

TECHNICAL INSTRUCTIONS IN ENGLISH: VOICES OF TECHNICAL LECTURERS

S.Thivviah Sanmugam
Sultan Azlan Shah Polytechnic
Email: thivviah@psas.edu.my

Raja Nor Safinas Raja Harun
Faculty of Language and Communication
Universiti Pendidikan Sultan Idris

ABSTRACT

This descriptive study examined the perceptions of technical lecturers towards the teaching of technical modules in English at a polytechnic in Malaysia. A questionnaire consisting four main aspects of perceptions mainly readiness, attitudes, problems and training needs were used for the purpose of data collection. Data were collected from 75 technical lecturers through the questionnaires, which were then analyzed to get the value of frequency and percentage score meanwhile interview data were qualitatively analysed with initial descriptive codes being assigned to lecturers' responses. This study will allow relevant authorities to identify the perceptions and training needs of the technical lecturers and to provide appropriate in-service training in order to facilitate these lecturers who are entering the new domain of teaching content subjects using English as the medium of instruction.

Keywords: *English as the Medium of Instruction, Technical Lecturers, Readiness, Attitudes, Training Needs*

1 INTRODUCTION

The English Language has established itself as a “killer language” (Coleman, 2006) and continues to emerge as the global lingua franca sweeping across the academic setting worldwide. Many countries, including Malaysia in 2003 have re-adopted English as the medium of instruction for science and mathematics in order to meet the demand of technological advancement and academic internationalization. This top-down policy replaced Bahasa Melayu, which was the main lingua franca for education since independence. The reverse in language policy, which was first implemented in schools, gradually took its place at higher learning institutions in Malaysia. At higher education levels, teaching content subjects in English has become a current trend worldwide (Crystal, 2003; Coleman, 2006; Graddol, 2007). The higher education policy, which includes intensifying internationalization, spearheads towards not only attracting international students to embark on studying in Malaysia, but also producing local graduates who are able to compete in the global arenas (*Pelan Tindakan Pengajian Tinggi Negara Fasa 2 (2011 – 2015): Mencetus Transformasi Pengajian Tinggi, 2011*). To keep abreast with the demands of globalization and the aspirations of the higher education policy, polytechnics and community colleges have gradually commenced the use of English as the medium of instruction of all content subjects since 2008.

Technical lecturers who are not language specialists will now have to cope with the demand of teaching and learning of technical subjects in English. Most research done so far focused on the school teachers needs, attitudes and problems in the teaching of mathematics and science in English (Pandian et al., 2004; Norzita, 2004; Kon, 2005; Noraini, 2007; Hudson, 2009) but a very few research is conducted on the perceptions of Technical lecturers, specifically in the context of Malaysian polytechnics. Therefore, to better understand the current situation in the teaching and learning of technical modules at Polytechnic, this study intends to find out the views of the technical lecturers in relation to the new medium of instruction, that is English.

1.1 Statement of the problem

The change in the medium of instruction in the teaching of content subjects in English is seen as an important innovation affecting lecturers at polytechnics. In order to train them to be able to cope with the change, the Training and Career Development Division, Department of Polytechnic and Community College Education had conducted a training programme based on the Training Needs Analysis conducted in early 2006 to train lecturers. The proficiency training or better known as PPSMTI course has been conducted in three phases from 2007 to 2008 with the objective of equipping the teaching staff, in particular technical lecturers with certain level of English proficiency so that they will be able to conduct their lessons in English effectively.

However, it must be realized that as the result of the former education policy that gave full emphasis to Bahasa Melayu as the medium of instruction, the current batch of lecturers is not as proficient in English as their older colleagues, many of whom are about to or have

retired. The older batch of lecturers who had their training in English may also find this new change in the education policy a challenge as their professional experience has largely involved the use of Bahasa Melayu as the medium of instruction (Pandian et al., 2004). Given this scenario, polytechnic lecturers now must teach the content that they are familiar with using an unfamiliar language. Lecturers who have been teaching and learning in Bahasa Melayu are now expected to teach content subjects effectively in English. Learners too may fail to understand academic concepts through the language they are still learning because their subject content teachers are incapable of assisting them to do so (Crandall, 1998).

