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Face-to-face vs. Online Discussion Board: A Comprehensive Research on Student's Preferred Mode for Class Contribution

Prepared by:

Cendana Desiree Idio
Liang, Shuang
Zhang, Wen

Supervisor:

A/P. Mian Shaheen Majid
Wee Kim Wee School of Communication and Information
Division of Information Studies

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Cendana Desiree Idio, Liang, Shuang, & Zhang, Wen
Nanyang Technological University
Singapore 637718
Email : {desiree001; SLIANG005; WZHANG014}@ntu.edu.sg

ABSTRACT

Pedagogical learning in Higher Education was greatly emphasized when developments in technology and Internet has rapidly augmented. Student's learning behavior was persistently studied to evaluate how collaborative learning environment and computer-mediated tools such as Online Discussion Board (ODB) improve student's performance in class discussion. However, student's engagement in ODB over Face-to-Face (F2F) discussion for class participation remains vulnerable. The purpose of this study is to explore students' preferred communication mode for class contribution and examine the motivating as well as inhibiting factors that influence their preference. This research has comprehensively examined 154 graduate students preference for class contribution. Convenience snowball sampling was used to draw respondents from different schools. Quantitative research method and deductive approach was applied in the process. Evidently, result showed that 50.6% of respondents' preferred face-to-face mode, 26% preferred online discussion board and the rest were in favor of both or other communication modes. The result also showed a trend that students from Singapore and India are more active to speak and participate in face-to-face class discussion than students from other countries, while Myanmar students write most postings in online discussion board. However, analysis in hypothesis testing indicates that no relationship is more likely to occur between nationality and their preference in communication mode. In the end, suggestions from respondents were put forward to improve the student-centric learnability through their active participation.

Author Keywords

Class contribution, Face-to-face, Online discussion board, Graduate students

INTRODUCTION

The fast changing innovations and developments in Web 2.0 have significantly influenced the learning practice and experience of students as well as teachers in educational perspective. The traditional classroom instruction was rapidly transaformed into dynamic and active learning education. As a result, information and knowledge sharing becomes more and more popular and important in education (Augustsson, 2010). With the various communication platforms and collaboration tools integrated into computer mediated learning applications, researchers were able to discover another medium to improve the learning capability of students and teachers (Chelliah & Clarke, 2011). Thus, technological and learning evolution becomes an integral part of teaching mode in higher education.

Discussion board, having it integrated into a collaborative learning environment has provided students more time to read and think about responses (Meyer, 2008). Curtis & Lawson (2001) supported that ODB has widely improved the way of sharing and exchanging information among students and teachers. Students were able to share their knowledge and ideas outside the actual classroom discussion. Hence, it is empirical that online

discussion board integrated into the collaborative learning environment provides greater impact for student's learnability and class participation. Because of this, many studies were concerned more on the performance and effectiveness of online discussion board in academia. Developments as mentioned previously, have initiated the researchers to study the factors that encourage students to engage in a virtual learning environment though some may be positively influenced or frustrated to the growing changes in collaborative learning. Also, understanding the students' preference on communication mode for class participation was greatly valued by researchers. This research primarily focus on investigating factors influencing students' preference for class participation and contribution when expressing and sharing their ideas, knowledge and reflections.

LITERATURE REVIEW

Web 2.0 in Higher Educational Institutions

The developments in online collaborative learning environment have greatly changed the pedagogical fashion in higher education. Collaborative tools were considered as a supplementary medium to cover curricular activities and student's participation including their class contributions beyond the walls of the classroom. These increasing innovations in Information and Communication Technology (ICT) and Web 2.0 continually transformed the traditional learning instructions into asynchronous way of learning with the various online collaboration tools that facilitates dynamic learning among students in 'Higher Educational Institutions (HEI)' (Sulisworo, 2012). This provides further evidence on the studies undertaken with the current students in HEI's, who realize that collaborative learning has become an essential learning skill (Chelliah & Clarke, 2011). This speaks that student's in HEI's view class participation as a key factor to learning. However, Ratsoy (2011) argue that students may appreciate learning perspective through legitimate peripheral participation not only by communication tools but in such community.

Knowledge and Information Sharing

Most studies have emphasized that knowledge and information sharing is a vital component to individual's learning and development (Majid & Yuen, 2006; Robson et al., 2003; Rafaeli & Ravid, 2003). While information and knowledge sharing was found to be a vital component in sustaining students learnability. Developments in Web 2.0 benefits most of individuals particularly the students (Majid & Wey, 2009). In support to the above-mentioned statements, three propositions of Web 2.0 were contemplated in relation to collaborative learning and information sharing among students beyond the classroom setting; (1) it provide students an avenue to express their thoughts and reflections of class discussion which play a significant role in individuals way of handling situations (2) it becomes an augmentation factor to recognize knowledge sharing and association among students (3) while it supports students reflections and reinforces recognition of collaboration and knowledge sharing, there could be possible consequences of students awareness in using such tool (Augustsson, 2010; Maloney, 2007; Hartshorne & Ajjan, 2009).

Learners in Higher Education may come in diverse learning background. Some students may consider themselves as intrinsic while some might be extrinsic (Siragusa et al., 2007). Previous studies have found several differences among students own approach when sharing information and knowledge during class discussion. Online discussion board was one of the earliest technologies integrated in collaborative learning environment which facilitate knowledge sharing. Because of its simplicity, inexpensiveness and substantial user interface platform, most educational communities used this tool to help learners expand and improve their learning process. (Wagner & Bolloju, 2005).

