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Lecturer Perceptions toward the Teaching of Mathematics using English as a Medium of Instruction at the International Class Program (ICP) of Mathematics Department of the State University of Makassar

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Abstract: The objectives of the study were to find out the lecturers perception on: (1) the teaching and learning of mathematics using English as medium of instruction (EMI) at the International Class Program (ICP) of Mathematics Department of the State University of Makassar (UNM); (2) their students' English achievement after joining in the ICP program. The study applied qualitative research design. Interview was used to collect data. The participants were five lecturers from Mathematics Department. They were all mathematics lecturers (non-English lecturers) and most of them have limited English proficiency. The data were analyzed using Miles and Huberman's qualitative data analysis. The study found that despite many constraints have been found in the program implementation (e.g students and lecturers low English proficiency), the lecturers believed that the program has many positive outcomes (e.g improving students' confidence and fluency in using English, at the same time they could cope with the content materials).

1. Introduction

Over the past decade, there has been an increasing trend towards implementing English as a medium of Instruction (EMI) both in private and public schools in many Asian countries. This trend is not only found in Commonwealth countries, such as Malaysia[1][2] but also in countries which have strong economic growth, such as Japan [3][4]. Similarly, in Indonesia, in 2006, in junior and senior secondary school context, EMI was systematically introduced, with programs being conducted as one stream in specially resourced government schools, called 'international standard schools' (RSBI).

The effect of the policy does not just affect secondary school level, but also tertiary education. Many universities located in the big cities of Indonesia also introduce English-Indonesian bilingual program in order to improve the quality of their graduates. In South Sulawesi Province, one of the universities which conducted bilingual (EMI) program is International Class Program (ICP) of Mathematics Department of Mathematics and Science Faculty of the State University of Makassar (UNM). This change in policy is congruent with to significant development and understandings in second language acquisition that emphasize the role of meaningful and understandable input [5]. Whilst this move may be seen as desirable and progressive, it is one that changes the dynamics of teaching and learning mathematics in the Indonesian university contexts.

Lecturers and students who have been teaching and learning in Indonesian are expected to perform effectively in English. This change of course has some consequences, especially concerns about the



lecturers competency [6]. On one hand we have students who must learn mathematics in English, and on the other hand, we have lecturers, who themselves have proficiency problems in the new medium of instruction [7]. When the competency of the lecturers themselves becomes questionable, what more can we expect of lecturers of mathematics?

Therefore, it is important to understand the perceptions and attitudes of these lecturers and their students towards the teaching of mathematics in English in their universities. As Pandian and Ramiah (2004) pointed out, what teachers know and can do, affect all the teaching practice. In addition, several studies [8][9] have emphasized the role of teachers in influencing students' behaviors.

In order to explore the phenomena being studied, research questions were formulated as follows:

What are the lecturers' perceptions towards the teaching and learning of mathematics using English as medium of instruction at ICP of Mathematics Department of UNM?

What are the lecturers' perceptions on their students' English achievement after joining the program?

2. Research Method

This study aimed at investigating the lecturers' perceptions on the EMI implementation in their university by using qualitative research design. Interview was used as data collection instrument [10]. Five lecturers of the International Class Program (ICP) of Mathematics Department of the State University of Makassar (UNM) have been selected as participants of the interviews. The selection for respondents for the interview was vested on the purposive sampling method and was based on the fit of the typical condition in order to yield information-rich case, such as, teaching experience, levels of education, the results of TOEFL prediction test, and subjects to be taught in the EMI programs as well as their willingness to participate. The questions for the interview were adapted from [11]. To accomplish this purpose, semi-structure interviews were conducted on a smaller sample for cross validation purposes [11]. The interviews were tape recorded, transcribed and translated by the researcher. The data were analyzed using coding technique [12].

3. Findings

3.1. The lecturers perceptions towards the teaching and learning of mathematics using English as medium of instruction at ICP of Mathematics Department of UNM

The five lecturers who have been interviewed in this current study agreed that they are happy to teach in the program. Lecturer 1, Amir (pseudonym), for example said that *"I am happy to teach in this program because I could explore more about mathematics not only in Bahasa but also in English"*. Therefore, he suggested that the EMI program in his university needed to be ongoing. He pointed out:

I am happy if this program continues because the students have already had many additional achievements. For example, in the past, they just knew general English. Now they know English for mathematics (Amir, interview, July 2017).

