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Students' Perceptions of Hybrid Classes in the Context of Gulf University: An Analytical Study

Mohanad Alfiras¹, Muskan Nagi², Janaki Bojiah¹, Maliha Sherwani¹

¹ General Sciences, Gulf University, Sanad, Bahrain

² Administrative Sciences, Gulf University, Sanad, Bahrain

Abstract: Since the emergence of the COVID-19 pandemic, the field of education has experienced a 360-degree change in terms of teaching and learning processes. Resources, pedagogies, and assessments have been revised in accordance with virtual learning environments. One such learning environment is the hybrid class in which half of the students attend the class physically, observing social distancing and other protocols pertaining to the pandemic safety measures, and the remaining students attend virtually. This model was adopted in the College of Engineering, Gulf University, Kingdom of Bahrain, where the practical sessions demanded the students' physical attendance for studio sessions. This study intends to examine the hybrid learning model adopted in detail and to identify the intensity of awareness, the perceptions, and the impact on performance of the hybrid learning model among the Interior Design Engineering students. The study is quantitative in nature; a specially designed questionnaire (with closed-ended questions) was used to collect data from participants selected based on a purposive sampling technique. Having verified the significance of the relationship of variables using the Pearson Chi-Square test, factor analysis was used for data reduction and to summarize the interdependent relationships. The results show that students' awareness of accessing online resources through hybrid classes, students' readiness to adopt hybrid classes, and teachers' efficiency in delivering a remarkable learning experience are the key factors in the success of the hybrid learning model. The results also indicate the importance of advanced Learning Management System (LMS) and the emotional connection of the students with their instructors and their classmates in adding value to the effective learning experience of the participants.

Keywords: hybrid class, students' perceptions, COVID-19 pandemic, virtual learning environment.

海湾大学背景下学生对混合课堂的看法：一项分析研究

摘要：自新冠肺炎大流行以来，教育领域在教学过程中经历了360度的变革。资源、教学法和评估已根据虚拟学习环境进行了修订。一种这样的学习环境是混合班级，其中一半的学生亲自上课，遵守与大流行安全措施有关的社交距离和其他协议，而其余的学生则以虚拟方式上课。这种模式被巴林王国海湾大学工程学院采用，实践课程要求学生亲自参加工作室课程。本研究旨在详细检查所采用的混合学习模型，并确定室内设计工程专业学生对混合学习模型的意识强度、感知和对性能的影响。该研究本质上是定量的；使用专门设计的问卷（带有封闭式问题）从根据有目的的抽样技术选择的参与者那里收集数据。使用皮尔逊卡方检验验证了变量关系的显著性后，使用因子分析来减少数据并总结相互依赖的关系。结果表明，学生通过混合课程访问在线资源的意识、学生对混合课程的准备程度以及教师提供卓越学习体验的效率是混合学习模式成功的关键因素。结果还表明，先进的学习管理系统（学习管理系统）以及学生与教师和同学之间的情感联系对于为参与者的有效学习体验增加价值的重要性。

关键词：混合课堂，学生的看法，新冠肺炎大流行，虚拟学习环境。

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About the authors: Mohanad Alfiras, General Sciences, Gulf University, Sanad, Bahrain; Muskan Nagi, Administrative Sciences, Gulf University, Sanad, Bahrain; Janaki Bojiah, Maliha Sherwani, General Sciences, Gulf University, Sanad, Bahrain

1. Introduction

During the COVID-19 pandemic, public health sectors conducted numerous research studies related to COVID-19 [1], [2], [3], [4], [5], [6], and educationists have been listing the effects of COVID-19 on education [7], [8], [9] and the challenges of online education. Hybrid learning is one of the best options among the various types of virtual learning environments. This is particularly true when the course design integrates practical sessions during which the supervision and immediate feedback of the instructors play a significant and indispensable role [10]. The value of the hybrid learning model lies in its balance between the face-to-face class and the online class. In every second class, the student has the opportunity to meet their instructor to discuss progress and to work on the feedback. In the following class, the student can sit at home, work at ease, and listen online to the instructions given by the instructor, thereby ensuring the safety of the student, the instructor, and the classmates [11]. The College of Interior Design Engineering at Gulf University, Bahrain, adopted this learning model. The instructors and the students felt positive about its contribution to the achievement of academic excellence [12]. This experience prompted a research study to measure the extent of students' awareness, their perceptions, and the impact on their academic performance of hybrid classes. The aim was to identify the factors contributing to the success of the model in the university. It is noteworthy that, so far, this kind of study has been very limited in the context of Bahrain. The use of factor analysis to evaluate the results was effective in identifying the significant factors contributing to the productivity of the hybrid learning model.

