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*Research Article*

# The Influence of Professors' Characteristics on Educational Satisfaction in Online Education Environment: Differences from Matching Online/Offline Lecture Format and Students' Preference

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**Abstract:** After the COVID-19 pandemic, the importance of new types of lectures such as online lectures in schools has become more important. This study explains the importance of the professors' roles in online education. In online education, the professors' characteristics such as attitude towards students, technical competence, and communication skills will have various effects on the students' educational satisfaction. In addition, there will be situational factors necessary to increase educational satisfaction such as universities offering both online and offline lectures since the students' preferences for online and offline lectures may differ. Therefore, the influence of the professors' characteristics may be different depending on the case when the students are provided with a lecture in a preferred format or not. These relationships show which professors' characteristics are necessary to improve the educational satisfaction in various situations. Satisfaction with online education will increase when the professors use specific characteristics appropriate to the situation. These results will have an impact on improving the success of school education in the post-COVID-19 era.

## 1. Introduction

After the COVID-19 outbreak, the importance of new types of lectures such as online lectures in schools has become more important. Due to these new challenges, the students, professors, and schools have all experienced difficulties. Also, there have been student complaints about online lectures. This study explains the importance of the professors' role in online education. Professors also need to adapt to the new environment to reduce student complaints and improve academic performance **(Hahm & Sun, 2020; Zheng & Hahm, 2019).**

Therefore, this study investigates which characteristics of professors (i.e., attitude towards student, technical competence, communication skills) influence the educational satisfaction in online lectures. In addition, the role of contextual factors necessary to increase educational satisfaction is explained. Universities can offer both online and offline lectures, as students may have different preferences for online and offline lectures. Therefore, it is necessary to explain which characteristics the professors need more when they are lecturing in the format they prefer and when they are not. This study has a purpose and significance in proposing ways to improve educational outcomes by exploring the discriminatory influence based on the characteristics of professors and students' preferences required for online education **(Park &hahm, 2019).**

The increase in online education satisfaction will have a close impact on improving the educational performance and success of universities in the post-COVID-19 era.

## 2. Review of Related Studies

Satisfaction is an individual's overall attitude, including attitudes toward service providers and emotional responses to differences between what one expects and what one actually receives receive **(Hansemark & Albinsson, 2004)**. Satisfaction is influenced by the existing expectations of the quality of a specific object (i.e., product and service) and the subjective evaluation after use **(Oliver, 1997**). Among the university's diverse clients, students can be seen as the most important customer **(Karami & Olfati, 2012; Firdaus, 2006)**. Schools need to

continually improve the learning environment and improve the quality of education services to ensure that schools are effective and competitive and meet the students' expectations **(Arokiasamy & Abdullah, 2012)**.

Student satisfaction is a measure of a student's perception or attitude toward learning activities and all other campus activities and experiences **(Hahm,2020; Tough, 1982)**. Satisfaction with a lecture is an attitude to prefer or continue to take the lecture **(Kyaw, Klieb & de Beer, 2018; Lin, 2012)**. Thus, satisfaction with online education can be explained by the satisfaction or preference of the online lecture as well as the attitude of students to continue taking the online lecture. The university also needs to make various efforts to increase student **satisfaction (Kyaw, Klieb & de Beer, 2018)**. Schools need to maintain a lasting and strong relationship with students. To this end, it is necessary to provide a quality educational service and develop a constructive learning environment **(Hanaysha, Abdullah & Warokka, 2011)**. Quality educational service is directly related to student satisfaction **(Firdaus, 2006; Russell, 2005)**. The quality of academic resources plays a key role in improving student satisfaction **(Encabo, 2011)**. In universities in particular, the teaching quality of professors has a major impact on improving the students' satisfaction **(Arambewela & Hall, 2009)**. The importance of satisfaction has also been emphasized in online education **(Lin, 2012)**. Hence, in order to improve the educational satisfaction of students in online education, professors will have to play various roles.

