Factors That Affect Students' Online Learning Under the COVID-19: The Example of Hong Kong

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ABSTRACT

Higher education has been impacted by the COVID-19 epidemic and as it is expanding, various universities have resorted to innovative online teaching methods to meet their teaching responsibilities. Although online education can effectively perform conventional teaching activities in some aspects, it can also have drawbacks such as a low level of student participation in the learning process. The study aims to identify and examine the primary variables that determine the impact of online learning on college students. Meanwhile, it also investigates the influence and the extent to which certain factors can decide the effectiveness of online learning in various disciplines.

Keywords: online learning, COVID-19, effectiveness of online learning, influencing factors, special majors.

1.INTRODUCTION

The Covid-19 epidemic in late 2019 has impacted many people's life. Because of the highly contagious virus feature and severity of the outbreak, Hong Kong government decided to combat the pandemic by applying a quarantine policy to avoid direct contact and transmission, which leads to the cancellation of the traditional face-to-face classes in higher education. In response to the current state of the epidemic, higher education institutions have begun to take some actions and measures and have launched innovative teaching modes that utilize the mainstream communicative platform such as Zoom, Skype, and Dingding. The smooth delivery of online education enables the relevant stakeholders including schools, teachers, and students to accomplish diverse learning tasks and educational activities despite the unexpected shift in teaching techniques. However, considering the extensive impact of the virus, the implementation of the details should be clarified and enhanced. After reviewing the literature, this research explored and analyzed the gathered comments in order to determine what variables influenced the learning efficiency of students in Hong Kong higher education institutions under online education. This study also delves into whether those majoring in science were more susceptible to the change of educational tools than their counterparts in the arts and social sciences.

2.LITERATURE REVIEW

As a result of the COVID-19 epidemic, many universities throughout the world were forced to close under careful surveillance; thus, researchers began to pay attention to how online learning was delivered [1]. In some cases, online learning can be considered the most viable substitute for face-to-face classes. Despite the fact that this is one of the government's most effective ways to prevent the virus from spreading [2] [3], existing research suggests that the satisfactory attitudes of higher education students towards online learning may be enhanced. For example, Xiong et al. (2020) carried out a survey of 1,227 undergraduates and associate degree students from eight Hong Kong public institutions to analyze their online learning experiences [4]. According to the research findings, more than half of the students believed online courses are less successful than face-to-face classes. Similarly, Nambiar (2020) conducted online questionnaires of 407 college students in Bangalore city to explore their perspectives and experiences of online education, revealing that merely 19.9% of the participants thought that online classrooms were more effective than offline classrooms [5]. Correspondingly, it was determined that the efficacy and the efficiency of online education are worth investigating.

Through numerous investigations in the academic field, the most prevalent factors influencing online education were proven to be a lack of supporting

resources and technological assistance. Nambiar (2020) discovered that the majority of college students in Bangalore City claimed that technical issues, including unstable network connections and inferior video and audio quality, are typical hurdles with which they are confronted when attending online classes [5]. He also came to the conclusion that technological assistance played an indispensable part in online learning. According to Yang and Cornelius (2004), students were unsatisfied with the online courses when professors did not provide technical support [6]. Similarly, Xu and Wang (2020) interviewed several college students from Guangdong University of Petrochemical Technology and discovered that network instability, inadequate guidance on equipment, and other external factors were the chief culprit for students' concerns when studying online [7]. Nevertheless, the existing literature mainly concentrates on the technical assistance uniquely limited to students' perspectives, there was little discussion on the effects of instructors' technical help on the success of students' online learning. Students frequently complained about some technological issues ensuing from the professors' unreliable network connections. Additionally, they were also confronted with difficulties in accessing numerous learning resources such as electronic libraries [8]. It is worth mentioning that students still had trouble connecting with teachers; therefore, when problems that they reported to professors were not appropriately addressed, they can merely resort to their peers to exchange ideas and resources [9].

As part of this research, the impact of diversely different personal characteristics on online learning is also being investigated. Internal reasons for online learning anxiety, according to Xu and Wang (2020), included inadequate self-efficacy in learning as well as erroneous and passive learning motivation [7]. To be specific, self-efficacy referred to people's self-evaluation on their skills to plan, conduct, and accomplish specified tasks [10], which was considered an essential factor in enhancing the efficiency of online education. Research has shown that students' lack of motivation and self-efficacy in online learning can lead them to spend excessive time on homework, hand in an overdue assignment, or produce low-quality learning results [11]. In addition, in a study of 270 undergraduate and graduate students, Aguilera-Hermida (2020) discovered that motivation, mastery of technology, self-efficacy, and attitude all had a substantial influence on students' academic performance and cognitive engagement [8]. In terms of personal elements, the majority of the literature was based on students' viewpoints, currently leaving abundant room for the development of solid research on instructors' personal factors. For example, teachers' familiarity with the multi-functions of online products.

