

STUDENT'S PERCEPTION OF FACE-TO-FACE VS ONLINE LEARNING AND SNS ACTIVITY

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ABSTRACT. *Pandemic caused by COVID-19 has caused huge change in learning, teaching and living paradigm globally. Especially in college, most teaching and learning methods have changed from Face-to-Face (F2F) to online digital way. As we are all used to the changed mechanism, the new digital learning and teaching method will continue in the future even endemic arrives soon. The purpose of this paper is to investigate student's perception about online learning and teaching and SNS (Social Networking Service)-based social activity during pandemic period. A questionnaire is devised to capture student's perception and satisfaction of online education vs F2F, and their interests on SNS-based activities. Five variables are proposed to evaluate student's perception on F2F and online learning. The five variables are interest, immersion, interaction, efficiency and satisfaction. In four variables of interest, immersion, interaction, and satisfaction, students prefer F2F over online, and for the variable of efficiency, they prefer online over F2F. Regarding SNS activity, students responded that they have undergone much obstacles in social activities and developing social capability, and showed high interests of learning Metaverse technology.*

Keywords: Pandemic, Online learning, Face-to-Face (F2F) learning, Questionnaire, Research hypothesis

1. Introduction. The paradigm of learning and teaching has undergone major changes due to revolutions in the IT technology and social environment. In addition, the pandemic caused by COVID-19 has accelerated a sudden shift from contact-based teaching and learning environment to untact-based online system.

Therefore, in the last few years, we have undergone rapid changes from Face-to-Face (F2F) education to online, remote, and e-learning system without prior preparation for the rapid change. Even if the pandemic turns into an endemic soon, the paradigm of the already changed education method cannot return to the previous F2F system.

Considering this background, in order to maximize the satisfaction of future educational performance, we need to compare and analyze student's perception about F2F and online learning system. During this process, the status of SNS (Social Networking Service)-based activity needs to be captured in order to understand student's real interests in the digital environment. This can guide us how to use digital media for social connections with them.

The new generation, represented by the MZ generation, has a different idea of getting a job compared to the previous generations. Rather than getting a job in a large company with a high salary, they prioritize free life style or consider the possibility of starting an e-Biz or smart business based on digital technology. From this point of view, it is also important to understand the student's thoughts on small business or start-up based on e-Biz or SNS.

The specific context of the pandemic disrupted more than normal teaching and learning activities. Whereas students generally responded positively to the transition from F2F to online because of pandemic, their reluctance to continue learning online showed limits in some aspect [1].

Even before the pandemic by COVID-19, online learning has been expanded rapidly in higher education. A research is conducted to explore student perspectives on the online and F2F modalities of a course from an Ontario community college. For the factors of 'learner preference', and 'preference for future learning', they will prefer online over F2F for the next course [2].

Fortune et al. [3] presented that students enrolled in several online and F2F sections in the hospitality, recreation and tourism course showed no statistically significant difference in learning preference enrolled in the two different learning modes.

In a structural relationships model, interest and interaction levels had effects on learning immersion and learning presence, self-efficacy on learning presence. Learning immersion and learning presence had effects on learning satisfaction [4].

The expanding role of applying the Metaverse platform in college education in the pandemic environment is shown in class teaching. Using Zepeto, a Metaverse classroom environment is created, and actual activities for teaching and learning have been tried using avatars [5]. The Metaverse also has been applied for learner-centered education in elementary school students [6].

The emergent Metaverse provides an opportunity for enterprises to reset the balance in hybrid and remote work, to recapture the spontaneity, interactivity, and fun of team-based working and learning, while maintaining the flexibility, productivity, and convenience of working from home [7].

As discussed in the above literature, many researches have focused on the specific situation of F2F and online, and Metaverse application in the digital learning environment. As online learning is mostly adopted because of the pandemic from COVID-19, we need to understand student's perception about F2F and online learning, and how they are satisfied of the present situation.

This paper sets out to explore the student's perception of F2F and online learning on the pandemic situations by COVID-19. Following the introduction, research method is proposed composed of research process and two research models with research hypothesis. A questionnaire is devised to survey student's perception for the model. In the result session, statistical analysis is conducted for the questionnaire response from 206 students. The paper closes providing conclusions and directions for future research.

2. Methods. In order to find the effect of pandemic on college education and SNS activity, research framework is devised as the following scheme. First, research background is analyzed in a college environment. A research hypothesis is established to find the effect of online learning and SNS activity. A questionnaire is designed and conducted of a survey for college students enrolled in the spring semester of 2022. For the survey data, statistical analytics is performed and then hypothesis test is conducted for the assumed hypothesis. The result is analyzed and pandemic effect on college education method and SNS activity is evaluated. The research process is represented in Figure 1.