Online Discussion

Many studies have also evaluated and examined the effect of online discussion in support to student's participation and contribution in the class (Mitchem et al., 2008; De Wever et al., 2009; Meyer, 2008; Krentler & Flurry, 2005). Curtis & Lawson (2001) argued that online interactions differ in quite important ways from face-to-face discussion due to lack of non-verbal communication. Wagner and Bolloju (2005) specifically studied several collaborative technologies (online discussion board, Weblogs and Wikis) used by students in interacting with their peers, as well as instructors in virtual communities or other environment. Qiu & Mcdougall (2013) discovered

that from student's perspective, online small group discussion can provide more chances for interaction and take more advantage over traditional one. While Campbell et al., (2008) discovered that participants in online discussion obtained higher marks than those engaged in face-to-face discussion. Meantime, Artino (2010) believed that by promoting life-long learning in the modern age, online learning continue to play a very important role.

Consequently, Fjermestad et al., (2005) did a content analysis of related studies and found that most of the studies supported online mode was regarded to be either better or equal to face-to-face class discussion mode in 86% studies.

Face-to-face Discussion

Deviating from the aforementioned studies, Tiene (2000) found that while graduate students have positive attitude towards online discussion, they still prefer face-to-face teaching mode. Also, Meyer (2008) discovered that graduate students noted online discussion board as a valuable and added mechanism to the class but not as substitute for face-to- face discussion.

Previous research also revealed that though discussion forums are the most popular knowledge sharing platforms, different community types are best supported by different technologies (Augustsson, 2010). Also, some studies discovered that online discussion could improve students' academic performance as well as learning satisfaction, provided that it does not replace face-to-face communication channel but considered as additional information sharing mechanism (Majid & Wey 2009; Majid & Yuen, 2006).

Though several studies were put forward, no further research has investigated on which mode of class contribution best matched students' task, interest and preference with the setting that may influence their learning capability.

PROBLEM STATEMENT

Learning and participating strategies such as cooperation should be encouraged to promote students-centered learning instruction (Siragusa et al., 2007). In response, technological innovations have evidently transformed the traditional learning practices into active collaborative learning. Therefore, online discussion tools were integrated to provide valuable supplementary applications that encourage students to actively participate in class discussion. Many studies have indicated that using asynchronous application in educational environment has positively influenced academic performance and learning satisfaction of students (Artino, 2010; Curtis & Lawson, 2001;Sulisworo, 2012; Qiu & Mcdougall, 2013). While some studies supported that face-to-face communication mode is more preferred by students (Majid & Wey, 2009; Majid &Yuen, 2006; Meyer, 2008). Though several studies have examined the implication of collaborative learning tools in students' performance, most of them do not capture the inhibiting and exhibiting factors influencing students' preferences for class contribution. Further, no distinguishable influencing factors were sufficiently investigated to understand how students could frequently engage in F2F or ODB. Also, researchers consider that a study on diverse research setting may provide different findings among different group of participants. Thus, those aforementioned gaps compelled this research paper.

This study was designed to address the general question, (1) what is the communication mode preferred by students when participating in class discussion? (2) If there would be some distinguishable differences on their preference, what could be the inhibiting and exhibiting factors that influence their choice of preference for class contribution?

To operationalize the above-mentioned research objective, researchers shall:

1. Examine the students' preferred communication mode for class contribution: face-to-face vs. online discussion board.
2. Explore the motivational factors that encourage students' engagement in F2F and/or ODB discussion.
3. Explore the barriers that deter students from sharing information in F2F and/or ODB.
4. Gather suggestions that will help educators to improve the intelligent information sharing among learners.

To better understand whether diversity of participants is associated with their preferred mode on class contribution, this research will also test the following hypothesis.

H_0: "Students' nationality has no relationship with his/her preference on communication mode for class contribution."

H_1: "Students' nationality has direct relationship with his/her preference on communication mode for class contribution."

METHODOLOGY

The researchers used a quantitative research method to systematically investigate the hypothetical constructs of the study. Given the highly structured problem statement identified prior to data collection, this research is more of deductive approach.

Research Instrument

Researchers have developed a structured and detailed survey questionnaire to collect data for this study. Paper-based and online survey questionnaires were provided (*refer to* Annex A) and pilot-tested by five graduate students.

To logically map the research constructs, the instrument was intentionally structured into five (5) sections.

Part I include participant's demographic data (i.e. name, nationality, school, program, age, gender, schooling status, and English proficiency). All attributes were deemed necessary to get several views from respondents of different demographic background.

Part II lumps together all questions related to student's preferred communication mode for class contribution and participation. All attributes covered in this section describes student's engagement to class participation whether online or F2F.

Part III consists of all questions about the activities undertaken for F2F class contribution. Attributes include activities and frequency of student's participation. It also compiles statements that identify the factors (i.e. motivators, class situation, and barriers) influencing their preference on communication mode. Statements were deliberately constructed to validate the responses given in Part II.

Part IV is comprised of questions that ask for student's engagement on activities executed in online discussion board when sharing ideas. Attributes include number of postings and frequency of student's engagement in ODB. Also, statements were intentionally constructed almost the same as Part III to identify the factors (i.e. motivators, class situation, and barriers) influencing students participation in class discussion using ODB over F2F.

Responses for statements in Part III and IV include 'Strongly agree', 'Agree', 'Neutral', 'Disagree', and 'Strongly Disagree'.

Part V was deliberately designed into an open-ended question to gather suggestions from target audiences. This is to collect feedback from students to help the lecturers in improving the pedagogical practices to promote student's active engagement in class discussion.

The instrument conveyed equivalence reliability as it contains multiple indicators that relate to one another. It establishes internal consistency especially for Parts II, III, and IV where questions and statements reflect patterns of responses.

Also, the instrument has content validity as it logically maps with the hypothetical constructs identified previously. It as well includes discriminant validity due to the multiple indicators for different hypothetical constructs.

