Collaborative Writing Using Wiki: Tertiary Students' Perspectives

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Abstract

Technology offers much potential to language pedagogy. In particular, the use of Wiki, which is part of Web 2.0 technology, is often recommended as a tool to support students' writing activities. This study explored undergraduate students' reactions to the use of Wiki for a group academic writing assignment. It involved 50 undergraduate students at a public university in Malaysia. Students' views were obtained through a questionnaire, which consisted of a set of closed-ended questions and open-ended questions. The questionnaire items focused on four aspects, which are Interaction, Ease of Use, Satisfaction, and Motivation. The findings revealed that the use of Wiki enabled the group members to interact and there was a sense of satisfaction with the use of the Wiki in supporting their academic writing. The students' experience in using Wiki motivated them to explore its use and also to recommend it to their friends. However, several issues related to the ease of use impeded the effective use of the Wiki. The analysis of the data from the open-ended questions shed some light on the challenges these students experienced in using Wiki for academic writing.

1 Introduction

Network technologies have affected teaching and learning in classrooms, especially in enhancing the way in which educational programmes are delivered. Web 2.0 tools such as blogs, wikis and social networking sites provide not only teachers with new strategies to engage with their students, but also enable students to connect with one another to enable participation beyond the confines of the classroom. Web 2.0 technologies facilitate new ways to create, collaborate, edit, and share user-generated content in the online environment (Crook, 2008; Kessler, Bikowski, & Boggs, 2012). These features offer the potential to enhance classroom pedagogy, particularly in language learning, which requires learners to interact, engage, and collaborate. The potential of Web 2.0 tools to support

language learning prompted this research to explore the perspectives of English as a Second Language (ESL) undergraduates using Wiki for the first time to collaborate in a small group academic writing assignment.

Collaboration plays an important role in the learning process and is considered important in developing student-centred learning (Burdett, 2007). It encourages the development of communication and interpersonal skills (Hassanien, 2007; Kapp, 2009), enhances thinking skills (Mills, 2003; Shehadeh, 2011; Weinberger, 2012), increases understanding of the learning task (Wigglesworth & Storch, 2009), and creates a sense of ownership and autonomy among learners (Kessler, 2009; Kilmanova & Dembovskaya, 2013). The potential of collaboration can be realised through writing activities. In the context of second language writing, which is the focus of this study, collaboration is defined as "learners tak[ing] the responsibility for the text as a whole and edit[ing] their own as well as their group mates' contributions" (Arnold, Ducate, & Kost, 2012, p. 433). It involves learners working synchronously on all aspects of the writing (Arnold, Ducate, & Kost, 2009). Thus, although writing is often perceived as an isolated and personal pursuit (Storch, 2013), it does offer opportunities for collaborative work.

One Web 2.0 tool which supports collaboration in writing between second language learners and is of particular relevance to this study is the Wiki. Wiki originates from the Hawaiian phrase *wiki-wiki*, meaning "quick," was first developed by Ward Cunningham as *WikiWikiWeb* (Cunningham, 2002). It is designed to enable users to create and edit content asynchronously (Franklin & Van Harmelen, 2007; Lund, 2008). Users are able to collectively author, expand, and revise content with the changes recorded as history (Li, 2012; Lund, 2008). Thus, Wiki is capable of functioning as a mediating artefact that enables users to collaborate and support one another in collective production (Li, 2014; Lund, 2008).

2   Collaboration in writing

Collaborative writing activities compel students to write while making decisions about the language required to articulate their ideas within a collaborative structure, which enables such articulation as a jointly produced piece of text (Elola & Ozkoz, 2010; Li & Zhu, 2013; Scotland, 2016; Storch, 2005, 2009). Most studies investigating collaborative writing in ESL and English as a Foreign Language (EFL) contexts have found that students working in pairs and groups to collaborate on writing tasks enhanced their language learning development and enjoyed the collaborative experience (Dobao, 2012; Shehadeh, 2011; Wigglesworth & Storch, 2009).

Dobao and Blum (2013) analysed the reactions of foreign language learners of Spanish in pairs and groups to a collaborative learning task to compare their preferences. The findings indicated that, while both groups enjoyed the experiences of collaborative work, those who worked in pairs preferred the collaboration, as it allowed increased opportunities for active participation, while those who worked in groups perceived the collaboration as providing them with opportunities to share more ideas and knowledge to enhance their language development (Dobao & Blum, 2013). Edstrom (2015) investigated the interaction patterns and engagement of EFL undergraduate learners of Spanish working in triads to draft the script of role play. This study, which analysed the students' language-related episodes (LRE) revealed that "the triads that interacted collaboratively produced the most LREs, resolved the most LREs correctly, and involved the most learners in their resolution" (Edstrom, 2015, p. 34–35), thus affirming the significance of true collaboration in group interaction. Similarly, Scotland (2016) investigated a group of undergraduates' perceptions of assessed work at a tertiary institution in Qatar using a longitudinal mixed-methods approach over the duration of a collaborative writing event. The findings of this study indicated that collaborative writing that is being assessed as a practicable tool of pedagogy in the tertiary context is valued by undergraduates for its potential in empowering them to produce, share, and develop their ideas (Scotland, 2016).

Collaboration thus, offers the potential to enhance students' second/foreign language writing. It not only improves the quality of written texts in terms of the language and content, but also facilitates

joint construction of language and knowledge, and encourages peer feedback, which promotes student-centred language learning.

3   Wiki

The use of Wiki supports efforts to facilitate second/foreign language writing, particularly in developing students' writing skills in collaborative learning environments. The tool enables students to enhance their writing skills (Kost, 2011; Li, 2013; Mak & Coniam, 2008), promote interaction (Bradley, Linstrom, & Rystedt, 2010; Li, 2013; Li & Zhu, 2013), and focus on language forms (Elola & Oskoz, 2010; Kuteeva, 2011; Lee, 2010) and meaning (Kessler, 2009; Woo, Chu, Ho, & Li, 2011), which enhances the language learning process.

A number of studies have documented the potential that Wiki offers in promoting collaboration among language learners to enhance their writing. A study by Aydin and Yildiz (2014), involving the use of Wikis among learners of English who completed three writing tasks (argumentative, decision-making, and informative), revealed that these learners had positive experiences with the tool. The use of the Wiki in completing these tasks indicated a higher attention to meaning than form (Aydin & Yildiz, 2014). Wang (2015), who investigated the use of Wiki to improve the writing skills of learners of English for Specific Purposes (ESP), found that the students who collaborated on the Wiki not only enjoyed the experience, but gained mastery in writing for business purposes as well. The findings suggested too that the use of the Wiki encouraged the students' interest in learning the language, enhanced their writing abilities, and improved the collaboration skills that were important for success in the workplace (Wang, 2015).

