

## Students' Sensory Modalities and Acceptance of using FUNancial.S.Battle (FSB) as Learning Method In Accounting Education

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**Abstract:** Accounting educators uses various techniques in making the subject interesting including introducing of accounting games in class. However, previous study shows that students' improvement is varied. Therefore this paper aims to explore students' ability to absorb learning financial statement using board game known as FUNancial.S.Battle (FSB) with their sensory modalities, VAK (visual, auditory, kinesthetic). 64 students enrolled for Financial Accounting 2 (FAR160) subject was chosen to participate in this study, as they have enough basic knowledge about financial statement. They were given set of Neuro Linguistic Programming (NLP) representational system preference test before playing the FSB game, once finished, another set of questionnaire was given to get their feedback about the game. Results were then analysed using SPSS to find whether there is any relationship between students' VAK and their acceptance of using board game as learning method in understanding the preparation of financial statement. Result shows that students with kinesthetic ability preferred using games better than the others. Since this area of study was rarely found in Malaysia, further study need to be done to confirm the finding. Furthermore sample of students should involve those majoring in accounting and also non-accounting students to see the difference. Further analysis should be done in future research to find out the significant relationship between sensory modalities and FSB game acceptance

**Keywords:** Financial statement, FSB, Visual, Auditory, Kinesthetic.

### 1. Introduction

Students in higher educational level are different from those of secondary school as they are more mature and able to think creatively. A more dynamic approach is needed to enhance their focus and understanding, and at the same time helping them to achieve higher result. According to the former Higher Education Ministry secretary-general, Tan Sri Dr Noorul Ainur Mohd Nur in her welcoming address at the Going Global 2018 Conference, Malaysia aims to become the best choice of destination for higher education (The Star, 6 May 2018). Indirectly, it makes innovation for teaching and learning becomes crucial as to enhance students' learning experience. Zulkifli (2011) highlighted that there is a need to broaden early approaches and to introduce alternative teaching and learning strategies among accounting educators in Malaysia. He also added that knowledge and understanding of learning modalities seems important to enhance student learning experience which was one of the main strategies to produce holistic graduate as well as to integrate sustainability into Malaysian accounting education.

Husin et al. (2014) highlighted that inactive class participation was among the factors that contributed to the poor performance among accounting students. Due to this issue, they suggested that it is necessary to find the alternative way in teaching financial accounting subject. One of the methods that were suggested by previous researchers was introducing interactive learning in class to makes it more interesting (Husin et al. 2014; Ke et al. 2016; M Yacob et al. 2015). Furthermore, intergrating interactive learning such as board game is one of the innovations in education that was proven to help improve results among students (Junaidah et. al. 2017; Treher

2011). Other than that, accounting educators around the globe used various techniques in making the subject interesting including introducing of various of accounting games in class (Seow and Wong 2016; Moncada and Moncada 2014; Michel et al. 2013; Nitkin 2011).

Gilakjani (2012) wrote that, if students know their learning style, they could integrate it in the process of learning as to help them learn faster and easier and at the same time may help them become an effective problem solver. Furthermore, Miller (2017) suggested that it is likely that students' learning style plays a role in what they believe and a common way to understand them is by determining their senses (modes) through which they receive and process information. Miller (2017) and Khalandi and Zoghi (2017) then suggested to use three basic modalities: Auditory, Visual, and Kinesthetic. These terms also known as VAK (visual, auditory and kinesthetic). Thomas (2014) simplify VAK as methodology which help individual to understand information received by way of 'see', 'hear', or 'feel', and how those information influence their action. According to Khalandi and Zoghi (2017) visual learners prefer the use of images as drawing and video, auditory learners prefer explanation and instruction while kinesthetic learners prefer experiments and practical.

In UiTM Cawangan Pahang, a board game 'FUNancial Statement Battle' (FSB) was introduced for teaching published financial statement for students. According to M. Yacob et al (2015), this is an interactive board game designed to enhance knowledge of students about preparation of published financial statement. Junaidah et al. (2017) found that the use of board game in accounting class have shown effectiveness, however they also found that students improvement were varied and therefore suggested that other factors might also influence. These might include student attitudes and their learning preference. This paper intends to look at whether student's preferences on using board game have connection with their sensory modalities (learning style). Objective of this study is to explore the relation of students' ability to absorb topic on preparation of financial statement using board game FSB with their sensory modalities, VAK. Next section explains more detail on methodology used in this study, followed by discussion on findings and analyses. Last section presented the conclusion.

