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Exploring Architecture Student's Behaviour in Using Google Workspace for Design Studio Learning During COVID-19 Pandemic

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Abstract

The spread of the COVID-19 pandemic has become one of the driving factors behind the rapidly rising importance of online learning globally. Google Workspace has proven successful at enhancing teaching and learning by being the top choice of online educators in ensuring teaching and learning would not be disrupted. However, there has been a minimal study that focused on students' adoption and the use of Google Workspace in Malaysia among architecture students. The main challenge in the architectural learning environment is the replacement of face-to-face with online approaches. Therefore, this research explores architecture students' behaviour practices using Google Workspace for learning during the COVID-19 Pandemic. This study employed a quantitative research method using a survey to obtain data. The study used the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2), consisting of seven elements to decipher student behaviour in the learning process from three (3) Universiti Teknologi MARA (UiTM) campuses that offer design-based courses. This research applied a combination of cluster and stratified random sampling by identifying the total population of architecture students in the three UiTM campuses. Of the seven (7) elements of behavioural patterns, Effort Expectancy has the highest frequency distribution and Hedonistic Motivation had the least. The findings suggest that Google Workspace has a favourable proclivity to be employed in design studio learning and revealed architecture students' acceptance of the use of Google Workspace for Education in these three (3) campuses. Thus, the results also serve as a resource for educators to use in devising strategies for their teaching methods in the new norm of a more engaging design studio.

Keywords: Google Workspace, Students' Behaviour, Studio Learning, Technology Acceptance, UTAUT2

Introduction

The COVID-19 pandemic, as well as higher education, is currently affecting the world. As a result, students and teachers in higher education institutions have been subjected to extraordinary changes (Chung, Mohamed Noor & Mathew, 2020; Raza, Qazi, Khan, & Salam, 2020). The pandemic too has affected the education sector. As a result, the Ministry of Higher Education, and all public and private universities in Malaysia decided to use online learning as a platform for the teaching and learning process until the end of December 2020 (Malaysian Ministry of Higher Education, 2020). This circumstance has impacted the increased integration of e-learning technologies in the teaching and learning process. E-learning systems enable students to use the Internet to access learning goods and interact with instructors, resources, and other students. Almaiah et al (2019); Liu et al (2019) claimed that a significant number of higher education institutions have been obliged to employ technology during the learning process. UiTM, a Malaysian state university, began online instruction in April 2020. Before the pandemic, UiTM subscribed to Google Workspace for Education on all its campuses. Around the same time, the UFuture Learning Management System (LMS) was introduced to supplement the previous i-Learn system (Chung et al., 2020). However, since using UFuture was optional, many instructors opted for more user-friendly and accessible platforms like Google Classroom and other social media platforms like WhatsApp, Telegram, and YouTube (Chung et al., 2020). As Chao (2019) stated this initiative could assist students to study whenever and wherever they want. Nonetheless, the usage and acceptance of architecture students to adopt the technology in the online environment are arguable. Students can have issues interacting with technology, particularly usage and acceptance (Kaliisa et al., 2019). Hence, online learning interaction requires social presence. If the online engagement could be prolonged or monitored, the social presence felt increased. Rahman et al (2021) added that this seems to imply that students were disengaged when learning electronically.

Thus, conducting studio-based courses on an online platform resulted in a low degree of satisfaction. This was evidenced by similar global replies (Grover and Wright, 2020). Since design studio learning demands social constructivism in the learning approach, conducting the studio in a fully online environment is the main concern. Nonetheless, a minimal investigation focused on students' adoption and the use of Google Workspace in Malaysia by architecture students. Along these lines, to ensure that the student can adapt to the environment of Google Workspace in the architectural design studio, the usage and acceptance of the student's behaviour must be assessed.

- This research aims to determine significant constructs from Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) by Venkatesh, Thong and Xu (2012) on architecture students' behaviour practices in using the Google Workspace during the design studio learning.

