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## Conceptual Framework of Factors Affecting Online Teaching

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### Abstract

This study will add to the body of knowledge by creating a conceptual framework around fundamental concepts related to examining the factors that influence the efficiency of online teaching. The framework is based on an assessment of the online teaching literature found using Emerald, Institute of Electrical and Electronics Engineers (IEEE) Explore, ProQuest, and Google Scholar searches. A conceptual matrix is used to combine the findings into a framework of online instruction and effectiveness. A questionnaire was utilized and 81 respondents participated in the survey. We found that Google Meet is the most used platform for online teaching. In terms of stress level, teachers between the ages of 36 and 50 are the most stressed. As per time spent on online teaching, most teachers spent 3-5 hours a day and we also found that the more hours spent on online teaching, the more benefit the teachers and students will get. The study's findings can help the school and Malaysia's Ministry of Education understand the factors that affect how well teachers can conduct online teaching.

**Keywords:** Conceptual framework, Malaysia, Online teaching, Pilot study, Teacher, e-Learning, COVID-19.

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### 1. Introduction

The Coronavirus disease (COVID-19) pandemic is a global health hazard that is wreaking havoc on practically every country's social and economic systems. When the virus expanded, millions of individuals began to experience serious health problems, and death rates skyrocketed. Stopping all economic and social activities was one successful strategy to halt the virus from spreading. As a result, many countries have implemented border closures and imposed lockdowns. These lockdowns have had an impact on a variety of industries, including small enterprises [1], airlines [2] and hospitality and tourism [3].

As a result of the movement restrictions and school closures imposed to combat the pandemic's spread, there is a growing tendency toward online teaching as the sole remaining alternative for continuing the learning process [4]. As a result, now is the time to restructure schooling in light of the present pandemic's unprecedented nature. Teachers and students must accept the online teaching-learning process and are compelled to migrate from traditional classrooms to virtual classrooms using online platforms like Zoom, Google Classroom, Microsoft Teams, WhatsApp, and Telegram.

Currently, there are many studies on online teaching for university students during pandemics [5-9] with the majority of these studies demonstrating academicians' and students' openness to adapt to the digital teaching and learning experience. Academicians believe that online learning is simple and adaptable because classes can be offered during the lockdown and the learning process can be completed anywhere [8]. Another study emphasizes the advantages of online education by claiming that lecturers have the flexibility to manage and arrange online classes in order to finish the syllabus [10]. All of this favorable feedback is due to the fact that university students and academicians are already familiar with technology and find the transfer to be simple. For school teachers and students, however, this may not be the case. They are not used to online learning and may sense some resentment if they suddenly embrace it.

By conducting an in-depth study of e-learning literature, the goal of this paper is to identify aspects that affect the success of online teaching for teachers. The factors will be classified in order to simplify the creation and implementation of an e-teaching effectiveness framework and to assist education stakeholders with the development and implementation of systems. Based on the literature review, we also conducted a pilot study along with the proposed conceptual framework.

## **2. Literature Review**

We used a two-step procedure to sort the literature in this study. The first stage entails obtaining the appropriate articles. The publications were from well-known international peer-reviewed magazines, including Emerald Insight, IEEE, ProQuest, Taylors and Francis, and Google Scholar. All of the papers were written in English and the search timeline was limited to between 1990 and 2021. This is because most modern e-learning solutions consider the presence of the Internet to be critical. We used the terms online teaching, teacher, and conceptual framework in our search. We also mix a variety of synonyms for the meaning 'efficiency,' including concerns, factors, and obstacles. We also used Google Scholar to broaden the scope and diversity of our search. We looked at both qualitative and quantitative research, and we did not limit ourselves to any one nation or degree of schooling. Our review includes all learning domains, such as school, higher education, vocational training, and corporate training.

The authors went over the title, abstract, introduction, and conclusion of each article in the second step of our sorting process. Articles that were considered unrelated to e-learning implementation hurdles were removed from the study. Articles that were solely focused on e-learning system algorithms, coding, or protocols were removed.