1.2 Objective of the study

In order to understand the task at hand, it is important to understand the perceptions and needs of these technical lecturers towards the teaching of technical subjects in English. Specifically, this study aims to investigate:

- i. The level of readiness of the technical lecturers towards the teaching of technical modules in English.
- ii. The attitudes of these lecturers in using English to teach technical modules.
- iii. The difficulties faced by these lecturers in using English to teach technical modules.
- iv. The various training needs perceived by these lecturers to teach technical modules in English.

2 REVIEW OF RELATED LITERATURE

There is a plethora of research that has been carried out internationally and locally concerning English as the medium of instruction. Camilla Vizconde (2006) conducted a study on the attitudes of student teachers towards the use of English as the medium of instruction for science and mathematics in Philipines. Data were collected through interviews conducted with sixteen student teachers from two leading teacher training institutions in Philipines. The results indicated that the respondents adhere to the use of English, however they do not agree with the sole use English as the medium of instruction as comprehension of the students are affected. Nevertheless, the respondents agreed that English is an important language at present and admitted that knowing how to speak English is an advantage.

A similar study was carried out in South Africa by Mandie Uys et.al (2007) for the purpose of conducting a situation analysis to determine whether there was a need for specialised training for English second language medium of instruction teachers. A qualitative and quantitative survey was conducted among three study populations of second language medium of instruction teachers for data collection purpose. The results showed that although the content lecturers recognized their responsibility to teach language skills in the content classroom, the majority failed to carry out these duties in the classroom as they not only lacked the language proficiency skills for teaching the four language skills, but also lacked the spoken and written language proficiency required to assist their students.

Furthermore, it was found that none of the content teachers had received training that prepared them for effectively teaching through the medium of English. The results stressed the need for developing an appropriate training course to assist the content subject teachers.

Mansoor Ahmed Channa (2012) investigated the perceptions of seven science teachers towards English Language as medium of instructions in a university at Pakistan. The data were collected through classroom observations and semi structured interviews. The results gave mixed reactions from the teachers as more than half of the participants regarded English language as medium of instructions determines their success in future to meet their global and future needs. However, these participants also showed dissatisfying factor that related to the use of English Language Medium Instruction in teaching and learning process in the classroom by encouraging L1 or local language.

In Malaysia, a study entitled the readiness of future technical teachers to teach in English was carried out by Masita Misdi et. al (2008) with 140 future teachers from the Faculty of Technical Education in University Tun Hussein Onn Malaysia (UTHM). Data collected through the questionnaires were then analyzed to get the value of mean, frequency and percentage score. The findings of the study revealed that the readiness level among the respondents were in the medium range level. Besides that, it was also found that the respondents are positive towards the implementation of English as the medium of instruction although they lacked confidence and proficiency in using English.

The studies above justified the special interest regarding teachers' attitudes and readiness towards English as the medium of instruction and has yielded information that would benefit the instructors and the policy makers. This study filled the gap on exploring the technical lecturers' attitudes, readiness and challenges in teaching technical subjects in English in a technical higher learning institution, specifically the polytechnic. In addition, this study further explored the training needs of these technical lecturers in order to develop suitable training programmes that would help them to teach technical subjects in English.

