

**STUDENT'S SPEAKING SKILL IN ENGLISH MATHEMATICS COURSES WITH MNEMONIC METHOD**

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**Abstract:**

From the experience of the researchers while teaching the English Mathematics course, it was found that the main obstacle faced by students in communicating in English lies in their minimal vocabulary of English mathematical concepts. Departing from this fact, this study has two objectives, namely to find out how students respond to the application of the mnemonic method in English mathematics courses and the second is to find out students' speaking abilities, especially in remembering new vocabulary obtained from the learned mathematical concepts. Based on research data both in the form of written tests and interviews, it can be concluded that overall it is of good value. Student responses to the application of the mnemonic method in Mathematics English courses on the topic of Statistics and Opportunity are positive. Meanwhile, the students' English speaking ability in the application of the mnemonic method on the topic of Statistics and Opportunity includes 5 aspects as follows: for grammar mastery, a score of 20% of students obtained 3 points or very good category was obtained, for the vocabulary aspect, a score of 64% was obtained, which received a very good score. good, 48% who scored very well also in the comprehension mastery aspect. As for the fluency and pronunciation aspects, 40% were in the good category and 48% were in the very good category, respectively.

**Keywords:** Speaking Skill, English Mathematic, and Mnemonic Method

**Introduction**

During the several times the author taught English mathematics courses, students often only considered this course as limited to listening to stories from lecturers. Lecturers are considered as storytellers and students listen to lecturers' explanations that they may not understand. This fact makes Mathematics English a subject that is less desirable for some students. Students experience difficulties in learning because they have not mastered English well. Some of these students have difficulty understanding English texts, and have difficulty expressing English both orally and in writing because of the lack of vocabulary they have. At least novice students can memorize some English math vocabulary to make it easier for them in the learning and evaluation process at the end of lectures.

There are two factors that make mathematics English courses less attractive to students, namely in terms of material and learning methods. In relation to the material, many students are constrained by language which is very close to mastering new vocabulary. In addition to the many new vocabularies, there are also vocabularies in mathematical concepts

that are different from ordinary English, such as when we say ball in general English with "Ball", it is different from ball in mathematical concepts which use the word "sphere". Then the learning method which is only limited to the lecture method which is only one way is clearly very boring for them. This is an external cause as well as the background to the low quality grades in mathematics English courses. The difficulty of students to communicate ideas or opinions due to constraints in mastering vocabulary makes English Mathematics courses tend to only change mathematics material into English. This resulted in this course being less preferred, only considered as a complementary course, and considered less important for students because it was felt that it was not sustainable or even not needed for courses in the following semester.

The second reason lies in the aspect of the teaching method. Monotonous teaching methods are seen in emphasizing memorization as the only way that is considered most effective. Memorizing new vocabulary for each math concept looks complicated, because students need to memorize vocabulary in English which is sometimes different from ordinary English. So far vocabulary has had a great influence

and the amount is not limited to learning any foreign language. There are many ways for a beginner to memorize foreign language vocabulary, for example using flash cards, applying the vocabulary to sentences, memorizing it over and over again, associating it with pictures and context, watching several movies or dramas in the foreign language and so on. However, none of these methods can guarantee the strength of the learner's memory in memorizing vocabulary. The method of repetition is still considered effective as a technique for memorizing foreign language vocabulary. This is because when students repeat words, these words will stick and become long-term memories. Instead of relying on foreign language learning methods, it is better for lecturers to provide a short period of time, for example one week to specifically teach vocabulary memorization by repeating it according to the learning target, so that students have no difficulty learning the material.

This tedious teaching method makes students not have optimal attention intensity. The core cause of it all is the difficulty of students to memorize a series of vocabulary that must be memorized, this is what makes it difficult for students to get optimal scores. One of the efforts to solve this problem is using the mnemonic method (Buzan, 2002:56). The mnemonic method is a way of memorizing using two main principles, namely imagination and association (Buzan, 2003:56). Imagination means that in the teaching process it is necessary to explore its imaginative power so that it is able to fully appreciate the English mathematics course and even facts that need to be remembered, as well as associations that link the facts to be remembered with facts that one already knows beforehand. This is then reinforced by (Higbee, 2003:41) which states that the ability to remember actually depends on the method used, as well as how the exercises are carried out with that method. The mnemonic method has a variety of techniques for solving memory problems such as the staking technique for memorizing large items, and the loci technique for memorizing speeches. This method has been found to be beneficial in order to optimize memory, as was done by the Greek orators to memorize the text of their speeches by using the loci technique. This method is quite easy to apply. The challenging method will make students interested in learning. The mnemonic method works by following the workings of the brain, so that it is possible to be able to achieve maximum results that will be achieved

by students in mastering English mathematics courses.

