How social network applications enhancing team project collaborations at home

Sonthya Vanichvatana *, Department of Real Estate, MSME School of Management and Economic, Assumption University, Ramkhamhaeng Rd., Huamak, Bangkok, 10240, Thailand https://orcid.org/0000-0002-0121-1980

Abstract

Team project collaboration is an important teaching and learning activity. Informal learning spaces are required to support such outside classrooms learning activity. There are increasing numbers of students who use virtual space platforms and social network applications (SNA) to support team project works at home. The objectives of this study were to understand how students used SNA to support team project works at home, how they learn about SNA, students' views of pro and con of SNA, and how much students need any supports from higher education institutions on this matter. This research used business students of a Bangkok private university as a case study. The results showed that though numerous advantages of SNA, students still valued face-to-face meetings in many phases of a team project. Students with higher cumulative grade point averages reflected higher proportions of needs for universities to teach them how to use SNA for team project collaboration at home than the lower cumulative grade point average students.

Keywords: Higher education institutions; Home; Informal learning spaces; Social network applications; Virtual spaces

* **ADDRESS FOR CORRESPONDENCE:** Sonthya, Vanichvatana, Assumption University, 592/3 Soi Ramkhamhaeng 24 Ramkhamhaeng Rd., Hus Mak, Bangkok 10240, Thailand
 E-mail address: sonthyavnt@msme.au.edu / Tel.: +66-81-612-2655

1. Introduction

Learning of students does not end within a classroom, especially when they are assigned individual projects and team projects. For team projects, students need to collaborate with group members, usually by working at informal learning spaces (ILS). On-campus ILS might not be sufficient and properly provided with needed facilities/equipment. However, nowadays with technology like virtual spaces and social network applications (SNA), students are able to work at home and collaborate concurrently with their team members faraway. The question is how universities can facilitate students to work on their team project at home through SNA. The following discuss three areas: (1) using home as a part of ILS, (2) using a team project as part of teaching and learning, and (3) using social media to support the team project at home.

Home as Part of ILS: Teaching and Learning can include many approaches besides lectures, such as individual project, assignment/homework, and team project. These activities require ILS, which are non-discipline specific spaces frequently used by both staff and students for self-directed learning activities, inside and outside library spaces (Harrop and Turpin, 2013). ILS includes many types of on-campus and off-campus spaces, such as library, cafe, co-working spaces, virtual spaces, and also home. *Home* is one important type of ILS that many students typically use to do many learning activities, including team project. Vanichvatana (2018) found from the previous research that there were many students who conducted 'Term Project/Team Project' and 'Group Discussion' at 'Home/Dorm'.

Team Project as Part of Teaching and Learning: Team project is an important teaching and learning approach, especially in higher education institutions (HEI) business programs. This approach of teaching and learning improves many students' skills which are essential for employment, such as interpersonal and communication skills. To conduct team projects, students required group collaborations outside classrooms, both inside and outside university territories. However, not every HEI can provide proper and enough on-campus ILS. In addition, students might prefer to work off-campus. With the merits of virtual spaces and SNA, students are able to work apart together for team project.

SNA to Support Team Project at Home: There are many technical terms in this area. This research limits only three groups of terms: virtual space, social media/social network, and social network applications (SNA). First, virtual space is internet platform or online environment (IGI Global, n.d.; Science Direct, n.d.). Second, both social media and social network have similar meaning as the shared of online communications channels/websites developed for community-based input, interaction, content-sharing and collaboration. Third, there are many SNA such as Facebook and Google (Tech Target, n.d.; Cambridge Dictionary, n.d.). It can be comprehended that virtual space is an online-platform/internet-environment, where websites in the forms of social media/social network can be applied, as so called SNA. SNA can be developed by corporates or individuals as websites – that allow people to share content quickly, efficiently, and in real-time (Hudson, 2019).

Virtual spaces have been changing the internal nature of education (Kio & Negreiros, 2013; Park, 2011). Web tools facilitate platforms for students to extend-then-combine their own formal learning into more informal places (Hall, 2009). Many social network applications support not only team communication but also team working concurrently apart. Each student might choose each own convenient in: (a) learning schedule, (b) preferred supporting facilities, and (c) atmosphere and environment (Kumar & Bhatt, 2015; Harrop & Turpin, 2013; Hunter & Cox, 2014; Vanichvatana, 2020; Cunningham & Walton, 2016; Riddle & Souter, 2012). University libraries provide opening hours vary widely – from government official working hours (around 8:30 to 16:30) to 24/7, and with or without weekends (Vanichvatana, 2016). Universities might not be able to provide enough of necessary supporting facilities at on-campus ILS, such as Wi-Fi, power sockets, study tables, and comfortable chairs. Furthermore, preferred atmosphere and environment for each student might not be the same. Some students prefer spaces which are allowed social discussions, while some students prefer quiet ones (Vanichvatana, 2018). A clear benefit of SNA is that it allows members of team project to communicate and work concurrently apart. Some popular SNA

include Google Doc, Google Hangout, Line Group, Line – Ladder Shuffle, Line – Poll Multi-Vote, Line – Schedule, Facebook, World Online 365, Instagram, and WeChat.