In general, attitude influences behavior. Likewise, the attitudes of others can affect one's attitudes or behaviors **(Hahm, 2018)**. The teachers' attitude towards the student can influence the students' education through the attitudes of teachers. The attitude towards students is a comprehensive attitude of professors as they educate students, which includes passion for education, affinity, and interest in students **(Volery & Lord, 2000)**. Professors need to have a specific attitude in order to achieve success in teaching **(Webster & Hackley, 1997)**. The teachers' various attitudes have a close correlation with the students' educational satisfaction. Depending on the professors' positive or negative attitude, the students' performance and satisfaction may improve or decrease **(Koh, Steers & Terborg, 1995; Ostroff, 1992)**. The professors need to have a positive attitude toward students and make efforts in various dimensions, such as providing feedback and supporting students **(Brophy, 1999)**. In the online environment, when the professors have a positive attitude and make good use of online lecture-related technologies, the students' participation in class increases, which is a positive educational outcome **(Volery & Lord, 2000)**. Even in online lectures, the professor's attitude toward students has a close relationship with the students' satisfaction with teaching and education. Based on this relationship, the following hypothesis was established:

*H.1 The professors' attitude towards the students will have a positive relationship with educational satisfaction*

To define a professor's competency, it is necessary to consider various environmental factors such as culture, values, characteristics of students and professors, and classroom conditions **(Richards, 2006)**. In online education, a professor's technical competence will be different from that in an offline environment. In online lectures, the technical competence of a professor entails the ability to use the internet or website efficiently or to deal with problems when they arise **(Volery & Lord, 2000)**.

The students' grades are influenced by the quality of the professor rather than characteristics such as existing academic records and race. If the professor's competence is superior or if it is not, there is a difference in the outcomes of the students' achievement. In other words, a professor with excellent competence can improve student achievement. A professor's competence is a major factor in determining the quality of the learning experience **(Long, Ibrahim & Kowang, 2014)**. Among the professors' diverse competencies, the ability to use technology has a significant impact on successful education **(Webster & Hackley, 1997)**. The strong technical capability of a professor improves the quality of lectures, thereby increasing student achievement. Competencies such as subject knowledge, for example, play a role in achieving the students' desired learning outcomes and enhancing educational satisfaction **(Matzler & Woessmann, 2010)**. Students often experience technical difficulties in online lectures. Therefore, supporting professors with technical competence to solve related problems can be essential to improving educational outcomes **(Volery & Lord, 2000)**. Therefore, if professors have technical competence in online lectures, they will be able to help students more and improve student satisfaction. In this regard, the following hypothesis was established:

*H2. The professors' technical competence will have a positive relationship with educational satisfaction.*

Communication is the process of sending and receiving meaningful messages. In education, having communication skills means that the professor has the necessary means of communication to interact with students. Typical communication skills include the ability to answer questions smoothly with students and the skills to encourage students to participate in class **(Kara, Tanui & Kalai, 2016; Volery & Lord, 2000)**.

The student-professor interaction is one of the fundamental elements necessary for student **satisfaction (Young & Norgard, 2006)**. Communication or interactions, such as professors giving feedback and counseling to students, can have a very significant impact on the students' satisfaction **(Kara, Tanui & Kalai, 2016)**. In online lectures, students may find that they have difficulties interacting with the professor. These students may feel isolated **(Serwatka, 1999)**. This feeling will have a negative impact on educational outcomes. When the interaction between the teacher and the student is negative, the students' performance is low or the students will encounter difficulty. Positive and supportive interactions between the professors and students can improve student achievement and performance **(Baker & Wigfield,1999)**. Therefore, professors need to strive for teaching styles and communication that allow for more interaction with students **(Volery & Lord 2000)**. Online lectures have a different form of communication than offline lectures. Professors will also need to have communication skills suitable for online situations. A professor's communication ability is a factor that explains the quality of a professor and is closely related to student satisfaction **(Brophy, 1999; Kara, Tanui, & Kalai, 2016)**. Therefore, the communication skills of professors in online lectures will be a necessary factor for the students' educational satisfaction. Based on this logic, the following hypothesis was established:

*H3. The professors' communication skills will have a positive relationship with educational satisfaction.*

The students' preferences for online and offline lectures may differ. In a variety of learning environments, the students compare these teaching styles and choose or prefer an environment in which they are more accomplished. Also, the degree of achievement each student can achieve in each setting may vary **(Paechter & Maier, 2010)**. This study explains whether the relationship between the professor's characteristics and educational satisfaction can be influenced by the students' preferences. There are cases of agreement and disagreement in preference. The case in which the students' preference is in agreement is a case where the teaching method provided by the school and the student's preferred method coincide. For example, there is an online-online, offline-offline relationship. In the case of disagreement, the student's preference and the provision of the school are different, and there is a relationship between offline-offline and offline-online. In the case of such agreement, there may be differences between the characteristics of professors necessary for educational satisfaction and the characteristics necessary for disagreement.