3 METHODOLOGY

This study deployed a survey method to obtain feedback from technical lecturers from Politeknik Sultan Azlan Shah. The subjects selected for this study consisted of technical lecturers who are teaching technical modules to Certificates and Diploma students of engineering from three various engineering departments – namely the Civil, Electrical and Mechanical Engineering department. A total number of 75 technical lecturers were chosen to be the subjects. Purposive sampling technique was used and the size of the samples are decided based on the fact that these are the number of lecturers who attended a one-day course entitled 'Voices of Technical Lecturers' in June 2010. In addition, these lecturers had been teaching the modules in question since the implementation of new medium of instruction in the teaching of technical modules and had attended all the 3 phases of Teaching and Learning of Science, Maths and Technical subjects in English (PPSMTI) courses in 2007 and 2008. The questionnaire used for the purpose of this study was adapted from a study entitled *The Professional Preparation of Malaysian Teachers in the Implementation of*

Teaching and Learning of Mathematics and Science in English conducted by Noraini et al., (2007) which was retrieved from the Eurasia Journal of Mathematics, Science & Technology Education Vol. 3(2). It was then modified to suit the context of this research. Five open-ended questions were added to the questionnaire to enable the samples to state their views. In addition, semi-structured interviews were also conducted on a smaller sample for cross-validation purpose. The data collected from this questionnaire were analyzed to get the value of frequency and percentage score using descriptive statistics meanwhile interview data were qualitatively analysed with initial descriptive codes being assigned to lecturers' responses.

4 RESULTS AND DISCUSSION

This subsection describes the results obtained from analysis of the data collected from the questionnaire. It is organized into six subsections; the first three sections on the technical lecturers' professional readiness to teach technical modules in English followed by sections on technical lecturers attitudes and problems encountered in using English as the medium of instruction and the last section is on the training needs perceived by the technical lecturers' to teach technical modules in English.

4.1 Technical lecturers' readiness in using English as the medium of instruction

Table 1: Technical lecturers' readiness in terms of language skills –speaking, reading, and writing in English

Item No.	Technical Lecturers' Readiness to Teach Technical Modules in English	Strongly Disagree	Disagree	Agree	Strongly Agree
1	I am ready to speak in English during my lectures.	14 (18.7)	34 (45.3%)	19 (25.3%)	8 (10.7%)
3	I understand technical reading materials in English.	6 (8%)	11 (14.7%)	40 (53.3%)	18 (24%)
4	I can write technical instructional materials in English.	15 (20%)	31 (41.3%)	21 (28%)	8 (10.7%)
5	I can construct test items in English.	12 (16%)	32 (42.6%)	20 (26.7%)	11 (14.7%)
6	I can deliver instruction of technical modules in English.	12 (16%)	34 (45.3%)	18 (24%)	11 (14.7%)
10	I can pose questions to students in English.	2 (2.7%)	10 (13.3%)	44 (58.7%)	19 (25.3%)
11	I can respond to students' questions in English.	5 (6.6%)	17 (22.7%)	36 (48%)	17 (22.7%)

This subsection presents the result of analysis on technical lecturers' professional readiness in terms of language skills—speaking, reading, and writing in English. As shown in Table 1, a substantial majority of the lecturers agreed that they are ready to pose questions to students in English (84%), ready to understand the technical reading materials in English (77.3%), and ready to answer students' questions in English (70.7%). However, a considerable percentage of lecturers disagreed that they are ready to speak in English during lectures (64%) and to deliver instruction of technical modules in English (61.3%).

It was found that generally these lecturers are aware of technical discourse but are unable to communicate the linguistic elements of this form of discourse to their students. They find it difficult to explain concepts in English. As Lecturer E pointed out:

“My students cannot understand simple instructions in English and it is even more difficult to explain technical terms in English. Even if I teach in Bahasa Melayu they don't understand, what will be the result if I taught in English?”(E1).

Further, 61.3% of the lecturers also reported that they are not prepared to write technical instructional materials in English and 58.6% admitted that they are not ready to construct test items in English. Writing in English for bilingual lecturers is of course not without its hurdle. Reasons given were lack of vocabularies and difficulties in writing correct grammatical sentences.