## 2. Methodology

This study was designed to measure the students' ability to absorb learning financial statement using FSB game with their sensory modalities. Sensory modalities are consisting of three categories, namely Visual (V), Auditory (A) and Kinesthetic (K). It will be known as VAK analysis in this study. In order to carry out this study, there are two sets of questionnaires given to the respondents. The first questionnaire is known as Neuro Linguistic Programming (NLP) representational system preference test and was adopted from website mySatori Malaysia. The purpose of this test is to evaluate the students' sensory modalities. The NLP test consists of five sections with Section 1 to evaluate how they make important decisions. Section 2 was designed to measure their attitude during an argument whereas Section 3 measures their feeling. Then, Section 4 evaluates the easiest thing to do while Section 5 measures the most accurate statement related to the respondents. For all section, the respondents are expected to indicate how much they agree with each item in the NLP test on a scale from 1 to 4. The results from the test will then analyze according to the several steps as follows:

1. Step 1: The respondents were required to write down the following alphabet beside each answer in the test:

1.	K	2.	A	3.	V	4.	A	5.	A
	A		V		K		D		D
	V		D		D		K		K
	D		K		A		V		V

V= Visual; K = Kinesthetics; A= Auditory; D = Digital

2. Step 2: The respondents were required to match the answer (score) according to the alphabet (V, A, K, D) for each question.
3. Step 3: The respondents were required to add the number associated with each alphabet to get the total number for each alphabet.
4. Step 4: The respondents were required to compare the total score for each alphabet, and the highest total score represents the sensory modalities of the respondents. However, if

the highest score is alphabet D (Digital), the second highest score will be the sensory modalities of the respondents.

The second questionnaire was designed to measure the students' perception and experience in using FSB game. This questionnaire was obtained from the previous study that examined the effect on games on learning. It was divided into five sections. Section A was designed to record the personal information whereas Section B was designed to measure the engagement in FSB game. Then, Section C was designed to evaluate the enjoyment in playing FSB game while Section D is for the learning effect. The last section was designed to measure the student's experience in playing FSB game. The section B (engagement) was constructed from Whitton (2007) and Cheong et al. (2013). The rest of the questionnaire was adapted from Cheong et al. (2013). Some of the questionnaires are designed as scaling question ended and some of them are open-ended questionnaire with multiple questions. However, the scaling question used in NLP test was a scale of four (1-4) and the second set of questionnaires was a scale of five (1-5).

In order to carry out the study, firstly, the respondents were required to take NLP test. Then, they must play FSB game in a group. Upon finished, they were given the second set of questionnaires to measure the students' perception and experience in using FSB game.

The population for this study was 158 students from Diploma in Accountancy, UiTM Pahang Kampus Jengka enrolled for subject Financial Accounting 2 (FAR160) as they have enough basic knowledge about a financial statement. Out of this, 64 respondents were chosen randomly to participate in this study. The respondents were drawn out based on 40 percent population of the total students taking FAR160. The number of respondents was quite small. Nevertheless, as mentioned by Bartlett et al. (2001), for a population of 1,679, the required sample size is 118. Therefore, this sample size is regarded as sufficient and reliable to precede the study.

A pilot study was conducted by distributing the questionnaires to 20 respondents, and the amendment to the questionnaires was made subsequently. The data are processed using the Statistical Package for Social Sciences (SPSS) Version 24. The overall analyses are mainly using the descriptive statistic emphasized on the frequencies and percentage of the results. This study uses the mean approach to evaluate the relationship between students' sensory modalities and their acceptance of using games as a learning method in the preparation of financial statement.

### 3. Findings and analysis

This section contains findings and analysis of the study comprises of five parts which are the demographic analysis of the respondents, results from NLP test, engagement in FSB game, enjoyment, learning and student experience, VAK analysis and FSB game. The tables and charts are used to aid the presentation of results from the study. The findings and analysis are presented accordingly as below.