### *2.1. Support from School*

Higher education has been using online teaching and learning for nearly two decades [11]. The numerous tools and platforms available to facilitate online activities like conversations, assessment, sharing, and involvement have been thoroughly created, tested, and have a high level of acceptance. Adoption in school education, on the other hand, has been slower. Teaching has been able to take place face-to-face because students and teachers are all co-located [12].

Howard et al. [12] claimed in a study that it is vital to incorporate teachers' assessments of their own preparation as well as that of their institution in order to have a whole picture of their situation. This integrated approach can help to clarify what kind of support is needed, whether in terms of training or developing school agendas, to help with the transition to online teaching.

Institutional variables such as technological support, pedagogical assistance, or the school's strategy for implementing online or blended learning might influence the success of online teaching [13, 14]. Teachers, on the other hand, confront the task of creating curriculum-based information that is also entertaining for pupils [15]. Teachers face a steep learning curve as a result of the rapid transition to online learning, as they must quickly adjust to new technologies and tools [16]. Many teachers are unaware of online pedagogies or how to promote online learning because it is not covered in many teacher training programmes [17]. As a result, many school teachers are unfamiliar with and have limited experience with online learning and teaching.

### *2.2. Stress Level*

Teachers may perceive online teaching depending on their skills, which can be a potential stressor and might result in stressful experiences and lower well-being [18]. Affected by stress, the major barriers that limit teachers' ability to use and integrate technology into classrooms are a lack of resources, time, and support, as examples given by Pittman and Gaines [19]. Early studies have shown that teachers are prone to stress when they feel a lack of support and time when teaching students [20-22]. On top of that, they would also feel stress if they use technology that they feel less competent with Al-Fudail and Mellar [23]. Although these findings were concluded in the early years, both these situations are applicable during the lockdown.

A study concluded that educators are emotionally fatigued and have lower levels of personal accomplishment due to depersonalization [24]. Depersonalization affects primarily educators with a bachelor's degree and fewer than five years of experience. This suggests that these educators have a negative attitude toward the individuals with whom they work, such as students and parents. This could be due to their lack of prior work experience. Nonetheless, female instructors with Master's degrees and 6 to 10 years of experience are disproportionately influenced by lower levels of personal achievement. These instructors' feelings of dissatisfaction can contribute to poor classroom performance [24].

There appears to be cause for concern when it comes to musculoskeletal illnesses, vocal abnormalities, and stress among Malaysian educators [25]. In academic settings, stress is recognized as a mental health issue [25] and it is frequently acknowledged as a common occurrence among instructors Ismail and Noor [26]; Ghani et al. [27]; Wee and Bahrein [28]; Ahmad et al. [29]. As Jamaludin and You [24] point out, stressed educators can have bad consequences for their students, such as unanticipated, harsh, or drastic unfavorable responses and behaviors that are judged intolerant to students [25]. In support of this assertion, [30] discovered that 23.1 percent of local educators are stressed, which is higher than the incidence of stress among non-educators (19.8 percent).

On the other hand, the management of online lessons for children of working mothers, as well as behavioral changes in youngsters, revealed the stress component. Working mothers face additional duties as a result of online classes, according to the report, as they try to balance their children's learning perspectives with their own workload. They should be taken seriously because double job pressure impairs their life satisfaction, happiness, and mental well-being [31].

### 2.3. Time Management

Time management is listed as one of the obstructions to teaching using the Internet, even though online learning is a solution to the pandemic condition [32]. Most teachers felt that their workload was heavier if compared to face-to-face teaching because they required additional time to package interesting learning to increase students' motivation and desire in the taught lesson [33]. Time is of the essence due to the inadequate facilities, which caused the burden of purchasing Internet data, poor Internet connection, difficulty in giving assessments and receiving feedback, as well as lack of freedom in controlling the students' learning activities [33].

