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STUDENTS' PERCEPTION ON TEACHING AND LEARNING ENGLISH FOR MATHEMATICS: THE VIETNAMESE CASE STUDY

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ABSTRACT: This study examines the importance of studying English for Mathematical Purposes (EMP) to students in the Department of Mathematics by arguing the result of a survey which uses a questionnaire to ask for the ideas and opinions of the students of Math Department. To summarize and propose the result, our statistical method is using SPSS to process primary information gathered from researching objects. It will help us with descriptive statistics and statistical analy00sis and making synthesis tables, statistical reports based on the information gathered from the questionnaire. This statistics is the reliable basis for our study.

KEYWORDS: ESP, English for Specific Purposes, EMP, English for Mathematical Purposes

INTRODUCTION

Since English became the worldwide language, it officially plays such an important part in our life. In fact, it is the key to open every door to success, to erase the gap among cultures and to help people to be wise by exchanging the knowledge. Our government and university therefore have a special concern about teaching and learning English. Yet, it is just General English (GE) which is only helpful for students in communicating, travelling, or reading common pieces of writing e.g: articles, magazines, etc. This is not enough for students who do not study in English Faculty (particularly Mathematics) and desire to be greatly successful like Professor Ngo Bao Chau. It has been argued that students can transfer general English skills and strategies to the tasks required in their specific disciplines at a later stage (Dudley-Evans & St John, 1998; Basturkmen, 2006). Since, in the 21st century – the age of development and globalization, when everything in this world keeps changing from day to day, we must continually update information and for that reason, English for Specific Purpose (ESP) is now as crucial as GE. Particularly, meanwhile English for Mathematics should have been concerned from students as well as the head of Mathematics faculty, the fact is that people seem to be indifferent with it.

Math's role in our life remains the same from ancient times which is vitally crucial and it is non-stop developed. However, compared to human knowledge about math, Vietnamese should try their best to acquire it by reading references from in and outside Vietnam as many as possible. In fact, Vietnam universities generally, HCMC university of Education particulally, has a great number of potential and talented students, and they are deserved to be trained and taught like every international student from all over the world which means the university should provide them not only the national's material but also the worldwide 's one. Yet, how many of them are successful and well-known? Why is it believed that if you want to go further in your major, you should to study abroad? The answer for the first question is: "just few people" and for the second one is: "Vietnam has not provided enough necessary and sufficient conditions for further education". However, the main reason which restrains

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students from success is that they themselves do not have a particular level in ESP to cultivate their minds. In this age of technology, we can study everywhere and anytime we want so there is no need to go to foreign country for higher education. Yet, not all the information can be translated into Vietnamese, so students are required to know ESP to acquire the knowledge. Thus, this is why ESP is extremely necessary for students.

Indeed, GE itself is not an easy subject to teach and learn, and so is ESP. There are moderate differences between GE and ESP. GE just provides students common grammar and vocabulary which can satisfy the need of daily communication. Nevertheless, ESP focuses on terminology which helps students to read and understand Mathematics material. Moreover, ESP course also gives students chances to work in group or make a presentation about Math in English. ESP is definitely far more difficult and demanding than GE because it requires students a lot of efforts. Yet, the more students work, the better they are. Hence, it is English for Mathematical Purposes (EMP) which is good preparation for students who aim to advance Mathematics, not only knowledge but also skills and experience.

In the Faculty of Mathematics at HCMC University of Education, many people already know the importance of GE but just a few are aware of the essential role of English for specific purpose. As the result, EMP is not taken seriously. As a matter of fact, EMP is an optional subject and the number of student who attends this course is not really much. For instance, there are only one class for each semester for class of 2012, meanwhile there are more than 100 students. Another point is that, maybe there are many students want to study EMP but only a few lecturers can teach this subject, so the number of class is limited. We are always expecting good education but in another country and accidentally forget that Vietnam also has a great potential to offer a great one if something changes.