Aside from the aforementioned two aspects, past research has overlooked the different impacts of diverse disciplines on online learning. It is challenging and

demanding, according to Adedoyin & Soykan (2020), to render certain disciplines compatible with online systems [12]. Social sciences and humanities have functioned as effective collaborators in online education. On the other hand, scholars have pointed that online education exerted a negative effect on subjects that require hands-on practical instructional activities, such as medicine, engineering, and sports sciences. Correspondingly, it is of paramount significance to bridge the compatibility gap of online learning with those subjects [13]. Students of the relevant majors will be strongly impacted by the outside environment and their emotions if failing to properly study physical drug materials and personally exercise operations online [14]. As a result, it is necessary for further researchers to explore the impact of the discipline-specific setting and related educational approaches on students' online learning experiences.

The study was designed to investigate the variables that impact students' online learning through critically and thoroughly reviewing various literature.

3. DISCUSSION

3.1 External Factors

3.1.1 Technical issues

Technical concerns are a vital determinant in online learning. According to the previous research, unstable network connection and undeveloped technological equipment can negatively affect the quality of online learning [5] [7]. Also, the network insecurity may exacerbate the situation, or some technical gadgets such as the computer or iPad may experience an electrical malfunction in the middle of a lesson. All of these emergencies can potentially reduce the effectiveness of online learning. Therefore, a video recording of the lesson might be beneficial for those who are experiencing technical difficulties in class, international students who are surmounting the language barriers, or students who are not capable of comprehending the learning content immediately.

3.1.2 Limited Communication with teachers and classmates

As a result of the extensive application of online learning, students can merely interact with their professors via emails or online chatting platforms, which is less authentic and time-efficient. Compared with the real-time class where professors could react quickly using technologies like Zoom, the online course makes academic communication a relatively lengthy process. When teachers are unable to respond to students promptly, the efficiency of online learning progress and students' learning motivation may be adversely impacted. Similarly, limited contact with classmates leads to a lack

of social connection among students, which crucially hinders students' overall development. This is especially disadvantageous for those postgraduate students in Hong Kong who are enrolled in the one-year master's program as they may sabotage various opportunities to communicate with new people. In this case, group work becomes much more difficult when international students are involved. Students from mainland China are accustomed to using the WeChat platform to communicate with others about their schoolwork or group projects. However, concerning their different socializing habits, international students are inclined to use local social media tools in their countries such as Skype so they are required to register new apps to exchange ideas with other group members.

3.1.3 The lack of public resources on campus

Another aspect that has a profound impact on the success of online learning is the available public resources on campus. Due to the closure of the universities, students are unable to use the library resources or authentic academic software such as Statistical Product and Service Solutions (SPSS). It is widely acknowledged that the school library can not only provide an innovative and fertile learning environment but it also enables students to browse books and other materials. Many students believed that learning at home would expose them to diverse environmental distractions, which also reduced their learning motivation. Despite the fact that some students might find a nearby library or other intellectually rich self-study rooms, it is less convenient and more time-consuming than using the library in the university. Therefore, students will be more likely to effectively adapt to online learning if they can have unlimited access to and take advantage of the public resources available.

3.1.4 Computer skills of teachers in online courses

The elementary computer skills of the professors can also be a factor affecting online education to some extent. Those who are not proficient in computer technology and equipment may encounter unexpected emergencies that they cannot resolve on their own, forcing all students to wait for the teacher to resolve the situation. This may also affect the teaching and reduce the effectiveness of students' online learning. As a result, instructors must have a penetrating insight into the fundamental computer skills in order to deal with those sticky situations.

3.2 Internal Factors

3.2.1 Computer skills of students in online courses

It might be unanticipated and challenging to use those

innovative and interactive communicating platforms such as ZOOM during an epidemic as students may find it maladaptive to learn online at first. At the same time, most students simply utilize the computer for the purpose of performing computer-dependent schoolwork or for recreational purposes. If a computer breaks down in the middle of an online course and most students lack the technical skills to repair it, the efficiency and effectiveness of online learning will be obstructed.

3.2.2 Online learning motivation

Strong learning motivation crucially functions in enhancing students' academic skills as it is positively correlated with learning effectiveness and perseverance. Accordingly, nurturing and stimulating students' learning motivation is vitally critical for enhancing instructors' teaching efficiency as well as ensuring students' academic achievement. However, online education unconsciously restricts students' learning within their homes, which may bring out significant disruption and distraction. Although some learners who have adapted to the online or hybrid education modes can increase their learning motivation through personal initiative, teachers should make efforts to boost interactivity and engagement in class to make students feel more involved in online courses if they are originally unmotivated.