Samaden [34] reported that time is a key element in determining the level of workload received by teachers, and this could be divided into three main parts, namely duration, time and time interval. Since the authors focused deeply on the element of time and provided results as a suggestion to the leaders assigning the workload to teachers, it loses the perspective of time management among the teachers, especially during the pandemic. Nevertheless, the elements discussed by Samaden [34] can be taken into consideration for further investigation in this research. In a gist, this research in Malaysia categorised the time element into eight statements under three parts: "lots of work at one time", "ad hoc work" and "dateline pursuit" (under duration); "at the same time", "during school hours", and "outside of school hours" (under time); and "heaps of work" and "the distance between a job to a job" (under time interval).

Research on the job demands-resources model by Sokal et al. [35] examined the five work demands, of which a few are related to this study. The work demands are time management, technology, expectations of parents, the balance of home and work life, and lack of resources. These elements were examined to understand the effect of burnout among the teachers, suggesting strong correlations between emotional exhaustion, cynicism, and reduced accomplishment in teaching.

Al-Yateem et al. [36] reported that online teaching requires extra effort from educators, compared to traditional face-to-face teaching, because of the expected availability of students in supporting and being proactive in online interactivity. This has brought up two issues, in terms of the readiness of educators to do this (i.e., not all educators can or are ready, due to skills and capacity), and time adequacy to perfect the online teaching process [36].

### 2.4. Students' Acceptance and Readiness to Online Teaching

Students who are not ready to adjust to online learning and who lack enthusiasm throughout the online learning session are often a problem for teachers [6]. When compared to online learning, most students prefer face-to-face learning [5] and teachers are unable to provide personal attention to students during online learning [10]. Because fast feedback was not accessible throughout the shift to online learning, there was a lack of motivation [9]. Students' stress levels rose as a result of their fear of losing marks if they were unable to complete assignments owing to internet connectivity concerns [16].

### 2.5. Platform and Device Used

In terms of online platforms for effective teaching, all researchers agree that any platforms and devices are effective for interactive teaching and learning. However, improvements are still needed such as advances in the platform's interface and content. Platform suitability, platform service type, platform privacy, platform teaching type, platform functionality, platform design environment, and network technology environment are all contributing elements that affect the experiences of both teachers and students [37]. According to their results, the platform's design environment should be more concise and simple to use, and more modes should be established to cater to different users at different times. A "dark mode" at night, for example, may have a better protective effect on students' eyesight [37].

According to Ahshan [38], learning platforms such as Google Meet, Jamboard, Google Chat, Breakout room, Mentimeter, and Moodle, when combined with the used technology, synchronous teaching, and active learning activities are effective for interactive learning. As for the impact of the devices used, the effects of the roles played by learners and teachers on online teaching were investigated by Zhang and Chen [39]. The findings reveal a good link between instructor participation and the impact of online learning. However, there is no apparent link between the devices used by students and the quality of online instruction. Despite the availability of a number of digital teaching-learning modalities, almost all teachers and students communicated with one another via WhatsApp/Telegram and email [9]. Students who reside in rural areas or originate from low-income families lack the required tools to engage in online programmes, such as a laptop or a stable Internet connection [16, 40].

Findings by Sofi [41] suggest that using mobile technology, the Google Classroom platform, to learn is effective and that it is an important solution for integrating technology into teaching and learning. The notable suggestions from the students in the same study in order to create a more useful experience are the need for continuous training on the effective

