

Mnemonics: An Alternative Memory Enhancement Technique in Teaching Accounting Theories

Nor Kartini Mohd Rodzi^{1*}, Norshimah Abdul Rahman², Nazirah Naiimi³, Norizam Ahmad @Muhammad⁴, Susilawani Ayob⁵, Salwana Selamat⁶

^{1,2,3,4,6}*Faculty of Accountancy, Universiti Teknologi MARA Perlis Branch, Arau Campus, 02600 Arau, Perlis, Malaysia*

⁵*Faculty of Business and Management, Universiti Teknologi MARA Perlis Branch, Arau Campus, 02600 Arau, Perlis, Malaysia*

Authors' Email Address: ¹norkartini@uitm.edu.my, ²shimah70@uitm.edu.my, ³nazirahnaiimi@uitm.edu.my, ⁴norizam@uitm.edu.my, ⁵susilawani@uitm.edu.my, ⁶salwanas@uitm.edu.my

*Corresponding Author

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ABSTRACT

It is a belief that mnemonic will increase students' understanding and thus, foster their academic performance. This study investigated the effectiveness of using mnemonics in teaching accounting theories for an intermediate financial accounting course. A sample of 96 accounting students enrolling the financial reporting course was chosen to take part in this study. The selected students were separated into 2 groups: M1 was with mnemonic training and M0 was without mnemonic training. The findings revealed that mnemonic is an effective technique in teaching accounting theories and enhancing student's ability to envisage and remember accounting concepts and theories. This is reinforced from finding that the average score index for students with mnemonic training was 4.985 higher than those without mnemonic training. In addition, the p-value for the dummy variable mnemonic training ($p=.000$) was very significant, suggesting that there was statistical evidence of a difference in average score index between the students with a mnemonic and no mnemonic training.

Keywords: *Mnemonics, Acronym, Accounting Theories, Sustainability*

INTRODUCTION

Good quality education is an essential tool for achieving a more sustainable world. Achieving inclusive and quality education for all reaffirms the belief that education is one of the most powerful and proven vehicles for sustainable development (United Nations Development Programme, 2019). Educators are the main actors in this process and education training is the key for developing capacities in delivering sustainable educational approaches in the future. Qualities' educator must have a willingness to embark new teaching strategies and incorporate new technologies into practice. A teaching strategy is a method used to convey information to students. Laing (2010) stated that mnemonic devices are among the teaching strategies used to enhance memory. Memory is the power or process of replicating or recollecting information that has been learned and retained, through related techniques (Merriam-Webster, 2019). The learning process involves the retention of new information that can be

recalled for use later. According to Kirkham, (2013) and Terms, (2020), a mnemonic is one of the techniques used in learning strategies to help remember ideas or phrases with a pattern, numbers, or relatable associations. It has proven effective in assisting students to recall new information (Joyce & Weil, 1986). Mnemonic techniques consist of acrostics, acronyms, narratives, and rhymes. An acrostic is a phrase or poem where initial letters of each word are used as a keyword, an acronym is a word created from the first letter of series of the word in a phrase or title, a narrative is a story that contains the words in the suitable order and rhyme emphasizes the sound between words (Laing, 2010). Mnemonics are techniques or devices, verbally or visually in nature, that serve to encode, store, and retrieve the information contained in memory (Zarei & Keysan, 2016; Mastropieri & Scruggs, 1989).

Mnemonic devices widely used in the fields of medical psychology and education. However, in the accounting field, the use of mnemonic devices in improving learning not yet fully explored. Accounting is a field of study, where students find it difficult to understand because the concepts are comparatively abstract and interrelated. The challenging point in their studies is when they are moving to the intermediate level after completing an introductory level in financial reporting courses. Discussion on statutory regulation, conceptual framework, and financial reporting standards are covered more comprehensively at the intermediate level (Syed Abdullah et al., 2019). Consequently, accounting students should equip themselves with analytical thinking skills and well-developed problem-solving ability. Introducing mnemonics early in the learning process will enhance students' confidence level and help to develop their problem-solving skills.

For the past 3 years, it has been noticed that accounting students enrolling financial reporting course in Universiti Teknologi MARA Perlis branch could not answer well in theoretical questions. This study chose the financial reporting course as it is the first intermediate subject which consists of 40% theoretical concepts in the course information. It is essential for the students to understand the basic theories and concepts in accounting. Further investigation using analysis of common test questions revealed the weaknesses of the students in remembering the accounting concepts to answer the theoretical questions. Therefore, the objective of this study is to determine the effectiveness of mnemonic method versus a non-mnemonic method on students' ability to answer theoretical questions in Financial Accounting 3 course.

The following research question was addressed in this study:

How does mnemonic training effects students' ability to answer theoretical questions in Financial Accounting 3 course?