Sampling and Design

The sample population for the study was initially drawn from four core courses of WKWSCI Graduate Programmes (information studies, information system, mass media communication, and knowledge management) and eventually extended to other schools to obtain higher reliability of research output. A non-probability convenience sampling was performed to define the flexibility of getting access to potential participants and to generate a friendly endorsement to other participants (Ferber, 1977). A total of 200 survey questionnaires were distributed to graduate students; 150 paper-based surveys were disseminated to students from WKWSCI while 50 were sent online to students from other schools. Upon getting permission from the lecturer, in-class survey was conducted during the class-break and filled in questionnaires were received back after the class. Using snowball convenience sampling, online survey questionnaire was sent to researcher's social networks by providing the survey link hosted on one of the University's server using Qualtrics software.

In total, the survey has resulted to 77% response rate. Given this result, researchers find the data collection method apt, as many researchers failed to achieve higher response rate when using random sampling (Majid & Wey, 2009; Hultsch et al., 2002).

FINDINGS AND DISCUSSIONS

Profile of the Respondents

Among 154 participants (As shown in Figure 1), 139 students have participated from WKW school of NTU (90.3%), comprising of four core programme: 29 Mass Media Communication (MMC) (18.8%), 43 Information Studies (IST) (27.9%), 45 Information Systems (ISY) (29.2%) and 22 Knowledge Management (KM) (14.3%). Another 13 participants (8.4%) were represented from other schools of NTU, such as Business School, School of Electrical and Electronic Engineering (EEE) and School of Material Science of Engineering (MSE). Only two participants (1.3%) were recruited from National University of Singapore (NUS).

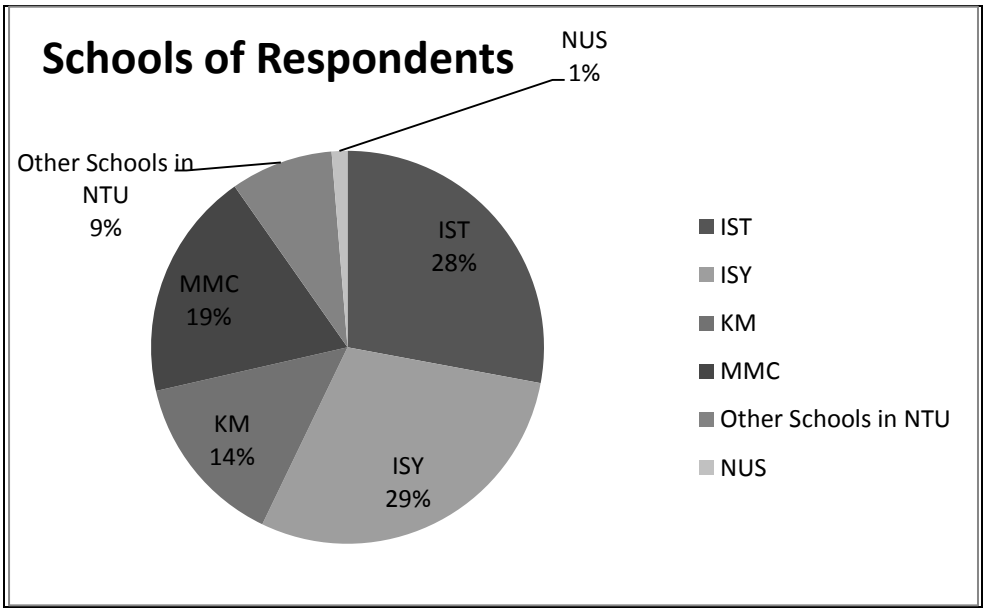

Figure 1: Schools of respondents.

Demographic information has resulted to (1) 12 different nationalities from various countries (as shown in Figure 2). Majority of which were Singaporean (41.2%) followed by People's Republic of China(PRC) (28.8%); (b) the number of male and female participants were almost the same, occupying 48.4% and 51.6% respectively; (c) more than 80% of respondents were aged 35 below and less than 20% of them were aged 36 and above (as shown in Figure 3); (d) Seventy five (75) part-time students and Sixty seven (67) full-time students participated in the survey, while 12 of which did not indicate their schooling-status (As shown in Figure 4).

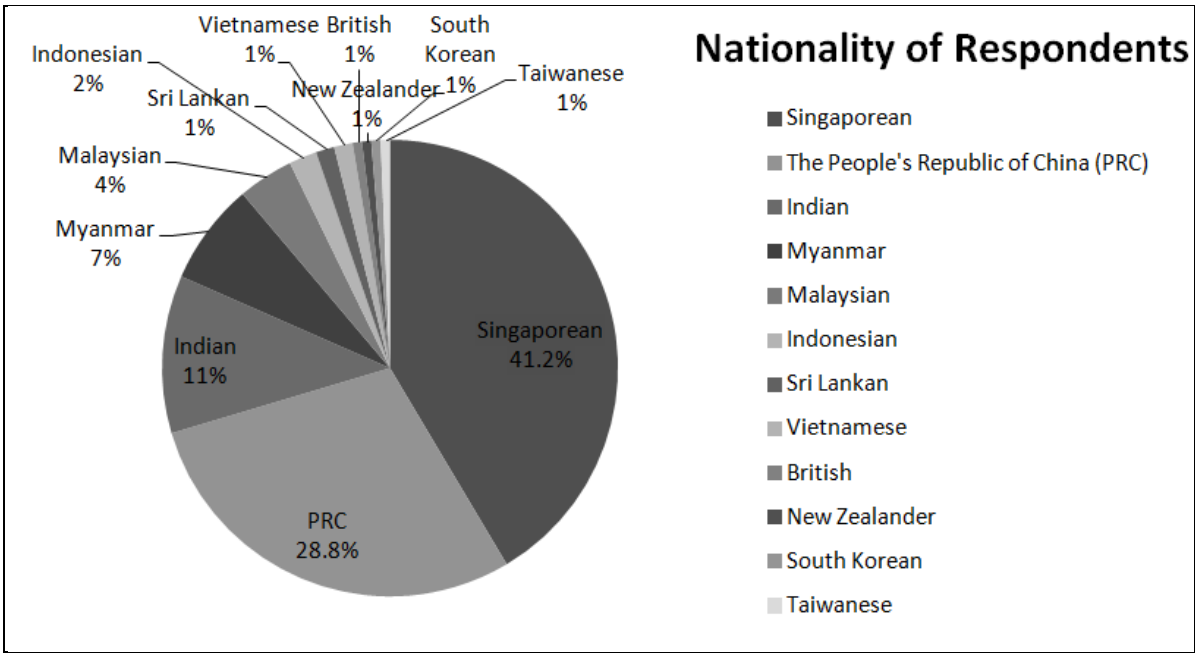

Figure 2: Nationality of respondents.