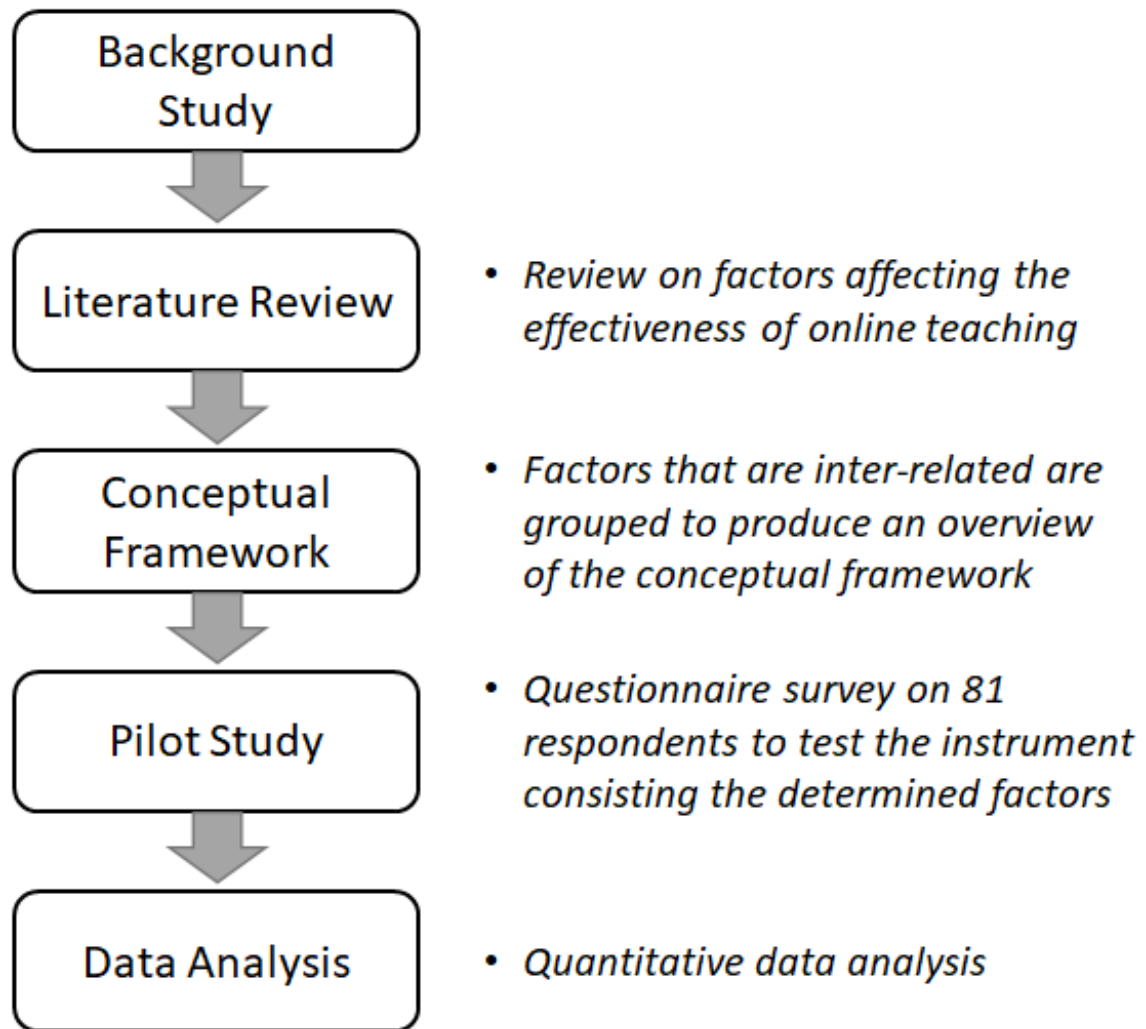
use of ICT and online education by platforms; improving the platform's interface and content through various formats and educational resources such as explainable videos; and providing equipment, infrastructure, and internet to continue online courses.

While the platform's technologies, such as web cameras and chatbots, provide the benefits of synchronous engagement between instructors and learners, they also increase the cognitive load on instructors, as the instructor must deliver the lesson while also scrolling through the video and chat pages to see how the students are doing [37].

In a nutshell, the issues with effective online teaching lie not in the platform or device but in technological barriers, inadequate internet access, a shortage of qualified teachers [42] unattractive interface and inadequate content Sofi [41]. Tan and Chen [37] also emphasize the critical importance of customer service or helpdesk for increasing the use and popularity of online instructional education platforms. To avoid wasting learning time, online customer care should constantly be available to address concerns and issues when using the platform.