In a recent study involving two groups of undergraduate ESL learners using Wiki in an ESP course, Li and Kim (2016) found that, while there were different patterns of interactions, which changed within each group across two identical tasks, the findings indicated that, pedagogically, Wiki was a useful tool for collaboration for small group writing. The usefulness of this tool, however, depended much on the instructional context, the communicative strategies of the participants, their personal circumstances, and the affordances of the tool to mediate the students' participation in the writing tasks (Li & Kim, 2016).

Thus, while there is potential in using Wiki to enhance students' writing skills in a foreign or second language, little is known about students' perspectives of using this tool in terms of their actual use of it compared to their non-use of it in the context of a university level academic writing programme for ESL/EFL learners. In particular, there is a dearth of educational technology research exploring their perspectives on the interaction, ease of use, motivation, and satisfaction they experienced in using Wiki to collaboratively plan, draft, and finalise their written assignment in an online environment. This study, which explores undergraduate students' perspectives of using Wiki for the first time, is guided by the following research questions:
- Did the use of Wiki support the students to interact when writing their academic assignment?
- Did the students find Wiki easy to use?
- How satisfied were these students in using the Wiki to write the assignment?
- Were the students motivated to use Wiki after this experience?

4   The study

This study explored the use of Wiki in an English for Academic Writing (EAW) course at a public university in Malaysia. The course is offered to ESL undergraduate students across the eight faculties in the university every semester to develop their skills in academic reading and writing. Lessons are conducted for two hours every week using a mass lecture delivery mode and each class consisted of approximately 100 students. The course exposed the students to the American Psychological Association (APA) referencing and citation style, paraphrasing strategies and writing genres (information and explanation). All course-based materials, submission of assignments, and communications were managed electronically via *Moodle*, the institutional learning management system.

Students are required to work in groups of three to complete the two writing assignments. It is a common practice for the students to meet face-to-face to plan, discuss, and finalise the drafting of their group's essay, but this approach is not always practical given clashes in students' schedules, as was the case with the first assignment for this study's participants. As such, the course instructor proposed the use of the Wiki and students were given the option to use this web tool for the second assignment. As these students had no prior experience with using Wiki, a brief explanation and demonstration session on how to use the tool was conducted in the classroom. The Wiki was provided via *Moodle* and a link was created for the students who indicated their willingness to use the tool.

4.1 Participants

The students who opted to use the Wiki for the second assignment in the EAW course were invited to participate in this study on a voluntary basis. Prior to the start of this study, they were briefed on its purpose and the need to complete a questionnaire and some open-ended questions after using the Wiki for the second assignment. A total of 50 students participated in this study and they comprised 86% (43) males and 14% (7) females. These students were from six different faculties and were at various stages of their academic programmes. The largest number of participants were from the Faculty of Resource Sciences and Technology with 21 (42%) students. The largest number, 17(34%), were in the third year of their academic programme. Most students enroll in the EAW course in the third year, as they are required to complete an undergraduate thesis before graduation. All participants reported using Wiki for the first time. The demographics of the participants are shown in Table 1.

Table 1. Demographic information of student participants

	Frequency	Percent
Gender		
Male	43	86.0
Female	7	14.0
Year of Study		
Year 1 Sem 1	11	22.0
Year 1 Sem 2	1	2.0
Year 2 Sem 1	14	28.0
Year 2 Sem 2	4	8.0
Year 3 Sem 1	17	34.0
Year 4 Sem 1	3	6.0
Faculty		
Applied and Creative Arts	1	2.0
Computer Science & IT	4	8.0
Economics & Business	13	26.0
Engineering	8	16.0
Resource Sciences & Technology	21	42.0
Social Sciences	3	6.0

4.2 Instrument

The study involved the use of a questionnaire, which was adapted from Hazari, North, and Moreland (2009). The original instrument was designed to investigate the pedagogical value of using Wiki in university courses based on four constructs: Learning/Pedagogy, Motivation, Group Interaction, and Technology (Hazari et al., 2009). It was first used to measure Business undergraduates'

views on the value of Wiki technology as part of a pilot study (Hazari et al., 2009). This question-naire was considered relevant to this study, as the items were closely related to the fundamental aspects of collaboration, which informs this research with regard to the constructs of *Learning/Ped-agogy, Motivation*, and *Group Interaction*. In addition, the items in the *Technology* construct con-cerns the tool, that is, Wiki, which is the focus of this study. However, there was a need to amend all items under each construct to reflect the context and purposes of this study, which were different from the conditions of the pilot study in Hazari et al (2009). A total of 20 items were constructed for the purpose of the present study. The amendment of the items resulted in the re-labelling of the constructs as some items were found to fit better in particular constructs. The following section explains how the items were organised according to the constructs.

4.3   Scale development

Exploratory factor analysis (EFA) was carried out on the survey items with the aid of SPSS Version 21 using the Principal Component analysis with Promax rotation, since the items are as-sumed to be inter-correlated. As a result, the highest loading for items was used as the criterion to categorize them into their relevant component. Table 2 shows that Items a1 to a7 have their loadings in the first component or latent variable (LV). Therefore, they were grouped under this LV which was renamed the Interaction factor. Likewise, Items b1 to b4 fall under the second component re-named the Ease of Use factor, and Items c1 to c4 were regrouped in the last LV and labelled the Satisfaction factor. Meanwhile, Items d1 to d5 were grouped under the LV referred to as the Moti-vation factor.

Table 2 shows that the correlation between the four latent variables was significant at the .01 level. The moderately positive correlations from the lowest of .44 to .76 suggest convergence of items within factors and divergence between factors.