This survey is conducted in order to analyze the reality of teaching and learning ESP of students in Math Department, and students' attitude towards EMP. From that, we can have a general assessment about EMP course and adjust the cons in order to improve EMP course and encourage students to continue learning EMP. With the aim of finding out the students' attitudes, the university management might make a decision of the policy marker whether EMP should be a compulsory subject to encourage students' autonomy. Therefore, the future projects related to changes in designing EMP curriculum which proposes new approaches to make English language teaching and learning in Vietnam more relevant, efficient, and productive. It is expected that by 2020, most Vietnamese students graduating from secondary and vocational schools, colleges, and universities will be able to use a foreign language in their daily communication as in accordance of Vietnam's National Foreign Language 2020 (NFL 2020).

LITERATURE REVIEW

The development of technology has brought a lot of benefits to the humankind. The standard of living has always been increasing; the requirements of life have also been changing dramatically in quality as well as in quantity. In communication, education, science or even in art, English is chosen to be one of the most important ways to explore the world, which makes teaching and learning English become an interest to both teachers and learners. Scientists, linguistics as well as professors also long to find ways with modern points of view in order to find practical and useful methods to teach this language. As far as we know, Math

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is also considered to be one of the essential subjects besides English. EMP has been taught all over the world since the 1990s. Many researches about the methods to teach it have been done; there also has some challenges of teaching methods and materials for this course. Theoretically, the training program ought to reach the goals of both quality and quantity in order make EMP a perfect course, which means that students will manage to use English in communicating as well as in reading Mathematics materials after finishing the EMP courses. However, there are some hardships and weakness in teaching EMP that leads to the waste of budget while the training goals are not reached. Course books and materials for EMP courses are not so common in bookstores. Furthermore, it is not easy to choose a reference book for a EMP course which is totally suitable for learners. In the development of globalization and economics, the students who are not well-trained enough will not have the proper skills to do the jobs, which causes bad effects to out society as well as our economy. For that reason, our national universities indeed need an interesting training program and methods to teach students basically, as well as motivate students in learning EMP courses so that students would be able to use their English fluently in communicating and in future career.

In 2008, the government has launched a project "Vietnam National Project of Foreign Languages 2020". The goals of this project are to achieve 30% government staff has the B1 level in adopting CEFR of English in 2020. One of the key is to change the ways of teaching and learning methods so as to reach the goals. For that reason, the research focuses on analyzing the basic points of training English due to learners' requirements. Moreover, some ways to compose materials for EMP course as well as the proper methods to teach EMP effectively are also recommended in the research.

METHODOLOGY

The main purpose of this study is to find out how important that students of Math Department of Ho Chi Minh city University of Education think English for Mathematic Purposes (EMP) is; and propose some suitable changes in training program of EMP.

The four purposes of this section are to (1) describe the research methodology of this study, (2) explain the sample selection, (3) describe the procedure used is designing the instrument and collecting the data, and (4) provide an explanation of the statistical procedures used to analyze the data.

Research Methodology: A sample testing research methodology was used for this study. A survey was administrated to a selected sample from population of students. The term "survey" in this study is applied to the research methodology designed to collect data from a sample from a specific population, utilizes a questionnaire as the survey instrument.

For these specific purposes of this study and some advantages in using a questionnaire to survey (questionnaire are less expensive and easier to administer than other methodology, it is also a familiar instrument with students who are surveyed); we chose a sample testing research methodology and designed a questionnaire survey instrument regarding the quality and condition, maintenance of Ho Chi Minh city University of Education and facilities of we group.

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Sample: For this study, 65 students from Faculty of Maths and Faculty of English in HCMC University of Education were specifically chosen to answer a designed questionnaire. These samples come from 6 classes including 2nd, 3rd and 4th year students.

Instrumentation: The survey instrument is a questionnaire designed for this study's purposes. The questionnaire was divided into 3 sections.

Section One is INTRODUCTION which required to give information about surveyed person (including: Name, Class, Department, Sex, Mail, Tel). This section keeps information so we can contact with surveyed person and have an overview about him/her.

Section Two is GENERAL QUESTIONS including 7 questions which asked about opinions about learning General English. This section was designed to examine opinions about learning general English to compare with opinions about learning EMP.

Section Three is DETAIL QUESTIONS including 18 questions which asked about learning EMP.

There are two types of question: *Multiple choices questions* and *Writing questions* (table M3). The term "*Multiple choices question*" here is the question with some existing answers designed by researchers, surveyed person can choose one or many answers; The term "*Writing question*" is the question require surveyed people to write down their opinions. (A sample of the Questionnaire is located in Appendix section).