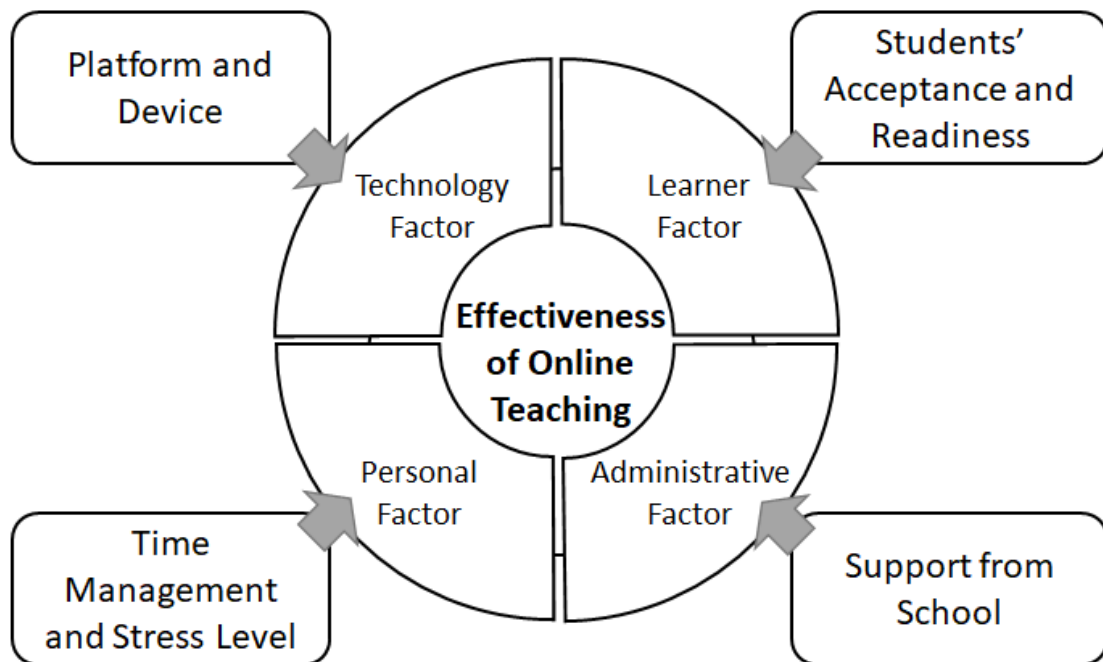
### 3. Conceptual Framework

An in-depth study of previous works is the first part of this study, with the results presented in the Literature Review section. From the literature review, we developed a conceptual framework that proposes sets of factors affecting the effectiveness of online teaching. This is followed by a pilot study to test the instrument, i.e., a questionnaire survey design, which consists of the determining factors. Since the pilot study is quantitative in nature, we analyzed the data quantitatively. Figure 1 presents the overall view of the research methodology undertaken in this study, showing the conceptual framework as the centre point of this research, which connects the literature review and the pilot study analysis.



**Figure 1.**  
Research methodology of this study.

The development of the conceptual framework is based on the literature review performed in the early stage. Putting the principles together, the framework in Figure 2 depicts the factors that affect the effectiveness of online teaching. From the initial five factors identified during the literature review, we could group them into a more meaningful higher-level component, namely technology factor, learner factor, administrative factor, and personal factor.



**Figure 2.**  
Conceptual Framework of factors affecting the effectiveness of online teaching

The personal factor here refers to the individual or personal condition of the main actor in online teaching, i.e., the teachers. Personal factor includes the capabilities of the teachers in managing stress (i.e., stress level) on top of managing time (i.e., time management), in which challenges in managing time would affect stress level tremendously. Teachers are prone to stress with the time duration and deadlines, especially in ensuring that they have completely covered their course syllabus and ensuring all students understand the lessons taught. If this is already a challenge to them before the pandemic, it becomes more challenging when the classroom is shifted to a fully online basis. The reason behind this challenge is the anxiety about time constraints in preparing for online teaching materials and technology capacity.