Table 2. Correlation of factors

	Interaction	Ease of Use	Satisfaction	Motivation
Interaction	1			
Ease of Use	.44[**]	1		
Satisfaction	.76[**]	.60[**]	1	
Motivation	.63[**]	.74[**]	.73[**]	1

*** = Correlation is significant at the 0.01 level (2-tailed).*
n = 50

Scale reliability and validity of the new Wiki instrument were assessed. Table 3 shows the meas-urement model with the mean, dispersion, Composite Reliability (CR), factor loadings and Average Variance Extracted (AVE). Internal consistency of each items within their respective factors are based on the CR measure, because CR is a less biased estimate of reliability than Cronbach's Alpha and the acceptable value of CR is 0.7 and above (Fornell & Larcker, 1981). The Interaction factor has the highest CR value among the factors (.93), while the Ease of Use factor has the lowest (.89). However, with a CR of more than .70, they are all considered highly reliable measures. Convergent validity was investigated as well, using the Average Variance Extracted (AVE) of Fornell and Larcker (1981), who suggested that adequately convergent latent variables should have measures that contain more than 50% (.5) explained. As shown in Table 4, all the LVs have AVEs greater than .5, which is adequate to establish convergent validity. To show adequate discriminant validity, Hair, Black, Babin, Anderson, and Tatham (2006) note that "the variance extracted estimates should be greater than the squared correlation estimate" (p. 778). As it turns out, all the subscales showed sufficient discriminant validity as none of their AVEs was less than their respective shared correla-tions.

Table 3. Measurement model validation

Items	M	SD	Skewness	Kurtosis	Composite Reliability	Factor loading	Average Variance Extracted
Interaction							
a1	3.22	1.23	-.10	-1.01	0.93	.94	0.69
a2	3.28	1.14	-.16	-.74		.91	
a3	3.40	.97	-.20	-.42		.74	
a4	3.52	.91	-.23	-.70		.74	
a5	3.36	1.03	-.43	-.42		.89	
a6	3.46	.95	-.32	-.26		.88	
a7	3.48	1.02	-.25	-.56		.69	
Ease of Use							
b1	3.06	.94	.03	-.12	0.89	.86	0.66
b2	3.16	1.00	-.33	-.29		.85	
b3	3.28	.86	-.18	.07		.75	
b4	3.08	1.03	-.17	-.11		.79	
Satisfaction							
c1	3.48	.86	-.13	-.58	0.90	.85	0.70
c2	3.54	.93	-.36	-.73		.90	
c3	3.24	.94	.11	-.25		.82	
c4	3.42	.79	-.12	-.39		.78	
Motivation							
d1	3.64	.99	-.41	-.21	0.92	.90	0.69
d2	3.52	1.02	-.24	-.52		.91	
d3	3.34	.90	-.39	-.21		.89	
d4	3.28	.90	-.42	.30		.80	
d5	3.16	.84	-.32	-.42		.62	

The final measurement model of the ESL students' conception of the Wiki showing each factor with their respective items in Figure 1.
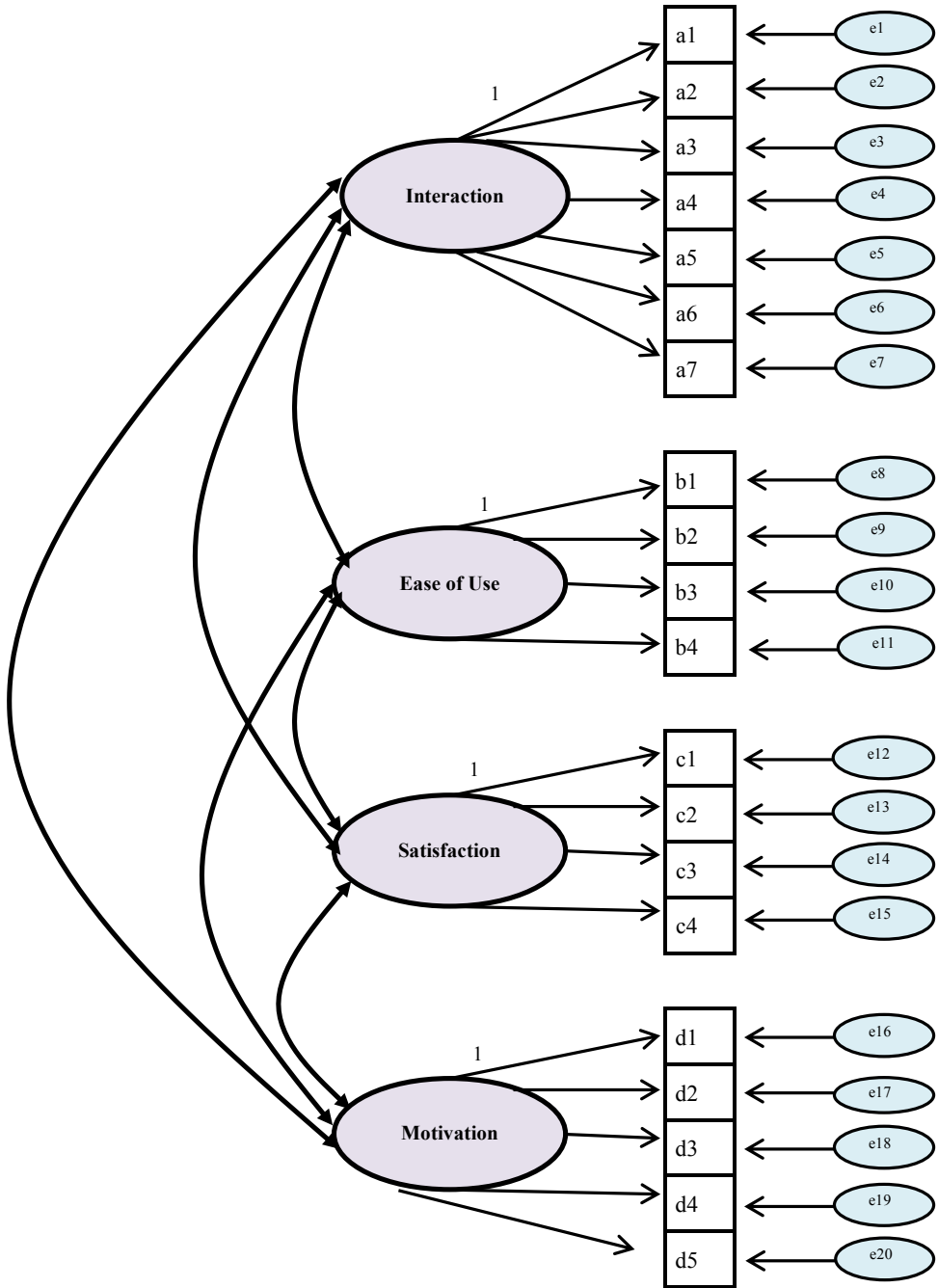
Fig. 1. A four-factor model of ESL students' conception of the Wiki

Therefore, the questionnaire to explore students' perspectives of using the Wiki to write their second writing assignment collaboratively was organised into four main constructs – Interaction, Ease of Use, Motivation, and Satisfaction (refer to Appendix 1). Each item was followed by a five-point Likert scale with the options "Strongly Disagree", "Disagree", "Unsure", "Agree", "Strongly Agree", coded as 1 to 5 respectively, with "Strongly Disagree" and "Strongly Agree" as anchors and "Unsure" as midpoint.