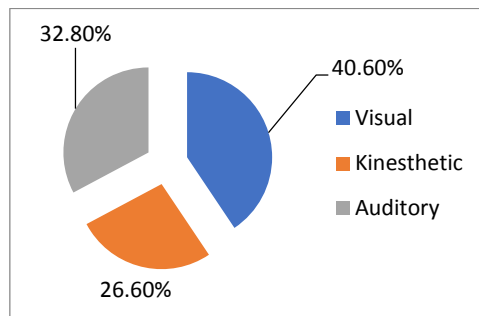
#### Demographic analysis

**Table 1** Demographics analysis of respondents

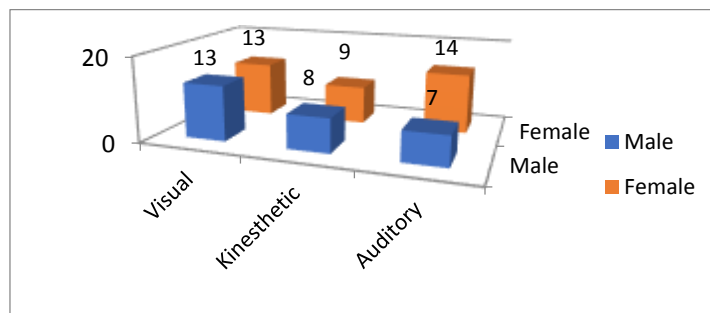
Characteristics	Respondents	
	Count	%
Gender:		
Male	28	43.8%
Female	36	56.3%
Age:		
18	1	1.6%
19	44	68.8%
20	19	29.7%
Part:		
Part 2	45	70.3%

Part 4	19	29.7%
Current Cumulative Grade Point Average (CGPA):		
Below 2.00	0	0%
2.00 – 2.49	1	1.6%
2.50 – 2.99	20	31.3%
3.00 – 3.49	20	31.3%
3.50 and above	25	33.9%

Table 1 shows the demographic analysis of the respondents in this study. Based on the analysis, out of 64 respondents, the majority of respondents are female which is 36 respondents (56.3%), and the rest is male that is 28 respondents (43.8%). Majority of the respondents are from part two Diploma in Accountancy which is 45 respondents (70.3%), and the balance is from part four. Their age is between 18 to 20 years old with a majority is 19 years old (68.8%). It can be observed that the majority of them have a CGPA between 3.50 and above (33.9%), followed by 3.00 – 3.49 and 2.50 – 2.99 which is 31.3% for both groups. Only 1.6% of them has a CGPA of between 2.00 – 2.49.



**Fig. 1** Analysis of respondents based on sensory modalities



**Fig. 2** Analysis of sensory modalities based on gender

Figure 1 shows the analysis of respondent based on sensory modalities. There are three types of sensory modalities which are visual, auditory and kinesthetic learners (Gilakjani 2012). The highest number of respondents comes from visual learners with the percentage and frequency of 40% (26), followed by auditory learners of 32.80% (21), and kinesthetic learners of 26.6% (17). The analysis based on gender is shown in Figure 2 as for the visual learners; there is a balance between male and female, 66.7% (14) of the auditory learners is female, and

52.9% (9) of the kinesthetic learners is female. As explained in the methodology section, the respondents must answer several questions under the NLP test to be categorised according to sensory modalities.

### Engagement in FSB game

**Table 2** Analysis of Engagement in FSB game

	Complete the game	Game is satisfying	Game is interesting	Achieve the goal	Game is boring	Game is difficult	Did not care how activity ended	Clear Information	Game is pointless	Time passed quickly
<b>Strongly Disagree</b>	0%	0%	0%	0%	20.3%	9.4%	37.5%	0%	37.5%	0%
<b>Agree</b>	4.7%	1.6%	0%	6.3%	45.3%	43.8%	46.9%	12.5%	39.1%	15.6%
<b>Neutral</b>	12.5%	14.1%	9.4%	40.6%	21.9%	35.9%	14.1%	17.2%	1.6%	15.6%
<b>Agree</b>	56.3%	75%	76.6%	43.8%	10.9%	7.8%	1.6%	59.4%	14.1%	57.8%
<b>Strongly Agree</b>	26.6%	9.4%	14.1%	9.4%	1.6%	3.1%	0%	10.9%	7.8%	10.9%

