of digital assignments provides the tutor an opportunity to review them at any time of their convenience. This also helps the learners to stay updated with the deadline for submission and the marks secured. On the other hand, the physical face-to-face learning in this pedagogy ensures effective classroom environment for the learners. This also provides ample opportunity to carry out flipped class model with ease. The candidates are provided with additional time to discuss their doubts which were posted in the online platform thereby providing a better-engaged learners. Also, they can make use of the study materials and links posted in the online platform as a reference during regular class hours. Thus, the Hybrid Model of Teaching-Learning (HMTL) serves as the best possible pedagogy to

engage the Gen Z learners. This also serves to be the futuristic approach to make the teaching-learning process meaningful.

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