In addition to the questionnaire items, four open-ended questions were included to elicit the students' overall experiences of using the Wiki for the group-writing task. The four questions were as follows:

1. What did you like MOST about using Wiki for writing Assignment 2?
2. What did you like LEAST about using Wiki for writing Assignment 2?
3. Do you think working on Wiki helped you in writing your Assignment 2?
4. Other Comments.

The questionnaire was made available online using Google Form and a link to this form was provided via the university's Moodle for the students to respond. It was compulsory to respond to each questionnaire item, and students were allowed to indicate only one option in the scale provided. Similarly, the responses to the open-ended questions 1–3 were compulsory, while question 4 was optional. The students who opted to use the Wiki for completing the group-writing task were invited to provide the required information within a week after submitting the assignment. Students were assured that all responses provided were anonymous, private, and confidential. A total of 50 students responded to this online questionnaire.

The items in the questionnaire were further validated to ensure its reliability. According to Cuieford (1965), Cronbach's α value of 0.8 shows high reliability of the instrument. As shown in Table 4, the Cronbach's α values for Interaction (Cronbach' s α = .93), Ease of Use (Cronbach' s α = 0.851), Satisfaction (Cronbach' s α = 0.90), and Motivation (Cronbach' s α =.92) showed high reliability in the way the items measure the perceptions of the ESL students about the use of Wiki. The overall Cronbach's alpha was .95. The scale reliabilities for each factor are shown in Table 4.

Table 4. Scale reliabilities for each factor

Factor	No Items	Alpha Value
Interaction	7	0.93
Ease of Use	4	0.85
Satisfaction	4	0.90
Motivation	5	0.92
Overall	20	0.90

5 Findings

The findings on the four research questions, which reflected each construct (Interaction, Ease of Use, Satisfaction, and Motivation), are presented as follow.

5.1 Interaction

There were 7 items in the questionnaire in relation to Wiki's ability in supporting the group members to interact while they were working on their writing assignment. The items were labelled as a1–a7. Figure 2 shows the results for Items a1–a7.
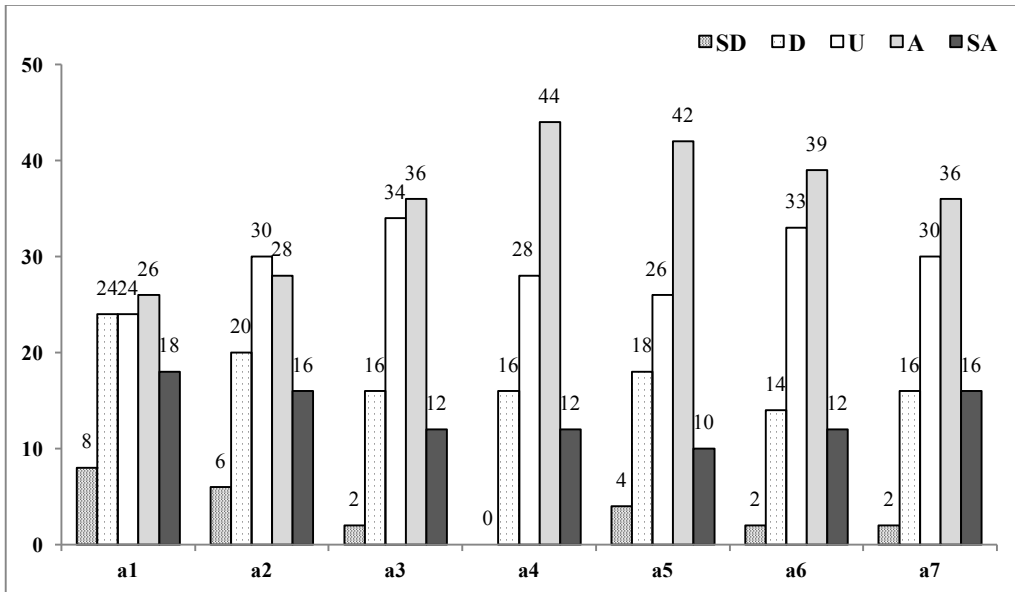
Fig. 2. Wiki's ability to support group interaction

For Item a1 "Compared to not using the Wiki, using the Wiki for writing Assignment 2 helped me to interact more with my group members", 8% of the participants strongly disagreed and 24% disagreed. This total percentage for disagreement was 32%. In contrast, 18% indicated strong agreement and 26% agreed that using Wiki helped them interact more with their group members while working on the writing task. Thus, the total percentage for agreement was 44%. A considerable percentage of students (24%) were uncertain.

For Item a2 "Compared to not using the Wiki, using the Wiki for writing Assignment 2 helped me interact easily with my group members", 6% of the participants strongly disagreed and 20% disagreed, making the total for disagreement 26%. In contrast, 16% strong agreed and 28% agreed with the item. Thhe total percentage for agreement was 44%. Similar to Item a1, a considerable percentage of students (30%) were uncertain.

For Item a3 "*Compared to not using the Wiki, using the Wiki for writing Assignment 2 enabled my group members to comment on my writing*", only 2% indicated strong disagreement and 16% disagreed. This makes the total percentage for disagreement 18%. On the other hand, 12% strongly agreed and 36% agreed, bringing the total percentage of students who felt that Wiki enabled their group members to comment on their own writing to 48%. However, the percentage of participants who indicated uncertainty for this item rose to 34%.

For Item a4 "*Compared to not using the Wiki, using the Wiki for writing Assignment 2 enabled me to comment on my group member's writing*", none of the participants strongly disagreed with the item, while 16% disagreed. On the other hand, 12% strongly agreed and a high 44% agreed, making the total for agreement 56%. This also indicates that more than half the participants perceived that Wiki encourages the individual student to say something about their peer's written work. Just like the previous item, many (28%) remained uncommitted.

For Item a5 "Compared to not using the Wiki, using the Wiki for writing Assignment 2 helped my group members complete Assignment 2 on time", 4% strongly disagreed, 18% disagreed with the item, bringing the total for disagreement to 22%. In contrast, 10% indicated strong agreement and 44% agreed. Similar to the results for Item a4, more than half the participants (52%) said that the Wiki had helped them to meet assignment deadlines. A slightly lower percentage of participants (26%) were unsure as to whether Wiki helped them to be prompt.