Mnemonics according to Wojowasito and Wasito (1980:2) comes from the word Mne'monics which means the ability to memorize. The essence of this method is imagination and association. Simply put, the method according to Stine (2002:23) is nothing more than the ability of the mind to associate ideas or words with images. Higbee (2003:4) defines mnemonics as a method to help memory. Suharnan (2005:15) defines the mnemonic method as a learned strategy to optimize memory performance through exercises. Suharnan was well aware that this technique needed practice to master. Mnemonics are closely related to imagination and association. Pasiq (2003:42) says that imagination and association are part of the work of the right brain which is the center of creativity, therefore learning with the mnemonic method indirectly coordinates between the left brain and the right brain in one learning activity. 10 Furthermore about associations, James (Higbee, 2003:4) explains the role of associations in memory by saying "the more facts related to something or material in our minds, the stronger the material is embedded in our minds. Every fact related to the material becomes a kind of fishing rod when the material sinks beneath our minds. The mnemonic method is quite effective in helping someone to remember. This ability was often used by Roman and Greek senators to attract the attention of politicians and the public with their learning power and memorization. This method enabled the Romans to memorize facts about empires without error. Even so, the mnemonic method does not guarantee that the incoming information will be remembered, because to store information in long-term memory, at least it takes a lot of repetition. According to Horby (1987:34) mnemonics is an art or system that can improve the ability to memorize. There are several techniques in the mnemonic method that can be used with their respective specifications, namely; acronyms, acrostic techniques, peg words, loci, mental imagery, relationship methods, and organizational methods.

Purpose of Mnemonic Mnemonic has the following objectives: 1. Make it easier for people to remember knowledge, be it places, people, dates, by connecting and associating it with an event that is related or close to them. 2. Make it easier for people to retrieve old knowledge so that it can be revealed again, if necessary. 3. Make effective information

from short-term memory (short-term memory) into long-term memory (long-term memory) in various ways contained therein. Information stored in short-term memory (short-term memory) will easily be lost in memory or forgotten, because remembering only uses the left brain, one of its functions is to carry out short-term memory as expressed by Roger Sperry in Mr. SGM (2008: 5) ) which states that 'we have a brain that is divided into two physiological parts of the left and right brain, each of which is associated with different mental functions.' Remembering by involving the right brain will make long-term memory, how to remember by using this mnemonic equipment is a way of remembering by involving the right brain so that information will be stored longer and easier to recall because it is stored in long-term memory (long-term memory).

Much research has been carried out related to the application of the mnemonic method at school and at the university level, including research with the title: Improving Students' Memory of Learning Mathematics Using Mnemonic Techniques in Xi Mas Al-Barakah Classes (Anggriyani, 2021), Mnemonic Method: Solutions Creative to Improve Nahwu Understanding for Students (Zaenudin, 2021). Mnemonics: creative solutions to improve the ability to memorize Arabic vocabulary for Madrasah Aliyah Nurul Jadid students (firdaus, 2020). Of these several titles, all of them are focused on improving the memory of students, which is the ultimate goal to make it easier for them to remember learning material and concepts to improve learning outcomes. There is no research related to the application of the mnemonic method applied to English mathematics courses to increase mastery of new vocabulary in its use to improve the ability to speak English mathematics. Therefore the researcher is interested in applying the mnemonic method in mathematics English lectures, so the author's research title appears, "**Student's Speaking Skill In English Mathematics Courses With Mnemonic Method**".

## **Method**

The most appropriate research method used in this study is descriptive qualitative method. Qualitative descriptive methods can describe the data obtained in real terms, and can clearly describe individuals, language conditions, symptoms or certain groups. The data collected is descriptive data in the form of student and teacher speech in English lessons, more precisely in the Translation course. The data

sources of this research are all conversations in the teaching and learning process for Translation courses in class, class discussions, presentations in front of the class, giving opinions, and so on.

This study uses descriptive quantitative and qualitative methods which aim to see the responses and student learning outcomes in learning English mathematics on the subject of Statistics and probability. This study applies the Mnemonic method. The variables of this study are the responses and learning outcomes of students in English mathematics courses on statistics and probability after the Mnemonic method is applied. Student response is the student's response to the stimulus provided by the lecturer. The stimulus is in the form of questions based on the Mnemonic theory. Learning outcomes are defined as the final results obtained by students after applying the Mnemonic method, in the form of the ability to speak English with vocabulary in mathematics.