2. Literature Review

The hybrid teaching/learning model is not new. Since the start of the current century, it has been tried and tested to achieve maximum teaching outcomes [13], [14], [15]. Teachers from all school levels aimed to incorporate technology into their teaching methods [16], [17], [18], [19] to develop and enhance their students' learning outcomes. Different techniques such as email, file transfer, content sharing, and cloud infrastructure are used to distribute assignments and to provide online feedback [16]. Technology has also been used widely to share teaching materials on LMS platforms like Moodle, Blackboard, and other similar media with the potential to enhance the achievement of learning objectives.

These techniques have led to the integration of technology in teaching programs, for example, in virtual/distance learning programs as a tool enhancing

the effectiveness of teaching, communication with students, and saving time [15] for in-service learners. Consequently, this model has been under scrutiny by those who wish to achieve excellence in teaching and learning at all levels. Therefore, recent research has attempted to establish its usefulness in terms of effective teaching/learning, accomplishment of planned learning outcomes, assessment of learners' performance [20], and learners' perceptions [18], [21], [22], [23] in relation to this method of teaching. In this context, learners are the most significant stakeholders.

The sole aim in introducing any novel technique in teaching is the achievement of effective teaching/learning outcomes in any course in any discipline. Many studies have supported the effectiveness of hybrid learning in terms of students' interest and involvement due to its practical nature [15], [17], [18], [24]. Studies show that the hybrid learning model is more effective in technical and practical courses that require practical learning under the direct supervision of an instructor [25]. In such areas of knowledge, online theoretical lectures alone are not enough. Instead, a combination of both forms, online lectures and hands-on activities (face-to-face vs. virtual learning), is a pathway to successful academic excellence [17], [26]. In addition, dependence on technology sometimes interrupts or negatively impacts the learning process because of technical problems such as connectivity issues and software glitches, etc. [19]. Also, online methods of instruction do not deal well with problems in the teaching of classes with many students. Student-student interaction, group work, and pair work are difficult to manage in the online setting [17]. The absence of teacher-student eye contact and body language hinders the internalization of knowledge. [27] introduced the human learning interface (HLI) approach and stated that humans use their senses to learn and internalize something efficiently. Consequently, merely online teaching could be challenging because of the lack of HLI. To ensure effective learning, online learning can be supplemented with face-to-face learning to teach courses that are more practical or technical [18], [21], [23], [28], [29].

On the other hand, [30] stated that both online, flipped, or blended learning programs can be successful or unsuccessful if not devised and executed appropriately in terms of structure, objectives, planned learning outcomes, taxonomy, and according to learner needs [20]. Hence, it is important to consider learners' perceptions and needs before developing any course or program. Numerous studies have been done to examine learners' satisfaction and teachers' beliefs and perceptions about blended instruction, reflecting positively on both learners' and teachers' satisfaction [18], [22], [23]. [21] claimed 93% positive results in

her research on students' perceptions related to their learning. Students show interest in online activity forums, and teachers also endorsed blended learning techniques. [22]'s research on learners' perceptions found that students appreciate technology-integrated online activities because such activities boost their interest and enhance their skills.

[28] emphasized the importance of the online teaching model in his study on factors shaping learners' attitudes and perceptions toward hybrid learning. The data displayed a positive correlation between hybrid learning and learners' satisfaction because of the former's flexible nature and structure. It was also seen that online teaching improved attendance because students could participate in classes from anywhere [15], [18], [23]. Also, it saved commuting time and shuttling-related costs for both teachers and students [23], [26]. Students feel more freedom and autonomy in online learning and spend more time interacting with technology, enabling them to become self-sufficient and lifelong learners [18], [29]. Therefore, this method of teaching is becoming increasingly popular with teachers and learners alike [18], [21], [23], [28], [29]. However, some studies related to perceptions of students/teachers bear mixed or negative results mainly due to the structure [19], management, or lack of training of students/instructors before the execution of the teaching programs [17], [24].