For Item a6 "Compared to not using the Wiki, using the Wiki for writing Assignment 2 helped me do writing Assignment 2 more effectively", only 2% indicated strong disagreement and 14%

checked "disagree". Thus, the total percentage for disagreement was 16%. In contrast, 12% strongly agreed and 39% agreed, bringing the total percentage for agreement to 51%. Similar to Items a4 and a5, more than half of the participants agreed that the Wiki enhanced their ability to write effectively. On the other hand, 33% percent of them indicated uncertainty.

For Item a7 "It would be good to use Wiki for other courses", the pattern is almost similar to the previous item, with only 2% strongly disagreeing and 16% disagreeing. This makes the total percentage for disagreement 18%. In contrast, 16% and 36% strongly agreed and agreed, respectively, indicating that more than half the participants (52%) agreed that other courses would benefit from the use of a Wiki. Approximately, 30% of the participants were unsure of its benefit for other courses.

5.2 Ease of use

There were four items in the questionnaire in relation to Wiki's Ease of Use. The items were labelled as b1–b4. Figure 3 shows the results for items b1–b4.
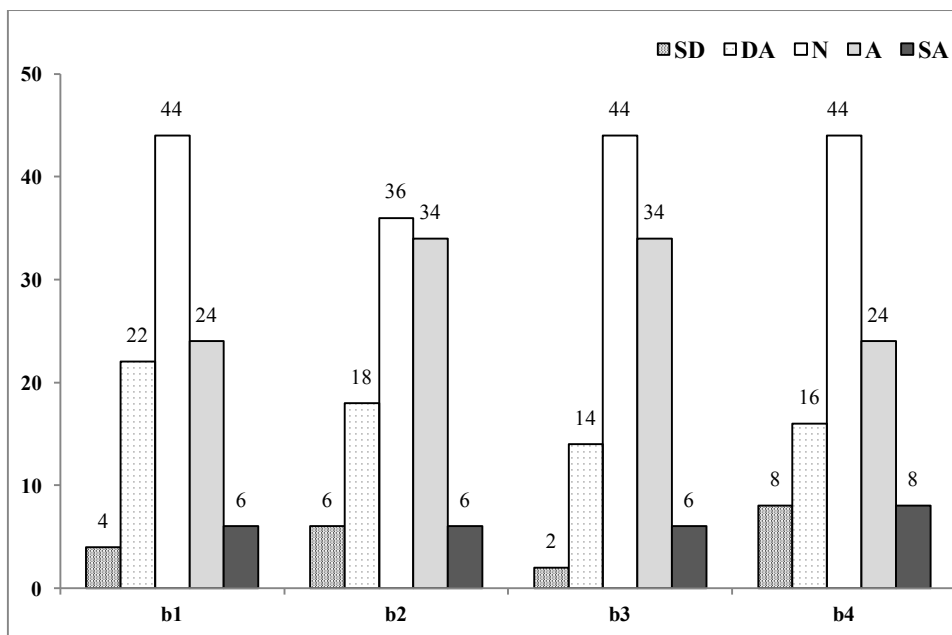

Fig. 3. Wiki's ease of use

For Item b1 "I did not face problems in browsing the information on Wiki", 4% strongly disagreed and 22% disagreed. This means the total percentage for disagreement is 26%. In contrast, 6% showed strong agreement and 24% agreed that they did not face difficulty in using Wiki for their writing task. Thus, the total percentage for agreement is 30%, which is only slightly higher than for disagreement. Similarly, a considerable percentage of students (44%) were uncertain.

For Item b2 "I did not face problems in editing the information on Wiki", 6% of the participants strongly disagreed and 18% disagreed, making the total percentage for disagreement 24%. In contrast, while only 6% agreed, a high 34% agreed with the item. This means that the total percentage for agreement is 40%. Similar to Item b1, a considerable percentage of students (36%) were uncertain.

For Item b3 "Technical features in the Wiki helped enhance my learning", only 2% indicated strong disagreement and 14% disagreed. This makes the total percentage for disagreement 16%. On the other hand, similar to item b2, 6% strongly agreed and 36% agreed, bringing the total percentage

of students who felt that Wiki enriched their learning experience to 42%. However, the percentage of participants who indicated uncertainty for this item rose to 44%, similar to item b1.

For Item b4 "I participated in Assignment 2 more because of the use of Wiki", 8% of the participants strongly disagreed with the item, while 16% disagreed. On the other hand, the same 8% strongly agreed and 24% agreed. This brings the total of students who agreed that using Wiki encouraged them to be more involved in completing the assignment to 32%, while the total for disagreement is lower at 24%. Just as for items b1 and b3, 44% remained unsure.

5.3   Satisfaction

There were four items in the questionnaire addressing participants' satisfaction in using Wiki. The items were labelled as d1-d4. Figure 4 shows the results for items c1–c4.
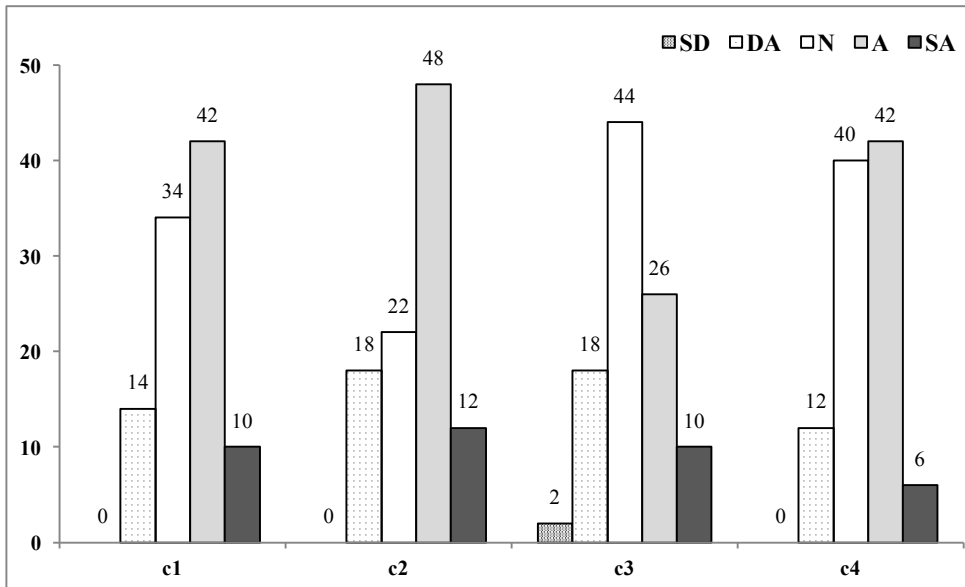

Fig. 4. *Satisfaction* in using Wiki

For Item c1 "Compared to not using the Wiki, using the Wiki for writing Assignment 2 was worth my time", none of the participants strongly disagreed, while 14% disagreed, making the total percentage for disagreement 14%. In contrast, 10% strongly agreed and a high 42% agreed with the item. This shows that almost half the participants agreed that using Wiki was worth their time. A lower percentage of participants (34%) were uncertain.