Literature Review

Students' Online Behaviour

Various Learning Management System (LMS) platforms have currently been developed and made available, and they are widely utilised in both distant learning and regular classrooms (Rocha et al., 2013). At all levels of education, the use of technology in education is rapidly increasing. With the introduction of digital technology and the rising relevance of computer transmission for higher education, ODL has emerged in a variety of forms, including electronic mail, the World Wide Web (WWW), the Internet, technology, and multimedia. This implies

that the usage of software technology necessitates the use of interactive software in order to attract more consumers to utilise ODL in their life. As a result, assessing interactive satisfaction and students' online behaviour for ODL is critical for determining the effectiveness and efficiency of interaction in ODL. As a result, a model for identifying students' online behaviour should be designed to allow lecturers or instructors to increase participation, develop communications, receive some feedback, improve clarity and retention, student support, and enable discovery and exploration to help clarify and enable closure. Interaction is only valuable if it is designed with the goal and objective of a specific learning experience in mind. Students struggle to adjust to the transition from traditional to ODL classrooms (Donnie et al., 2018). Several studies found that students had difficulties, such as slow take-up after the course's first introduction, and that participation rates dropped significantly as the course progressed. As a result, there is a need to examine students' behaviour, particularly in design-based disciplines like architecture.

Architecture Design Studio

The design studio, which is central to architectural education, is taught through a project-based studio approach. Students engage in various social and intellectual activities, such as model-making and drawing, alternating between analytic, synthetic, and evaluative modes of thought (Dutton, 1987). According to the Council of Architectural Accreditation and Education Malaysia (MAPS) (2020) 'studios' refer to a learning pedagogy for students motivated by a project-based problem, frequently developed from issues or problem-based conditions as a medium for design studies, where activities such as input lectures, definitive studies, talks, discussions, critique sessions between lecturers and students at their desks, presentations and critiques for learning sharing purposes, portfolio, review, and exhibitions are conducted. In physical terms, studios can also be interpreted as a specialised studio space used to facilitate the activities above, including individual workspaces for students and academic staff. If and when necessary, a studio's operating hours might be extended to 24 hours a day (Council of Architectural Accreditation and Education Malaysia (MAPS), 2020).

The design studio approaches and learning strategies have been developed throughout time. Thus, examining students' opinions of online studios during the COVID-19 pandemic shows that online studios represent another step forward in the evolution of studio-quality design education. With the pandemic in 2020, it is once again demonstrated that traditional methods of design instruction might quickly become obsolete and physically incapable of reaching students. Alternative remote education communication tactics must be developed to visualise better and represent ways to complement online communication platforms (Ceylan et al., 2021). The Council of Architectural Accreditation and Education Malaysia (MAPS) (2020) also emphasised in the circular that guided learning time (GLT), which includes face-to-face (F2F) and non-face-to-face (nF2F) learning should account for at least 60% of total student learning time (SLT) to all higher education institutions offering architectural programmes. The main purpose is to ensure that the quality of studio learning is not jeopardised during the Movement Control Order (MCO).

Google Workspace for Education

Google Workspace for Education is a collection of Google technologies and services designed to help schools and homeschools communicate, expedite instruction, and keep students secure while studying. Google Workspace for Education provides a variety of choices to match your organization's needs. This subscription includes Google Classroom, Google Meet, Google

Mail, Google Calendar, Google Drive, Google Docs, Google Sheets, Google Slides, Google Forms, and many more tools for teaching and learning.

Since the beginning of the COVID-19 pandemic in March 2020, the number of active users of Google Classroom (GC) has more than doubled (De Vynck & Bergen, 2020). Google Apps for Education was first made available in 2004, allowing anybody with a Google account to build and participate in online learning platforms or courses (Kumar & Barvell, 2019). Using this platform, instructors can create and post learning materials in various formats, such as images, videos and links; manage student activities and tests; provide their students' feedback; provide feedback to their students. Students can use GC to get in touch with their instructors. A video conferencing capability has just been added to the LMS, allowing for real-time teaching and learning.

There are various reasons behind GC's growing popularity. The platform is viewed as cost-effective (Inoue & Pengnate, 2018; Ventayen et al., 2018; Rajendram, 2019), with students, for example, only need to register for a Google account to begin enrolling in a course through GC, with no monthly membership fee. Furthermore, GC is quick and simple to use (Alim et al., 2019) since it provides an intuitive and simple interface, while simultaneously functioning as a one-stop resource centre for students, allowing teachers to manage their classrooms more efficiently (Apriyanti et al., 2019; Sudarsana, et al., 2019). Furthermore, GC provides its consumers with the flexibility (Mafa, 2018), as it is available at any time and from any location through various devices, such as its app on a smartphone or its website on a personal computer with Internet access.