Table 2: Technical lecturers' confidence to teach technical module in English

Item No.	Technical Lecturers' Readiness to Teach Technical Modules in English	Strongly Disagree	Disagree	Agree	Strongly Agree
2	I feel confident to speak in English.	17 (22.7%)	33 (44%)	18 (24%)	7 (9.3%)
8	I feel confident that students can understand my teaching in English.	15 (20%)	31 (41.3%)	20 (26.7%)	9 (12%)
9	I feel confident to teach technical modules in English.	15 (20%)	33 (44%)	18 (24%)	9 (12%)

Table 2 presents the frequencies and the percentages for the items pertaining to technical lecturers' readiness in terms of confidence. As shown in Table 2, a significant percentage of lecturers reported that they are not confident to speak in English (66.7%) and admitted that they are not confident that students will be able to understand their teaching in English (61.3%).

As shown in Table 2, they also reported that they are not confident to teach technical modules in English (64%) mainly because they are all trained in Bahasa Malaysia and also due to their students' poor level of English proficiency. The results are quite reflective that

these lecturers' are still unprepared in terms of confidence to use English. This resonates with what Lecturer C and Lecturer D said during the interview:

“I’m not confident and comfortable to speak in English. I’m worried if I speak in English the grammar is wrong. My students and friends will laugh at me” (C2)

“The truth is I’m afraid when I teach in English. I’m also shy to speak in English and have no self-confidence. My students also not understand what I teach. Students will ask lecturers to teach in Bahasa because they don’t understand. When I was in university, almost every lecturer are teaching in ‘Bahasa Campur’, not fully in English”(D2).

Table 3: Technical lecturers’ readiness to assist students in English during lectures

Item No.	Technical Lecturers’ Readiness to Teach Technical Modules in English	Strongly Disagree	Disagree	Agree	Strongly Agree
7	I can guide students to use English in learning technical modules.	12 (16%)	32 (42.7%)	18 (24%)	13 (17.3%)
12	I can solve weak students learning problems in technical modules when they learn in English.	14 (18.7%)	35 (46.6%)	14 (18.7%)	12 (16%)

This section describes the results obtained from the analysis on technical lecturers’ readiness to assist students in English during lectures. About 58.7% of the lecturers’ disagreed that they can guide students to use English in learning technical modules and 65.3% disagreed that they can solve weak students learning problems in technical modules when they learn in English. The results were quite apparent that apart from managing their own language inadequacies, these lecturers also face the burden of managing the language development of their students in respect to their content subject. This reverberates with what Lecturer A reported during the interview session:

“The major problem is my students English. They come from different level of proficiency. They don’t even understand simple technical terms like balance, barriers, constant etc. Students will ask lecturers to teach in Bahasa because they don’t understand” (A2).

4.2 Technical lecturers’ attitudes in using English as the medium of instruction

In response to the technical lecturers’ attitudes, these lecturers were questioned on their motivation and their stand towards the use of English as the medium of instruction for technical modules.

Table 4: Technical lecturers' motivation to teach technical modules in English

Do you feel motivated to teach technical modules in English?	Quantity/Percentage
Yes	48 (64%)
No	27 (36%)

It was found that 48 technical lecturers (64%) reported that they felt motivated to teach technical modules in English. This included both senior and junior lecturers, thus dispelling the notion that their education background (in terms of medium of instruction) might have influenced their perceptions. The majority of the sampled technical lecturers were motivated to teach technical modules in English as they felt it provided them opportunities to improve their speaking skills in terms of proficiency in English. Despite the majority of these technical lecturers being positively motivated, 27 (36%) of them felt otherwise due to the fact that students were not able to understand what was being taught. Another reason, which was very important, was the fact that these lecturers felt they were compelled to teach technical modules in English as it was ordered by the ministry and thus, had no choice but follow the orders. As Lecturer B mentioned:

“What am I to do? We have students from the rural area who are weak. Anyway, this is a do or die mission, we have to do it” (B3).

The study also investigated the sampled technical lecturers' perceptions on the change in the medium of instruction in teaching Technical modules in English.