This research was conducted at Madura University majoring in mathematics education class A class 2022/2023 semester 1, a total of 25 students, in the English mathematics course on the topic of integers and fractions. The data collection techniques used were tests and interviews. Meanwhile, to see student responses in English mathematics lectures on whole statistics and probability using a questionnaire sheet. Students' speaking ability is seen from the score consisting of mastery of grammar, vocabulary, comprehension, fluency, and pronunciation which are assessed during the lecture.

Data collection techniques used are observation, tests, and interviews. Observations aim to see student responses in English mathematics lectures on integers and fractions. The observation sheet consists of two indicators, namely (1) Responding to questions given by lecturers and other students, (2) formulating answers to the questions given or providing alternative answers, (3) Asking questions. The test aims to measure learning outcomes. The application of the mnemonic method, in the form of students' speaking ability. The interview aims to support the test data. Observation data analysis was carried out by giving a score to each descriptor that appears, with a score of 0 if no descriptor appears, a score of 2 if only 1 descriptor appears, a score of 4 if 2 descriptors appear, and a score of 6 if there are 3 descriptors that appear. The observation sheet consists of 2 indicators and 6 descriptors, so that the maximum score in this

observational data is 12. Furthermore, the score obtained by students is divided by the maximum score, and multiplied by 100.

The Mnemonic method used in this English course follows the following technique:

1. Acronym, an acronym is a combination of letters arranged to form a word. This technique is useful for remembering specific words, for example KPK is an acronym for the least common multiple. This method is used to memorize sequential names (DePorter and Hernacki, 2002:45) such as to memorize the names of units of account for measuring distances consisting of Kilometers, hectometers, dekameters, meters, decimeters, meters decimeters, centimeters and millimeters by means of take the first letter of each planet then form it into KHDMDSCM
2. Acrostic Another word for the acrostic technique is the sentence method. The method of this technique is to take the first few letters of the word to be memorized and then assemble it into an interesting string of words such as Kings Phil Came Over For The Genes Special (Kingdom, Phylum, Class, Order, Genus, Species). As with acronyms, the acrostic acrostic technique is not useful for memorizing complex information.
3. Loci Technique This technique is commonly used by orators to memorize the text of their speeches. This loci technique can also be referred to as the place technique, because this method combines visual memory/association of facts with place. According to Cicero (Turkington, 2005:16) this method was developed from the poem Simeonides of Ceos, the only person who survived when the building where the performance was being held collapsed. Simonider was able to identify all the corpses by remembering where they sat.
4. Peg Word The stake technique is a way to train memory by making peg words and visualizing them visually. According to Turkington (2005: 56), this technique was developed by Henry Herkson in 1600 by connecting one digit of the number with items that resembled the number. Like number one with a candle, number three with a trident. The principle of this technique is to depend on the facts to be remembered on the stakes that have been made.
5. Visual Imagery Suharman (2005:45) argues that the visual imagery technique is the most effective technique compared to other methods. This

technique encourages the subject to present an image of the object to be memorized in his mind. This technique is quite good at dealing with descriptive information that is interconnected. However, this technique is problematic when dealing with information that is not related to each other. This technique seems to need a device to awaken the imagination, both with stories and by using props that can get closer to reality.

6. Story Technique Story technique is a fun method for memorizing information that is not interconnected or related to large amounts of information. In fact, according to DePorter and Hernacki (2002: 226) this technique is good enough to memorize lists of terms or geographic patterns.
7. Keywords The key technique is used to remember the main words of the information to be remembered, for example to remember information about the duties of the League of Nations Security Council (Matroji, 2004:34) which consists of: 1. Resolving international disputes. 2. Protect member countries against attacks from other countries. 3. Weapon reduction. 4. Defend and protect the League of Nations. You can simply use keywords from each of the items above, namely conflict, attack, weapons, defense.

## **Result and Discussion**

The application of the Mnemonic method in this study was carried out using several research instruments, namely, Learning Implementation Plans (RPP), Statistics and Opportunity teaching materials, student worksheets, test questions, observation sheets, and interview guidelines. Lectures using the mnemonic method were carried out in 4 meetings. At the first meeting, the material taught was how to explain statistics which included analyzing and presenting statistical data. Furthermore, the second meeting discussed problem solving in everyday life related to statistical concepts. At the third meeting the material discussed was the concept of opportunity which included the definition and concept of opportunity and the last meeting, namely the fourth meeting, discussed solving problems related to the concept of opportunity. In each meeting, each student was asked to communicate with his group mates using English using vocabulary related to the material discussed at each meeting. The results of the observations obtained from the four meetings were then presented in the following table:

Data from student responses to English mathematics lectures using the mnemonic method are as follows:

Table 1. Student's Response Result

No	Question	Criteria	
		Yes	No
1	Do you feel happy while attending lectures using the mnemonic method?	86%	14%
2	Are you more flexible in expressing opinions by using the mnemonic method instead of previous learning?	81%	19%
3	Does this method make it easier for you to remember new vocabulary?	94%	6%
4	After understanding the tricks applied to the mnemonic method, do you feel more confident in speaking mathematical English?	91%	9%
5	Do you want to use the mnemonic method in the next Mathematics English lecture?	89%	11%

From the table above, it can be seen that the student's response was positive for every aspect that was asked on the questionnaire sheet. Even for aspect number 4 which asked about the effect of the mnemonic method on confidence in speaking using English mathematics, 91% of students answered "yes". As for the first question, namely whether students are happy during learning with the mnemonic method, there are 14% who answered "no". It could be that some of these students are because they are still not familiar with this method and they are still not confident and afraid to express opinions or speak in English math vocabulary. For the third question, regarding the ease of using the new vocabulary, there are 94% who answered "yes" and it means that only 6% still find it difficult to use the new vocabulary in question, maybe this 6% is also in the 14% which is illustrated in the question first. For the second and fifth questions the responses were not too much different, namely 81% who answered "yes" to the second question and there were 89% who answered "yes" to the last question.

For student learning outcomes in the form of speaking skills which include mastery of grammar, vocabulary, comprehension, fluency, and pronunciation which are assessed during the lecture, it can be seen in the table below:

Table 2. Percentage of English Speaking Skill Score

Speaking Skill	Percentage of English Speaking Skill Score			
	0	1	2	3
Grammar	28	8	44	20
Vocabulary	8	16	12	64
Comprehension	20	12	30	48
Fluency	24	4	40	32
Pronunciation	16	8	48	28

Based on the table above we can obtain the following information, for grammar mastery a percentage of 20% is obtained, with a score of 3 in the very good category, for vocabulary mastery it is obtained by 64% in the very good category, comprehension mastery is 48% in the very good category, mastery of fluency was obtained by 40% in the good category, while mastery of the pronunciation indicator was 48% in the very good category. Mastery

of English vocabulary skills reaches the highest mastery because students tend to be comfortable and have their own method which is considered the easiest to apply in remembering new vocabulary. Mastery of fluency gets the lowest point because students are still lacking in training and want to dare to speak English during teaching and learning activities.

In order to support the research data, an interview test was conducted. Interviews were conducted with 3 students as interview subjects. Subject 1 was chosen because it was considered active when learning English mathematics took place, Subject 2 was chosen because it was considered quite active when learning English mathematics took place, and the third subject was chosen because it was considered less active during the English learning activities in mathematics. After the interview data was analyzed, it was concluded that Subject 1 was able to answer the three test questions given correctly and was able to explain the answers. However, the subject still experienced difficulties when solving the second question. In addition, Subject 1 gave an excellent response to the mnemonic method used during the learning activities. So that the data from observations, tests, and interviews are valid for subject 1 which is included in the active student category. Furthermore, the results of interviews with Subject 2, obtained data that the subject worked on the test questions given correctly for all the questions given even though they were in line with Subject 1 who had difficulty on the second question. The second subject has not responded as expected so it is not included in the very good category. For the last subject, namely the third subject, he could only answer 2 questions out of the three questions given, namely questions number 1 and number 3 only. The subject experienced confusion when asked to explain the answer. On the observation sheet, it can be seen that there are still many descriptors that have not appeared, so that the student's response during learning is still categorized as very low. After conducting the interviews, the data from the interviews were transcribed in written form and then a conclusion was drawn. Based on the results of the interview data analysis, it was concluded that overall the results of the observations and test results were considered to be in accordance with the results of the interviews.

## **Conclusion**

Based on the results of the research that has been carried out, it can be concluded that the responses and speaking skills of students in English mathematics lectures on the topic of Statistic and probability at Madura University are generally good. The response given by students to lectures with this method is positive. Meanwhile, the speaking ability score which includes 5 aspects is also good, namely the students' grammar mastery of 20% who got a score of 3 in the very good category, vocabulary mastery of 64% in the very good category, and 48% of the comprehension mastery with very good category, fluency mastery of 40% in good category, mastery of pronunciation indicator by 48% in very good category.

## **Suggestion**

Learning English must use varied and interesting methods. One method that can be used is the mnemonic. Students are expected to be more active in class activities and dare to practice speaking in English. And the parties are expected to provide adequate facilities to practice English

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