Unified Theory of Acceptance and Use of Technology 2 (UTAUT2)

In UiTM, learning architectural design in a fully online platform is considered new. Google Workspace also is newly subscribed by the institutions before the pandemic happens. There is an urgency to assess the students' behaviour in using and accepting technology. Venkatesh et al. (2012) developed an extension to the UTAUT model, dubbed UTAUT2. The UTAUT2 as in Figure 1 below contains seven significant factors, three of which are novel. The combination of known constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) and novel constructs (hedonic motivation, habit, and price value) predicts an individual's intention to utilise technology. Its authors argue that this paradigm is better in order to assess the consumer's acceptability of information systems. Additionally, UTAUT 2 has been empirically confirmed in studies (Admiraal et al., 2017; El-Masri & Tarhini, 2017; Raman & Don, 2013) that attempt to explain academics' acceptance of online learning technologies.

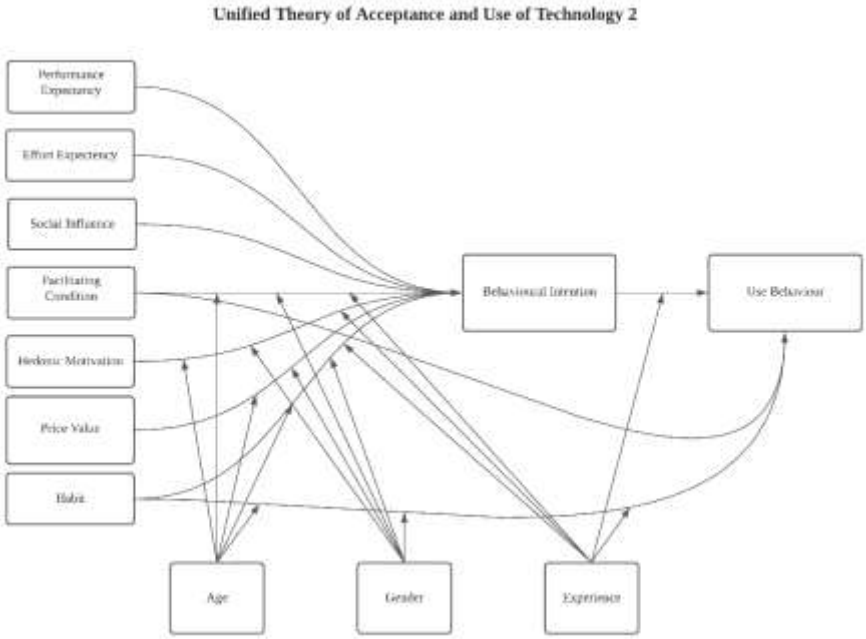

Fig. 1 The Unified Theory of Acceptance and Use of Technology (UTAUT2)
[Sources: Venkatesh et al., 2012]

This paper proposed to change the price value construct into learning value (LV). Using the concept of "price value," Venkatesh et al (2012) looked at monetary costs and advantages linked with consumers' technology use (Venkatesh et al., 2012; Dodds et al., 1991). When consumers view technology as offering benefits, their intention to bear the expense is influenced. For example, when there is a benefit-cost relationship, this impacts the intention of the consumers to adopt the technology (Venkatesh et al., 2012). This remark on the consumer side, “good value for money,” does a decent job conveying the price value concept. A good value proposition leads to more intentions to employ new technologies. A learning management system (LMS) holds ‘value' in consumer interests if it delivers the related benefits or quality. In this research, Google Workspace is being used as LMS in design studio learning. As far as students are concerned, LMS's value is based on the learning they obtain through it. Ain et al (2016) said there are no costs for students using LMS technology at the institutional level.

On the other hand, students dedicate their time and effort to obtain the advantage offered by an LMS. Students' thoughts about gaining learning from an LMS positively influence their purpose to invest more time and effort in researching and gaining information from the LMS. Their perception of learning value influences students' intentions to use LMS. Students' impression that the time and effort invested in learning yields beneficial results. This has influenced their intention to use an LMS. Realising that Venkatesh et al (2012) included a description of the pricing value of learning, learning value is defined as the “time and effort involved in using an LMS over the perceived value of the product."

Behavioural intention is used to describe individuals' intention to use a given technology for distinct purposes. Additionally, to know how committed individuals are to performing a given behaviour, the degree of behavioural intention can be measured (Ngai et al., 2007).