LITERATURE REVIEW

Educators have found that using mnemonics technique, students have better memory, enhanced long-term retention, sustained motivation to learn, improving their reasoning skills and bettering their text processing (Toney-McLin, 2002; DeLashmutt, 2007; Laing, 2010). This is also supported by Azmi et al. (2016) that a higher score can be generated when mnemonic techniques are used to do exercises compared to the traditional teaching method. Yin (2012) discovered that mnemonic techniques have increased the economic concept memorization and academic performance of undergraduates. In addition, Lloyd & Abbey (2009) have empirically revealed that by using mnemonics for amusement, students could be coaxed into rapid memorization and retrieving important accounting concepts. Furthermore, the use of mnemonic techniques would also likely stimulate the rate at which new information is obtained (Levin & Presley, 1985; Wang & Thomas, 1996).

Previous studies suggest that comprehension scores were found to be higher for students using mnemonic training because this strategy can improve students' ability to remember factual information

needed to answer comprehension questions. Students who have a problem in remembering the concept will benefit from mnemonic training (Mastropieri et al., 1985; Syed Abdullah et al., 2019).

Laing (2010) has developed a model for assessing the characteristics of a memory cue (Figure 1). It has been created based on numerous aspects of the literature regarding memory to provide a method to examine the design and the prospective usefulness of any memory cue (such as the mnemonic device). A memory cue may take the form of a simile, mnemonic, acrostic, or acronym. Whichever form the memory cue takes, the intention is for it to act as an impetus to help gain access to memories (Brown & McNeil, 1966).

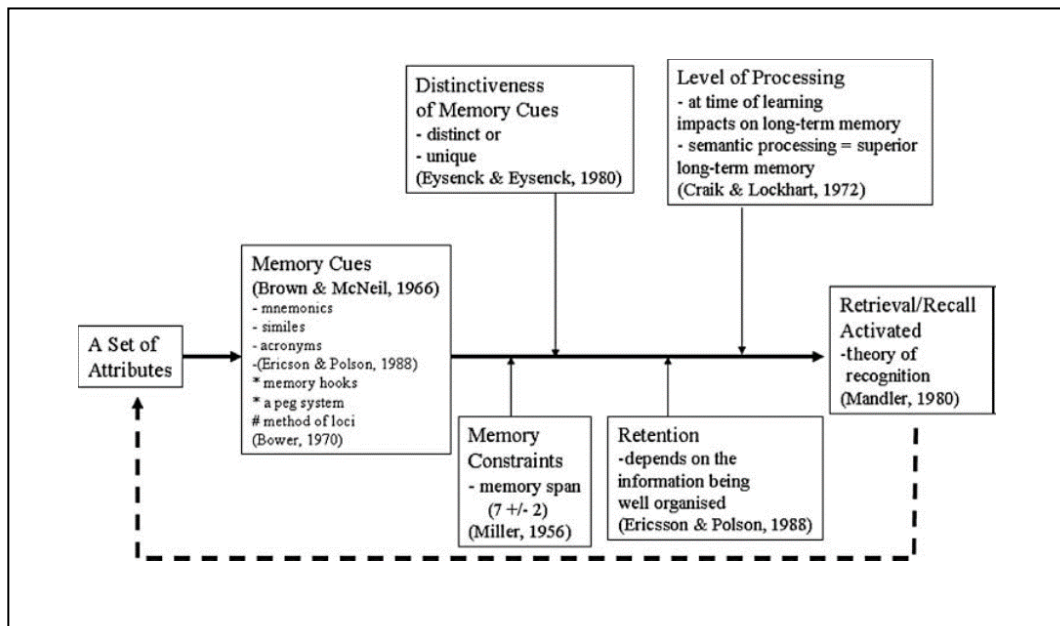


Figure 1: Model for Assessing the Characteristics of a Memory Cue.

Wailoo & John (2013) indicated that mnemonics are regularly used for lists such as memorable phrases, acronyms, and short poems. Acronyms are developed from the first letter of each word in a series of words, such as Sonar (**S**ound **N**avigation and **R**anging) or Chief Financial Officer (CFO).

Accounting courses also apply acronyms which students must become competent in using them as part of their theoretical and problem-solving skills. Some common examples of acronyms use in financial accounting and reporting are:

1. statement of **f**inancial **p**osition (SOFP)
2. statement of **p**rofit or **l**oss (SoPL)
3. statement of **c**hanges in **e**quity (SoCiE)

The use of acronyms in accounting greatly helps students, educators and accountants in understanding accounting issues, standards, pronouncements, and statutory regulations, and even the language of the profession. By introducing acronyms in the study of financial accounting courses will increase the capability of all graduates to apply accounting concepts and theories into their work tasks (Wailoo & John, 2013). Abd Rahim (2018) used the mnemonic acronym as an educational tool to understand and remember the group of accounts by the arrangement of all letters to create words that represent the best to-be-remembered information. This technique serves as an encouragement that would change the negative perception of students towards the difficulty in learning accounting subject. Syed

Abdullah et al. (2019) also discovered that the use of acronym was able to stimulate the students' memory through their ability to envision and remembering the connection between concept and theories. Therefore, the acronym was chosen as a mnemonic technique to be used in this study.