Data collection and Method of Analysis: There are 65 questionnaires was distributed and 65 questionnaires was taken back to examine. Each student from specific chosen sample was asked to do the questionnaire individually in 20 minutes. The data collecting consisted of completeness and validity. All incomplete questionnaires were discarded from the data collection. To analysis data for this study, we divided questions into 3 types:

(1) **Qualitative questions** (including question 3, 4, 5, 6, 7, 13, 18): For this type of question, we used nominal scale to analysis data. These questions are multiple choices questions. The existing answers of each question of this type were independent; they were not involved together and did not express any set levels or set measures. We used whole numbers to match with each answers. These numbers did not have any ordinal or continuous meanings.

(2) **Quantitative questions** (including question 1, 2, 11, 12, 14, 16, 17, 21, 22, 23, 24): For this type of question, we used Ordinal scale to analysis data. These questions are multiple choices questions. The existing answers of each question of this type were involved together and did express set levels or set measures of a phenomenon. We used whole numbers to match with each answers. These numbers did have ordinal and continuous meanings to express the level. The analyzed data of these questions had full meaning with rational number results.

(3) *Descriptive questions* (including question 8, 9, 10, 15, 18, 25): For this type of questions, we only analysis question 10, 15 and 25. These questions are writing. We specially chose some samples of these answers and opinions.

Summary: The purpose of this section is to describe the research methodology of this study. This section described the research methodology, explained the sample selection, described

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the procedure used is designing the instrument and collecting the data, and provided an explanation of the statistical procedures used to analyze the data.

DATA COLLECTION AND FINDINGS

Data collection process is necessary as it ensures that data gathered are both defined and accurate and that subsequent decisions based on arguments embodied in the findings are valid.

Question 3: Why do you learn English? (multiple answers)			
Answers	Frequency	Percentage	
1. Pressure from parents and school	26	40,00%	
2. I like studying English	23	35,40%	
3. It helps me for my future career	60	92,30%	
Question 4: In what situation(s) do you use English? (multiple answers)			
Answers	Frequency	Percentage	
1. Reading your major's materials	57	88,00%	
2. Communicating	36	55,40%	
3. Entertaining (movies, music, chat,)	47	72,30%	
Question 5: <i>How do you improve your English?</i> (multiple answers)			
Answers	Frequency	Percentage	
1. Self-study	60	92,30%	
2. Enroll a class at an English centre	21	32,30%	
3. Study with friends	26	40,00%	
4. Join English Club	10	15,40%	
5. Study English due to school's requirement	31	47,70%	

Part 1: The qualitative questions include question 3, 4, 5, 6, 7, 13, 18.

The table illustrates the ways that students improve English skills. It can be seen that English skills are improved by self-studying, enrolling a class at an English centre, studying with friends, joining English Club and studying English due to school's requirement. In brief, a great number of the students choose self-study to improve English skills and many students enroll a class at an English centre, study with friends or due to school's requirement while there is just a small number of students join an English Club as a way to master the skills.

In details, over 92% students find self-studying to be the best way to learn English. What comes second are studying English due to school's requirement, studying with friends and enrolling a class at an English centre with 47.7%, 40% and 32.3% respectively. Finally, joining an English Club is thought to be the least common way to master English skills, which holds only 15.4%. To sum up, English Club seems to be not so popular in our schools, which is the reason why most students pick self-studying, attending an English centre or studying with friends in order to improve English skill.

Question 6: What is/are your weakness(es) in English ?			
Answers	Frequency	Percentage	
1. Listening	42	65,00%	
2. Writing	34	52,30%	
3. Speaking	47	72,30%	
4. Reading	13	20,00%	
5. Grammar	13	20,00%	
6. Vocabulary	31	47,60%	

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The table shows the percentage of students whose weaknesses in English skills are listening, writing, speaking, reading, grammar and vocabulary. According to the statistics, listening, writing, speaking and vocabulary are said to be the weaknesses of most students with high percentage. By contrast, the percentage of students whose the weaknesses are reading and grammar are fairly small. In the figure, speaking comes first with over 70% of students' choice. What comes second are listening, writing and vocabulary with 65%, 52.3% and 47.6% respectively. Finally, only 20% students find reading or grammar as the weakness. In conclusion, students have been focusing on reading and grammar are not students' weaknesses. Although other five skills are essential to master English language, they are not emphasized, which makes students are not good at these skills, so the speaking skill, listening, writing as well as vocabulary are needed to be focused in order to have a good command of English.