Assisting students' learnings, through team project approach, should be an important role of HEI. However, some universities might not be able to provide/improve on-campus ILS to support team projects for all needed students. Furthermore, universities should not leave students on their own responsibilities to find off-campus ILS, such as working at café or renting coworking spaces. A question rises as how such universities can support students' group collaboration for team project.

The objectives of this research was to find out how students use social network applications (SNA) to support their team project collaborations at home. The aims of this study were to understand: (a) the way(s) that students *learn* to use SNA, (b) phasing of team project that students used SNA to support the collaborations, (c) the advantage(s) and the disadvantage(s) of SNA, and (d) any need from students for HEI to support them in this issue. The ultimate goal was to know whether a university can support students to do team project collaborations at home by using SNA or not. The scope the study took undergraduate students studying at the business school of a Bangkok private university (BPU) in Thailand as a case study.

2. Methodology

This research applied both qualitative and quantitative research approaches**.** The qualitative research was conducted first, through direct interviews – to gain initial understanding how students used SNA to support team project collaborations. The second step was quantitative analysis through online survey and descriptive analysis – to identify the specified objectives and gain further understands. The third and last step was conducted the second round of qualitative analysis, through focus group – to clarify any questions gained from the survey and analysis results. These three steps were conducted in April, 2019.

This research examined business students at a Bangkok private university. This international university is located in the far eastern side of Bangkok, Thailand. The total number of students (population) who attended this business school were about 6,000 students**.** The teaching and learning is conducted in English. Students were from more than 80 nationalities. However, the majority of the students are Thai, about 85% of the population.

Direct Interviews

The first round of the qualitative analysis started with conducted direct interviews with four students, two top students and two weak students. The direct interviews start with the two students who were among the top cumulative grade point average (CGPA) students in their class. The first part of the interviews asked and found that each of these top students used many types of SNA for learning activities. However, both top students used *Google Doc* as the main SNA to support their online team project collaborations. The rest of the interview questions were then focused on Google Doc applications, including 'How' these students firstly learned about Google Doc and 'When' they firstly learned how to use Google Doc.

The second part of the interview was to understand which phases of a team project collaborations that students uses SNA. Team project collaborations can divided into four phases: (i) Early phase – brain storm/identify scope phase, (ii) Middle phase – working/writing phase, (iii) Final phase – work combine phase, and (iv) Presentation rehearsal phase. The next part was to further learn whether students still needed 'Face-to-face meetings' (FTF) for team project works – if so – which phases of group projects needed FTF. The results from the discussions from the two top students were similar. In the early phase, the students used FTF. SNA was then used during the middle and final phases. FTF was necessary again for the presentation rehearsal phase.

FTF interaction was mentioned to be important in the early phase – to brain storm and identify scope of assignments, and in the presentation rehearsal phase. In the early phase, FTF enhance team members to have better communications with body languages. Such body languages – including direct eye contacts – will make

weak students, who usually keep quiet, cannot avoid team work responsibilities. During FTF at the presentation rehearsal phase, team members can make comments to improve each other presentation performances.

As stated by many previous research, face-to-face interaction shows to improve communication, trust, and better working relationships (Blenke, 2013; AIB Blog, 2016). The benefits of face-to-face communication are showing body language, building relationships, valuing the other person and creating bond, boosting effectiveness (clearer and details communication), protecting confidentiality, enhancing trust and credibility, and creating more motivation (ezTalks, 2017; Free Management eBooks, n.d.).

The third, and the last part, was to understand the students' view about advantages and disadvantages of using SNA for team projects. For advantages, the top students revealed that, with SNA, students can work together concurrently apart. No student can make no more excuses on inconvenience on meeting time and meeting venues. For disadvantages, working far apart might create some misunderstandings. But, if team members were able to well agree upon during the early phase, the team confusion would be lessen. The final question was to ask if students need any support from the university on this matter. Both top students agreed that it would be better if the university could organize classes to teach students how to use Google Doc and other SNA to support team projects, as early as in freshman year.

The interviews with the two weak students were performed later. The interview results with these two weak students were similar to the interviews with the top two students in some questions. However, the answers from the weak students were without self-assured opinions. These last two students had no idea in many questions.

Online Surveys

The results from the direct interviews were used to develop the questionnaire form. The questionnaire consists of nine questions, shown in the nine sections in the Results. The questionnaires were created on an online survey used Google Form Application. A QR-code of this electronic questionnaire was created. The QR code was distributed to students by lecturers in four selected required business-core courses, in all undergraduate levels: freshmen, sophomores, juniors and seniors. There were the totals of 500 returned e-survey respondents. The data were analyzed through the descriptive analysis.