Behavioural desire to use affects actual system utilisation (Davis, 1989; Motaghian et al., 2013; Raman and Don, 2013; Wang and Wang, 2009).

Methodology

Data Collection

This research applied a descriptive survey using a cross-sectional research design. The survey was conducted to identify the student's learning experience in three (3) UiTM campuses; Seri Iskandar Campus (Perak), Kota Samarahan Campus (Sarawak), and Puncak Alam Campus (Selangor). Data were gathered through a set of structured questionnaires distributed to the students. The sample was drawn from architectural students. This research focussed on cluster and stratified random sampling for architecture students. According to Krejcie and Morgan (1970), the sampling size is dependent on the population size. The process to identify the sample size from the population using Slovin's formula (Slovin, 1960). Total population (N) =931 students. UiTM Perak Branch, Seri Iskandar Campus: N=460 students. UiTM Puncak Alam: N=381. UiTM Sarawak Branch: N=90.

Thus, the total sample size of N=305 is sufficient to explore the students' learning experience (strata) to guarantee appropriate, and equal representation based on several criteria. Table 1 below is question items with seven (7) constructs adopted from UTAUT2 to determine students' behaviour towards using Google Workspace in design studio learning 37 questions were distributed in one survey form via Google Form to the students at the end of the semester session March 2021 – August 2021.

Data Analysis

The Statistical Package for the Social Sciences (SPSS) software was used to examine quantitative data gathered through structural questions involving Likert scale type of questions contained in structured questionnaire forms. The data were examined using descriptive statistics that included frequency distribution and were displayed in tables. For univariate analysis, this data was summarised into percentages and frequency distribution forms.

Findings and Discussion

The architecture students' behaviour practices in using Google Workspace for learning during the COVID-19 Pandemic were assessed based on the following elements: performance expectancy; effort expectancy; social influence; facilitating conditions; hedonistic motivation; learning value; habit, and behavioural intention. The findings on architecture students' behaviour practices in using Google Workspace are shown in Table 1.

Table 1
Frequency of the Architecture Students' Behaviour Practices in Using Google Workspace for Design Studio Learning during COVID-19 Pandemic

	Elements	Architecture Students' Behaviour Practices in Using Google Workspace (Frequency and Percentage)										
		Mean	Strongly Disagree		Disagree		Moderate		Agree		Strongly Agree	
Performance	PE1	4.02	0	0.0%	8	2.6%	68	22.3%	138	45.2%	91	29.8%

Expectancy	PE2	3.68	6	2.0%	24	7.9%	97	31.8%	112	36.7%	66	21.6%
	PE3	3.70	5	1.6%	24	7.9%	104	34.1%	96	31.5%	76	24.9%
	PE4	3.63	10	3.3%	30	9.8%	94	30.8%	100	32.8%	71	23.3%
	PE5	3.30	12	3.9%	57	18.7%	116	38.0%	68	22.3%	52	17.0%
Effort Expectancy	EE1	4.09	1	0.3%	11	3.6%	66	21.6%	109	35.7%	118	38.7%
	EE2	4.04	1	0.3%	13	4.3%	65	21.3%	121	39.7%	105	34.4%
	EE3	4.17	1	0.3%	6	2.0%	60	19.7%	110	36.1%	128	42.0%
	EE4	4.02	2	0.7%	8	2.6%	70	23.0%	126	41.3%	99	32.5%
	EE5	3.11	21	6.9%	79	25.9%	98	32.1%	59	19.3%	48	15.7%
Social Influence	SI1	3.64	6	2.0%	17	5.6%	119	39.0%	103	33.8%	60	19.7%
	SI2	3.68	5	1.6%	21	6.9%	103	33.8%	114	37.4%	62	20.3%
	SI3	3.72	5	1.6%	24	7.9%	90	29.5%	118	38.7%	68	22.3%
	SI4	3.79	5	1.6%	24	7.9%	80	26.2%	117	38.4%	79	25.9%
	SI5	3.77	6	2.0%	22	7.2%	87	28.5%	111	36.4%	79	25.9%
Facilitating Conditions	FC1	3.96	1	0.3%	9	3.0%	77	25.2%	131	43.0%	87	28.5%
	FC2	4.02	1	0.3%	7	2.3%	65	21.3%	13	46.9%	89	29.2%
	FC3	3.57	4	1.3%	32	10.5%	111	36.4%	102	33.4%	56	18.4%
	FC4	3.79	6	2.0%	15	4.9%	93	30.5%	114	37.4%	77	25.2%
	FC5	4.02	3	1.0%	8	2.6%	70	23.0%	124	40.7%	100	32.8%
	FC6	3.37	20	6.6%	54	17.7%	93	30.5%	69	22.6%	69	22.6%
Hedonistic Motivation	HM1	3.81	6	2.0%	19	6.2%	84	27.5%	115	37.7%	81	26.6%
	HM2	3.76	6	2.0%	20	6.6%	94	30.8%	107	35.1%	78	25.6%
	HM3	2.82	42	13.8%	79	25.9%	102	33.4%	55	18.0%	27	8.9%