Question 7: Which skill do you think important for you ?			
Answers	frequency Percentage		
1. Listening	37	57%	
2. Writing	55	84,60%	
3. Speaking	26	40%	
4. Reading	47	72%	
5. Grammar	18	28%	
6. Vocabulary	26	40%	

The table illustrates the importance of English skills which are listening, writing, speaking, reading, grammar and vocabulary towards students in Mathematics department. In general, the remarkable feature is that writing, reading and listening are said to be crucial with high percentage. In the diagram, writing is mentioned by just over 80% of people's choice. Following closely are reading and listening with 72% and 57% respectively. Moreover, Vocabulary and speaking are equally important at 40%. Finally, grammar is the least essential feature which only holds 28%.

Question 13: What skill(s) have you improved? (multiple answers)			
Answers	Frequency	Percentage	
1. Listening	31	48%	
2. Writing	35	53,80%	
3. Speaking	13	62%	
4. Reading	52	80%	
5. Grammar	7	11%	
6. Vocabulary	35	54%	

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The table demonstrates the percentage of skills which have been improved through EMP course: listening, writing, speaking, reading, grammar and vocabulary. Firstly, the most striking feature of the table is that students have improved their English skills quite a lot, except for grammar. Reading is the most remarkable element with 80% people found that they have got better. In addition, what comes second is speaking which holds 62%, followed closely by vocabulary, writing and listening with 54%, 53.8% and 48% respectively. Finally, grammar is mentioned to be the feature which comes the bottom with 11%.

Descriptive Statistics					
	Ν	Minimum	Maximum	Mean	Std. Deviation
ques11	65	1	4	3.17	.802
ques12	65	1	4	2.68	.831
ques16	65	1	4	3.52	.709
ques19	65	1	4	2.65	.738
ques20	65	1	4	2.18	.788
ques21	65	1	4	2.38	.823
ques22	65	1	4	2.89	.921
ques23	65	1	4	2.54	.812
ques17	65	1	5	4.14	.966
ques24	65	1	5	3.94	.998
ques2	65	2	7	5.51	1.091
ques14	65	1	6	4.35	1.165
Valid N (listwise)	65				

Part 2: Quantitative questions: include question 1, 2, 11, 12, 14, 16, 17, 21, 22, 23, 24.

Question 11: The "mean" is 3,17 the "median" is 3 and the "Std. Deviation" is 0,802. This mean that 50% think that it is useful and 50% think that it isn't useful. The distribution of choice isn't equilibrium. It means from 25% to 50% choose "useful". The language used to convey mathematical ideas to students has become a topic of increased concern to mathematics educators in recent years. Mathematics educators working with students whose native language is not English need to be more cognizant of what is known about the complex process of learning a second language. The interest in the relationship between language and learning in general is not new. Natural language words reinterpreted in the context of mathematics, such as *set, point, field, column, sum, even* (number), *random*. For math students, EMP has access to newly developed proofs and theorems can make the difference when giving presentations at math conferences and competitions. In college

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science courses, access to the latest information can mean the difference between a good student and a great student. This constitutes a considerable academic advantage to learning math and science in English. Therefore, this result means that EMP is truly helpful for a lot of students who have learned it.

Question 12: The "mean" is 3,68 the "median" is 3 and the the "Std. Deviation" is 0,831. The distribution of choice isn't equilibrium. According to boxplot in figure 1.2 almost 75% surveyed students choose "a lot" and "a little bit". Besides, it means 25% surveyed students choose the rest. According to the results above, EMP really help to improve some skills of maths department's student such as: presentation skill, group discussion skill skill ,etc. Besides, we obviously see that:

- \checkmark How does the verbalization of a mathematical concept affect the way it is learned?
- ✓ How does instruction in language skills that are related to content affect concept formation in mathematics?
- \checkmark To what extent and how do mathematical skills translate from one language to another?
- ✓ How is reading achievement in the student's first language related to performance in mathematical problem solving for bilingual students and for students with a limited proficiency in English?