The whole 500 returned e-survey respondents consist of 131 freshman (26.2%), 160 sophomores (32%), 84 juniors (16.8%), and 125 seniors and over-seniors (25%). When analyzed in the aspect of CGPA, the data consist with the following number of responds and percentages: < 2.00 (24, 4.8%), 2.00-2.50 (120, 24%), 2.51-3.00 (150, 30%), 3.01-3.50 (118, 23.6%), and > 3.50 (88, 17.6%). The outcomes from the descriptive analysis are presented in the results section.

Focus Group Interview

Focus group interviews was conducted, as the second round of qualitative analysis, with a group of students in a senior year class. The objective of this interview was to reconfirm some results found from the online survey conducted in the previous step. There were two main questions in this focus group interviews. The first question was about the year that students learned how to use Google Doc for team project collaboration. Most students learnt this SNA since freshman or sophomore years. But, there was one student who revealed that he had just learnt about Google Doc in his junior year. The second question was about whether students needed the university to provide classes on how to use SNA for team project collaborations. Almost all students agreed that they preferred the university to teach Google Doc in classrooms.

3. Results

This part shows the findings from the online surveys, based on the following nine questions: (1) What types of 'Social Network Applications (SNA)' did students most often use when they studied at home?, (2) Which phase(s) of team projects did students use SNA?, (3) Which phase(s) of team projects did students used 'Face-to-face meetings (FTF)'?, (4) How did students first learn about 'SNA' to support team projects?, (5) Since when did

students start using SNA for team projects?, (6) Since when did students start using Google Doc for team projects?, (7) What is the advantage(s) of using SNA for team projects?, (8) What is the disadvantage(s) of using SNA for team projects?, and (9) Should the university teach how to use SNA for team projects in classrooms?

Questions 2, 3, 4, 5, 6, and 9 were further analyzed based on two students' attributes (a) CGPA and (b) undergraduate levels. Figure 1 shows the histogram charts for the first questions. Figures 2.1 to 7.2 show stacked columns as the results for the rest of the questions.

Question 1: What Types of SNA Did Students Most Often Use When They Study at Home?

There were nine choices of social network applications and one open choice for this question. Figure 1 shows the frequency of the nine choices. The number of responds and percentages (in parenthesis) are listed from high to low as follows: (4) Line Group 397(79.4%), (2) Google Drive/Google Doc 312(62.4%), (8) Facebook 210(42%), (9) Word online 365 – 103(20.6%), (1) WeChat 73(14.6%), (7) Line-schedule 26(5.2%), (3) Google Hangout 18(3.6%), (5) Line-Ladder shuffle 15(3%), (6) Line-Poll Multi-vote 14(2.8%). For the open question, 'Others', there are three more SNA added: (10) Instagram 8(1.6%), (11) YouTube 1(0.2%), and (12) Google Translate 1(0.2%).
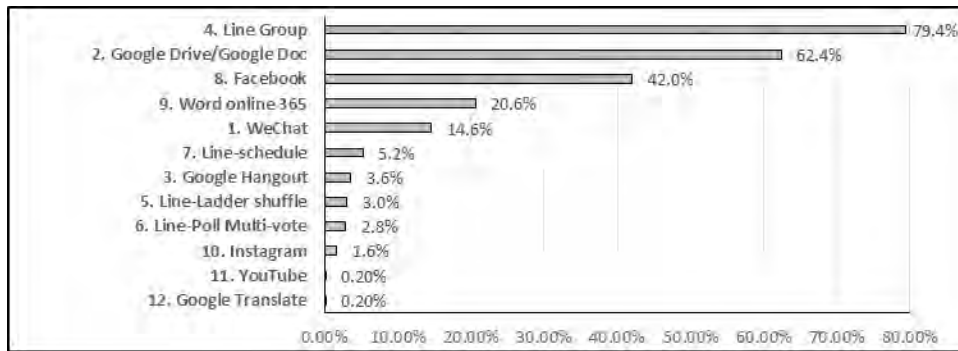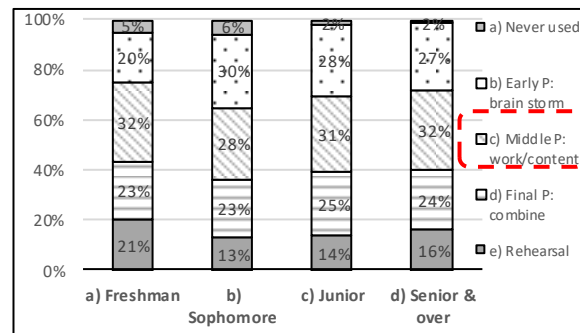

Figure 1. Types of Social Network Applications that Students Most Often Use When Study at Home