METHODOLOGY

Design

This study was conducted in the year 2019. The students were separated into two groups which were M1(student learned through mnemonic method) and M0 (students learned without mnemonic method). All the steps are summarized in Figure 2.

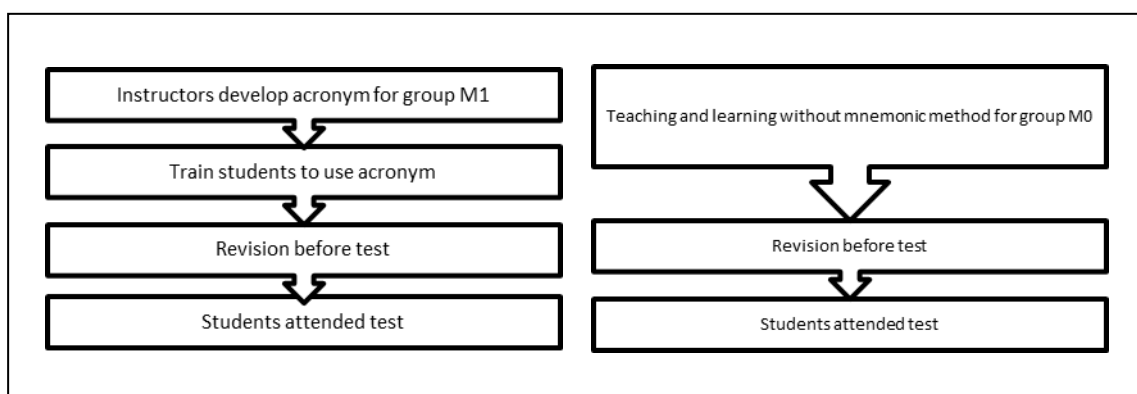


Figure 2: Research Procedure

This experimental study was carried out in Universiti Teknologi MARA(UiTM) Perlis, Malaysia, as part of broader mixed-method studies. The common test was conducted to investigate the understanding of accounting theories among the students taking Financial Accounting and Reporting 3 (FAR 3), focusing on one of the chapters i.e., Statutory Regulation on Financial Accounting & Reporting in Malaysia.

For the group with the mnemonic method (M1), the instructors developed the acronym relevant to that chapter. Next, the instructors trained the students on how to use the developed acronym. A week training was given to the students and another week for them to revise. Whilst, the other group (M0) followed the traditional teaching and learning method. The test was carried out where both groups were given the same set of questions as a common test.

Subject

Rule of thumb by Roscoe (as cited in Sekaran, 2000) posited that a sample size bigger than 30 and less than 500 is appropriate for most research. Therefore, 96 Financial Accounting and Reporting 3 (FAR 3) students were chosen at random and separated into two groups (with mnemonic training and without mnemonic training) which consisted of 48 students per group.

The M1 was a group that the students learned through the acronym method, whereas M0 followed the same pattern of testing and instructions as the mnemonic training groups except no mnemonic device was taught.

Instrument

Instructors developed the acronym relevant to Statutory Regulation on Financial Accounting & Reporting in Malaysia which consists of a compilation of basic concepts, facts, and accounting terms. Each acronym can be pronounced as a word that can easily be remembered by the students. Below are the acronyms used to answer the test questions.

Table 1: Acronyms

Question 1: Explain FOUR reporting requirements of private companies.			
Memory box	CAIN		
C	A	I	N
Companies Act	Approved Accounting Standard	Income tax department	Non-compliance with Securities Commission

Question 2: State FOUR rules on financial accounting and reporting in Malaysia.			
Memory box	BASB		
B	A	S	B
Bank Negara regulations	Audit Oversight Board requirements	Security Commission regulations	Bursa Malaysia regulations

Question 3: Explain any THREE requirements of listed public companies in the submission of financial report to regulatory authorities.			
Memory box	QAPA		
Q	A	P	A
Quarterly financial statements	Annual audited accounts	Periodic financial report	Approved Accounting Standards

Question 4: State any TWO functions each of the Financial Reporting Foundation and Malaysian Accounting Standard Board.			
Memory box	This acronym was not given to students and they are free to create their acronyms.		
V	I	V	A
Views to MASB	Issue statement of principles	View the performance	Accounting standards

A common test was administered after the instructors completed teaching the chapter using the mnemonic technique. The same set of questions with the memory box were given to these two groups for 20 minutes. The total mark for the test was 15.