These are just a sample of the many challenging questions open to study EMP. Answers to them should help us provide a much-needed equality of educational opportunity in mathematics to students from language minorities like Viet Nam.

Ouestion 17: The "mean" is 4,14 the "median" is 4 and the "Std. Deviation" is 0,996. This mean that 50% think that it is important and 50% think that it isn't important. The distribution of choice isn't equilibrium. It means from 25% to 50% choose "important". According to the results above mastering knowledge in Math is important. It gives students the ability to learn advanced subjects in science (like physics and chemistry). Mathematics is the fundamental science. Mathematics is used throughout the world as an essential tool in engineering, medicine, finance and the social many fields, including natural science sciences. Mathematicians also engage in pure mathematics, or mathematics for its own sake, without having any application in mind. There is no clear line separating pure and applied mathematics, and practical applications for what began as pure mathematics are often discovered. Besides, surveyed students are teacher to be, so the mathematical knowledge needed for teaching must be usable for those mathematical problems. Mathematical knowledge for teaching must be serviceable for the mathematical work that teaching entails, from offering clear explanations, to posing good problems to students, to mapping across alternative models, to examining instructional materials with a keen and critical mathematical eve, to modifying or correcting inaccurate or incorrect expositions. The mathematical knowledge needed for teaching, even at the elementary level, is not a watered-down version of "real" mathematics. Teaching mathematics is a serious and demanding arena of mathematical work.

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COMPARISONS OF SOME QUESTIONS

In this part, we work with some special pairs of questions to find out some meaningful results.

First of all, the comparison between question 24 (which is "Is EMP important to your department's students?") and question 17 (which is "is mastering knowledge in Math important to you?") shows 5 choices including from "Not important at all" to "Extremely important" (which are corresponded from 1 to 5). There are 2 people chose 1 in question 17 (it means they think mastering knowledge in Math is not important at all) and Mean of their choices in question 24 is 1.00, so we can tell that they don't think that EMP is important because they don't think that Math is important to them. Similarly, there are 29 people chose 4 in question 17 and their result in question 24 has Mean is 3.93 (with Std. Deviation is 0.593 which is small enough), it means 29 people think that mastering knowledge in Math is important to them.

Here we investigate in question 20 and question 21 "Do you think that Math materials written in Vietnamese enough for you?" and there are 4 choices from "No" to "Yes but just a little bit enough" to "Enough" and "Very enough" which is corresponded from 1 to 4. Similarly, question 21 has 4 choices "Never"- "Rarely"- "Sometime"- "Always" for the question about "reading Math materials in other languages, especially English". This is the result, there is 24 people rarely read Math from English materials but they think that Vietnamese materials is just a little bit enough for them (they chose 2 is question 21 and mean is 2.33 in question 20), similarly 10 people never read Math from English materials think that Vietnamese materials is just a little bit enough for them. "Is these results unreasonable?"

Question 23 is "Do you think that your English is enough for you to read materials written in English?" and there are 4 choices including "Not at all" -"Quite enough"-"So so"-"Enough" (1 to 4). According to this report table, they think that their English is not enough to read English materials, that is why they never or rarely read Math in English although they don't think that Vietnamese materials are enough for them. In conclusion, this result show that many students need to improve their English (especially English to read Math) to supply their needs of reading Math material in English because Vietnamese materials are not enough for them. That is the reason why EMP is very important and useful for them.

Part 3: Descriptive questions

Descriptive questions (including question 8, 9, 10, 15, 18, 25): For this type of questions, we only analysis question 10, 15 and 25. These questions are writing questions. We specially chose some samples of these answers and opinions.

Question 10: Which units do you like best in your English for Mathematics course? Why?

A fourth-year student said that he liked the lesson about points, line and rays because it is interesting.

A second-year student found that she liked studying the operations as they would be useful for her future. Moreover, after finishing EMP courses, she could read Math materials written in English.

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Another second-year student told that she liked Unit 3 best, for a couple of reasons. First, its grammar point was about the present perfect including the form and the usage as well. Second, it was interesting to know more about operation of fraction as well as its vocabulary. Last but not least, she found it useful and practical to learn algebra rather than geometry.

Besides, one second-year student claimed that he liked no particular unit because he still had not finished the book yet, as well as he personally thought that every unit was useful in every single way.