Question 2: Which Phase(s) of Team Projects Did Students Use SNA?
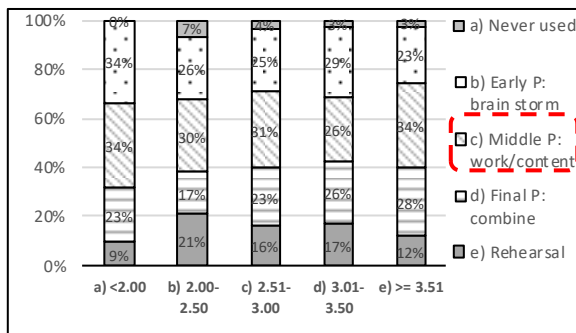
Figure 2.1: Phase(s) of Team Projects that Use SNA, by CGPA

Figure 2.2: Phase(s) of Team Projects that Use SNA, by Undergraduate Levels

The respondents reflected the frequencies and percentages to *Use SNA* in each team project phase as: 'a) Never used' (34, 6.8%), 'b) Early phase' (240, 48.0%), 'c) Middle phase' (277, 55.4%), 'd) Final phase' (214, 42.8%), and 'e) Rehearsal' (146, 29.2%). The data in each category ((a) to (e)) were then analyzed based on CGPA (in five levels of CGPA) and on undergraduate levels (in four levels). The analysis results based on CGPA are shown in the

five stacked columns in Figure 2.1, while those based on undergraduate levels are shown in the four stacked columns in Figure 2.2.

The next step was the calculations of the averaged percentages of the frequency to use SNA in each phase. That is, this step calculated the average of all percentages from each same phase of all levels of CGPA. For an example, the calculation for the averaged percentage of using SNA in 'b) Early phase' equals to: ((34% + 26% + 25% + 29% + 23%) / 5) = 27.6%. The calculations were conducted until receiving all averaged percentages of every team project phase. Based on CGPA, the averaged percentages of each team project phase are: 'a) Never used'=3.2%, 'b) Early phase'=27.6%, 'c) Middle phase'=31.0%, 'd) Final phase'=23.3% and 'e) Rehearsal'=14.9%.

Base on undergraduate levels, the averaged percentages of each team project phase are: 'a) Never used'=3.5%, 'b) Early phase'=26.3%, 'c) Middle phase'=30.5%, 'd) Final phase'=23.6% and 'e) Rehearsal'=16.0%. These averaged percentage values were summarized in Table 1.

Question 3: Which Phase(s) of Team Projects Did Students Use 'Face-to-face' Meetings?

The respondents reflected the frequencies and percentages to *Use Face-to-face Meetings* (FTF) in each team project phase as: 'a) Never used' (42, 8.4%), 'b) Early phase' (272, 54.4%), 'c) Middle phase' (161, 32.2%), 'd) Final phase' (151, 30.2%), and 'e) Rehearsal' (187, 37.4%). Similar to the previous section, the data in each category ((a) to (e)) were analyzed, based on CGPA (in five levels of CGPA) and on undergraduate levels (in four levels). The analysis results based on CGPA are shown in the five stacked columns in Figure 3.1, and those on undergraduate levels are shown in the four stacked columns in Figure 3.2.

Similar to the previous section, the next step was the calculations of the averaged percentages of the frequency to use FTF in each phase, based on CGPA and undergraduate levels. Based on CGPA, the averaged percentage values of each team project phase are: 'a) Never used'=4.8%, 'b) Early phase'=34.3%, 'c) Middle phase'=20.2%, 'd) Final phase'=18.0% and 'e) Rehearsal'=22.8%. Base on undergraduate levels, the averaged percentage values of each team project phase are: 'a) Never used'=5.7%, 'b) Early phase'=33.3%, 'c) Middle phase'=19.4%, 'd) Final phase'=18.6% and 'e) Rehearsal'=23.0%. These averaged percentage values were then summarized in Table 1.
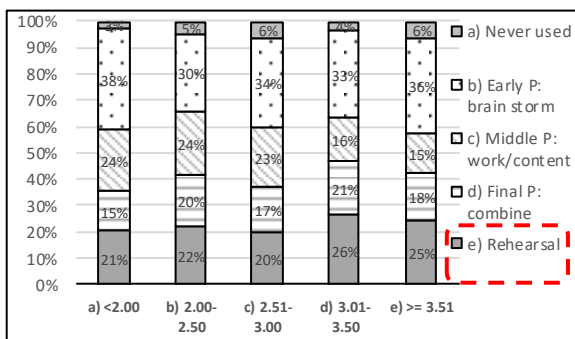
Figure 3.1. Phase(s) of Team Projects that Use 'Face-to-face' Meetings, by CGPA
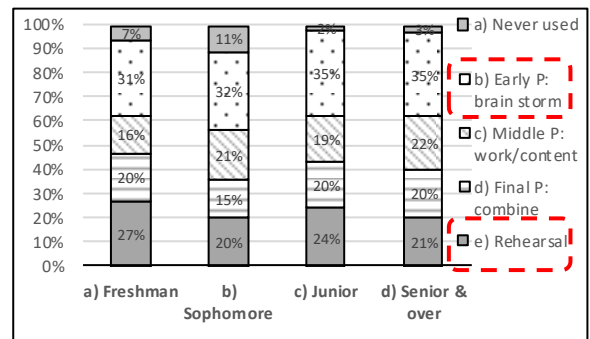
Figure 3.2. Phase(s) of Team Projects that Use 'Face-to-face' Meetings, by Undergraduate Levels