Table 5: Technical lecturers' opinions on the teaching of technical modules in English

What is your opinion about the change in the medium of instruction in teaching technical modules in English?	Quantity/Percentage
For the change	49 (65.3%)
Against the change	26 (34.7%)

Based on Table 5, the majority of the sampled technical lecturers' (49) felt that the change was a good one. They felt this change would benefit both lecturers and students, as it would help train them to use English more frequently. More importantly, they said that the change was advantageous to students in the sense that it would be of help to them when they needed to refer to reference books or the Internet for more information regarding what they had learnt. This would indirectly prepare them to face English reference books in university libraries if they continue their education to degree level. As Lecturer A commented:

“It is important as English is the international language now and many researches and books are in English, so there is a need for us to learn in English” (A4).

However about 26 (34.7%) of the sampled technical lecturers' were against such a change. They were of the opinion that the government's decision to bring about such a change was a drastic one and this had created a culture of shock among their students who had been learning Science, Mathematics, Technical and Vocational subjects in Bahasa Malaysia all through their primary and secondary education. Moreover, the same group of sampled technical lecturers' felt that the government's decision to abolish the English medium of instruction in schools more than 20 years ago was a great loss to both citizens and the country itself. They felt that as a result of this change, students had lost interest in learning technical modules in English as they had difficulties in understanding what was being taught as well as in communicating with their lecturers in class and this was more apparent in the weak classes, notably among the Certificate programme students and students from the rural areas. Lecturer E explained:

“This change done suddenly by government without thinking about students in rural areas-my students cannot cope with English. They will loss interest” (E4).

In spite of negative opinion, these sampled technical lecturers' indicated that this change would be more successful if it was implemented from Form One in the secondary schools or at selected Polytechnics first and gradually introduced to other levels/polytechnics. They admitted that such a change is necessary to survive in the present day modern world. In other words, it was not the move to change the medium of instruction to English that these group were against, rather, the level in which the change should have been introduced.

4.3 Problems faced by lecturers teaching technical modules in English

This subsection reports the results regarding the problems faced by the technical lecturers in teaching Technical modules in English.

The most prominent problem faced by the sampled technical lecturers' was getting students to respond in class in English. This in return affected the communication between lecturers and students and slowed the teaching process. Basically, it was found that good students' reluctance to speak up was not because they did not understand the lesson but rather because they were not proficient in English whereas the weak students did not do so mainly because they didn't understand the lesson, they were afraid to speak up and also they were not proficient in the language.

Secondly, the sampled technical lecturers' themselves had problems learning the new terms and definitions of technical subjects in English. Lecturer C indicated that:

“Sometimes English terms are difficult and hard to explain. I don't like to study. When I teach I have to use Technical English, whereby I need to change the Malay terms to English and there is not enough reference materials. I fear teaching my students the wrong thing”(C3).

Some lecturers' admitted that they could have overcome this difficulty if they had been more willing to learn. But, having taught Technical modules in Bahasa Malaysia for so long made it difficult for them to change initially.

Another difficulty faced by the lecturers' was in getting students to write reports of process and procedures in the passive form. As this involved correct language structure and grammar, it made it twice as difficult for lecturers to teach and students to use them. Some of the lecturers' who were from the Malay ethnic groups also stated that students expected the lecturers to speak in Bahasa Malaysia whereas this was not so with the lecturers who were from other ethnic groups. I realized that the ethnic background of the lecturers was a factor that influenced students' attitude to using English in the technical classroom.

The lecturers' also had to prepare notes containing extra information about certain topics as the information found in their modules was found to be lacking. Though it followed the syllabus, yet it was limited. Looking at the preparation aspect, the lecturers said that the preparatory courses that they had attended had helped them tremendously in coping with the new medium of instruction in terms of language proficiency. However, they felt more time should have been allocated for this.

Another major difficulty faced by the lecturers was in the modules. They were of the opinion that the tasks in the modules were not suitable for all levels and thus had to be adapted by the lecturers to suit their students' ability. These were the kind of difficulties that were faced by the lecturers in teaching technical modules in English. However, most lecturers also stated that they were able to overcome most of these difficulties during the later part of the year as they got used to the change.

