Comparison of students' perceptions of small group discussion in online and face-to-face environments

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Abstract: The aim of this study is to understand students' experiences in online and face-to-face discussion and compare their perceptions towards these two environments. Students from two undergraduate classes (n=208) were surveyed by questionnaires and 30 students were interviewed. The analyses centered around five major aspects – learning, affection, reading and writing skills, critical thinking skills, and efficacy. The results show that the student perceived more positively towards face-to-face discussion than online discussion in all but the reading and writing aspect. The interview data revealed the advantages and disadvantages of each discussion method.

Keywords: online asynchronous discussion, face-to-face discussion, perceptions towards discussion, undergraduate

1. Introduction

Group discussion and small group collaboration has become one of the most common activities in higher education. With support of the Internet and computer technologies, group discussion can be administrated online in conjunction with face-to-face teaching (e.g., Zhan, et al., 2011). There are reported advantages and disadvantages of online asynchronous discussion. For instance, online discussion promoted active learning or self-regulated learning, and it encouraged critical thinking and collaborative knowledge construction (S. W.-Y. Lee & Tsai, 2011a; Vighnarajah, Luan, & Bakar, 2009; Wang & Woo, 2007; Yeh, 2010). However, as online asynchronous discussion become increasingly popular, few studies made direct comparison of students' perceptions and experience between online and face-to-face discussion. Therefore, the purposes of this study are as follow:

- To validate a questionnaire for measuring students' perceptions of online and face-to-face discussion.
- By surveying and interviewing students, to investigate which method of discussion that the students preferred and why.

2. Methods

In this study, we surveyed undergraduate students from two general education courses in the same university in Taiwan. Those two courses were chosen because they used similar class design – using online and face-to-face discussions extensively in addition to the lecture. Additionally, the two courses shared similar subject area, about biology and society. The questionnaire was revised from the Perception of Online Asynchronous Discussion (POAD) questionnaire (Lee, 2013). The original questionnaire includes five aspects, namely, Cognition, Affection, was further divided into two sections – the online discussion section and the face-to-face discussion section. A total of 208 students completed the questionnaires. Because of the addition of the face-to-face section of the questionnaire, exploratory factor analyses and reliability analyses were conducted to validate the questionnaire. Paired-t statistics were conducted to compare the results for the online and face-to-face discussion for

each aspect. In addition to questionnaire data, 30 students (15 students from each class) were interviewed at the end of the semester. The purpose of the interview was to further elicit students' perception and experience with both online and face-to-face discussion in order to find confirming and disconfirming evidence for the questionnaire results. Here are the questions we asked for the online discussion. "What is your perceived purpose of online discussion?" "How do you participate in online discussion?" "How do you prepare to participate in the online discussion?" "What kind of attitude did you have towards online discussion when you were taking the class?" "Do you think online discussion is helpful to your learning? If so in which aspect?" "When you compare your experience with online and face-to-face discussion, which one was more helpful to you?" The same questions were repeated for understanding the face-to-face discussion.

3. Results

3.1 Validity and reliability of the questionnaire

For both the online questionnaire and the face-to-face questionnaire, the results of factor analysis showed five factors corresponding to the five aspects in the original design of the questionnaire (Lee, 2013). Item 7 resulted in a factor loading below .40 therefore it was deleted. The final version of the questionnaire consists of 16 items accounting for 69.948% of the variance for the online questionnaire and 76.672% of the variance for the face-to-face questionnaire. The reliability (Conbrach alpha) of individual constructs range from .630 to .892 for the online section and range from .616 to .929 for the face-to-face section. The results show that the questionnaire, including both sections, has good validity and reliability

Table1. Validity and reliability of the PAOD questionnaire.