Table 1. Comparison of the Averaged Percentages of the Frequencies to Use SNA versus FTF in each Team Project Phase, based on CGPA and Undergraduate Levels

| Based on →	Averaged Percentages of Frequencies to Use SNA in Team Projects (From *Q2*, Fig.2.1 and Fig. 2.2)		Averaged Percentages of Frequencies to Use FTF in Team Projects (From *Q3*, Fig.3.1 and Fig. 3.2)	
	CGPA	Undergraduate Levels	CGPA	Undergraduate Levels
a) Never used	3.2%	3.5%	4.8%	5.7%
b) Early Phase	27.6%	26.3%	34.3%	33.3%
c) Middle Phase	31.0%	30.5%	20.2%	19.4%
d) Final Phase	23.3%	23.6%	18.0%	18.6%
e) Rehearsal	14.9%	16.0%	22.8%	23.0%

The data in Table 1 consist of the averaged percentages of the frequencies to use SNA during each team project phase. The calculation results were from question 2 and 3. The data in the second and third columns are from Question 2 (Q2), based on CGPA and undergraduate levels. The data in the fourth and fifth columns are from Question 3 (Q3), based on CGPA and undergraduate levels.

Question 4: How Did Students Learn About 'SNA' to Support Team Projects Collaborations?

The respondents reflected the frequencies and percentages of how they learned to use SNA for team project collaborations from each approach as: 'a) Never used' (22, 4.4%), 'b) Friends' (256, 51.2%), 'c) 231, 46.2%), 'd) Lecturer advice' (76, 15.2%), 'e) Classrooms' (47, 9.4%). With the similar process as above, the data in each category ((a) to (e)) were further analyzed, based on CGPA and undergraduate levels. Figure 4.1 shows the percentages of each approach that students learned how to use SNA, based on CGPA. Figure 4.2 shows the percentages of each approach that students learned how to use SNA, based on undergraduate levels.
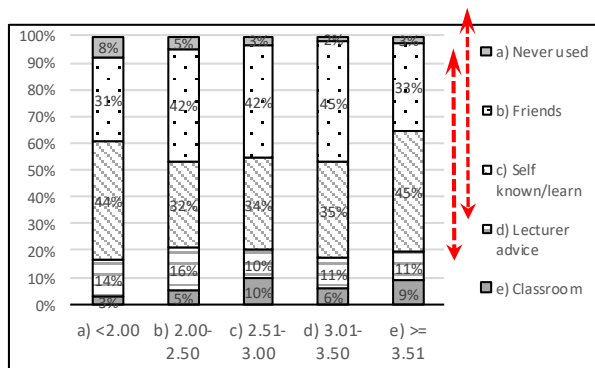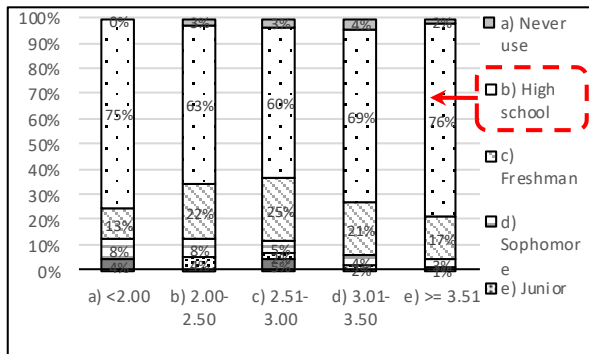

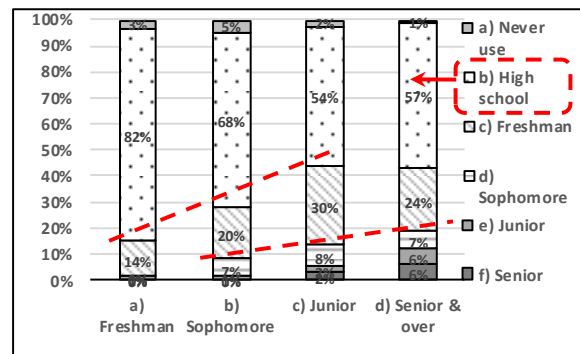**Figure 4.1. How Students Learn about SNA for Team Projects, by CGPA**
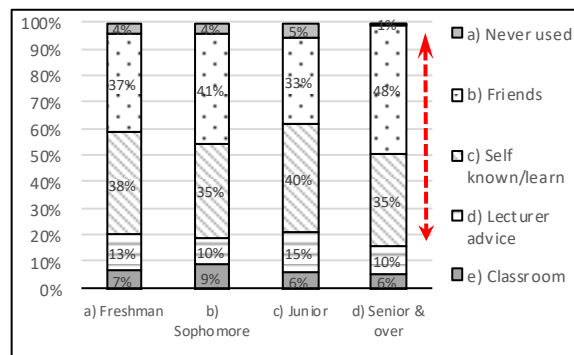
Figure 4.2. How Students Learn about SNA for Team Projects, by Undergraduate Levels

Question 5: Since When Did Students Start Using SNA for Team Projects?