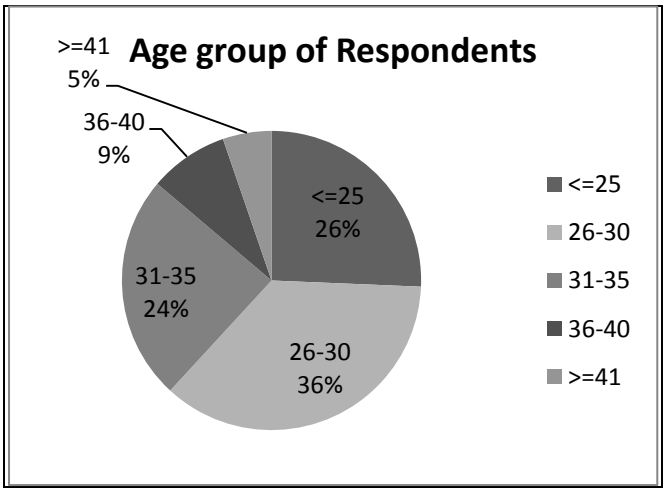

Figure 3: Age group of respondents.

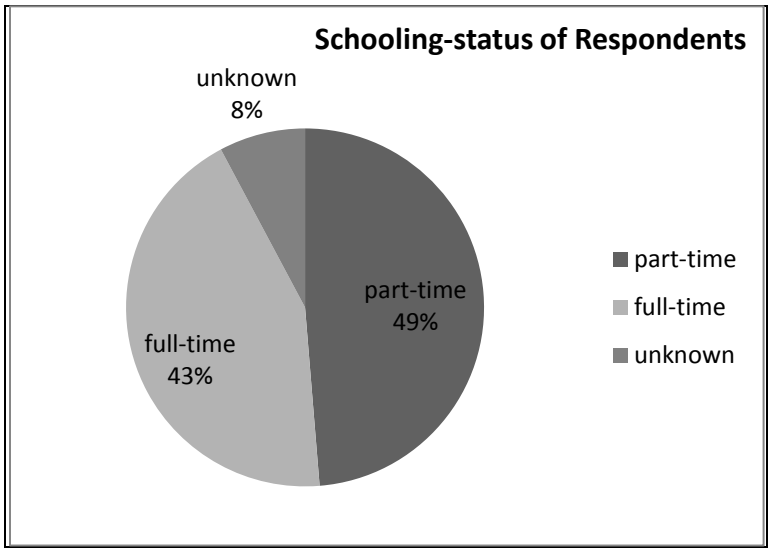

Figure 4: Schooling-status of respondents.

Preferred Communication Mode for Class Contribution

All participants were asked to choose their preferred mode for class contribution. According to the result (Table 1), 78 participants chose F2F, 40 participants chose ODB, while 32 of them preferred both (F2F and ODB) for class contribution. These results however does not support other two studies (Wagner & Bolloju, 2005; Krentler & Flurry, 2005) conducted by western scholars, which mentioned that online discussion board improve students' learning process. While Majid and Wey's (2009) research showed that F2F communication channel is more popular than ODB for knowledge and information sharing among fellow students. Subsequent to Majid and Wey's (2009) research that was conducted in Singapore, this study implies that culture could be one of the factors that influence students' preference on class contribution.

Preferred mode	**Number of participants (N=154)**
Face-to-face(F2F)	78 (50.6%)
Online Discussion Board(ODB)	40 (26%)
Both	32 (20.8%)
Others	4 (2.6%)

Table 1: Result on preferred mode.

More specifically, Indian appeared to use F2F communicatio mode for class contribution most (70.6%); followed by PRC students (56.8%) and Singaporean (see Table 2). Surprisingly, Myanmar was the only nationality that majority of them preferred ODB for class contribution (63.6%), while students from other countries that preferred online communicatio mode did not exceed 31%. Unlike other nationalities, half Malaysian students were in favor of both modes. Due to the smaller size (less than 4) of students from Vietnam, Taiwan, Indonesia, South Korea and so on, researchers have combined them into others. While students from these groups have provided higher preference in F2F mode, the figure cannot indicate any statistical significance for one certain country.

Nationality	N	Preferred Mode			
		F2F	ODB	Both	Others
Singaporean	63	27 (42.8%)	19 (30.2%)	15 (23.8%)	2 (3.2%)
PRC	44	25 (56.8%)	9 (20.5%)	8 (18.2%)	2 (4.5%)
Indian	17	12 (70.6%)	3 (17.6%)	2 (11.8%)	0
Myanmar	11	3 (27.3%)	7 (63.6%)	1 (9%)	0
Malaysian	6	2 (33.3%)	1 (16.7%)	3 (50%)	0
Others	13	9 (69.2%)	1 (7.7%)	3 (23.1%)	0

Table 2: Nationality and preferred mode.