For item c2 "Compared to not using the Wiki, using the Wiki for writing Assignment 2 was worth my effort", only 2% of the participants strongly disagreed, while 18% 1disagreed, making the total percentage for disagreement 18%. On the other hand, 12% indicated strong agreement and a high 48% agreed, indicating that far more than half the participants (60%) were in agreement that using the Wiki in doing their assignment was worth it. The percentage of uncertain participants was far lower (22%).

For Item c3 "Compared to not using the Wiki, using the Wiki for writing Assignment 2 made me interested in the course", only 2% indicated strong disagreement and 18% disagreed. This makes the total percentage for disagreement 18%. On the other hand, 10% strongly agreed and 26% agreed, bringing the total percentage of agreement to 36%. In contrast, the percentage of participants who indicated uncertainty for this item rose to 44%.

For item c4 "Use of Wiki helped me achieve the writing objectives of the course", similar to Items c1 and c2, none of the participants strongly disagreed, while 12% disagreed. Thus, the total percentage for disagreement is 12%. On the other hand, 6% strongly agreed and 42% agreed, making the total percentage for agreement 48%. The percentage of participants who remained unsure was high at 40%.

5.4 Motivation

There were 5 items in the questionnaire addressing participants' experience in using the Wiki. The items were labelled as d1–d5. Figure 5 shows the results for items d1–d5.
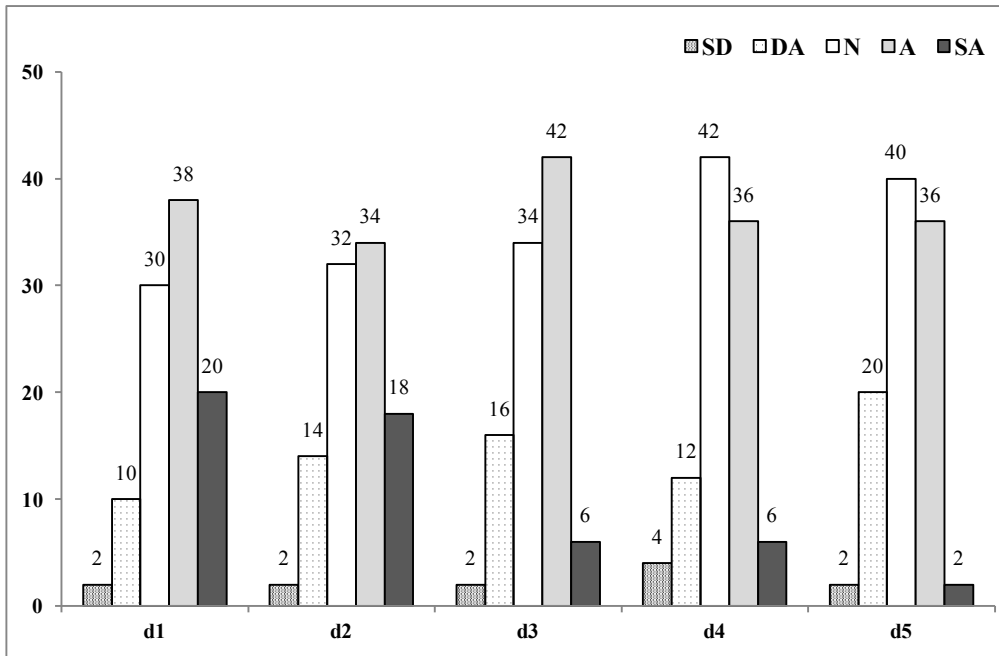

Fig. 5. Wiki as a source of motivation

For item d1 "I will continue to explore the use of Wiki", while only 2% strongly disagreed, 10% disagreed, bringing the total percentage for disagreement to 12%. On the other hand, 20% indicated strong agreement and 38% agreed, showing that more than half the participants (58%) said they would continue to discover the use of Wiki. The percentage of participants indicating uncertainty was 30%.

For item d2 "I will recommend my friends to use Wiki", only 2% indicated strong disagreement and 14% disagreed. Thus, the total percentage for disagreement is 16%. In contrast, 18% strongly agreed and 34% agreed, bringing the total percentage for agreement to 52%. Similar to the response for Item c1, more than half of the participants (52%) indicated that they would advise their friends to use Wiki. On the other hand, 32% indicated uncertainty.

For Item d3 "I found it easy to use the Wiki for writing Assignment 2", 2% of the participants strongly disagreed and 16% disagreed, making the total percentage for disagreement 18%. In contrast, 6% strongly agreed and a high 42% agreed with the item. This means that the total percentage for agreement is 48%. Rather similar to Item c2, 34% remained unsure.

For Item d4 "Use of Wiki enhanced my interest in the course", 4% of the participants strongly disagreed with the item, while 12% disagreed. On the other hand, 6% strongly agreed and 36% agreed. This brings the percentage of students who agreed that using Wiki increased their interest in

the course to 42%, while the total percentage for disagreement is lower at 16%. However, the percentage of unsure participants was the same as the total percentage for agreement (42%).

For item d5 "Use of the Wiki enabled me to remember what was learnt in the course", similar to Items d1, d2, and d3, only 2% strongly disagreed, while a higher percentage of 20% disagreed. The total percentage for disagreement is thus 22%. While the same percentage of 2% expressed strong agreement, 36% agreed, making the total percentage for agreement 38%. In contrast, the percentage of participants who remained unsure was slightly higher at 40%.