Figure 5.1. Since When Did Students Start Using SNA for Team Projects, by CGPA

Figure 5.2. Since When Did Students Start Using SNA for Team Projects, by Undergraduate Levels

The respondents showed the frequencies and percentages of since when they start used SNA in each study levels: 'a) Never used' (15, 3.0%), 'b) High school' (332, 66.4%), 'c) Freshmen' (106, 21.2%), 'd) Sophomores' (106, 21.2%), 'e) Juniors' (27, 5.4%), and 'f) Seniors' (9, 1.8%). The data in each category ((a) to (f)) were then analyzed based on CGPA (in five levels of CGPA) and on undergraduate levels (in four levels). The analysis results based on CGPA are shown in the five stacked columns in Figure 5.1, while those based on undergraduate levels are shown in the four stacked columns in Figure 5.2.

Similar to the previous section, the next step was the calculations of the averaged percentages of the frequency of when students started using SNA in each category of study levels, based on CGPA and undergraduate levels. Based on CGPA, the averaged percentages of each study level are: 'a) Never used'=2.5%', 'b) High school'=68.6%, 'c) Freshmen'=19.4%, 'd) Sophomores'=5.8%, 'e) Juniors'=1.8%, and 'f) Seniors and over-seniors'=1.9%. Base on undergraduate levels, the averaged percentages of each choice are: 'a) Never used'=2.8%, 'b) High school'=65.2%, 'c) Freshmen'=22.0%, 'd) Sophomores'=5.6%, 'e) Juniors'=2.3%, and 'f) Seniors and over-seniors'=2.0%'. These averaged percentages were then summarized in Table 2.

Question 6: Since When Did Students Start Using 'Google Doc' for Team Projects?

The respondents reflected the frequencies and percentages of since when they start using Google Doc for team projects in each category of study levels as: : 'a) Never used' (26, 5.2%), 'b) High school' (182, 36.4%), 'c) Freshmen' (195, 39.0%), 'd) Sophomores' (64, 12.8%), 'e) Juniors' (20, 4.0%), and 'f) Seniors' (12, 2.4%). The data in each category ((a) to (f)) were then analyzed based on CGPA (in five levels of CGPA) and on undergraduate levels (in four levels). The analysis results based on CGPA are shown in the five stacked columns in Figure 6.1, while those based on undergraduate levels are shown in the four stacked columns in Figure 6.2.

Followed the similar process as above, the survey results, shown in Figures 6.1 and 6.2, were then calculated to get the averaged percentages of the frequency of when students started using Google Doc in each category of study levels, based on CGPA and undergraduate levels. Based on CGPA, the averaged percentages of each study level are: 'a) Never used'=5.2%', 'b) High school'=37.6%, 'c) Freshmen'=39.2%, 'd) Sophomores'=12.3%, 'e) Juniors'=3.2%, and 'f) Seniors and over-seniors'=2.5%. Base on undergraduate levels, the averaged percentages of each choice are: 'a) Never used'=4.7%, 'b) High school'=35.7%, 'c) Freshmen'=38.8%, 'd) Sophomores'=14.0%, 'e) Juniors'=4.3%, and 'f) Seniors and over-seniors'=2.5%'. These averaged percentages were then summarized in Table 2.
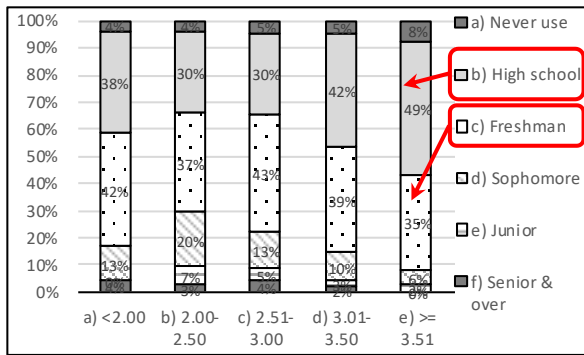
Figure 6.1. Since When Students Start Using 'Google Doc' for Team Projects, by CGPA
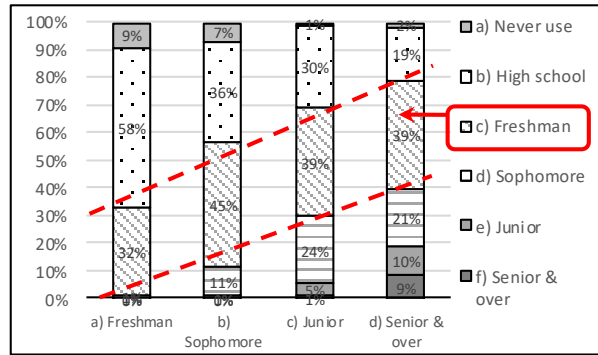
Figure 6.2. Since When Students Start Using 'Google Doc' for Team Projects, by Undergraduate Levels

