

## Civil and Geomatic Engineering Students' Communication Pattern at Survey Camp

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**Abstract:** This study investigates the communication pattern among civil and geomatic engineering students' during survey camp conducted at Lumut, Perak, Malaysia. This study also discusses the content of students' communication among peers and groups. The samples consist of 80 civil and geomatic engineering students from Kuala Lumpur Infrastructure University College. The samples were divided in groups and each group were given a task in remapping the area. The tasks involved engineering surveying techniques via levelling, traversing and detailing by tacheometry. The tasks were carried out in 10 days from 8am till 6pm. The interactions were taped and analysed accordingly. Selected extracts from the interactions were analysed and discussed by using the discourse analysis method. The findings showed that although there were difficulties in communication when handling the task given but towards the end the subjects' were able to fulfill the tasks. Students were able to communicate diligently among peers or groups. It is hoped that during survey camp, communication among peers and group would be the major priority in order to succeed in the tasks given.

**Key words:** communication, task, engineering, survey camp

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### INTRODUCTION

Communication is important in dealing with hands-on activities. Communication will be able to be comprehended by the listeners and speakers during hands-on activities and therefore it is crucial to speak in the target language appropriately (Normaliza Abd Rahim *et al.*, 2011). Thus communication will take place in a situation where both or more parties understood what is being discussed and talked about. Communication among small groups is recommended due to better understanding (Gullberg, 2006) since in smaller group; they tend to concentrate on the subject matter hence the tasks given will be carried out successfully without any barrier in understanding (Abdulwahed Ahmed Ismail, 2010). Therefore, relaying a receiving the messages were carried out successfully in smaller groups without any disturbance. Communication is crucial among engineers too. To be able to understand the importance of communication among engineers, they had to use the technical terms in order for better understanding. The technical terms were used to relate with the task given and therefore it is useful for speakers and listeners to be aware of the terms before starting with the task. A speaker of listeners whom are not aware of the terms might end up with confusion and misunderstanding of the task and therefore the major mistakes will occur and this will lead to bad products and outcomes by the engineers.

According to Oluga (2010:37) effective communication is about the dissemination of properly worded meaningful ideas/messages that are comprehensible to both parties and which ultimately can attract the desired response or feedback. Hence the semantic clarity is very essential to the effectiveness of communication towards the target goals and therefore ambiguity takes place (Oluga *et al.*, 2001). The objective of this study was to investigate the causes of ambiguity in human communication. The results of the study found that the causes of ambiguity were the use of ambiguous lexemes, omission of vital punctuations, use of double or multiple referent pronouns, multiple class membership of some verbs, use of non-restrictive adjectives, positional and directional interpretations of adjuncts, complex multiple modification of nominal groups, use of hanging clausal modifiers, clausal non-finiteness, and mixed quantification. Therefore ambiguity may constitute hindrance to proper comprehension and interpretation (Mariani, 2010) an obstacle to getting desired response/feedback and an impediment to the attainment of communicators' target goal (Dörnyei, 1995).

Research by Surapa Somsai & Channarong Intaraprasert (2011) revealed that there were strategies for coping with face-to-face communication in English among the Thai learners of English. The samples of the study were 48 students studying at three different Rajamangala Universities of Technology in Thailand. The instrument involved was a semi-structured interview and the obtained data were transcribed unfocusedly verbatim and translated from Thai into English. The translated data were then validated and analysed. The results of the study revealed that the two groups of strategies employed for conveying a message to the interlocutor as the message sender: continuous interaction and discontinuous interaction subcategories and one

group of strategies for understanding the message as the message receiver were reported. The results of this study were similar to the results by Ya-ni (2007) and Zheng (2004) where communication strategies were crucial to overcome barriers in communication.

Another research by Normaliza Abd Rahim *et al.*, (2011) revealed that subjects tend to communicate well in groups and they managed to use appropriate language in communication. Hence the target language was understood among the peers and they adapted the situation with the task given. The study involved two small groups of subjects from a college in United Kingdom. They were given a task on *One Stop Motion Animation*. The subjects involved were given four weeks to fulfill the task and the results found that they managed to discuss the theme, making the figurine, took photos for animation and organized the photos to make *One Stop Motion Animation* in one minute. It was also found that the subjects were confident when discussing with the group members and they were giving good ideas and comments during the process of finishing the task. The results of this study were similar to the study by Gullberg (2006) and Dobao & Martínez (2007) where good communication would lead to better understanding among speakers and listeners. The results also revealed that in order to communicate well, a person must be competent in the situation and language (Canale, 1983; Bygate, 2000).