Item		Online	Face-to-face
Cognition	1	.711	.848
	2	.644	.830
	3	.782	.839
	4	.850	.842
	5	.820	.805
	6	.562	.693
	α	**.892**	**.929**
Affection	8	.615	.570
	9	.751	.885
	10	.811	.778
	α	**.681**	**.716**
Reading &Writing	11	.656	.894
	12	.859	.908
	α	**.630**	**.616**
Critical Thinking	13	.895	.847
	14	.851	.824
	α	**.860**	**.865**
Efficacy	15	.732	.653
	16	.828	.847
	17	.778	.807
	α	**.733**	**.780**
Total	***α***	**.718**	**.777**

3.2 Comparison between online and face-to-face discussion

The results of paired t-test statistics show that statistically significant differences exist between students' perceptions of online discussion and face-to-face discussion in all five aspects. It appears that

students perceived that the face-to-face discussion was better than the online discussion in terms of Cognition ($t = -7.902$, $p < .001$), Critical Thinking Skill ($t = -4.249$, $p < .001$) and Efficacy ($t = -10.142$, $p < .001$). The Affection aspect includes reversed items that describe students' negative emotions towards learning. Therefore, the results indicate that students perceived more negatively towards online discussion than face-to-face discussion ($t = 5.954$, $p < .001$). Among the five aspects, students only perceived more highly of online than face-to-face discussion in terms of gaining reading and writing skills ($t = 2.519$, $p < .05$).

During students' interview, we also asked students which method of discussion they preferred overall. Among the 30 students, 18 students answered that they either enjoy participating in face-to-face discussion or feel face-to-face discussion more helpful. Five students preferred online discussion and seven students perceived both methods of discussion were equally good. This result is consistent with the questionnaire findings.

3.3 Qualitative findings in terms of the five aspects of discussion

3.3.1 Learning aspect

Some students indicated that through face-to-face interactions during the discussion, they gained more insights into the discussion topics and understood the topics more deeply. Other students' immediate responses contributed to the efficiency of learning during face-to-face discussion while the low response rate during online discussion made learning less efficient. Also, students mentioned that they had more preparation prior to the small group discussion in the face-to-face sessions (n=8). Nevertheless, students mentioned that both online and face-to-face discussion helped them to gain new knowledge, to see multiple perspectives, and to discuss some value of life. For online discussion, some students (n=6) perceived learning autonomy.

3.3.2 Affection

Both online and face-to-face learning environments were described as interesting and enjoyable. During face-to-face discussion, students (n=10) felt particularly positive towards the opportunities of getting to know other students. During online discussion, on the other hand, students felt more courageous to voice their opinions and felt less restricted by time and location.

3.3.3 Skills

As mentioned by students during the interviews, both online and face-to-face discussion seemed to promote skills for analyzing and synthesizing information and also promote critical thinking skills. Due to the design of the online and face-to-face discussion, students tended to engage in rebuttal or argumentation with other students. The major differences between online and face-to-face discussion can be found in the training of oral representation skills and the in-depth reflection. The small group assignments during face-to-face discussion required students to represent orally, therefore, some students (n=9) mentioned that their oral representation skills improved after the semester. A few students (n=5), however, felt difficult to express their opinions through writing.

3.3.4 Efficacy

In the questionnaire, we asked students' efficacy in terms of satisfaction with their own learning, satisfaction with the peer's performance, and satisfaction with faculty's facilitation. The interview data mostly emphasize satisfaction and dissatisfaction with their classmates. Not only during online discussion, but also during face-to-face discussion, the students felt inspired by other people's ideas emerging in the discussion. However, three students found that face-to-face discussion not only creates positive experiences but also contributed to negative learning experience if the team members did not cooperate well.

3.3.4 Overall preference

When we asked students which method of discussion they prefer, the majority of the students who chose face-to-face discussion focused on the benefits of immediate and quick responses. Although less students preferred online discussion, they appreciated the fact that they can reflect upon the information on the Internet while participating in asynchronous discussion.

4. Implication and Discussion

Although past studies have reported some advantages and disadvantages of online and face-to-face discussion, few studies made direct comparison of the students' experiences with their online and face-to-face discussion. Despite online discussion has become the mainstream of collaborative learning, while students were given the opportunity to participate face-to-face, they may still prefer the latter one. Low and slow response rates and the lack of social interactions remain the issues of online discussion. Some interesting aspects about discussion such as "seeing multiple perspectives," "discussing value," or "feeling inspired by others" were not originally in the survey but were revealed during interview. This can be essential new findings for revising the questionnaire in the future.

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