To provide an overall idea of these participants' perspectives in using Wiki to collaborate in a small group academic writing assignment, their responses for the items within the constructs investigated (Interaction, Ease of Use, Motivation and Satisfaction) were averaged. The results are shown in Figure 6.
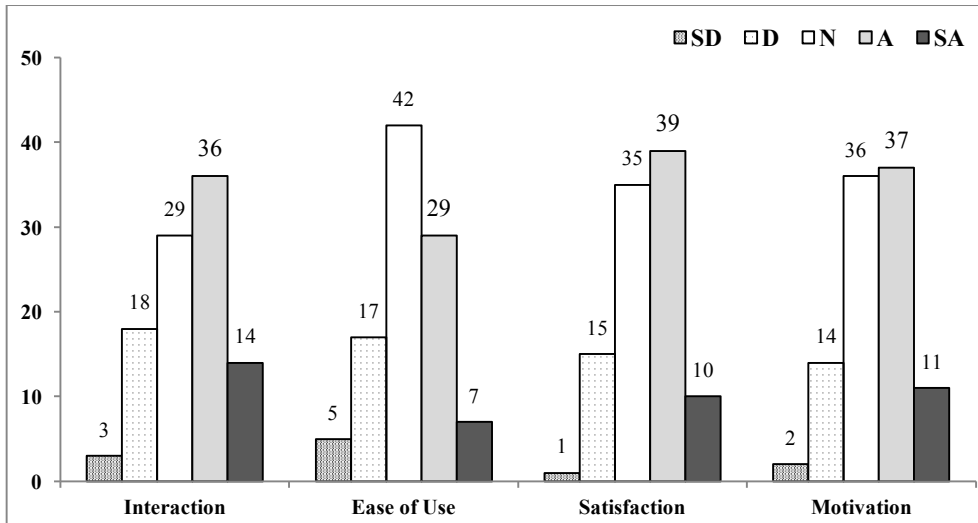

Fig. 6. Average of responses to the four constructs

As shown in Fig. 6., the overall results for the Interaction construct show that 14% of the participants strongly agreed and 36% agreed. This indicates that half the participants (50%) approved that Wiki has a positive impact on the interactions between group members while working on a writing task. In contrast, a total of 21% indicated disagreement, while 29% were unsure. Overall, the percentage for the Interaction construct is highest for agreement (50%), followed by uncertainty (29%) and disagreement (21%).

For the Ease of Use construct, 5% of the participants strongly disagreed and 17% disagreed, while 7% strongly agreed and 29% agreed. This indicates that the total percentage supporting Wiki's Ease of Use (36%) is higher than the total for disagreement (22%). Unlike the pattern for the Interaction construct, the overall results for Ease of Use show that the percentage for unsure is the highest (42%), followed by agreement (36%) and disagreement (22%). The rather high percentage for unsure responses is a cause for concern.

As for the Satisfaction construct, the overall results show that only 1% of the participants strongly disagreed and 15% disagreed. 10% strongly agreed and 29% agreed. Almost similar to the Motivation construct, the average percentage for uncertain responses was 35%. The overall results show that close to half the participants (49%) were satisfied in using Wiki for their writing task compared to only 16% who were in disagreement and 35% still unsure of their satisfaction with Wiki. The Satisfaction construct's overall pattern is again similar to the pattern observed for Interaction, whereby the total percentage for agreement is the highest, followed by unsure and lowest being the percentage for disagreement. However, the level of unsure responses is again a cause for concern.

The final construct investigated was Motivation. For this construct, while only 2% of the participants strongly disagreed and 14% disagreed, 11% strongly agreed and 37% agreed. On the other hand, the uncertainty level was 36%. This finding indicated that the total percentage supporting Wiki as a source of motivation for learning (48%) is more than double the percentage for disagreement (16%). Also, the agreement level (48%) is higher than the percentage for unsure responses (36%). Although the pattern is similar to the Interaction and Satisfaction constructs, the rather high percentage of those who are unsure of Wiki as a source of motivation is certainly a cause for concern.

The participants' responses to the items in the questionnaire are indications of their positive experiences in using Wiki's for their writing task. It is thus crucial to shed light on the possible reasons for the participants' negative and unsure choices. The comments given for the open-ended questions in the questionnaire were therefore analyzed. Five major themes emerged from the analyses of the participants' responses to the open-ended items in the questionnaire. These themes are lack of access to Internet, slow Internet connection, web browser compatibility, lack of familiarity, and lack of commitment from group members. Each theme is explained below.

A number of students mentioned that using Wiki requires them to go online. However, since they do not have Internet at home or at their hostel, it was not convenient enough for them to use Wiki. The excerpts below are evidence for the comments made.

> P3:   Since it (Wiki) is an online application, I need to connect to Internet when using it. Sometimes I have difficulties to find Internet connection on campus.
> P21: I have no Internet in the hostel so I can't access Wiki easily.
> P37: When I am at home, it's hard for me to access Internet.

Slow internet connection was mentioned as a challenge to access Wiki via Morpheus, as indicated in the following excerpts.

> P19: At times the Internet connection is slow, it delays my work.
> P43: Sometimes the Internet connection at my college is too slow so I couldn't access Morpheus.

Web browser compatibility was also a concern among the participants. Morpheus is a learning system through which Wiki becomes available to the institution's students and it works better on *Internet Explorer* and *Mozilla* but not with *Google Chrome*. This did pose some difficulties to users. The samples below are excerpts from *Google Chrome* users.

> P27: Could not use Google Chrome to open Morpheus, had to download Mozilla.
> P34: Does not perform well in Google Chrome.

For most students, this is their first experience in using Wiki for their writing task. Therefore, the instructor demonstrated how to use Wiki during one of the in-class lessons. Despite the approach, a few students mentioned having difficulties in using Wiki and expressed their preference to use other methods, as indicated in the excerpts below.

> P17: I write and edit in my draft in Microsoft Word, then I copy and paste on Wiki. It is easier this way compared to editing in Wiki.
> P9:   I did my part manually, then send to my group via email. I am not used to Wiki.
> P46: I am not used to using Wiki. I find it easier to draft the assignment by doing group discussion (face-to-face discussion) and using email to communicate. One person emails to the other person, edits it, then we submit it online.

The comments related to the lack of commitment from group members could have contributed towards the uncertain responses and negative responses. The excerpts below are examples of related comments.

> P16: Some group members did not contribute ideas in Wiki.
> P33: Not all the members of the group participated in drafting on Wiki. The checking and editing could not be done as not all members participated in drafting using Wiki.

As mentioned earlier, five major themes emerged from the analyses of the participants' responses to the open-ended items in the questionnaire. These themes are lack of access to internet, slow internet connection, web browser incompatibility, lack of familiarity, and lack of commitment from group members. The reasons related to these themes have to some extent contributed to the negative and uncertain responses to the ease of use of Wiki in writing collaboratively online.