This study used students' score index (SI) as a dependent variable to evaluate students' performance. SI was calculated by dividing the number of correct answer over the number of question.

$$SI = \frac{\sum(\text{number of correct answer})}{\sum(\text{number of question})}$$

The independent variables were coded as dummy variables where mnemonic training was coded as 1 and 0 for no mnemonic training.

RESULTS

Descriptive Performance Analysis

Table 2: Test Result

Range of score	M1	M0	Difference (M1 minus M0)
0-5	1	7	-6
6-10	2	19	-17
11-15	45	22	+23
Total	48	48	

Table 2 shows the score obtained by the respondents from M1 and M0. For the M1 group, 45 students scored the highest marks of 11-15 and only 1 student scored the lowest. In addition, almost half of the M1 students (23) scored more than M0 in the highest range of marks. This showed that the majorities of the respondents in group M1 were able to answer the theoretical questions correctly using the mnemonic technique. The overall result implied that learning with mnemonic devices is better in memorising and understanding accounting concepts.

Regression Analysis on Developed Acronym in Common Test

Table 3: Chi-Square Tests

	Value	df	Asymp. Sig. (2 sided)
Pearson Chi-square	73.997 ^a	18	.000
Likelihood Ratio	96.339	18	.000
Linear-by-linear Association	53.679	1	.000
N of Valid cases		96	

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is .50.

Pearson's Chi-Squared test was carried out to assess whether the mnemonic method and students' performance were related. From the top row of the output table, it can be observed that the Pearson Chi-Squared statistic, $\chi^2 = 44.835$, degrees of freedom 2, corresponding to $p < 0.001$. Therefore, we reject the null hypothesis with 99.9% confidence and conclude that there is very significant evidence of an association, ($\chi^2 (2) = 73.997$, $p < 0.001$) between mnemonic training and students' performance.

Table 4: Results of Linear Regression Students' Performance (SI) on Mnemonic.

Predictor	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	3.885	.317	12.246***	.000
Mnemonic	4.958	.449	11.051***	.000
R-squared			.752	
DW-statistic			1.871	
Shapiro-Wilk			.949 (.105)	
F			122.114**	

** Statistical significance at 5%, *** Statistical significance at 1%,

Using the results in Table 5, the written model is:

$$Y = a + bX$$
$$Y = 3.885 + (4.958)(X)$$

where Y = score on the dependent variable
a = mean of student's performance, C2
b = mean of student's performance, A2 = 1 minus mean of X = 0
X = mnemonic method

The finding showed that the average score index for students with mnemonic training was 4.985 higher than those without mnemonic training. The p-value for the dummy variable mnemonic training ($p=.000$) was very significant, suggesting that there was statistical evidence of a difference in average score index between the students with a mnemonic and no mnemonic training. In addition, the R-squared value of 0.752 for the model exhibited that the model was a good fit.

DISCUSSION AND CONCLUSION

This study aimed to determine the effectiveness of mnemonic device versus a non-mnemonic method on students' ability to answer theoretical questions in Financial Accounting 3 course. Based on the significant findings of the research involving the subjects, it is not impulsive to conclude that this technique is an effective strategy to remember and recall factual information related to accounting concepts.

The result of this study showed the group with mnemonic training not only scored higher marks in the test but also the number was greater than those in the group without. The acronyms developed were easy to remember and familiar to them. It was a simple shortcut that helped them to associate the information they wanted to remember with a word. This finding is consistent with DeLashmutt (2007) and Yin (2012) where the experimental students outperformed the control group. This verified that the mnemonic methods are simpler and easier to use even under strain and time pressures especially to students who have difficulty remembering accounting concepts (Laing, 2010).

Apart from forming acronym, the instructors also need to encourage the students to develop their acronyms as it will make them more comfortable when using them. Besides acronym word, the students can use image or sentence in remembering information. There are various ways of creating their own mnemonic devices in learning accounting theories. The findings from this study revealed that the students have drawn an image of certain mnemonic given by the lecturers to be best-remembered information. This result is also supported by Chan (2000) that learning takes place at a faster rate when the mechanisms are images rather than words.

As the students were able to remember the answer in a specific sequence, most answers were given in a schematic format facilitating the accounting instructors to grade the answers quickly. Hence, marking became faster and more efficient. From this study, it showed that accounting instructors may use the mnemonic acronym in their class since it increased students' understanding of accounting concepts and theories.

Accounting educators must also explore the use of other mnemonic techniques (other than an acronym) and use other innovative teaching strategies to motivate students to learn and excel in learning accounting theories. It is suggested for future research to employ mnemonics techniques in a wider scope or other subjects relating to accounting. Given the wider use of accounting learning tools, this technique would give a significant contribution to the accounting education literature.

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