3.2.3 Students' self-discipline abilities in online learning

Among all the related internal factors, students' self-discipline has proved to exert the largest influence on their learning experience. Self-discipline is critical to the development of students' creative thinking and practical abilities. Students who attend courses delivered online are exposed to additional external temptations, thereby requiring stronger self-control to be cognitively engaged. If students can gradually and voluntarily strengthen their self-control and willpower, the efficacy of their online learning will be improved at the same time.

3.3 Special influencing factor

According to the relevant literature, several specific aspects of students majoring in arts, science, and business might be severely affected by the delivery of online education. The following sections concretely investigate these four elements including experimentation, on-site inspection, work internship, and learning materials.

3.3.1 Experimentation

Concerning the complex operation of the experiment, science students are the most adversely affected as the actual experimentation might be suspended online. Instead of personally participating in or conducting the experiments, students are only allowed to see

experimental films directed by their professors. It prevents individuals from accumulating authentic and necessary experimental knowledge and grasping operational abilities, thereby reducing their online learning efficacy.

3.3.2 On-site inspection

Some liberal arts students may be required to conduct academic research in places with unique geographical and cultural research values according to the actual situation or some academics should engage in field visits and study in museums and exhibition halls. However, with online education, those students can merely obtain and comprehend those abstract knowledge through virtual e-learning platforms rather than being individually involved. Also, science students are influenced tremendously as information from books can only be properly transformed into their own understanding via practical investigations which cannot be realized in online education. Therefore, future development of online courses should not only delve into the ways to effectively organize field excursions but also devise techniques to mitigate this negative aspect.

3.3.3 Work internship

Because of the epidemic, students enrolled in online learning can lose the opportunity to be placed in internships at local businesses which collaborate with their universities. In this case, students are unable to apply and examine the professional and academic abilities gained through daily learning. As a result, compared with face-to-face learning, the decreased richness and diversity of schooling experiences takes a toll on the efficacy of online learning to some extent.

3.3.4 Learning materials

With regards to the learning materials, students majoring in medicine, science, business, and social science are required to touch and experience those physical materials at first hand. In order to grasp a profound insight into their academic area, students must contact with chemicals, pharmaceutical materials, the metal components of robots, industrial equipment, color additives, textiles, soil, and even some dangerous substances and irritant materials, which is a valuable and precious experience. However, through online education, students can merely watch the videos and passively absorb information from the teacher's introduction so they cannot truly comprehend the true properties and textures of these solid materials but just their appearance. Similarly, the efficacy of online learning is strongly associated with these factors.

3.4 Implications for future studies

During online courses, higher education institutions should consider providing diverse seminars which enable students and professors to exchange their experiences of dealing with crises and emergencies in technical issues. In this situation, they can also get more familiar with computers and strengthen their computer abilities, thereby handling certain unexpected incidents and potential challenges on their own.

Additionally, video recording may be employed frequently in online courses as it is highly beneficial for students to review their studies and it can also enhance and ameliorate professors' teaching process. With the epidemic under control, students will be provided with abundant opportunities to attend face-to-face classes, albeit video recording will continue to be applied in hybrid teaching mode.

Besides, teachers can connect with students more during and after online sessions, encouraging them to be more involved and demonstrating a sense of belonging. As such, teachers can schedule a fixed question-answering session for students so that they can dedicate this time solely to answer students' queries, which avoids the time-consuming email conversation. As a consequence, teachers and students will form stronger bonds and will be able to explain and exchange their ideas comprehensively in real-time interaction.

Finally, higher education institutions should devise diversely different strategies to satisfy the requirements of students of various majors. If those universities have sufficient funds, they can collaborate with higher education institutions in the China mainland to allow these students who are restricted by the pandemic policy to participate in offline activities on campus appropriately.

4. CONCLUSION

According to the study, students' self-discipline abilities and learning motivation are the primary internal variables that determine the efficiency of online learning, while their computer skills have less impact on it. Regarding the external obstacles, the insufficient school's public resources and delayed online communication with professors and classmates can reduce the quality of online education. However, the network, technological equipment, issues with some online learning applications, and teachers' lack of computer skills have no significant influence on students' online learning efficacy. Furthermore, particular factors impact the online learning experience of science students and further impact students majoring in liberal arts, business, and social science in an unanticipated manner. This is mainly because they are unable to perform experiments, undertake field studies, get internships, or

personally learn materials. As a result, future studies are expected to investigate how these unique elements impact the online learning efficiency of students from diverse fields.

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