According to Ng Lee Luan and Sheila Marina Shappathy (2011) negotiation is important during discussion. The study revealed that among 48 subjects participated in the study, 24 subjects took part in two way interactive task in information gap task. Learners in pair managed to describe the target vocabulary items in pictures. The results showed that learners who negotiated for meaning in the two-way task achieved higher vocabulary test scores. Negotiation took place actively among the 24 students involved in the interactive task and the subjects able to demonstrate their ability in negotiating for meaning despite their lack of proficiency in the language. As negotiated interaction has proved successful in enabling students to acquire and retain vocabulary items (Oliver, 2002) such interactive tasks should be encouraged in the classroom (Wilhelm & Pei, 2008; Zhao & Bitchener, 2007).

Based on the literature above, the objectives of the study were to investigate the communication pattern among civil and geomatic engineering students' during survey camp conducted at Lumut, Perak, Malaysia. This study also discusses the content of students' communication among peers and groups.

#### **Methodology:**

The study was conducted at Lumut, Perak Malaysia. The samples of the study consisted of eighty civil and geomatic engineering students from Kuala Lumpur Infrastructure University College. The samples were divided in groups and each group were given a task of remapping the area. The tasks involved engineering surveying techniques via levelling, traversing and detailing by tacheometry. The tasks were carried out in 10 days from 8am till 6pm. The interactions were taped and analysed accordingly. Selected extracts from the interactions were analysed and discussed by using the discourse analysis method.

## **RESULTS AND DISCUSSION**

The subjects seemed to be using a lot of technical terms during the discussion with their group members. This seemed to be normal since they were handling the task based on engineering survey where it needed to be mentioned during the discussion. Although at times, they were seen communicating about other stuff than the task given, they were seen focussed instantly. This was due to the fact that the tasks were tedious and needed more time to finish. As the subjects were completing the levelling, traversing and detailing by tacheometry task, it can be seen that majority of the subjects (87%) agreed that they would rather use geomatic engineering technical terms when communicating with peers. This was to make sure that they were using the right terms during the discussion. The subjects stated that, 'Using the geomatic engineering terms seemed to understandable among my friends', 'I would rather use the technical terms to express my disagreement on the results', 'I would express my disbelief with the results by using the geomatic engineering technical terms', 'Sometimes I would just use words from geomatic engineering technical terms by shouting at my friend during the task', and 'My friend was too far away holding the equipment so I would rather use words to signal to him'. The interactions given by the subjects above showed that the subjects seemed to be more comfortable in using the geomatic engineering technical communication terms compared to the usual informal communication among their peers. This might due to the fact that the subjects were aware of the terms and they used the words frequently during the task. All the subjects seemed to understand the terms and they had use the terms appropriately. Moreover, the subjects were comfortable to communicate among their peers since they knew what they were doing at that moment and the communication were understood among them. Therefore, communication with peers within the group seemed to have a positive feedback among them.

Other than that, when completing the levelling, traversing and detailing by tacheometry task, majority of the subjects (99%) would rather use geomatic engineering technical terms when communicating with peers from other groups. The subjects seemed to feel comfortable communicating with peers from other groups and they

felt that using the geomatic technical terms would make them felt at ease since everyone understood the meaning of each terms. Although the subjects stated that at times they did not use the technical terms but towards the end of the conversation, they had to use it in order for their peers to understand more. This seemed to be important since the other groups were not doing the same task as them but still they were able to concentrate and understand the meaning underling the conversation on the task. The subjects stated in the discussion like, 'I felt that the other group understood what we were doing!', 'Although our friends were not doing the same task, but they managed to understand instantly', 'I managed to understand the questions asked by the other group members', 'Although we were not doing leveling but we managed to interact with the other group members comfortably', 'Can you check our groups' work with the other group, whether they are using the correct formula to calculate the allowable misclosure for levelling work, or not' and 'Our group were doing the traversing and yet the other group managed to discuss on the same topic'. The interactions above showed that the subjects were able to communicate with the other groups by using the geomatic technical terms although the tasks were given differently among the groups. This showed that the subjects were aware with the all the task given and they were able to communicate and use the right terms. This proofed that the subjects were well prepared and had used the terms appropriately. The subjects were also seen contented with the discussion among the other groups since they were also aware that sharing information would give them the benefit.