Researchers claimed that pedagogy plays a pivotal role in the success or failure of any learning teaching

platform [17]. [26] suggested that interesting, hands-on interactive activities help a great deal develop students' interest in hybrid classes. The class activities should be engaging and learner-centered to harvest maximum teaching and learning outcomes effectively. In addition to that, new applications and platforms should be introduced and incorporated to achieve maximum student interaction and overall learning outcomes [18] to shape learners' better understanding and perceptions. Substantial research and need analysis on learners' perceptions and beliefs related to hybrid learning are required to achieve optimal course objectives, medium of instruction, lecture delivery methods, and valid assessment [17], [31] as learners are the utmost important entity in the teaching-learning process [22].

3. Hybrid Learning Model: An Overview

The hybrid learning model bridges the gap between face-to-face classes and online classes as it assures no missing out on the learning experience. The instructor's feedback and follow-up at regular intervals ensure guaranteed academic achievement, whereas socializing leads to building up a rapport with instructors and emotional bonding with other classmates. The pedagogical flexibility characteristic of the hybrid learning model provides a transformative experience to both the instructors and the learners as it is profoundly personalized [32].

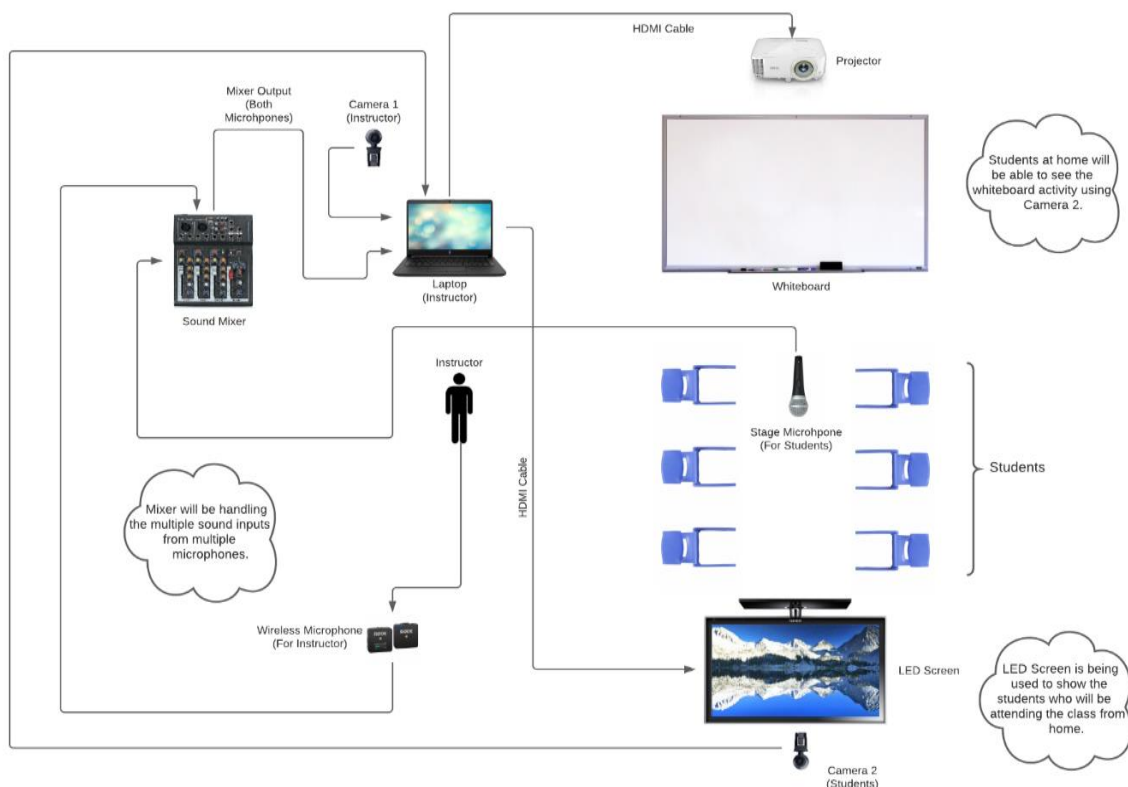


Fig. 1 Hybrid learning model in Gulf University

Gulf University has initiated a new concept for delivering hybrid class lessons using technology in the classroom setup. The following classroom setup gives

the instructor and students the tools to communicate with each other. Online students can communicate with the instructor via audio/video and screen sharing, and

onsite students who attend the class can engage with the instructor and online students.

- The instructor's laptop is connected to a high-definition projector using an HDMI cable to project the lesson displayed on the instructor's laptop monitor.

- The instructor's laptop is fitted with Camera 1 as shown in the picture to broadcast the instructor's actions.