4.4 Training Needs of the Technical lecturers teaching technical modules in English.

Table 6: Training Needs of the Technical Lecturers' to Enhance their Readiness to Teach Technical Subjects in English

Item No.	Aspects of training	Not Needed	Less Needed	Needed	Very Needed
1	Training on speaking in English	3 (4%)	7 (9.3%)	27 (36%)	38 (50.7%)
2	Training on understanding technical reading materials in English	8 (10.7%)	10 (13.3%)	24 (32%)	33 (44%)
3	Training on writing technical instructional materials in English	3 (4%)	8 (10.7%)	26 (34.6%)	38 (50.7%)

Item No.	Aspects of training	Not Needed	Less Needed	Needed	Very Needed
4	Training on constructing test items in English	4 (5.3%)	10 (13.3%)	29 (38.7%)	32 (42.7%)
5	Training on delivering instruction of technical subjects in English	3 (4%)	8 (10.7%)	26 (34.6%)	38 (50.7%)
6	Training on conducting question and answer session with students in English	7 (9.3%)	11 (14.7%)	25 (33.3%)	32 (42.7%)
7	Training on various strategies to teach technical subjects in English	3 (4%)	6 (8%)	30 (40%)	36 (48%)
8	Training in guiding students to use English in learning technical subjects	4 (5.3%)	8 (10.7%)	29 (38.7%)	34 (45.3%)

This subsection presents the result of descriptive analysis on training needs of technical lecturers' to enhance their readiness to teach technical modules in English. As shown in Table 6, the lecturers reported they need training on all aspects of teaching technical modules in English specifically on various strategies to teach technical modules in English (88%), speaking in English (86.7%), writing technical instructional materials in English and delivering instruction of technical subjects in English (85.3%) and guiding students to use English in learning technical modules (84%). The training of lecturers is an important element for the successful implementation of the policy. The results of the data analysis shows that the training for lecturers involved in implementing the teaching of technical modules in English need to be reviewed for greater efficacy.

5 DISCUSSION AND CONCLUSION

The findings of this study revealed that technical lecturers perceived that they are still unprepared to teach technical modules in English, specifically in the aspect of speaking and classroom instructions, writing, confidence to use English and the ability to handle learning problems of students who are weak. The study also found that many lecturers perceived they still need more training in preparing themselves to teach technical modules in English especially in: speaking in English; guiding students to use English in learning technical modules; delivering instruction of technical subjects in English and devising strategies to teach technical modules in English.

The purpose of introducing English as the medium of instruction in the teaching and learning of technical modules is mainly to enable students to keep up with the current technological development which is mainly available in the English language and to enable them to survive in the competitive world. Technical lecturers generally understand the rationale of the change in the medium of instruction and are trying to facilitate this move.

However, some of these lecturers feel that they themselves lack the necessary language skills in English. The PPSMTI course that was conducted with the objective of equipping the lecturers with certain level of English proficiency is only an urgent interim measure by the Ministry to ensure that these lecturers have some basic capacity to conduct their lessons effectively.

Therefore, there is a dire need for sustained content specific language input for the personal language development of these lecturers. According to Al-Ansari (2000) and Short (2002) learners' chances of attaining academic literacy is better if subject teachers, not only language teachers, have received training that enables them to teach the four language skills and promote the development of functional language skills in the content classroom.

It is also equally important that technical lecturers are exposed to collaborative and co-operative efforts. This would entail educators of various disciplines (English, engineering, mathematics and science) working together to come up with courses that will help pre-service content and language. Such trans-disciplinary courses will be able to provide technical lecturers with a basic understanding of second language acquisition and academic discourse.

The teaching of technical modules in English should not be left to chance. In order to successfully implement the teaching of technical modules in English, the professional readiness and needs of the lecturers should be addressed. This is essential because it will influence the way they look into the issue of using English to teach technical modules, in particular whether they are willing to teach the modules in English and these will surely affect the way they teach the modules and later will definitely affect the nature and quality of instructional activities and the students' performances.