Another pattern discovered from the subjects was that the subjects would rather use geomatic engineering technical terms when communicating during survey camp. Majority of the subjects (96%) agreed that they would prefer to use the geomatic engineering technical terms during survey camp. This was due to the fact that the subjects had to use the terms during survey camp since most of the tasks involved in stating the terms during communication. Although this situation is typical for technical tasks, but minority (4%) of the subjects seemed to disagree where they stated that they would not use the technical terms during survey camp. This might be the reason that the subjects were handling other stuff as in writing reports or just a member in the group whom listening to instruction but not giving the instruction. Moreover, the use of the technical terms was important for all the subjects in order to understand the task given to them. The detailing by tacheometry tasks like levelling and traversing needed technical terms in order to understand the situation and also to discuss the task among the group members. The subjects stated, 'I would only use a lot of geomatic engineering technical terms during survey camp', 'It is important to use the right technical terms during survey camp or else we might be in trouble', 'The technical terms that we used during survey camp helped us in understanding the tasks given', 'I would rather use the technical terms in order for me to understand the task', 'How is the progress of your detailing work? How many percent of the area that you and your group have covered so far?', and 'If I don't use the technical terms occasionally during survey camp, I might end up doing the wrong thing'. The interactions above showed that the subjects were happy to use the technical terms during survey camp. This might be that the subjects were confident to use the terms since it was really important to know and use the right terms during survey camp since survey camp was more practical and if the subjects had used the wrong technical terms, they might end up doing the wrong thing and with incorrect results. The interactions also revealed that the subjects were used to using the technical terms during survey camp and they were comfortable to use the terms with the group members. In fact, the group members would use the technical terms as well. It can be seen that the subjects referred to the lecturer when they were stuck with the technical terms that they wanted to use. This showed that technical terms were always used during survey camp.

Another communication pattern by the subjects showed that they would rather use geomatic engineering technical terms when communicating during free time at survey camp. Majority of the subjects (87%) agreed that they used the technical terms during their free time at survey camp. This was due to the fact that the subjects were discussing about the tasks given to them since they only had ten days to complete the task and the time given had to be used appropriately. The subjects seemed to use the technical terms during lunch, tea and dinner time and they were seen holding papers on clipboards that have the results of each task. They were seen discussing the subject matter and at the same time they were seen writing tables and numbers of the papers. Although they stated that they wanted to have a peaceful time on their own but it seemed that they were contented to use the time to complete the task and therefore the use of technical terms was heard. The subjects stated, 'Shall we just finish with the discussion at lunch!', 'We can use the dinner time later to complete the discussion', 'Dinner time would be nice since we can sit down and discuss about the progress of transferring the reduced level from the existing bench mark to the temporary bench march in our site area', 'Shall we just discuss this results after supper tonight!', and 'I will join the discussion tonight and we have to make sure that we finish till late'. The interactions above showed that the subjects were comfortable with the free time to be used by completing the tasks. The interactions also stated that the subjects were trying to complete the task and yet they did not complain about having to use their free time. This showed that the subjects understood the tasks given during survey camp and they had used their free time sensibly. The subjects were also seen agreeing to the suggestion given by their group members in having the discussion. This showed that the subjects had used the technical terms during their free time since the free time was used to complete the task given. Therefore

majority of the subjects were seen busy with their tight schedule since they have to present the results by end of the tenth day.