Talking about technology capacity, the technology factor is highly expected to be the main contribution towards the effectiveness of online teaching. Availability of infrastructure, platform and device(s) is just a start; knowing how to use them is next; and being efficient in handling and managing the technical aspects is the most crucial part, especially during online classes. No doubt, efforts have been made in making devices available to teachers in Malaysia, but it does not fully solve the whole problem. It is still based on the stability of the infrastructure (e.g., Internet connection at home) and the capabilities of the teachers in managing technology and online classes. If the connection is unstable, the teachers need to find ways to ensure that their students received and learnt the lessons regardless of the situation. Nevertheless, it takes two to tango; hence acceptance and readiness on the part of students are crucial.

Teachers have their own “miseries” but the challenges could be faced smoothly if the other party, i.e., the students, is ready and accepting. This brings us to the learner factor. We cannot call this an external factor, even though students are considered “customers” in the education world because without them being part of the equation, there is no “business” of teaching to begin with. Therefore, it is important to make the learner factor part of our proposed conceptual framework. Online teaching without students’ acceptance and readiness will invite failures in education, especially when the goal is to provide quality education. Since quality education is the vital “product” of schools, support from school is necessary to ensure the effectiveness of online teaching.

Support from school is considered part of the administrative factor. There could be more than just support, like continuous improvement in management or proper governance, to name a few. However, for our conceptual framework, support from school is what we could gather from the literature review. Support here may refer more towards giving considerable deadlines and time duration for teachers to cover their lesson contents, finding solutions to technical issues centrally to ease the online teaching and learning processes and to provide moral support to teachers. Since this conceptual framework refers mainly to the teachers, the support here is proposed to be focusing on teachers’ well-being. We do not want our teachers to face mental health issues due to the constraints they are facing (i.e., personal factors, technology factors), hence the need to provide as much support as possible to them.

## 4. Pilot Study

### 4.1. Research Setting

The pilot study recruited 81 teachers from across Malaysia as participants. There are 71 females and 10 males who have responded to the survey. They are teaching primary and secondary schools and implements online teaching since the start of the movement control order (MCO) in 2020. The questionnaire was distributed online, using Google Forms, and the data collected was analysed and presented here.

#### 4.2. Demographic Information

Table 1 shows the age, gender, qualifications, and years of teaching experience of teacher responders. According to the findings, female respondents account for 87.7 percent of the total, while male respondents account for 12.3 percent. In addition, 42 percent of responders are between the ages of 36 and 45. Only 3.7 percent of those polled are beyond the age of 55. The majority of respondents (82.7%) have a bachelor's degree as their background qualification, while only 1.2 percent have a diploma. Only 3.7 percent of respondents have less than 5 years of teaching experience, whereas the majority of respondents (24.7%) have 15 to 20 years of teaching experience.

**Table 1.**  
Demographic of Respondents (n = 81).

Demographic		Frequency	Percentage
Gender	Female	71	87.7%
	Male	10	12.3%
Age	36 - 45 years old	34	42.0%
	46 - 50 years old	19	23.5%
	51 - 55 years old	16	19.8%
	25 - 35 years old	9	11.1%
	More than 55 years old	3	3.7%
Qualification	Degree	67	82.7%
	Masters	13	16.0%
	Diploma	1	1.2%
Teaching experience	15 - 20 years	20	24.7%
	More than 25 years	18	22.2%
	11 - 15 years	15	18.5%
	21 - 25 years	14	17.3%
	5 - 10 years	11	13.6%
	Less than 5 years	3	3.7%

#### 4.3. Data Analysis: Mean comparison

Table 2 depicts the many platforms that teachers use to undertake online instruction. According to the findings, the majority of teachers chose Google Meet to undertake online education, followed by WhatsApp (41.8%) and 31.6%), respectively. YouTube is the least popular web platform among instructors, with only 1.3 percent using it.