In addition, one third-year student told that he liked Matrices since that unit was his presentation.

Question 15: Beside the basic skills of English, through English for Mathematics program, do you master any other soft skills? (Eg: presentation skill, group discussion skill, etc...)

Talking about the skills, almost second-year students agreed that through EMP courses, presentation and group discussion skills were highly dramatically improved.

Moreover, a fourth-year student also claimed that joing EMP cousres has helped him a lot to master the translation skill, which is totally to read Math material in English.

A third-year student said that EMP course was quite effective since now he can read Mathematics notation clearly.

Question 25: Do you have any ideas in order to improve this program to be better?

A second-year student suggest that students should be supplied more materials as well as more time for EMP courses,

A fourth-year student thinks that it will be great if students are organized club or built a program for the EMP course.

A third-year student says that it would be more effective if it were a small-sized EMP class (maybe 10 students). Moreover, this student also wishes to have a chance to study English by talking, playing games and absorbing knowledge by variety sources.

Furthermore, one of the third-year students' ideas is that the course should have some days which students are taught by foreign teachers. Last but not least, one of the second-year student idea is that the EMP course will be perfect if we have books with colors and pictures.

IMPLICATIONS, AND RECOMMENDATIONS

The purpose of this section is to show the results we received from the questionnaires. With these information, we make comparisons, discussion and propose our findings. From the result of the survey, we would like to give some suggestions:

(1) Encouraging students to learn EMP: There are two ways to encourage students to learn EMP. Firstly, the math department should find a Math English club which is a ideal place for them to consolidate and cultivate their knowledge. In fact, learning with friends and through activities is also effective. Hence, there should be association with other academic club to attract students and motivate their activeness as well. Another solution is that, the math

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department should organize competitions about EMP with special prizes, for instance, Olympic, "gold ring", etc. This would help student to make great efforts to learn EMP.

(2) EMP should be a compulsory subject in the Faculty of Mathematics: GE is probably hard for some students which do not come from English department. Besides, EMP is far more difficult than GE in many aspect (e.g. vocabulary, writing, reading, etc) which is easy to be fed up with and given up. In addition, EMP is a compulsory subject, so students may seem to be indifferent to it. Their confusion and the importance of the course in the program give them no motivation in attempting to learn EMP. As the result, the number of student attending EMP class has declined from the first semester to the second semester (2012 - 2013). Hence, the faculty management should change this by making EMP is a compulsory rather than an optional subject.

(3) *Lecturers:* There should be more lecturers for this course. EMP is difficult to learn and more difficult to teach as well. Yet, there are not many EMP lecturers in the faculty of Maths now which may cause trammels. Thus, training program is absolutely crucial.

CONCLUSION

To sum up, the training program which meets learners' requirements are not simple, but is it something which must be done as soon as possible. Since the details and analysis of learners' demand are not totally understood, it is difficult to compose right and interesting materials as well as organize a suitable class for EMP. When education, health and economics are things which are critically focused on in order to satisfy people's demand, EMP is honestly useful to help use earn and save money. Moreover, students who are trained with EMP courses will be provided not only professional knowledge, soft skills, but also the ability of English use in their subject matter field to do the jobs perfectly, such as the ability to communicate fluently, read thoroughly Mathematics materials in English and master soft skills.

In this research, we just give some features which are useful for composing materials for EMP courses or organizing basic EMP classes. Other features of the research are discussed in the next researches.

The result of this study could help teachers and educators to aware of the importance of EMP, learners' needs and purposes in learning EMP. They should do prepare and overcome obstacles to acquire EMP successfully. As a result, EMP students can build up their learning autonomy and seek for learning styles. This also eases EMP learning and teaching process.

Moreover, school management are likely to make decisions whether EMP should be mandatory or an optional. This will be appropriate to one of initial targets of the national project of foreign languages 2020 in Vietnam context in which English is a mean of instruction for learners in the field of natural science.

It is suggested that the future projects will be conducted for designing ESP curriculum for those who aim to acquire professional knowledge and ESP use. Eventually, if it is done, the future student generations are well trained in order to catch up with new challenges and requirements of the society. Hence, they may adapt the demands of the workforce in Vietnam setting.

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