This paper has research objectives in two perspectives. The first one is to find student's perception between F2F and online learning method. The second goal is to identify student's SNS-based inter-social activities and e-Biz interest during pandemic period.

Previous researches have proposed several parameters regarding satisfaction and preference for online and F2F-based learning [2-4]. Six parameters are proposed, i.e., 1) learner preference, 2) interactivity, 3) workload, 4) performance, 5) challenges and 6) preference for future learning in [2]. In another research, interest, interaction level and self-efficacy

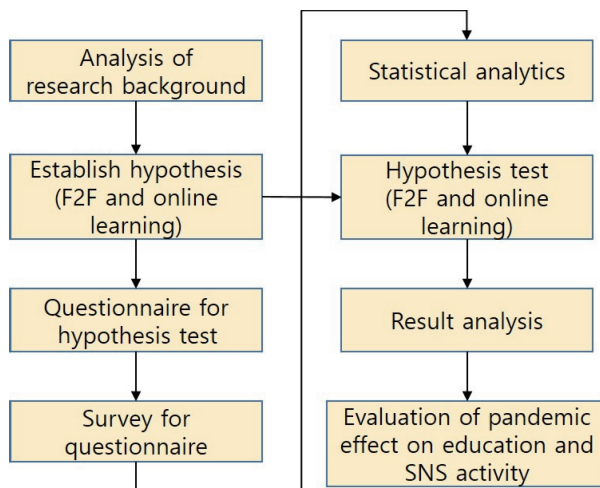


FIGURE 1. Research process to identify student’s perception of F2F and online learning

are set as independent variables with parameters of presence and learning immersion to measure learning satisfaction [4].

Based on thorough review and analysis of decision parameters, a few important parameters are devised to represent student’s perception in learning environment. The predictor variables are interest/attention, immersion/presence, interaction/communication, effectiveness/efficiency and satisfaction. The depending variable is student’s perception. The research model is shown in Figure 2.

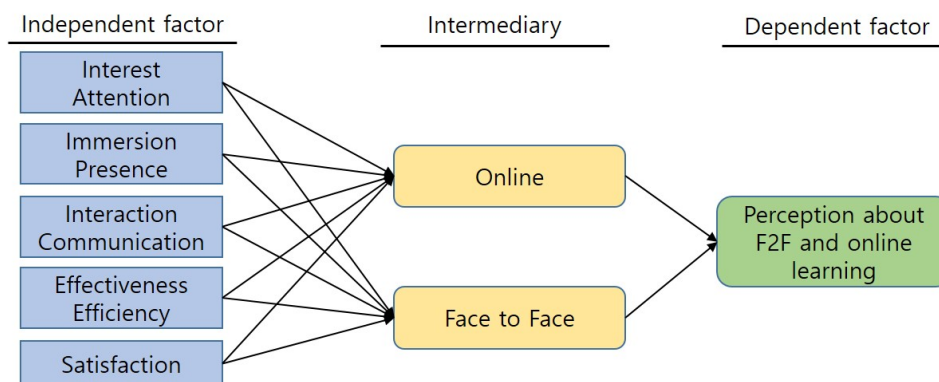


FIGURE 2. Research model for evaluating student’s perception about online and F2F learning

The five variables are independent variables. The learning/teaching medium, which is online and face-to-face method is considered as intermediary. The last variable, student’s perception about F2F and online is set up as dependent variable.

Based on the research model, research hypothesis is assumed for the five variables. It is summarized in Table 1.

For the second goal, another meaningful parameter is devised to represent student’s life style during COVID-19 pandemic. The variables are social activity, SNS, Metaverse, Youtube and e-Biz. These factors will affect the student’s life style via digital or F2F. The student’s life style will be satisfied or limited according to digital (online) or F2F. The model is shown in Figure 3.

3. Results. For the student’s response data, statistical analysis has been conducted using ‘IBM SPSS Statistics 26’ package. Important technical statistics analysis has been performed as follows.

TABLE 1. Research hypothesis for five variables

Area	H0 Null hypothesis	H1 Alternative hypothesis
Interest Attention	With regard to interest and attention, there <u>is no difference</u> between F2F and online learning.	With regard to interest and attention, there <u>is difference</u> between F2F and online learning.
Immersion Presence	With regard to immersion and presence, there <u>is no difference</u> between F2F and online learning.	With regard to immersion and presence, there <u>is difference</u> between F2F and online learning.
Interaction Communication	With regard to interaction and communication, there <u>is no difference</u> between F2F and online learning.	With regard to interaction and communication, there <u>is difference</u> between F2F and online learning.
Effectiveness Efficiency	With regard to effectiveness and efficiency, there <u>is no difference</u> between F2F and online learning.	With regard to effectiveness and efficiency, there <u>is difference</u> between F2F and online learning.
Satisfaction	With regard to satisfaction, there <u>is no difference</u> between F2F and online learning.	With regard to satisfaction, there <u>is difference</u> between F2F and online learning.