## 3. Population and Sample

All surveys were conducted online. The subjects of the survey were Chinese students studying at universities in Korea and China (i.e., social science department). Of the students who responded to the survey, 238 samples were used for analysis, excluding those who were unfaithful. Unfaithful respondents were cases where one responder's responses were duplicated (i.e., a sample that answered all questions identically to the same IP) or all questions answered with one number (i.e., including reverse questions). The gender of the participants was 113 males 47.5% and 125 females 52.5%. In terms of grades, 94 students (39.5%) in the first grade, 15 students (6.2%) in the second year, 24 students (10.1%) in the third year, and 105 students (44.1%) in the fourth grade and above. In addition, for students who match the type of lecture provided and their preferences, there were 83 (46.1%) males and 979 (53.9%) females, with a total of 180. In terms of grades, 76 students (42.2%) in first grade, 8 students in second grade (4.4%), 22 students in third grade (12.2%), and 74 students (41.1%) in fourth grade and above. For students who do not agree with the type of lecture provided and their preferences, there were 30 males (51.7%) and 28 females (48.3%), a total of 58. In terms of grades, 18 students in the first grade (31%), 7 students in the second grade (12.1%), 2 students in the third grade (3.4%), and 31 students in the fourth grade and above (53.4%).

### 4.1. Statistical Techniques Used in the Present Study

All items in this study were measured on a Likert 7-point scale. First, attitude towards student was measured by 5 items. For instance, “Professors was enthusiastic about teaching the class”, “. Professor was friendly towards individual students”, “Professor had a genuine interest in students” (Volery & Lord, 2000).

Second, technical competence was measured by 4 items. For example, “Professor handled the Web technology effectively”, “Professor explained how to use the Web site”, “I feel the professor was keen that we use the Web site” (Volery & Lord, 2000).

Third, communication skill was measured by 3 items, including “I was invited to ask questions/receive answers”, “I was encouraged to participate in class”, “I found the intensive seminars were useful” (Kara, Tanui & Kalai, 2016; Volery & Lord, 2000).

Educational satisfaction was measured 4 items. For instance, “I am generally satisfied with the online lecture”, “I want to continue taking online lectures in the future”, “I prefer online lectures”, “I think it will be fine to take the online lecture again next semester”. (Kyaw, Klieb & de Beer, 2018; Lin, 2012).

### 4.2. Data Analysis and Interpretation

Table 1 shows the results of the confirmatory factor analysis(CFA), and reliability. All variable has a significant validity and sufficient reliability (AVE .5 or higer, C.R .7 or higer, Cronbach's Alpha .7 or higer).

**Table. 1.** Results of CFA and reliability

| | **AVE** | **C.R** | **Cronbach's Alpha** |
|---|---|---|---|
| **attitudes towards student** | .726 | .906 | .921 |
| **technical competence** | .706 | .836 | .865 |
| **communication skill** | .719 | .866 | .881 |
| **educational satisfaction** | .755 | .876 | .911 |
| absolute fit index $X^2$ (p)= 411.804, $X^2$/df= 4.290, incremental fit index CFI= .913, IFI= .913, parsimonious fit index PNFI= .712, PGFI= .587, | | | |

Table 2 indicates descriptive statistics, and correlations among variables. Attitude towards student has a positive and significant relationship with educational satisfaction (.351, p<.001). Thus, Hypothesis 1 is supported. Also, technical competence has a positive and significant relationship to educational satisfaction (4.55, p<.001). Hence, Hypothesis 2 is supported. Finally, communication skill and educational satisfaction have a positive and significant relationship (.357, p<.001). Therefore, hypothesis 3 is supported.

**Table.2.** Descriptive statistics and Correlations

| | **Mean** | **Std. Deviation** | **1** | **2** | **3** | **4** |
|---|---|---|---|---|---|---|
| 1 | 5.453 | .975 | - | | | |
| 2 | 5.251 | .966 | .804** | - | | |
| 3 | 5.515 | .978 | .771** | .798** | - | |
| 4 | 4.764 | 1.310 | .351** | .466** | .357** | - |

1= attitude towards student, 2= technical competence, 3=communication skill, 4= educational satisfaction

In addition, Table 3 shows the results of regression analysis, which explains the influence of professors' attitude towards student, technical competence, and communication skill on educational satisfaction. The first total is about educational satisfaction of all students, and it has been proven that technical competence has the most important role. (β=.530, sig=.000).