**Table 2.**  
Platform teachers used to conduct online classes (n = 81).

Platform	Frequency	Percentage
Google Meet	33	41.80%
WhatsApp	25	31.60%
Microsoft Teams	11	13.90%
Telegram	7	8.90%
Google Classroom	2	2.50%
YouTube	1	1.30%

Table 3 shows the mean comparison between the demographic information such as age, qualification and teaching experience among teachers and the time spent on online teaching. In terms of age, in terms of support from school, teachers between the ages of 36 and 45 have the highest mean of support when compared to teachers of other ages. When compared to teachers of other age groups, teachers between the ages of 36 and 50 had the highest amount of stress when delivering online classes. Except for teachers over 55 years old, teachers of all ages share the same mean when it comes to time management.

The mean comparison between respondents' qualification categories demonstrates that all qualifications have the same mean in terms of time management. Teachers with a diploma receive more support from school than those with a Bachelor's or Master's degree. When it comes to stress levels, bachelor's degree teachers are more stressed than master's degree and diploma holders.

In terms of teaching experience, the results reveal that all teaching experience categories have the same average time management. When compared to other teachers, only teachers with 15 to 20 years of experience obtain higher support from school. On the other hand, teachers with 11 to 20 years of experience had a higher stress level. Teachers with 11 to 15 years of experience in the classroom prefer online learning less than other teachers.

According to the comparison of the mean time the respondents spent conducting online classes, we can draw the conclusion that all teachers manage their time equally regardless of how much time they spend doing it each day. Compared to teachers who spend fewer than three hours or more than seven hours for online classes, teachers who spend between three and five hours and between five and seven hours receive more support from their institutions, but they also feel more stress. The results also show that teachers who spend less than three hours per week on online learning receive less benefit than those who spend more than three hours per week.

**Table 3.**

Mean comparison between respondents' demographic and factors of online teaching (n=81).

Demographic factors	Support from school	Stress Level	Time management
<b>Age</b>			
25 - 35 years old	3	2	3
36 - 45 years old	4	3	3
46 - 50 years old	3	3	3
51 - 55 years old	3	2	3
More than 55 years old	3	2	2
<b>Teacher's Qualification</b>			
Degree	3	3	3
Masters	3	2	3
Diploma	4	2	3
<b>Teaching Experience</b>			
Less than 5 years	3	2	3
5 - 10 years	3	2	3
11 - 15 years	3	3	3
15 - 20 years	4	3	3
21 - 25 years	3	2	3
More than 25 years	3	2	3
<b>Time spent teaching online</b>			
Less than 3 hours	3	2	3
3 - 5 hours	4	3	3
5 - 7 hours	4	3	3
More than 7 hours	3	2	3

## 5. Conclusion

In this article, the authors have synthesised a range of literature regarding the factors that affect online teaching. Owing to a lack of space in the present paper, further work is needed to examine the macro, exo and meso levels. Although the framework presented in this contribution is only one way of viewing this complex phenomenon, it offers a clear conceptual structure that other researchers, instructional designers, policy advisors and practitioners may find useful, and could help teachers to be more effective in conducting online teaching.

The COVID-19 pandemic has disrupted our daily routines, affecting everyone on the planet. In universities and schools, education has been disrupted and compelled to transition to online learning. The purpose of the pilot project is to evaluate the level of readiness of Malaysian teachers to provide online courses. This study is essential because it is critical to comprehend the challenges facing teachers while effectively delivering online courses. Numerous studies have been done on students, especially those in universities.

The research findings can help the school and Malaysia's Ministry of Education understand the factors that affect how well teachers can teach online. If teachers are aware of the challenges they face and take action to address them, they will be more motivated to deliver an engaging online lesson that will capture students' attention and accomplish the goal of imparting knowledge to pupils.

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