Table 2. Comparison of the Averaged Percentages of since When Students Used Social Network App (SNA) versus Google Doc, based on CGPA and Undergraduate Levels

Based on →	When Start Using SNA to Support Team Projects (From Q5, Fig.5.1 and Fig. 5.2)		When Start Using Google Doc to Support Team Projects (From Q6, Fig.6.1 and Fig. 6.2)	
	CGPA	Undergraduate Levels	CGPA	Undergraduate Levels
a) Never used	2.5%	2.8%	5.2%	4.7%
b) High school	68.6%	65.2%	37.6%	33.7%
c) Freshman	19.4%	22.0%	39.2%	38.8%
d) Sophomore	5.8%	5.6%	12.3%	14.0%
e) Junior	1.8%	2.3%	3.2%	4.3%
f) Senior and Over	1.9%	2.0%	2.5%	2.5%

The data in Table 2 consist of the averaged percentages of the frequencies of when the respondents started using Google Doc in each study level. The results were from Question 5 (Q5) and Question 6 (Q6). The data in the second and third columns are from Question 5 (Q5), based on CGPA and undergraduate levels. The data in the fourth and fifth columns are from Question 6 (Q6), based on CGPA and undergraduate levels.

Question 7: What Is the Advantage(s) of Using SNA for Team Projects?

This question showed six choices of the advantages to use SNA for team projects with the following frequencies and percentages: (a) Everyone can work concurrently 349(69.8%), (b) Instant sharing contents/pictures 258(51.6%), (c) Instant checking by group members' works 177(35.4%), (d) Save travelling time 184(36.8%), (e) No need to find a meeting place 163(32.6%), and (f) No need to schedule a meeting 84(16.8%). There were two additional open comments as follows: (g) Very convenient tool to communicate with team members 1(0.2%), and (h) Easy to find the information 1(0.2%).

*Question 8: What Is the Disadvantage(s) of Using SNA for Team Projects?*

This question offered four choices of the disadvantages to use SNA for team projects with the following frequencies and percentages: (a) Can create miscommunication 302(60.4%), (b) Need to talk face-to-face

283(56.6%), (c) No inspiration 99(19.8%), and (d) Impractical to study on social networking applications at home 88(17.6%). There were two additional open comments as follows: (e) Some people do not do anything and do not answer 1(0.2%) and (f) There is no disadvantage for using SNA 1(0.2%).

Question 9: Should the University Teach How to Use SNA for Team Projects in Classrooms?
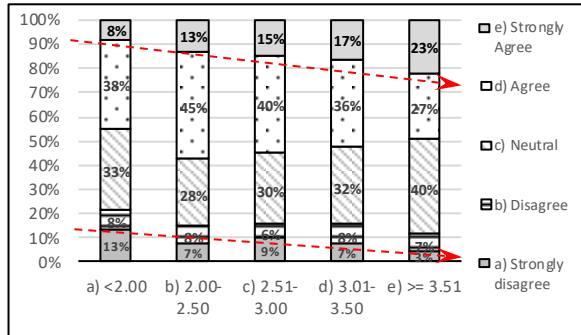
Figure 7.1: **Should the University Teach SNA for Team Projects in Classrooms, by CGPA**
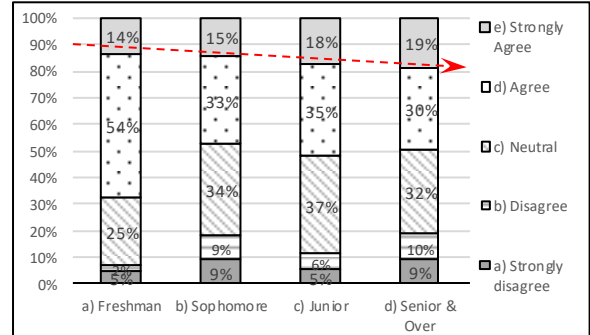
Figure: **7.2 Should the University Teach SNA for Team Projects in Classrooms, by Undergraduate Levels**

The respondents showed the frequency and percentages of whether the university teach SNA for team projects in classrooms as follows: 'a) Strongly disagree' (35, 7.0%), 'b) Disagree' (35, 7.0%), 'c) Neutral' (159, 31.8%), 'd) Agree' (190, 38.0%), and 'e) Strongly agree' (81, 16.2%). Similar to the previous sections, the data in each category ((a) to (e)) were analysed, based on CGPA (in five levels of CGPA) and on undergraduate levels (in four levels). The analysis results based on CGPA are shown in the five stacked columns in Figure 7.1, while those on undergraduate levels are shown in the four stacked columns in Figure 7.2.