Students' Class Contribution in F2F and ODB

As mentioned previously, researchers have operationalized class contribution by measuring their frequency of speaking in F2F class discussion and frequency of writing posts in ODB. By comparing means of both frequencies, figures revealed that students' preference on class contribution were different among countries. Singaporeans scored the highest mean (3.59) for the frequency of speaking, followed by Indians and PRC students with a mean score of 3.41 and 3.32 respectively (see Table 3). The figures also revealed that Myanmar students were leading over other groups in terms of frequency of writing posts in ODB.

Nationality	N	Frequency of Speaking		Frequency of Writing	
		Mean	Std. Deviation	Mean	Std. Deviation
Singaporean	63	**3.59**	1.213	2.54	1.013
Indian	17	**3.41**	1.326	2.24	0.664
PRC	44	**3.32**	1.116	2.55	1.229
Myanmar	11	3.09	1.375	**3.36**	1.206
Malaysian	6	3	1.095	2.33	0.816
Others	13	2.92	0.954	2.31	0.947
Total	154	3.38	1.189	2.54	1.067

Table 3: Nationality and class contribution.

Tables 2 and 3 illustrate the top-3 nationalities that preferred F2F communication mode as well as the comparison for their frequency of speaking and posting. Singaporean, Indian and PRC students remain on upper part of the ranking. Noticeably, Myanmar students' class contribution trend has supported their preferred mode. To a great extent, findings indicate that students who prefer F2F communication mode are more likely have positive reaction in F2F discussion whilst students who prefer ODB react positively in online settings. This is however not similar as Tiene's (2000) findings that graduate students' who prefer F2F setting, react actively in online discussions. The result however was obtained by comparing cultural differences between 2 groups (western and eastern research).

By further exploring the nationality and motivators of two communication modes, as shown in Table 4, Myanmar students have ranked 'can build trust relationships with classmates' the least motivating factor which obtained a mean score of 3.27 when participating in F2F discussion. This further means that they have neutral feelings about the statement. Their preference in ODB is more likely motivated by some of online discussion board motivators. The result in Table 5 also showed that Myanmar students have higher agreement than other nationality with the following motivators is using ODB: (1) Students are more likely to share URL's and references (2) can interact conveniently on 24/7 basis (3) encourages students to contribute in a thoughtful manner and (4) utilize critical thinking skills through online discussion board.

Face-to-face Motivator / Nationality	Build trust relationships with classmates		
	N	**Mean (1~5)**	**Std. Deviation**
Indian	17	4.18	.951
PRC	44	4.18	.724
Singaporean	63	3.94	.780
Malaysian	6	3.83	.753
Others	13	3.62	.506
Myanmar	11	**3.27**	1.009

Table 4: Face-to-face motivator and nationality.

ODB Motivators / Nationality	N	Students are more likely to share URL's and references for research purposes		Students can interact conveniently on 24/7 basis		Encourages students to contribute in a thoughtful manner through multi-thread posts		Students are more likely to utilize critical thinking skills	
		Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Myanmar	11	**4.09**	.539	**4.00**	.775	**4.00**	.632	**4.00**	.632
Malaysian	6	4.00	.632	4.00	.894	3.67	.516	3.83	.753
PRC	44	3.73	.727	3.57	.925	3.56	.734	3.48	.792
Indian	17	3.59	.795	3.76	.752	3.76	.664	3.41	1.004
Singaporean	63	3.71	.888	3.84	.865	3.67	.861	3.76	.875
Others	13	3.62	.832	3.77	.832	3.69	.751	3.38	.870

Table 5: Online discussion board motivators and nationality.

Motivating Factors for Class Participation

Motivating factors were analyzed to explore how students are influentially encouraged to participate in class discussion. The respondents were asked the Likert questions (on a scale of 1-5) to measure their resemblance for active participation in F2F (*refer to* Table 6) and ODB (*refer to* Table 7) class discussion. The two most important reasons students would contribute in F2F were: getting feedback directly and quickly (mean score: 4.21) and capturing body language for better communication (mean score: 4.03). While student's are most likely to share ideas using ODB in class discussion because of the following factors: provides enough time to gather and conceptualize ideas (mean score: 3.96) and provides tangible evidence for class contribution (mean score: 3.82); these were considered the most encouraging factors probably because it indicates a more feasible evidence of their class participation as well as providing students enough time that will help them think more of valuable responses. The factor that was least considered to motivate students when sharing ideas in F2F was 'encourages student to prepare before class (mean score: 3.56). For online discussion board, developing class community was seemed the least important motivator.

Findings revealed that student's preference might also be according to how they can provide information and get feedback in a more efficient way rather than building a relationship or community.

The factor that scored the highest mean was similarly obtained by Majid & Yuen (2006) that learning from each other through feedback from classmates also encourages students to participate in class discussion. However, the motivating factors that ranked least is in contrast to the previous findings that developing closer relationship with the community among fellow students strongly encourage student's participation (Majid & Wey, 2009).

Motivating factors for face-to-face discussion	N	Mean (1-5)	Std. Deviation
Get feedback on ideas directly and quickly	154	4.21	.636
Captures body language and facial expression for better communication	154	4.03	.800
Easily recognized by professors and classmates	154	3.97	.779
Builds trust relationship with classmates	154	3.95	.811
Encouragement from professors and classmates	154	3.95	.717
Enhances spoken English proficiency	154	3.80	.903
Help students to earn points for class participation	153	3.72	.839
Encourages students to prepare before attending classes	154	3.56	.921

Table 6: Motivators for face-to-face class contribution

Motivating factors for online discussion board	N	Mean (1-5)	Std. Deviation
Provides enough time for student to gather and conceptualize ideas	154	3.96	.635
Provides tangible evidence of class contribution	154	3.82	.751
Students can gain knowledge from others beyond classroom boundaries	154	3.79	.741
Students can interact conveniently on 24/7 basis	154	3.77	.862

Students are more likely to share URL's and references for research purposes	154	3.73	.776
Encourages students to contribute in a thoughtful manner through multi-thread posts	153	3.67	.768
Students are more likely to utilize critical thinking skills	154	3.63	.855
Develop stronger class community	152	3.24	.956

Table 7: Motivators for online discussion board class contribution

Barriers Inhibiting Class Participation

While the aforementioned factors can provide educators new approach to understand how students are motivated to actively engage in class discussion, several inhibiting factors were deliberately surveyed to understand why students deter themselves to participate in class discussion.