Table 2 shows the results from the survey on engagement issues regarding FSB game. Majority of the respondents agree (56.3%) and strongly agree (26.6%) that they want to complete the FSB game. Only 1.6% did not care how the game activity ended, and 12.5% felt boring while playing the FSB game. In total, 84.4% and 90.7% of the respondents agree and strongly agree that the game is satisfying and interesting. 68.7% of the respondents also felt that the time passed so quickly while playing the game. More than half which is 70.3% of the respondent think that the FSB game provides clear information on how to play the game. 53.2% of them agree that they can achieve the goal of the FSB game while 40.6% were not sure about that. Only 10.9% and 21.9% of the respondents think that the FSB game is difficult and pointless to use in teaching and learning proses. Based on the above result, it can be seen that most of the respondents engaged with the FSB game. This is very important because an excellent educational game should be able to engage the players while playing the game (Whitton, 2007).

### Enjoyment in FSB game

There are several questions asked to evaluate the enjoyment of undertaking FSB game. It is more on how the student felt when they are playing the FSB game such as whether they feel unhappy, worried, exhausted, miserable or they are happy in playing the FSB game. Of the respondents, 56.3% disagree and 12.5% strongly disagree that they were unhappy while playing the FSB game. In total, 67.2%, 65.6%, and 92.2% strongly disagree and disagree that they were worried, exhausted and miserable respectively while playing FSB game. 59.4% and 10.9% agree and strongly agree that they were happy in playing the FSB game. As mentioned by Cheong et al. (2013), enjoyment while playing the game is one of the essential factors to determine the successfulness of the game. This study found that majority of the respondents enjoyed playing the FSB game.

### Learning effect from FSB game

This study aims to identify the learning effect from FSB game among the respondents. There are four dimensions evaluated, which are whether the game will improve learning performance, increase learning productivity, enhance learning effectiveness, and help to achieve better grades. The result shows that most of the respondents agree that FSB game will help them to improve learning performance (70.3%), increases learning activity (51.6%), enhances learning effectiveness (57.8%), and achieve better grades (56.3%). However, 15.6% of them choose neutral when the survey asked whether playing FSB game will help them to improve learning performance. 31.3% also choose neutral concerning the FSB game will increase learning productivity and enhance learning effectiveness. For better grades, 29.7% choose neutral. It may imply that they cannot decide whether FSB game will help them or not with regards to learning benefit. This may due to the short time is given to them to explore the FSB game. A few of them disagree with the learning benefit, which is represented by 1.6% for improving learning performance, 10.9% for increase learning productivity, 3.1% for enhancing learning effectiveness, and

4.7% for achieving better. Even though there is some respondents do not agree with the learning benefit from the FSB game, the overall result shows that FSB game has an impact on learning especially it can help to improve learning performance.

### Experience in playing FSB game

The respondents were being asked about their experience in playing FSB game. Most of them highlighted the benefit of the game such as interesting, fun, improve the knowledge, better understanding, help to remember the format of financial statements and increase their confidence level. Some of them hope that the FSB game should be applied in the classroom as an alternative teaching method. There was one respondent commented that if the student does not have fundamental in preparing a financial statement, they will feel lost and annoying to complete the game.

### Sensory modalities and FSB game

The main objective of this study is to measure the students' ability to absorb learning financial statement using FSB game with their sensory modalities. As mentioned earlier, sensory modalities are categorised into three, namely visual, auditory and kinesthetic. Besides, FSB game is evaluated based on three factors such as engagement, enjoyment, and learning. Below are the results of VAK analysis with the relevant factors:

#### 1. VAK analysis and engagement

**Table 3** The mean of engagement in FSB game based on sensory modalities

Sensory Modalities	Complete the game	Satisfying	Interesting	Achieve the goal	Game is boring	Game is difficult	Did not care how activity ended	Clear Information	Game is pointless	Time passed quickly
Visual	4.08	3.88	4.12	3.69	2.08	2.35	1.65	3.88	1.60	3.69
Auditory	3.62	3.90	3.86	3.43	2.62	3.00	2.10	3.48	2.90	3.52
Kinesthetic	4.53	4	4.18	4.18	2.18	2.18	2.76	3.65	2.06	3.71