4. Discussions

The results from the previous sections answer the four research objectives: (a) the ways that students learned to use SNA, (b) the characteristics that students use SNA to support team project collaborations, (c) the advantages and disadvantages of SNA, and (d) any need from students for HEI to support them is this issue.

(a)   The ways that students learned to use SNA

What types of SNA that were frequently used by students, when they study at home: From Figure 1, the top three types of SNA were (1) Line Group 397(79.4%), (2) Google Drive/Google Doc 312(62.4%), and (3) Facebook 210(42%).

How did students learn about SNA to support team projects collaborations? Students learned about SNA from friends and from self-known/self-learned as the first and second ranks, respectively. Both learnt from friends and self-known/self-learned are the two top frequencies when analyzed based on CGPA and undergraduate levels, shown in Figure 4.1 and 4.2.

Since when did students start using SNA versus Google Doc for team projects? There are three considerations in this aspect. Firstly, CGPA and undergraduate levels make no difference in term of the time that students started using SNA and Google doc for team projects. It can be seen in Table 2 column two and three, explaining about "When using SNA", the data in each of the six pairs (from rows (a) to (f)). For example, the data in row-a, 'Never Used', in both column two and column three are similar of 2.5% and 2.8%, respectively. Likewise for 'When start Using Google Docs' columns, the data in each of the six pairs (from rows (a) to (f)) are also similar. Secondly, students started using SNA earlier in their life than started using Google Doc. This can be seen that the averaged percentages of students who learned SNA since 'High school' are almost double higher than those who learned

Google Doc. For an example, in SNA are 65.2% and in Google Doc are 33.7%, as seen in Table 2 row (b). Thirdly, students with higher CGPA start using Google Doc sooner than students with lower CGPA. Figure 6.1 supports this aspect. That is, students with CGPA over 3.0 responded with higher percentages to start using Google Doc, since their high school and freshmen, than other levels of CGPA. There are more percentages of younger level students who start using Google Doc than those of the older level students, as shown in Figure 6.2.

(b)   Phasing of team project that students used SNA to support the collaborations

Phases of team projects that students use SNA versus FTF: Table 1 shows the data for this comparison. In the 'Early phase (brain storm/identify scope)' and 'Presentation Rehearsal phase', students used FTF more than SNA. In the 'Middle phase (working/writing)'and 'Final phase (work combine)' students used SNA more than FTF. It can also be noticed that the data in both CGPA and undergraduate levels aspects are similar in all pairs of comparisons.

(c)   The advantages and disadvantages of SNA

Students reflected that there are many advantages of SNA: 'work concurrently', 'instant sharing contents/pictures', and 'instant checking by group members' works'. Moreover, from the direct interviews with two top students, SNA can also provide auto data saving mechanism (backup files), which their team's works will be stored on cloud. These features do not only secure their works but also allow each team members can access their works any place and any time. Furthermore, no team members can have any excuses for not having work files or accessibility to work.

However, there are still disadvantages of SNA. Besides the views that students still valued face-to-face meetings (FTF), some students reflected that working at home apart from team members made them no inspiration. Some students also revealed that it was impractical to study on social networking applications at home. The direct interviews with two top students also supported that when working apart via SNA, the teammate are less connected. With face-to-face meetings, the teammates are able to create bonding time. In addition, voice communication and texts, without seeing each other face-to-face or eye-to-eye, can create misunderstandings. 'Body language' speaks a lot more.

(d)   Any need from students for HEI to support in this issue

It is very interesting to find that many students, especially with higher CGPA, reflected high percentages of 'Strongly Agree' that the university should teach SNA for team project collaborations in classrooms. Figure 7.1 supports this aspect. In addition, Figure 7.2 also shows that the higher the year of study, the higher percentages of students to agree that the university should teach SNA in classrooms.

5. Conclusions

New information from this research can be highlighted in two aspects as follows: (1) Even with marvelous advantages of SNA, the traditional style 'Face-to-face meetings (FTF)' is still important as parts of team project collaborations. (2) Students still need university to teach them knowledge about information technology (IT). Even though almost all lecturers believe that new generation students are able and better off learning about new technologies by themselves. These results create a question that may be e*ducators overestimate the ability of students on this matter.*

Limitations: the research scope is based on the data, both qualitative and quantitative analysis, gathered from students at a business school of a private university in Bangkok, Thailand. *Further study:* it is interesting to explore this research issue with students who study at other private universities and public universities, especially top ranks universities.

The research can reach the ultimate goal to find out HOW a university can support students to do team project collaborations at home. HEI have many important roles to support students' learning with team project approach.

Firstly, for the early phase (brain storm and identify scope) and for the presentation rehearsal phase, the university should support students with sufficient/proper on-campus informal learning spaces (ILS) and related facilities. Such ILS will allow students to make a face-to-face meeting which is an important part of team project collaborations. And secondly, for the middle phase (working/writing parts) and for the final phase (work combine), there are students who still need the university to teach them, in classrooms, how to use social network applications (SNA), especially Google Doc. So that, they can work efficiently on team project collaborations at home.

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