- The instructor's laptop is fitted with Camera 2 as shown in the picture to broadcast the actions of the students attending the class from home on the LED screen.

- Using Camera 2, students attending the class from home can see the whiteboard activity.

- As the instructor and the students use microphones, a sound mixer is fitted to handle the multiple sound inputs from the multiple microphones.

- The mixer output is used in between the microphones to manage the clarity of the sound output.

4. Research Methodology

The study was conducted using a self-designed questionnaire which was divided into four sections. Section A: Demographic Profile, Section B: Awareness for Hybrid Classes, Section C is divided into two parts [16] such as i). Students' Perceptions about Hybrid Classes ii). Impact of Hybrid Classes on Student Performance. Designing questions is done so that the first five questions measure the students' perceptions, and the next five ones measure the impact on performance. Last but not least is Section D: Factors Affecting Hybrid Classes. The questionnaire was based on a 5-point Likert scale, where respondents ranked their level of agreement with five representing parameters, namely 5 Strongly Agree, 4 Agree, 3 Neutral, 2 Disagree, and 1 Strongly Disagree. The data were collected from Gulf University, Kingdom of Bahrain. The respondents were students from Bachelor of Interior Designing Engineering. For collecting data, a judgment, or purposive, sampling technique was used. There were 57 respondents, *but* only 55 complete responses were considered for the study. The reliability statistics of 25 items shows the value of Cronbach's alpha to be 0.956, which is highly significant *and* acknowledges all the items to be reliable. Cronbach's alpha measures need to exceed the accepted benchmark of 0.6. The final sample, comprising 55 executives, is described as follows:

Table 1 Summary of sample structure

N=55	No. of Respondents	Percentage
Gender		
Male	10	18.2%
Female	45	81.8%
Age Group		
Less than 20 years	7	12.7%
20-25 years	43	78.2%
25 years & above	5	9.1%
Years of study		

1st Year	8	13.8%
2nd Year	15	27.7%
3rd Year	14	25.7%
4th Year	18	32.8%

5. Analysis

The IBM SPSS Statistics program was used for data analysis. Variables were tested for the significance of their relationships using Pearson's chi-square test. Factor analysis [33] was also used to understand which factor is considered to be the most important factor for hybrid classes as per the respondents. Factor analysis is defined as a procedure mainly used for data reduction and summarization as it is an interdependence technique used to examine an entire set of interdependent relationships.

5.1. Analysis Interpretation

5.1.1. Chi-Square Analysis

Pearson's chi-square test was applied to determine significant relations of the demographic profile of students with awareness of hybrid classes, students' perceptions regarding hybrid classes, and the impact of it on student performance. Below are the tables showing SPSS results and their interpretation.

Table 2 Summary of Pearson's Chi-square test

Variables	Value	P-Value	Significant Value
Gender*Awareness	.153	.132	Not Significant
Gender*Perception	7.320	.000	Significant
Gender*Performance Impact	.490	.543	Not Significant
Age*Awareness	274.879	.000	Significant
Age*Perception	284.306	.000	Significant
Age*Performance Impact	226.654	.000	Significant
Year*Awareness	174.451	.000	Significant
Year*Perception	153.197	.000	Significant
Year*Performance Impact	166.489	.000	Significant

As per the above results from the chi-square test, it was found that gender versus the awareness and impact of hybrid classes on performance had a nonsignificant relationship, whereas gender versus perception and other demographic profiles was found to have a significant relation with dependent variables.

5.1.2. Factor Analysis

The second part of the research is dedicated to the identification of the factors that respondents/students considered to be the most important for awareness, students' perceptions, impact on student performance, and successful implementation of hybrid classes.

The five identified factors of students' awareness are:

AW1: I completely enjoy hybrid classes.

AW2: I am aware of accessing online resources in hybrid classes.

AW3: I am aware of the learning strategies of hybrid classes.

AW4: I am familiar with the pedagogies (teaching styles).

AW5: I am aware of participation in classroom activities offline and online.

Table 3 Component matrix^{a1}

Awareness	Component
AW2	.907
AW5	.900

As the results indicate that the most important factor for the students is knowing how to access online resources, followed by having awareness for participation in classroom activities offline and online.

Regarding students' perceptions about hybrid classes, the variables identified for the study are:

SP1: I believe hybrid classes develop my soft skills.

SP2: I believe I establish an emotional connection with my instructor during hybrid classes.

SP3: I believe I establish emotional connections with my classmates during hybrid classes.