The results in Table 3 show that the mean for each VAK analysis is different. It implies that sensory modalities may influence the student's ability to absorb and accept learning financial statement using FSB game. The mean for kinesthetic learners is higher than visual and auditory learners for the several items in engagement such as want to complete the game; the game is satisfying, the game is interesting, able to achieve the goal of the game, and time passed quickly. However, the mean of auditory learners is higher for the item the game is boring, the game is difficult, and the game is pointless as compared to the other category of learners. The mean for visual learners is only highest for the item that asked whether the game provide clear information. Based on the mean ranking, kinesthetic learners are the highest ranking, followed by visual and the lowest ranking is auditory learners. It may imply that for engagement in FSB game, kinesthetic learners favour games as compared to the other category of sensory modalities. Students with auditory learners are not favoured game as shown by the highest mean for the item that negative feedback about FSB game.

#### 2. VAK analysis and enjoyment

**Table 4** The mean of enjoyment in FSB game based on sensory modalities

Sensory Modalities	Unhappy	Worried	Happy	Exhausted	Miserable
Visual	2.19	2.19	3.73	2.23	1.65
Auditory	2.81	3.14	2.62	2.48	1.95

Kinesthetic	2.18	1.94	3.82	2.06	1.47
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As shown in Table 4, the highest mean is representing by the kinesthetic learners for the item feeling happy while playing FSB game. The auditory learners have the highest mean for the item feeling unhappy, worried, exhausted, and miserable while playing FSB game. Similar with engagement in FSB game, students with kinesthetic learners have the highest mean for an item that favour game and students with auditory learners have the highest mean ranking for items that is not favourable with the game. However, the differences between the mean score for kinesthetic and visual are not much different.

### 3. VAK analysis and learning

**Table 5** The mean of learning effect in FSB game based on sensory modalities

Sensory Modalities	Improve performance	Increase productivity	Enhance effectiveness	Achieve better grades
Visual	4.00	3.54	3.69	3.81
Auditory	3.90	3.43	3.67	3.43
Kinesthetic	3.88	3.65	3.76	3.88

Table 5 indicates that students with kinesthetic learners have the highest mean ranking for all item under learning effect in FSB game except for FSB game can improve the learning performances. Visual learners have the highest mean score about the FSB game can improve the learning performance.

Based on the above analysis, it can be seen that sensory modalities will influence the students' ability to absorb learning financial statement using FSB game. Students with kinesthetic learners can absorb learning financial statement using FSB game as shown by the highest mean ranking for each analysis of FSB game compared to the other sensory modalities. This finding is consistent with the finding by Gilakjani (2012) who reported that individual with kinesthetic ability learns best with an active 'hands-on' approach. However, this study is only using the mean approach to evaluate the relationship between students' sensory modalities and their acceptance of using games as a learning method in the preparation of financial statement. Further analysis should be done in future research to find out the significant relationship between sensory modalities and FSB game acceptance.

### 4. Conclusion

The purpose of this study was to explore any relation between students' ability to understand preparation of financial statement using FSB and their sensory modalities, VAK. This is to support the use of board game as an alternative way of teaching certain accounting topic. Generally all respondents are satisfied with the use of board game as one of the alternatif teaching method in preparation of financial statement. This can be clearly seen from the result in term of engagement with FSB board game, enjoyment of the game, improvement of learning performance and overall experience of respondents. However there are few respondents stated otherwise, which mean they do not enjoy the game, nor did they think it will improve their performance.

As for learning modalities, it can be concluded that kinesthetic learners will get the most advantage with the use of board game as alternative teaching method. They rank the highest in engagement, enjoyment and learning effect analyses. However the number of kinesthetic learners found in this study represent the smallest group of the respondent .This is in line with previous study done by Shoemaker and Kelly (2015), which says accounting' students are less likely to be kinesthetic learners compared to management' students. However, even their numbers are small, this study found that, kinesthetic learners have the highest advantage over the use of board game in class, this findings support those of Gilakjani (2012).

Further study need to be done to include accounting and also non-accounting as sample, to see if there is any different between these two groups of students. Since this study only used mean approach, another analysis should be done in future research purposely to find out the significant relationship between sensory modalities and FSB game acceptance.

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