Although the study was limited to seventy five respondents from only one out of thirty polytechnics in Malaysia, further studies can be undertaken using respondents from other polytechnics or community colleges across the country for more conclusive findings. Besides that, the research samples were only focused on lecturers, thus the study might suggest a study on the perceptions of technical students in learning their content subjects using English as the medium of instruction to be carried out.

6 REFERENCES

- Al-Ansari S (2000). *Sheltered curricular exposure and unsheltered extra-curricular exposure as factors influencing the development of academic proficiency in ESL*. International Review of Applied Linguistics in Language Teaching, 38:175-194.
- Coleman, J.A. (2006). *English-medium teaching in European higher education*. Language Teaching, 39(1), 1-14.
- Crandall, J. (1998) Collaborate and cooperate: Educator education for integrating language and content instruction. *Forum*, 36:2.
- Crystal, D. (2003). *English as a global language*. Cambridge University Press, UK.
- Cohen, L., Manion, L., & Morrison, K. (2007). *Research Methods in Education*. Routledge Falmer Publishers.

- Graddol, D. (2007). *English Next: Why global English may mean the end of 'English as a Foreign Language'*. British Council, UK.
- Hudson, P. (2009). *Learning to Teach Science Using English as the Medium of Instruction*. Journal of Mathematics, Science and Technology Education, 5(2), 165-170.
- Kementerian Pengajian Tinggi (2011). *Pelan Tindakan Pengajian Tinggi Negara Fasa 2 (2011 – 2015)*. Retrieved May 10, 2012, from <http://www.mohe.gov.my/portal/penerbitan.html>
- Kon, Y.H. (2005). *Teaching efficacy beliefs of primary school teachers in using English to teach Mathematics and Science*. Jurnal IPBA, 3(2), 45-49.
- Kon, Y.H., Low, B.Y., Chong, P. W., & Mohanakrishnan, K. (2005). *Think Science, speak English: A study of selected year one primary school teachers' English oral fluency in the teaching of Science*. Jurnal IPBA, 3(2), 78-83.
- Mandie Uys, Johann van der Walt, Ria van den Berg & Sue Botha (2007). *English medium of instruction: a situation analysis*. *South African Journal of Education*, Vol 27(1)69–82. Retrieved September 13, 2012 from www.ajol.info/index.php/saje/article/download/25099/20768
- Mansoor Ahmed Channa (2012). *Teacher's Perceptions towards English Language as the Medium of Instruction in Pakistan*. Interdisciplinary Journal of Contemporary Research in Business, Vol 4, No 5. Retrieved September 13, from <http://journal-archives23.webs.com/759-764.pdf>
- Masita Misdi et. al (2008) *The readiness of future technical teachers to teach in English*. Conference Prosiding: Seminar Kebangsaan Jawatakuasa Penyelarasan Pendidikan Guru (JPPG 2008), 13-15 December 2008, Bayview Hotel, Langkawi, Malaysia.
- Noraini Idris et. al (2007). *The Professional Preparation of Malaysian Teachers in the Implementation of Teaching and Learning of Mathematics and Science in English*. Eurasia Journal of Mathematics, Science and Technology Education, 3(2), 101-110.
- Norzita, M. D. (2004). *Tinjauan terhadap kesediaan guru dalam pelaksanaan pengajaran dan pembelajaran Sains dan Matematik dalam Bahasa Inggeris*. Unpublished master's thesis, Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia.
- Pandian, Ambigapathy, & Ramiah, Revathi (2004). *Mathematics and Science in English: Teacher Voice*. Retrieved May 8, 2012, from <http://www.melta.org.my/ET/2004/2004-50.pdf>.
- Short, D. (2002). *Language learning in sheltered Social classes*. TESOL Journal, 11:18-24.
- Vizconde, C. (2006). *Attitudes of Student Teachers towards the use of English as Language of Instruction for Science and Mathematics in the Philipines*. Retrieved May 15, 2012 from <http://www.linguistics-journal.com/Nov2006LinguisticsJournal.pdf>