	HM4	3.65	11	3.6%	25	8.2%	91	29.8%	110	36.1%	68	22.3%
Learning Value	LV1	3.60	3	1.0%	24	7.9%	119	39.0%	106	34.8%	53	17.4%
	LV2	3.93	3	1.0%	15	4.9%	76	24.9%	116	38.0%	95	31.1%
	LV3	3.72	7	2.3%	18	5.9%	102	33.4%	105	33.4%	73	23.9%
	LV4	3.78	5	1.6%	16	5.2%	96	31.5%	111	36.4%	77	25.2%
Habit	H1	3.81	8	2.6%	24	7.9%	71	23.3%	118	38.7%	84	27.5%
	H2	3.17	26	8.5%	56	18.4%	104	34.1%	79	25.9%	40	13.1%
	H3	3.50	1	4.3%	30	9.8%	107	35.1%	102	33.4%	53	17.4%
	H4	3.91	3	1.0%	18	5.9%	70	23.0%	126	41.3%	88	28.9%
Behavioural Intention	BI1	3.85	6	2.0%	20	6.6%	70	23.0%	128	42.0%	81	26.6%
	BI2	3.75	4	1.3%	26	8.5%	88	28.9%	112	36.7%	75	24.6%
	BI3	2.94	14	4.6%	88	28.9%	133	43.6%	43	14.1%	27	8.9%
	BI4	3.78	4	1.3%	16	5.2%	88	28.9%	132	43.3%	65	21.3%

Table 1 displays the frequency of the architecture students' behaviour practices in using Google Workspace for design studio learning during the COVID-19 Pandemic. Overall, the students' behaviour practices showed diverse variations based on the seven (7) elements of behavioural patterns. Nonetheless, most of the students showed a positive inclination in using the Google Workspace application for learning during the COVID-19 Pandemic. This was reflected in the responses obtained in Table 1. There are seven (7) elements of behavioural patterns: Performance Expectancy, Effort Expectancy, Social Influence, Facilitating Condition, Hedonistic Motivation, Learning Value, Habit, and Behavioural Intention.

From the seven (7) elements of behavioural patterns, Effort Expectancy has the highest frequency distribution with four out of five elements- EE1, EE2, EE3 and EE4- having more than 200 students who agreed and strongly agreed with the statements of EE1, EE2, EE3 and EE4 on the usage and at ease in using the application. In this context; it is different from Jayaseelan et al (2020) who discovered that performance expectations are the essential element to determine whether or not an individual intends to use ICT for professional purposes. It can be interpreted that students feel easy to use this platform over the performance expectancy. The more accessible the technology is the more likely it will be adopted (Kaliisa et al., 2019). Only about 43 students disagreed with the statements, and about 60 chose moderate as their response. However, for the question on the use is troublesome (EE5), there was an equal distribution of mixed responses from the students. There were about 100 students who agreed and disagreed with the statement respectively,

while another 98 students chose moderate as their answer. It can be deduced that overall, the students have a positive inclination toward the application of Google Workspace.

This was followed by Performance Expectancy. Performance expectancy has been shown to have a considerable impact on behaviour intention (Almaiah et al., 2019; Arumugam Raman et al., 2020; Chao, 2019, Padhi, 2018; Rabaa'i, 2017) in several research. With more than 180 students agreeing and strongly agreeing with the statements (PE1, PE2, PE3, and PE4), the application is helpful in their study, increases their learning productivity, and able to do work faster and increase their performance. Only a total of 107 students disagreed with the statements on the Performance Expectancy (PE1, PE2, PE3, and PE4), and 163 students chose moderate as their option. While the PE5 statement task takes a lot of my time using this application, 120 students indicated they agree and strongly agree with the statement; only about 57 disagreed and 116 chose moderate as their option. Overall, the pattern shows that the students found the application helpful and benefit them.