Another pattern by the subjects during survey camp had showed that majority of the subjects (99%) agreed that they would rather use geomatic engineering technical terms when communicating with the lecturers during survey camp. Only 1% disagreed since the subject had not even uttered a word to the lecturer since she had lost her voice for the whole ten days. The majority of the subjects had positive communication with the lecturer and they seemed to be very talkative and needed confirmation and answers from the lecturers. There were six lecturers involved in the survey camp and all of them were always around facilitating the subjects during completing the levelling, traversing and detailing by tacheometry. Although there was free time for the lecturers, the subjects were seen running to them if they got stuck with the tasks. At times, the subjects were seen looking for the lecturers during lunch, dinner, tea and also at night where the lecturers supposed to be resting. The subjects were seen sitting in groups while confirming about the tasks from the lecturers. Therefore the use of the technical terms was heard most of the time. The subjects stated, 'We are sorry that we disturbed your free time but we need to confirm about this task', 'The task that we did today seemed to have the wrong results!', 'What can we do to improve our surveying fieldwork so that when we repeat the work, we will be able to obtain the result that is within the allowable range of misclosure?', 'Can you help to check whether the results are fine!', 'The results here seemed to be wrong!', and 'Shall we use other equipment for this tasks?'. The interactions above showed that the subjects were anxious about the task. They felt that the tasks that they did were done wrongly and they had to seek for the lecturers help. They were using the technical terms appropriately since the lecturers were seen nodding their heads that showed that they understood what the subjects were saying. This also showed that the subjects had used the technical terms appropriately. The tasks were done successfully by the subjects but they were seen confirming with the lecturers. This showed that the subjects were doing the right thing and understood the instruction given in the tasks.

Besides that, the subjects seemed would rather use geomatic engineering technical terms when communicating during presentation. Majority of the subjects (96%) stated that they used a lot of technical terms during presentation. Although minority of the subjects (4%) disagreed that they had used a lot of technical terms but it seemed that these subjects were not involved in the presentation. They were only watching the presentation and this showed that they were not really involved with the group members. The subjects did not understand when using the terms and they would rather use other terms in the presentation. As such, the majority of the subjects seemed to favor using the technical terms since they stated that by using the terms, the other subjects would understand better and it was easier to present without lengthy explanation. The subjects were contented with the presentation by using the technical terms and were seen explained briefly since the objectives of the presentation were to present the results without having any dubious results. The subjects also stated, 'During presentation, I would rather have all the technical terms since I want it to be short', 'I would rather listen to short presentation but the results were fine', 'It is easier to present by using the geomatic technical terms as it makes the lecturers and other students understands about the presentation', 'Short presentation and a straight forward answers would be better with all the technical terms', and 'I understand clearly when the other groups presented with all the technical terms'. The interactions above clearly stated that the subjects were contented with the presentation which consists of technical terms. This was because they understood the content of the presentation clearly without having any doubt in the results. The subjects seemed to be précised with the answers from the presentation and it was obvious that they wanted straight forwards answers with the technical terms. The interactions above clearly supported the percentage given by the subjects where the subjects would rather use the technical terms during presentation. This way the presentation was to avoid mistakes in delivering the results during the presentation where subjects tend to misuse the discussion and presentation with unnecessary explanations. Hence, the use of the technical terms has helped the subjects during the presentation.

The results and discussion above revealed that majority of the subjects had used the technical terms in the tasks involved engineering surveying techniques via levelling, traversing and detailing by tacheometry. Besides having the confidence to use the technical terms, the subjects were also seen used a lot of the terms with the peers, with peers from other groups, the lecturers during survey camp, with peers during survey camp, with peers during their free time at survey camp and during presentation at survey camp. Although it was necessary for the subjects to use the technical terms but the subjects could also not use the terms since most of the subjects had other means of communication when dealing with geomatic engineering tasks and decision making. Therefore this study had showed that communication pattern by the subjects during survey camp has helped them in understanding the technical terms through practise. This study has parallel results with the research by Normaliza Abd Rahim *et al.*, (2011) and Ya-Ni (2007) where communication has played a major role during hands-on activities and discussion was appropriate for decision making. The study also has the similar results with the study by Gullberg (2006) where communication is important to have better understanding towards the task given and therefore it is crucial to communicate well in the appropriate scenario.

**Conclusion:**

This study implicates educators in engineering fields to enhance communication skills during hands-on or practical sessions. Since students from engineering field need communication skills, they also have to know the technical terms used in order to discuss appropriately. This study also implicates engineers to use the technical terms to have better understanding towards the task given and therefore lead to success in the project. It is important to know the technical terms so that there is no miscommunication during handling the tasks. It is hoped that future research concentrates on communication among engineers in handling big projects that involved more samples.

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