Similarly, Lecturer 2, Fitri (pseudonym), a female lecturer in the program, said:

The students have been enjoyed in this program, if it is stopped then .. they will become... disappointed (Fitri, interview, July 2017).

Whilst the lecturers' comments suggest support for the concept of the program, they also believe that there were some obstacles in the program implementation. The current study found three main obstacles, namely: lecturers' low English proficiency, lack sufficient of English for mathematics materials, and lack of English environment in the campus.

The most common constraint was teachers' low English proficiency. The lecturers' participants in the study admitted that they experienced difficulties in teaching mathematics in English due to their lack of English proficiency. For example, Amir commented *"of course, the main problem is language [English]"* (interview, July 2017). Furthermore, Lecturer 3, Ahmad (pseudonym) and Lecturer 4,

Basri (pseudonym) argued that since they have limited English proficiency, they need more time to explain and clarify content materials.

Maybe what the teachers mean is different with what the students understood. Therefore, I have to repeat and repeat again to make sure the students understood ... (Ahmad, interview, July 2017).

Sometimes there was misunderstanding or miscommunication between students and teacher, so we need to clarify in Indonesian (Basri, interview, July 2017).

Another factor that may detract from EMI implementation was lack of sufficient of English mathematics materials. Ahmad for example, argued that *“we [lecturers] need more materials from overseas publishers because so far we just used materials written by the lecturers which is I reckon it is not satisfying”*.

The lack of English environment is also become the main problem for the majority of the lecturers. Lecturer 5, Sudarman (pseudonym), for example, argued that once his department agreed to commit to implementing an EMI program, it was essential that the initiative had support from all members of the faculty community. He said: *“So far, we do not have any commitment...”* (Sudarman, interview, July 2017).

3.2. The lecturers perceptions on their students' English achievement

In terms of the lecturers perceptions on their students' English achievement, one of the lecturers (Sudarman) who was interviewed believed that after studying at ICP programs, the students' English was not improved. According to Sudarman the students' English achievement *“depends on the students' efforts”*. However, four other lecturers believed that their students English improved. Basri, for example, said *“I think, there is an improvement”*. Similarly, Fitri said the students English improved *“because in the past they just got English lesson, now [they get] mathematics in English and this leads to the improvement on vocabulary”*. (Interview, July 2017).

Similarly, Amir, focused particularly on an increased opportunity to hear English. He pointed out:

In regular classes, they just use English during the English subject, while in bilingual [ICP] program, all mathematics subjects including English lesson they always hear English

In addition, Ahmad believed that *“They have high motivation to learn English, therefore they have better English compared to regular students”* (Interview, July 2017).

Therefore, in the EMI learning context at International Class Program of Mathematics Department of UNM, there appears to be a cycle of learning need and motivation that is mutually reinforcing.

4. Discussions

In terms of lecturers' perceptions on EMI program, despite them perceiving that there is not sufficient bilingual material in their schools, the majority claimed to be enjoying teaching in the EMI program. There was quite strong endorsement from lecturers that the program should be continued because the program concept was seen as bringing benefits to both students and lecturers. The lecturers believed that through the program, students are able to improve their English. Furthermore, lecturers also can benefit from the program because through the program, they can improve their English (e.g. speaking and vocabulary), and they were more motivated and able to read books from overseas.

The lecturers commented on several factors that potentially detracted from program implementation. The main concern related to lecturers' low English proficiency levels. In many bilingual programs in other non-English speaking countries, such as Korea and Thailand, they use native speakers to teach in the classrooms or employ local lecturers who have excellent English proficiency [13]. Researchers [14-16] have all emphasized that in order to produce effective language learning interaction, lecturers should have good L2 proficiency. In addition, the lack of opportunities for lecturers and students to engage in and practice their English skills impacted negatively on EMI program implementation. This finding is contrary to the common portrait of the EMI program in other contexts where the use of target language in the school or university environment is strongly encouraged [17].

5. Conclusions

There were still many challenges in the EMI program implementation at the International Class Program (ICP) of Department of Mathematics of UNM, such as lecturer limited English proficiency, lack of sufficient of bilingual materials, and lack of English environment at the campus. However, the lecturers believed that their students have benefitted from the program in terms of their confidence and fluency in using English. In addition, the lecturers also motivated to explore more challenge materials in order to teach in this program. Therefore, it is suggested that the ICP Program still need to be continued. Since this study only focus on the lecturers' perception, further study on students' perception on learning mathematics using English and the actual teaching and learning process in the classroom is encouraged to be conducted.

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