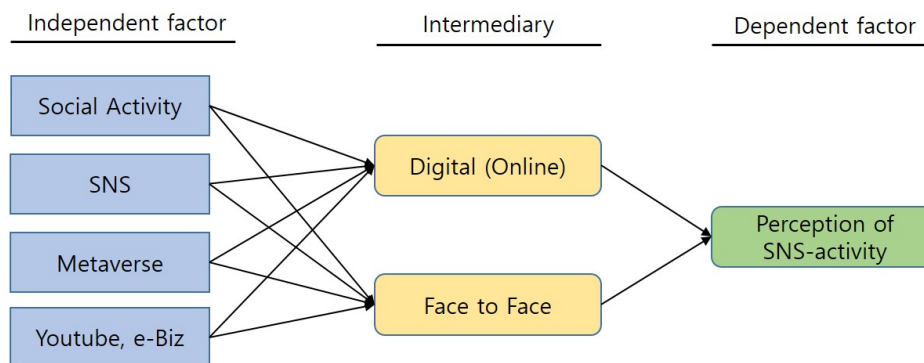


FIGURE 3. Research model for evaluating student's life style via online and F2F

3.1. Basic facts of survey. For the proposed method, experimental process has been established as follows. First, questionnaire has been set up to survey online and F2F perception for the college education. It is designed as 5 points Likert Scale to measure the degree of agreement with a statement, i.e., 1 = Strongly Disagree to 5 = Strongly Agree. Also, student perception of SNS and social activities has been questioned using additional questions. Second, for the student's response, statistical analysis has been conducted using SPSS software. Basic summary data from the survey response is as follows.

Total respondents are 206 students, among them 48 freshmen, 21 sophomores, 104 juniors and 33 seniors. Among the total, 136 students do not work even part time, but 70 students work as part time. With a commuting hour, it takes less than 30 minutes for 97 students, 30 minutes to one hour for 61 students, one hour to one and half hour 33 students, and more than one and half hour for 15 students. For the experience of online learning, most students have an experience from one semester up to two years. With academic major involved in the survey, 16 departments are included. Among them, industrial engineering occupies 77 students, theater and film occupies 38, electrical engineering is 33, and new material engineering is 25. These four departments occupy 84 percent of

total response. The distribution of majors implies that respondents cover many areas, but majority of the students include engineering and theater and film department.

3.2. Analysis of online and F2F learning. For the 10 questions about online and F2F learning regarding the research model, the following results are derived.

Table 2 shows that F2F learning shows higher points than online learning for four predictors. The variables are interest/attention, immersion/presence, interaction, and overall satisfaction. Only for the efficiency, online learning shows higher points than F2F.

TABLE 2. Basic technical statistics for the paired questions about online and F2F learning

Questions	Mean	SD
1. Higher interest and attention in online learning.	3.04	1.182
2. Higher interest and attention in F2F learning.	3.67	0.924
3. Class immersion and presence is higher in online learning.	3.26	1.197
4. Class immersion and presence is higher in F2F learning.	3.95	0.899
5. SNS-based interaction is higher in online learning.	2.68	1.17
6. Interaction and social activity is higher in F2F learning.	3.81	1.044
7. Online learning is more effective and efficient.	4.02	1.05
8. F2F learning is more efficient by focusing in the class.	3.71	1.035
9. Overall satisfaction is higher in online learning.	2.97	1.257
10. Overall satisfaction is higher in F2F learning.	3.74	0.937

• SD: Standard Deviation

In order to verify the statistical significance for the difference of mean, *t*-test has been conducted for the set of five variables. Table 3 summarizes the result of *t*-test.