SP4: I believe I am ready to adopt hybrid classes.

SP5: I believe hybrid classes are more participative and attentive in nature.

Table 4 Component matrix^{a1}

Students' Perception	Component
SP4	.934
SP2	.931
SP3	.930

As per the factor analysis, the students' perceptions of hybrid class were very high for SP4, followed by SP2, with only minor difference compared to SP3.

The identified variables with respect to the impact on student performance are:

SP6: Hybrid classes enhance my confidence level.

SP7: Hybrid classes let me study at my own speed.

SP8: Hybrid classes have a greater impact on my performance than online classes.

SP9: Hybrid classes give me more time for self-study.

SP10: Hybrid classes provide effective feedback from the instructors.

Table 5 Component matrix^{a1}

Students' Performance	Component
SP9	.956
SP10	.950

SP9 is considered as an important factor for having a greater impact on student performance, followed by SP10 for having more effective feedback from instructors than from online classes.

According to students, as per the factor analysis, the following factors are considered to be effective for successful implementation of hybrid classes, in ascending order:

FA1: Teacher efficiency

FA2: Advanced LMS

FA3: Communication over the Internet

FA4: Good Internet connectivity

FA5: Calm environment

FA6: Smart device

FA7: Instructor support

FA8: Student performance

FA9: Technology-savvy nature of students

FA10: Solving technological issues

Table 6 Component matrix^{a1}

Factor Affecting Hybrid Classes	Component
FA1	.976
FA2	.974
FA4	.966
FA7	.960

Students' responses show that FA1, Teacher efficiency, and FA2, Advanced LMS, are the key factors for effectively implementing hybrid classes.

6. Discussion

The above interpretation of the factor analysis has shown that awareness and impact on student performance have no relation with the gender of the respondent. This acknowledges the fact that, in the 21st century, males and females are equally educated and possess good awareness of the evolving technology and changing lifestyle. However, gender has strong relationships with perceptions, and this shows that males and females perceive things differently based on various factors, such as individual traits, convenience, soft skills, responsibility, and so on.

Moreover, the study highlights the strong or significant relationship of demographic/age and year of study with awareness, perception, and impact on performance. This means that with increasing age and year of study, the respondents have gained more awareness and positive perception of hybrid classes, which thereby has resulted in a remarkable impact on their performance. This may be due to the fact that with increasing age and year of study, the sense of responsibility for certain achievements also increases.

Further, the most significant result of the study AW2.—I am aware of accessing online resources through hybrid classes—explains the success of hybrid classes. As today's generation is tech-savvy, their familiarity with smart devices and technology makes it easy for them to adopt hybrid classes. Analyzing the second part of the questionnaire with respect to the respondents' perception of hybrid classes, in the first place is SP4.—I believe I possess the readiness to adopt hybrid classes—and in the second place SP2.—I believe I establish emotional connection with my instructor during hybrid classes—and in the third place SP3.—I believe I establish emotional connection with my classmates during hybrid classes. Further,

respondents acknowledge SP9.—Hybrid classes give me more time for self-study, leading students to better and improved performance—and in the last place is SP10.—Hybrid classes provide effective feedback from the instructors [34].

The most significant factor for the successful implementation of hybrid classes is FA1.—teacher efficiency [35]. Students are of the opinion that teachers should be efficient enough to engage students through hybrid classes, which is followed by FA2.—advanced LMS. Students judge that an efficient and advanced LMS plays a major role in enriching their learning experience in hybrid classes.

7. Conclusion

The results of the study clarify that hybrid classes are effective and in order to make them even better, the identified parameters are to be regularized and enhanced. This rings the bell for the educationalists to design CPDs specially for hybrid classes, to train the teachers to adopt hybrid classes, and identify as well as incorporate advancements in LMS periodically. Another interpretation of the results could be the indispensable part played by teachers in any mode of teaching. The emotional connection that a teacher establishes and the constructive feedback that a teacher provides make the learning experience all the more positive and welcoming.

This study identified the factors contributing to the successful implementation of hybrid classes only taking into consideration the feedback rendered by the current students of College of Interior Design Engineering, Gulf University. Hence, there is a scope for furthering the study by taking responses from the entire student population of Gulf University and examining the variation of students' preferences as per academic discipline. Longitudinal research can be conducted across the country to measure the effectiveness of hybrid classes. The effectiveness of the hybrid learning model can be measured in two countries and a comparative study could be initiated in this regard.

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