The respondents were asked to rate the possible reasons that restrict their participation in F2F and ODB through likert scale questions (Table 8 and Table 9). Result revealed that (a) shy personality (mean score: 4.21); (b) poor spoken English (mean score: 3.95) and; (c) communication skill (mean score: 3.90) were the main barriers that limit students' participation in F2F discussion. While results in ODB showed that the main barriers influencing class contribution were lacking of time to read multi-thread posts (mean score: 4.21) and fear on posting wrong information (mean score: 3.95). The least barrier that hinders class contribution in F2F were (a) lack of incentives from professors (3.07) and; (b) do not want to share information with unfamiliar students (3.00). While (a) Poor reading comprehension (2.99); (b) unfamiliarity with the features of online discussion board (2.0); (c) slow Internet connection (2.48) and; (d) Slow typing skill (2.42) were least important barriers. This further implied that students have positively adapted the rapidly changing communication environment in improving learnability.

Similar results were obtained previously by Siragusa et al., (2007) that intrinsic personality affect students' participation. While time, in-depth knowledge, and peer-to-peer communication approach impede students towards active class contribution (Majid & Wey, 2009; Majid & Yuen, 2006; Ikhsan & Rowland, 2004; Curtis and Lawson, 2001).

Barriers	N	Mean (1-5)	Std. Deviation
Shyness and introvert personality	153	4.21	.685
Poor spoken English	154	3.95	.877
Poor communication skills	154	3.90	.864
Fear of giving opposing or wrong comments	153	3.84	.831
Class discussion is dominated by some talkative students	154	3.66	.998
Lack of preparation before class	154	3.57	.892
Unable to understand Professor or classmates' accent	154	3.51	.951
Limited time allocated for class discussion	154	3.46	.957
Afraid of not getting others' interest and attention	154	3.37	.977

Poor sense of belonging to the class (e.g., classmates do not care about others' opinions)	154	3.24	1.004
Students' showing favoritism for some classes	149	3.22	.943
Lack of incentives from professors (e.g. marks, praise)	153	3.07	.971
Do not want to share information with unfamiliar students	153	3.00	.967

Table 8: Barriers affecting students' participation in F2F discussion.

Barriers	N	Mean (1-5)	Std. Deviation
Insufficient time to read multi-thread posts before giving responses	154	3.44	.914
Fear of being criticized for posting wrong information	154	3.23	.982
Contribution in online discussion board is often dominated by some students	154	3.19	.929
Lack of incentives from professors (e.g. marks, praise)	154	3.09	.999
Fear that no one will read or respond to my comments	154	3.06	.965
Many students don't have good writing skills	153	3.01	.873
Fear of getting opposing comments from others	153	3.00	.960
Poor reading comprehension	154	2.99	.900
Unfamiliarity with the features of online discussion board	154	2.90	.991
Slow internet connection	152	2.48	.996
Slow typing skill	154	2.42	.982

Table 9: Barriers affecting class contribution in online discussion.

Hypothesis Testing

Because researchers thought that students' preference on communication mode for class contribution maybe influenced by their demographic information as such their native race could be one of the factors, the hypothesis as mentioned previously was tested to investigate whether the diversity of students in the research setting could bear significant result.

One-way ANNOVA was used to test the hypothesis. 'Nationality' was described as independent variable while 'preference on communication mode' was analyzed as dependent variable. Both variables have a nominal level of measurements and more than 3 groups of nationality were tested. Table 10 provides a summary of one-way ANNOVA analysis. As indicated, these results not only supported but also extended the findings obtained from chi-square tests (Table 11). Both analysis and test resulted to overall $p=.374 > \alpha= .05$ (one-way ANNOVA) and $p=.149 > \alpha= .05$ (Chi-square). Result indicated that no association is more likely to occur between nationality and students preference on communication mode for class contribution. Also, the F ratio has resulted to a value of 1.079 which means that the null hypothesis cannot be rejected. This further indicates that researchers fail to reject $H_{0.}$

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	102.210	5	20.442	**1.079**	**.374**
Within Groups	2784.261	147	18.941		
Total	2886.471	152			

Table 10: Hypothesis testing using One-way ANNOVA

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	20.620[a]	15	.149
Likelihood Ratio	20.210	15	.164
Linear-by-Linear Association	.014	1	.906
N of Valid Cases	153		

a. 15 cells (62.5%) have expected count less than 5. The minimum expected count is .16.

Table 11: Hypothesis testing using Chi-square

Suggestions in Improving Active Class Participation

Through open-ended questions, respondents were requested to provide suggestions in improving both communication modes for class contribution. Related concepts were tabulated, grouped together, and ranked (Table 12 and Table 13). Result revealed that most students have ranked 'giving more incentive such as marks' as the most motivating factor when participating in F2F and ODB class discussion. Twenty-two (22) respondents also suggested that encouragement from professors and classmates should also be given emphasis; followed by creating friendly and supportive class atmosphere would also be conducive for F2F discussion. In addition, to be able to encourage students to actively participate in ODB, compulsory participation by professors can also be a valuable approach. Decisively, creating user-friendly interface that allow participants to conveniently access ODB is also an important factor to include when deciding to integrate a collaborative tool in the system.