The next element with a higher number of frequencies was Facilitating Condition, focusing on personal resources, knowledge on how to use the application, software compatibility, lecturers, and university support. From Table 1, the findings showed that most of the students responded positively to the statements posed (FC1, FC2, FC3, FC4, FC5), with more than 150 responses received for each of these elements. Only 86 of the students reported otherwise and about 430 students chose moderate as their response. Providing students with direction and technical assistance to enhance their use of educational technologies is critical to keeping them engaged in their studies (Mubuke et al., 2017). Nonetheless, when the FC6 statement "I often face problems in using Google Workspace", a total number of 138 students disagreed with the statement, only 74 students said otherwise, while 94 students chose moderate. The findings showed that the students do not face problems using the application for personal resources and using the application.

The following element with a higher number of frequencies is Social Influence, which includes questions on who plays a vital role in influencing them to use the application and when they would use it (SI1, SI2, SI3, SI4, SI5). According to Almaiah et al (2019), it was found that social influence does not have an impact on students' mobile learning behaviour. However, from Table 1, most of the students with more than 160 students from the total of 305 for each element reported that their decision to use the application was influenced by those who are important to them, whose opinions are valued, opinions of the lecturer and they would use the application when needed and when the course prescribed to use the application. Only a total of 135 from 305 students said otherwise for the elements (SI1, SI2, SI3, SI4, SI5) and the balance chose moderate as their option. It can be inferred that others' opinions influence the students' decision to use the platform.

The other element that follows suit is Learning Value. Many of the students have a positive perception of the value of Google Workspace employed in their learning. The majority of them with more than 150 students for each element (LV1, LV2, LV3 and LV4) reported that they agreed with the statement on the value of using this platform to learn, a total of 91 respondents disagreed with the statement, and the remaining total number of students chose moderate as their option. Ain et al. (2016) stated that this demonstrates that students believe that learning through LMS is more valuable than the time and effort invested in using it for various activities. As a result, learning value influences LMS intention. Overall, this shows that the students value the usage of this platform for the learning process.

Next is Habit. The element of habit involves four attributes H1, H2, H3, and H4, which involve behaving towards the application of Google Workspace. Most of the students

expressed a positive attitude towards the application in the learning process with more than 200 students responding positively for the H1 and H4 attributes, while for H2 and H3 with 119 and 115 responses respectively. A total of 166 students disagreed with the statements of the four attributes, and the remaining students chose moderate. It can be construed that the students have accepted the application of Google Workspace for their programme in line with the results of (Tarhini, 2017; Moorthy et al., 2019).

The following element is on Hedonistic Motivation. The overall responses gathered showed that the students found the application to be fun (HM1), enjoyable (HM2), and interactive (HM4). To each statement, most of the students with more than 170 respectively agreed that Google Workspace benefits them, but the application is enjoyable. Only a total of 87 disagreed with the three questions, and the remaining total chose moderate as their answer. For question H3 on whether using the application caused them to feel depressed, only 82 students agreed to the statement, 121 students said otherwise, and the remaining 102 chose moderation. According to Warnecke (2011), e-learning relies heavily on enjoyable learning experiences. A user-friendly environment and e-content play an essential role in developing pleasurable learning experiences. As a result, instructional designers should pay close attention to these characteristics. It can be deduced that the students found the application fun and meaningful.

Finally, the Behavioural Intention. According to Almaiah et al (2019) and Al-Maroof and Al-Emran (2018), behaviour intention has a favourable impact on student behaviour, which is actual use. Overall, the majority of the students intend to use this Google Workspace even after completing the course for statements in BI1, BI2, and BI4 with more than 180 students responding positively respectively for the three questions. Only 76 disagreed and the remaining total number of students chose moderate for these three questions. Even to the statement on whether they will choose another platform besides Google Workspace only about 70 agreed to the statement, while 102 stated they disagree and 133 chose moderate. It can be inferred that the students are now comfortable using this application in their courses.