TABLE 3. *t*-test for statistical significance of the five variables

Variable	Online learning		F2F		Mean difference		<i>t</i>	Significance probability (<i>p</i>)
	M	SD	M	SD	M	SD		
Interest and attention	3.04	1.18	3.67	0.92	-0.63	1.66	-5.46***	0.000
Immersion and presence	3.26	1.20	3.95	0.89	-0.69	1.72	-5.74***	0.000
Interaction	2.68	1.17	3.81	1.04	-1.13	1.62	-10.01***	0.000
Effectiveness and efficiency	4.02	1.05	3.71	1.04	0.31	1.63	2.71**	0.007
Overall satisfaction	2.97	1.26	3.74	0.94	-0.77	1.87	-5.89***	0.000

• M: Mean, SD: Standard Deviation, *: *p* < .05, **: *p* < .01, ***: *p* < .001

From Table 3, four variables show statistical significance of 99.9% in mean difference. Thus, for the variables of interest/attention, immersion/presence, interaction, and overall satisfaction, F2F learning shows higher points than online learning. For the variable of effectiveness/efficiency, it shows statistical significance in 99% in mean difference. Thus, for the variable of effectiveness/efficiency, online learning shows higher preference than F2F in 99% level of significance. In the survey of English Grammar learning class in Indonesia, online learning resulted in higher achievement compared to F2F classroom lesson [8].

The perception of online learning from student’s and teachers’ perspectives compared to traditional F2F learning during the COVID-19 pandemic in Hong Kong tertiary educational institutions has been presented in [9]. Qualitative content analysis indicated that teacher-student and student-student interactions were the biggest challenge in on-line learning. This is why students prefer F2F (3.81) over online (2.68) for the factor of ‘interaction’ in our research.

3.3. Analysis of SNS and social activity. The second questions focus on student’s social and SNS activities during pandemic period. We assumed that their social activity has been influenced by pandemic, and they performed SNS activities and social relations without big obstacles. Also, they might have experience of using Metaverse technology, or plan to learn it. Finally, student’s plan about e-Biz or smart business based on Internet platform has been asked.

Table 4 shows student’s response of these questions. Because of pandemic, students responded that they have undergone much obstacles in social activities and developing social capability. With Metaverse technology, they showed high interests of learning it. With Youtube activity, students do not play actively as a Youtuber or SNS activity. Regarding e-Biz, they showed very low response of e-Biz experience (1.99), but they plan to start e-Biz or smart business in the future.

TABLE 4. Basic technical statistics for the additional questions of SNS and social activity

Questions	Mean	SD
1. During pandemic, much limit on social activity and meeting.	3.54	1.154
2. During pandemic, I can’t develop social capability.	3.16	1.086
3. During pandemic, social activity was feasible via SNS.	3.18	1.177
4. During pandemic, SNS activity can replace F2F activity.	2.94	1.066
5. Experience of using Metaverse (Zepeto, Roblox, Fortnite, Minecraft).	3.12	1.411
6. Intention of learning Metaverse.	3.58	0.959
7. Now, act as a Youtuber or SNS activity.	2.67	1.339
8. Later, plan to act as a Youtuber or SNS activity.	2.91	1.329
9. Experience of e-Biz or smart business.	1.99	1.056
10. Plan to do e-Biz or smart business.	2.67	1.116

Student’s priorities for SNS activities are shown in Table 5. Most students focus on Youtube and Kokao talk, and a few in Instagram. Very few students play with Facebook and Twitter contrary to my expectation. Even it is not covered in this table, some students mentioned ‘Discord’ as their SNS tools. Discord is a VoIP and instant messaging social platform mainly used by gamers. Based on Wikipedia, users have the ability to communicate with voice calls, video calls, text messaging, media and files in private chats or as part of communities called “servers”.

TABLE 5. Student’s priorities for SNS activities among major tools

SNS type	1st choice	2nd choice	3rd choice	No choice	Total
Youtube	86	68	30	22	206
Kakao talk	74	70	39	23	206
Instagram	36	52	74	44	206
Facebook	7	4	27	168	206
Twitter	0	2	5	199	206

4. Conclusions. This study investigated student's perception on F2F and online learning through a survey due to the inevitability of online classes caused by the pandemic. A research model is established composed of five variables. For each variable, student's responses were analyzed by asking conflicting questions about F2F and online learning. In the four variables, the null hypothesis was rejected and the alternative hypothesis was adopted by 99.9% significance level, indicating that they prefer F2F classes than online classes even during pandemic. For the variable of effectiveness/efficiency, online learning showed higher points, and statistical significance was satisfied for the mean difference in the 99% significance level.

Regarding SNS activity, students responded that they have undergone much obstacles in social activities and developing social capability, and showed high interests of learning Metaverse technology. Regarding e-Biz, they showed very low response of e-Biz experience (1.99), but they plan to start e-Biz or smart business in the future.

For the future research, the following issues are suggested. Regardless of student's perception, online learning should accompany with F2F even endemic arrives. Many students have suggested that online and F2F should work together according to class characteristics. Except for experiment related courses and key major courses, online is preferred by students especially for liberal arts and non-experiment courses. Accordingly, survey needs to be continued periodically to follow up student's perception in the future.

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