Suggestions	Number of Respondents N = 136
Giving students more incentive, such as marks	28
Encouragement from professors and classmates	22
Creating friendly and supportive atmosphere	20
Compulsory participation required by professors	17
Dividing into smaller group	14
Giving sufficient time in class	13
Creating interesting discussion topics	13
Providing chance for everyone to speak in class	9

Table 12. Suggestions for face-to-face class contribution.

Suggestion	Number of Respondents
Giving students more incentive, such as marks	28
Compulsory participation required by professors	20
Creating user-friendly interface that is easily accessible	18
Making the in-depth discussion and follow-up	16
Creating interesting discussion topics	12
Professors also participate	11
Encouragement from professors and classmates	5

Table 13: Suggestions for online discussion board class contribution.

CONCLUSION

This research cannot be decisive; however, it is indicative of several motivating insights in understanding the student's preference for class contribution. Findings in the research imply that demographic data (i.e. nationality, gender, and age) may not be an influencing factor to students' preference when participating in class discussion. However, researchers found that language proficiency could be one of the factors that influence student's preference on class contribution. Apart from demographic information, student's expectations, behavior, and time may also impact their preference to participate in class discussion. The overall findings on students preference in communication mode further indicates that triangulation of multi-dimensional factors need to consider in order to achieve students gratification in promoting active learning. Barriers, as mentioned previously should also take into consideration to understand why students deter themselves to participate in class discussion.

Though preference on communication mode was comprehensively investigated, findings in this paper show that selection between class contribution communication modes should not be imposed but rather should use both in an appropriate manner to improve and promote better student-centric environment of learnability. One of the research gaps of this research is that, students' learnability was not comprehensively obtained to reflect their preference for class contribution. Second, this actual study cannot resolve the question of when to use F2F or ODB. Third, findings in this research setting may be different from other setting and sample population. Conceivably, student's learnability can serve the researcher further studies to determine the distinguishable difference of student's preference for class contribution. Hence, the need for further research across learnability and preference for class contribution is advocated.

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(Annex A)

Nanyang Technological University
Wee Kim Wee School of Communication and Information

Participant Information Sheet and Informed Consent

Dear Participant,

We, students from WKWSCI, Nanyang Technological University, are currently conducting a study under the supervision of A/P Mian Shaheen Majid on student's preferred mode for class contribution: Face-to-Face vs. Online Discussion board.
The study aims to understand the postgraduate students' perceptions on their preferred mode for class contribution and the different factors that may affect their choice of preference.

What you will do in this study:
You will answer the survey questionnaire and we would highly appreciate if you could spend about 10 minutes of your time.

Risks:
There are no anticipated risks beyond those encountered in daily life associated with participating in this study.

Voluntary Withdrawal:
Your participation in this study is completely voluntary, and you may withdraw from the study at any time without consequences. However, it is important to us that you completely answer the questions as possible. Your decision to participate, decline, or withdraw from participation will not affect your status or relationship with the University.

Confidentiality:
Rest assured that all the information collected through this survey would be kept strictly confidential and will solely be used for academic purposes.

Further Information:
If you have questions or need clarification about this study, please feel free to contact us.

Cendana Desiree (DESIREE001@e.ntu.edu.sg)
Liang Shuang (SLIANG005@e.ntu.edu.sg)
Zhang Wen (WZHANG014@e.ntu.edu.sg)

Agreement:

The purpose and nature of this research have been sufficiently explained and I agree to participate in this study. I understand that I am free to withdraw at any time without incurring any penalty.

Signature: _____
Date: _____
Name (print): _____

Student's Preferred mode for Class Contribution: Face-to-face vs. Online Discussion board

Survey Questionnaire

Class contribution (through face-to-face and/ or online discussion board) includes a variety of activities such as responding to instructors questions, making a comment on the topic under discussion, asking a question or clarification, sharing personal experiences, participating in small group discussion, making a class presentation, etc.

Instructions: Please put a check mark (√) beside your chosen answer(s). For open-ended questions, please try to write clearly.

Part I: Knowing your Personal details

1. Nationality: _____
2. School/ College: _____
3. Graduate Program enrolled in: _____
4. Gender: [ ] Male [ ] Female
5. Age-group: [ ] <=25 [ ] 26-30 [ ] 31-35 [ ] 36-40 [ ] >=41
6. Student-schooling status: [ ] Part-time [ ] Full-time
7. How will you rate your English language proficiency?
   Spoken: [ ] Excellent [ ] Good [ ] Fair [ ] Poor
   Written: [ ] Excellent [ ] Good [ ] Fair [ ] Poor

Part II: Knowing your mode of class participation and contribution

8. Are you currently enrolled in a course that uses face-to-face and/or online discussion board for discussions? *Please tick only one option.*
   [ ] Face-to-face only [ ] Both
   [ ] Online Discussion board only [ ] None

9. How do you prefer contributing your ideas on topics discussed in your classes? *Please tick all that apply.*
   [ ] Face-to-face (F2F) [ ] others, *please specify*: _____
   [ ] Online discussion board (ODB)

10. Do you read the lecture slides or assigned readings before attending the class? *Please tick only one option.*
    [ ] Always [ ] Most of the time [ ] Sometimes [ ] Seldom [ ] Never

11. For the following purposes, which is your preferred communication mode? Please choose only one response for each statement.