Conclusion

The research findings suggest that Google Workspace has a favourable proclivity to be employed in design studio learning. The architecture design studio is extensive, with numerous learning activities and programmes. Because of the efficiency in learning engagement and interaction, the online learning environment was rarely employed in UiTM's architecture design studio learning prior to the pandemic. Based on student usage and acceptance, Google Workspace has been determined to be a reliable medium of instruction. Although performance expectancy lags behind effort expectancy, the findings implied it is still vital for design studio learning. Furthermore, the institution and educators have been quite helpful to facilitate the student's use of the platform. Education systems have the potential to be improved by technology. It became one of the treatments available to educators in dealing with the COVID-19 pandemic. On the other hand, educators must work rapidly to embrace e-learning and deploy the technology. It could affect the educational method and assessment techniques. It is advised that this research be expanded to include a wider sample of respondents from other higher education institutions including private universities that offer architecture programmes. Because this research only focuses on students' perspectives, it is also necessary to gain the perspective of the educators. The educators' approval of Google Classroom can be studied in future studies. Other online applications can also be addressed

as a medium of teaching and learning for a more participatory and effective method of instruction. The study can contribute to the theory and pedagogical implication, particularly for studio-based students such as architecture. It is believed that the findings from this research will serve as a guide for educators in focusing on and strategizing their teaching techniques and dealing with and adjusting to the new norms of the educational environment. This aligns with Malaysia's education policy that emphasises the well-being of students and their performances in education and the 2030 Agenda for Sustainable Development Goals, which, among others, aims to provide quality education in order to strengthen the core of Malaysian societal layers.

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Appendix

Table 2

Question Item

Construct	Items	Measures
Performance Expectancy	PE1	I find Google Workspace applications useful in my architectural design studio.
	PE2	Using Google Workspace for Education applications increases my architectural design performance because I have access to more advanced functionalities.
	PE3	Using Google Workspace for Education applications helps me accomplish my architectural design studio tasks faster.
	PE4	Using Google Workspace for Education applications increases my learning productivity.
	PE5	Using Google Workspace for Education applications takes a lot of my time.
Effort Expectancy	EE1	Learning how to use Google Workspace for Education applications is easy for me.
	EE2	My interaction with Google Workspace for Education applications is clear and understandable.
	EE3	I find Google Workspace for Education applications easy to use.
	EE4	It is easy for me to become skilful at using Google Workspace for Education applications
	EE5	The use of Google Workspace for Education is troublesome in my architectural design studio learning
Social Influence	SI1	People who are important to me think that I should use Google Workspace for Education applications
	SI2	People whose opinions that I value prefer that I use Google Workspace for Education applications
	SI3	The lecturer advises that I should use Google Workspace for Education
	SI4	I would only use Google Workspace for Education applications if I needed to
	SI5	I will only use Google Workspace for Education applications if my course prescribed the platform.
Facilitating Conditions	FC1	I have the resources necessary to use Google Workspace for Education applications
	FC2	I have the knowledge necessary to use Google Workspace for Education applications
	FC3	Google Workspace for Education applications is compatible with other architecture design technologies/software I use.
	FC4	The lecturer has been helpful when I have difficulties using Google Workspace for Education applications.
	FC5	In general, the university has supported the use of Google Workspace for Education applications.
	FC6	I often face problems in using Google Workspace for Education due to insufficient data Internet

Hedonistic Motivation	HM1	Using Google Workspace for Education applications is fun.
	HM2	Using Google Workspace for Education applications is enjoyable.
	HM3	Using Google Workspace for Education applications is depressing
	HM4	Using Google Workspace for Education is very interactive.
Learning Value	LV1	Learning through Google Workspace for Education applications is worth more than the time and effort were given to it.
	LV2	In less time, Google Workspace for Education applications allow me to quickly and easily share my knowledge with others (e.g. discussion, sharing content, and expressing emotion.)
	LV3	Google Workspace for Education applications allows me to decide about my own learning pace.
	LV4	Google Workspace for Education applications allows me to increase my knowledge and control my success (e.g., via quizzes and assignments/ assessments, etc.)
Habit	HT1	The use of Google Workspace for Education applications has become a habit for me.
	HT2	I am addicted to using Google Workspace for Education applications
	HT3	I must use Google Workspace for Education applications
	HT4	Using Google Workspace for Education applications has become natural to me.
Behavioural Intention	BI1	I intend to continue using Google Workspace for Education applications in the future.
	BI2	I will always try to use Google Workspace for Education applications in my daily life.
	BI3	I will choose another platform rather than using Google Workspace for Education
	BI4	I plan to continue to use Google Workspace for Education applications frequently.