6   Discussion

The findings indicated that Wiki supported the participants of this study in interacting when writing their academic assignment. These students believed that Wiki enabled a better interaction among their group members. It enabled group members to comment on their work. This outcome confirms findings from other studies that indicate that interactions occur when students work collaboratively on a writing task (Edstrom, 2015; Scotland, 2016). Furthermore, the findings affirm that Wiki is a useful tool that encourages students to interact (Bradley et al., 2010; Li & Kim, 2016; Li & Zhu, 2013).

However, in terms of the Wiki's ease of use, the participants' perspectives on this construct revealed that they experienced difficulties when using the tool. This challenge appears to be attributable to the lack of access to and the speed of the Internet connection, web browser compatibility, a lack of familiarity with Wiki as they were first-time users, and the commitment levels of members in the group when completing the assignment. It is possible that these factors would have contributed to participants indicating a sense of uncertainty in their responses to this research. The issues related to Internet connection and web browser compatibility are a matter of policy and beyond the scope of this paper, these challenges underscore the importance of reliable technological infrastructure (Henderson, Selwub, & Aston, 2015; Porter & Graham, 2015;) and the need to consider students' expectations of technology given its promotion as a convenient tool (Moskal, Dziuban, & Hartman, 2013; Thomsen, Sørensen, & Ryberg, 2016).

With regard to the issue of familiarity, it is possible that although a demonstration was conducted in class, the students may have understood it at varying levels (McBain, Drew, James, Phelan, Harris, & Archer, 2016). Demonstrations could have been repeated periodically, or upon request, or audio-visually recorded and made available online for students to help them recall steps they may have forgotten. The lack of commitment among members in the group when completing the assignment could be due to the students not recognising the demands required when writing collaboratively on Wiki. While collaborative writing activities empower students to share, produce, and develop ideas (Scotland, 2016), the usefulness of the Wiki as a tool to facilitate collaborative writing online is dependent on its affordance, how participants communicated with one another, their personal circumstances, and the instructional context (Li & Kim, 2016). As the Wiki enables group members and the instructor to view the level of student participation in the collaborative effort, participants who hardly or did not participate at all, thus displaying 'parasitic' behaviour, should be penalised. The penalty could be in the form of making them complete the task individually, or marks reduction. Another possible solution to ensure participation from all group members is to include marks for participation in the assessment rubric.

Further, the students were satisfied with the use of the Wiki to complete the writing. In particular, they considered the tool to be worth their time and effort, and to have helped them achieve the writing objectives of the course. This perspective seems to suggest that these students were satisfied with the use of this tool as it was time and effort effective. They could collaborate across space and time to contribute their ideas and provide their comments to the writing drafts (Franklin & Van Harmelen, 2007; Li, 2012; Lund, 2008), and finally complete the writing assignment on time so as to fulfil the writing objectives of the course.

Overall, the students perceived the Wiki as a source of motivation for them to continue exploring its use and recommending it to their friends. The positive feedback could be due to them recognising that the tool has enabled better interactions among their group members. It is possible that the interactions afforded by the Wiki could have enhanced their interest in the course and enabled them to

remember what they had learned. This affordance of the Wiki in enabling interactions and the completion of the assignment on time could thus be key to why these students considered the tool to be a cause of motivation. The usefulness of the tool is therefore dependent on its affordance (Li & Kim, 2016).

7   Conclusions

This study investigated students' perspective of using Wiki to collaborate in an English academic writing assignment. The students who participated in this study had never used Wiki to write collaboratively. Their perspective of this experience was investigated based on four constructs – Interaction, Ease of Use, Motivation, and Satisfaction.

The findings of the study showed that the students considered that their use of the Wiki for the first time as a tool enabled them to better interact when writing their academic assignment. In addition, there was a sense of satisfaction among the students. These experiences encouraged the students to continue to explore the use of Wiki and to recommend it to their friends. Despite the encouraging results, the findings also showed a high level of uncertain responses from the participants for all four constructs. This response was particularly rather high for Ease of Use. The analyses of the participants' responses to the open-ended items in the questionnaire revealed technical challenges related to Internet access, web browser compatibility, lack of familiarity and commitment from group members. Thus, while their use of Wiki for the first time did offer benefits, there is a need to address shortcomings in terms of technical support and the monitoring of students' participation level.

This study only used an online questionnaire that consisted of Likert scale items and open-ended questions. Future studies using other approaches such as interviews, observations, and content analysis of written assignments could be used to provide more details on students' use of Wiki to write collaboratively. Research exploring students' use of Wiki to collaborate in other types of tasks, such as group presentation and projects, is also needed.

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Appendix 1

Four main constructs – Interaction, Ease of Use, Motivation, and Satisfaction

Construct		Item
Interaction	a1	Compared to not using the Wiki, using the Wiki for writing Assignment 2 helped me to interact more with my group members.
	a2	Compared to not using the Wiki, using the Wiki for writing Assignment 2 helped me interact easily with my group members.
	a3	Compared to not using the Wiki, using the Wiki for writing Assignment 2 enabled my group members to comment on my writing.
	a4	Compared to not using the Wiki, using the Wiki for writing Assignment 2 enabled me to comment on my group member's writing.
	a5	Compared to not using the Wiki, using the Wiki for writing Assignment 2 helped my group members complete Assignment 2 on time.
	a6	Compared to not using the Wiki, using the Wiki for writing Assignment 2 helped me do writing Assignment 2 more effectively.
	a7	It would be good to use Wiki for other courses.
Ease of use	b1	I did not face problems in browsing the information on Wiki.
	b2	I did not face problems in editing the information on Wiki.
	b3	Technical features in the Wiki helped enhance my learning.
	b4	I participated in Assignment 2 more because of the use of Wiki.
Satisfaction	c1	Compared to not using the Wiki, using the Wiki for writing Assignment 2 was worth my time.
	c2	Compared to not using the Wiki, using the Wiki for writing Assignment 2 was worth my effort.
	c3	Compared to not using the Wiki, using the Wiki for writing Assignment 2 made me interested in the course.
	c4	Use of Wiki helped me achieve the writing objectives of the course.
Motivation	d1	I will continue to explore the use of Wiki.
	d2	I will recommend my friends to use Wiki.
	d3	I found it easy to use the Wiki for writing Assignment 2.
	d4	Use of Wiki enhanced my interest in the course.
	d5	Use of the Wiki enabled me to remember what was learnt in the course.