	Statement	**Preference**		
		F2F	**ODB**	**Equal**
a.	More in-depth and comprehensive discussion is possible in			
b.	I am more comfortable to participate in			
c.	I am more active in			
d.	I spend more time in			
e.	I learn more in			
f.	I learn better in			
g.	I get more rewards in (e.g. class participation marks, praise from professor			

	or students)			

Part III: Face-to-face discussion

12. On average, how many times do you speak in face-to-face discussion for each subject in one semester? *Please tick only one option.*
    [ ] Never [ ] 1- 3 times [ ] 4-6 times [ ] 7-9 times [ ] >=10 times

13. In your opinion, which of the following activities contribute to the face-to-face discussions? *Please tick all that apply.*
    [ ] Asking questions related to class discussion
    [ ] Answering question from professors or classmates
    [ ] Sharing personal experiences or knowledge related to class discussion
    [ ] Providing comments or suggestions related to class discussion
    [ ] Others; Please specify: _____

14. Do you agree or disagree that the following factors motivate students to participate in face-to-face class discussions? *Check one box for each statement.*

Motivating factors		**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
a.	Builds trust relationship with classmates.					
b.	Get feedback on ideas directly and quickly.					
c.	Easily recognized by professors and classmates.					
d.	Encouragement from professors and classmates.					
e.	Captures body language and facial expression for better communication.					
f.	Enhances spoken English proficiency.					
g.	Encourages students to prepare before attending classes.					
h.	Help students to earn points for class participation.					
Other motivating factors *(Please specify)*:						

15. Do you agree or disagree with the following statements related to face-to-face class discussion? *Check one box for each statement.*

Statement		**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
a.	Most of the students only speak up in the class when required by professors.					
b.	Students' ask questions to clarify things and ensure that concepts were clearly understood by them.					
c.	Professor often asks everyone to give a brief summary of the previous discussion.					
d.	Students do not regularly participate in class discussions.					

e.	I often use examples from my work experience for class discussions.					
f.	Students and professors' questions are immediately answered during class discussion.					
g.	Students' thoughts and feelings are better expressed in class by showing body language.					
h.	Most of my classmates actively participate in class discussions.					
i.	Most of my classmates don't feel comfortable when their ideas are challenged during class discussions.					
j.	Sometimes my classmates make comments just to get class participation marks.					
k.	Most of my classmates are not interested to share their experiences and thoughts.					

16. Do you agree or disagree with the following barriers that could possibly affect face-to-face discussion? *Check one box for each statement.*

Barriers		**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
a.	Poor spoken English.					
b.	Shyness and introvert personality.					
c	Poor communication skills.					
d.	Limited time allocated for class discussion.					
e.	Fear of giving opposing or wrong comments.					
f.	Afraid of not getting others' interest and attention.					
g.	Lack of preparation before class.					
h.	Unable to understand Professor or classmates' accent.					
i.	Class discussion is dominated by some talkative students.					
j.	Lack of incentives from professors (e.g. marks, praise)					
k.	Do not want to share information with unfamiliar students.					
l.	Poor sense of belonging to the class (e.g., classmates do not care about others' opinions).					
m.	Students' showing favoritism for some classes.					
Other barriers *(Please specify):*						

Part IV: Online discussion board

17. On average, how many times do you write postings on the online discussion board for each subject in one semester? *Please tick only one option.*

[ ] Never [ ] 1-2 postings [ ] 3-4 postings [ ] 5-6 posting [ ] > 6 postings

18. On average, how much time do you spend in preparing and writing each of your postings (e.g. replies, create new thread, etc.)? *Please tick only one option.*
[ ] < 10 minutes [ ] 10-20 minutes [ ] 21-30 minutes [ ] > 30 minutes

19. In your opinion, which of the following activities contribute to the online class discussions? *Please tick all that apply.*
[ ] Creating new thread leading to in-depth discussion
[ ] Giving comments (replies) to the existing posts
[ ] Providing answers to the questions asked by the professor
[ ] Others; Please specify: _____

20. Do you agree or disagree that the following factors motivate students to participate in online discussion board? *Check one box for each statement.*

	Motivating factors	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
a.	Provides enough time for student to gather and conceptualize ideas.					
b.	Provides tangible evidence of class contribution.					
c.	Students can interact conveniently on 24/7 basis.					
d.	Encourages students to contribute in a thoughtful manner through multi-thread posts.					
e.	Students are more likely to utilize critical thinking skills.					
f.	Develop stronger class community.					
g.	Students are more likely to share URL's and references for research purposes.					
h.	Students can gain knowledge from others beyond classroom boundaries.					
Other motivating factors *(Please specify)*:						

21. Do you agree or disagree with the following statements related to class discussion using online discussion board? *Check one box for each statement.*

	Statements	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
a.	Students only take part in online discussion board when required by the professors.					
b.	Students post questions when comments made by professor and students were not clearly understood.					
c.	Most of my classmates post threads to continue the unfinished discussion in the class.					
d.	Most of my classmates often share online references (e.g. journals, links, and videos).					
e.	Students create threads in online discussion board to collect more feedback from others.					

f.	Most of my classmates actively contribute ideas by sharing information about their working experiences.					
g.	I often use online discussion board to give comments on other academic issues.					
h.	I usually post questions to gain better understanding of the concepts discussed in the class.					

22. Do you agree or disagree with the following barriers that could possibly affect your online discussion board? *Check one box for each statement.*

Barriers		**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
a.	Many students don't have good writing skills.					
b.	Fear of being criticized for posting wrong information.					
c.	Insufficient time to read multi-thread posts before giving responses.					
d.	Fear that no one will read or respond to my comments.					
e.	Poor reading comprehension.					
f.	Some students often dominate contribution in online discussion board.					
g.	Lack of incentives from professors (e.g. marks, praise).					
h.	Fear of getting opposing comments from others.					
i.	Unfamiliarity with the features of online discussion board.					
j.	Slow typing skill.					
k.	Slow internet connection.					
Other barriers *(Please specify):*						

Part V - Improving the quality of class discussion through students' active participation and contribution

23. Please suggest two measures that will encourage students' participation through face-to-face discussion and online discussion board.

Face-to-face:

a. _____

b. _____

Online discussion board:

a. _____

b. _____

----------*End of questionnaire*----------

Thank you for your time and effort. We highly appreciate your participation in this study.