Second, agree is a case where students' preferences and teaching methods(online/offline) are consistent. In this case, it was found that the role of technical competence is the most important like ii is the most crucial factor in total case (β=.494, sig=.000). Third, disagree is a case in which students' preferences and teaching methods do not match. Even in this case, it was verified that technical competence has a very important influence on improving educational satisfaction (β=.533, sig=.019). In contrast, attitude towards student were found to have a negative effect on educational satisfaction (β=-.540, sig=.011). These results imply that the positive attitude of professors decreases the educational satisfaction of students when student preferences and teaching methods do not match.

**Table.3**. Effects of attitude towards student, technical competence, and communication skill on educational satisfaction

| | **total** | | | **agree** | | | **disagree** | | |
|---|---|---|---|---|---|---|---|---|---|
| | ***β*** | ***t*** | ***sig*** | ***β*** | ***t*** | ***sig*** | ***β*** | ***t*** | ***sig*** |
| **A1** | -.058 | -.554 | .580 | .136 | 1.137 | .257 | -.540 | -2.645 | .011 |
| **A2** | .530 | 4.817 | .000 | .494 | 3.916 | .000 | .533 | 2.416 | .019 |
| **A3** | -.022 | -.217 | .829 | -.112 | -.922 | .358 | .225 | 1.138 | .260 |
| $R^2$ **(Adj-** $R^2$**)** | .219(.209) | | | .269(.257) | | | .188(.143) | | |
| ***F*** | 21.865(sig=.000) | | | 21.644(sig=.000) | | | 4.163 (sig=.010) | | |
| ***n*** | 238 | | | 180 | | | 58 | | |

A1= attitude towards student, A2= technical competence, A3=communication skill

## 5. Conclusion

As a result of this study, it was found that the professors' attitude towards the student, technical competence, and communication skills all had a significant correlation with educational satisfaction. These results explain the role of the professors' characteristics in enhancing the performance of the online lecture. In online lectures, the professors should conduct classes with a more positive attitude toward students. In addition, the professors need to make efforts to develop technical competence related to online lectures as well as general education methods. Communication methods may differ between offline and online lectures. Thus, the professors should develop communication skills for online lectures.

Furthermore, it has been shown that among the characteristics of professors, technical competence has the most important influence on educational satisfaction. Educational satisfaction will increase if the professors help students to solve technical difficulties in online lectures and use skills related to online lectures skillfully (Hahm, 2016). Therefore, the professors should also receive training to improve their technical competence for online education, develop their own competence, and endeavor to help students.

In this study, it was established whether the students' preferences for offline and online education were appropriate depending on the case of providing online education and the case of providing offline education in schools. Hence, the relationship between the characteristics of the professor and educational satisfaction is explained in the case where the student is provided with the desired type of education and the case where it is not provided. In particular, it was found that technical competence plays the most important role in both cases where the preference and education method coincide or not. This is the result of emphasizing the importance of technical competence in online education.

Interestingly, the negative influence of attitude towards students was verified when the preferences and educational forms were inconsistent. This means that even if the professor has a positive attitude, educational satisfaction is lowered if the preferences and educational forms are inconsistent. These results have implications, especially for universities and professors. First, universities need to figure out what their students' needs are. It is necessary to provide an appropriate educational method for students who want to go online or offline. Second, professors will need to find other factors, including technical competence to reduce student dissatisfaction when the students' preferences are inconsistent. In addition, professors need to motivate students to find reasons for their preference for a specific teaching method and support them to find reasons for dislike and to solve them.

## 6. Limitations and suggestions for future research

First, this study explained the relationship between the professors' characteristics and educational satisfaction. In future studies, it is necessary to investigate the relationship between educational satisfaction and other variables related to educational outcomes such as satisfaction with professors and schools (Hahm, 2017).

Second, this paper focused on the suitability of educational methods and preferences. However, it will be necessary to study whether other contextual factors, such as the relationship between students and professors, can also influence educational satisfaction.

Third, in this article, the degree of fit was simply set as agreement and disagreement. The situations in which offline lectures are provided when students prefer online lectures or when online lectures are provided when students prefer offline lectures are also classified, so that it is necessary to investigate the relationship between variables. Moreover, detailed studies should be conducted on measures to improve educational performance in such an unsuitable situation.

Fourth, this study has limitations regarding the sample. Since this study focused on Chinese students, it is necessary to study cultural differences among students from more diverse countries (Cheng & Hahm, 2017). Also, the relative number of samples was smaller in the case where the fit was not matched (58) compared to the case where it was matched (180). Therefore, there is a need to continue research through more diverse and abundant samples.

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