

DEVELOPING MONEY MASTER GAME FOR COLLEGE STUDENTS

by

Nor Izzatul Madiha binti Mustafah (11282)

Dissertation report submitted in partial fulfilment of
the requirements for the
Bachelor of Technology (Hons)
(Business Information Systems)

MAY 2011

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CERTIFICATION OF APPROVAL

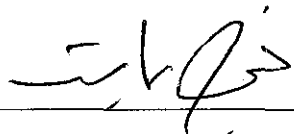
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A project dissertation submitted to the
Business Information Systems Programme
Universiti Teknologi PETRONAS
in partial fulfilment of the requirement for the
Bachelor of Technology (Hons)
(Business Information Systems)

Approved by,



(Ms Mazeyanti bt Mohd Ariffin)

UNIVERSITI TEKNOLOGI PETRONAS

TRONOH, PERAK

MAY 2011

CERTIFICATION OF ORIGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained herein have not been undertaken or done by unspecified sources or persons.



Nor Izzatul Madiha binti Mustafah

ABSTRACT

This project is designed purposely for college students in order to teach them about how to manage their money. The degree of personal finance management among college students in Malaysia is quite low. Spending style among students showed they are lack in financial literacy. Students with lack of financial knowledge will tend to do mistake in making financial decision. They should to improve their financial literacy of individuals and have positive money management attitude before it's too late. It is important to provide knowledge and educate college students about how to manage their financial standing. College students are generation which born with technology advancement. Game can be used as technology tools that will able to educate people. Game can be developed by using andragogy approach. This approach will be able to assist college students to learn about making wise financial decisions. Using this method, college students will be able to think in making the right decision in managing their money.

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CHAPTER 1

INTRODUCTION

1.1. Background

Money is something that most people desire and eager to have. According to Online Oxford Dictionary (n.d.), money is about anything in value which serves as is accepted as medium of financial exchange. Money had stands for many things such as power, security, achievement, love and also evil (Tatzel, n.d.). Money is needed in order to purchase many items in this world. People have many choices, whether to spend, save or invest their money. It is depends on people's behavior on how they want to manage their own money.

Theory of consumer choice state that people select goods and services to satisfy their needs. People also often groups and ranks the goods and services into the most attractive combination goods and services. They tend to do this because they want to select which goods and services give them the greatest enjoyment and suit to their budget. Some of people use savings in order to consider the multi-year consumption for goods and services that they want. It is because saving in this theory had represented the future spending. Another theory which is life cycle theory of saving said that utility which is satisfaction can be measured in money term. This theory also state that borrowing will be taking place in household's life when income for household is low. When income rises, people usually will pay off their debt and save for retirement (Alfest, 2007).

Besides, Alfest (2007) also said that behavioral finance is influenced by the cultural background, life cycle, family and personality. Cultural background had influenced by the culture of spending habit of the society, social, ethnic and religious background. The life cycle involves a certain period of age. For example, while people are young their spending habit might be aggressive but for the senior aged people, their spending habit

will become slow. Besides, the family background and personality also had created the pattern of spending habits. It is depends on how the parents had train the children's personality in spending money. Usually people spend money based on their affordability. However, there are also many ways people deals with money. With money people can budget, spend, lend and also save it. Sometimes people do crimes because of they want money which can drive them towards wealth, power and material trappings. Malaysia's news today always talked about the issues of drug mules. This is one issue that people do crime because of money. One of the articles in The Star said that half of Malaysians held abroad are drug mules. About 1,880 Malaysians arrested in overseas involved in drug cases. Greed is the main factors of why this issue happened (TheStar Online, 2011). Besides, the crime analyst also said that people had involve in this cases are because they need fast money. In this article, it had suggested that in order to prevent this case, family should play the important roles. It is to ensure their family's members has the right values especially when they go to private college that mixed around with multicultural backgrounds.

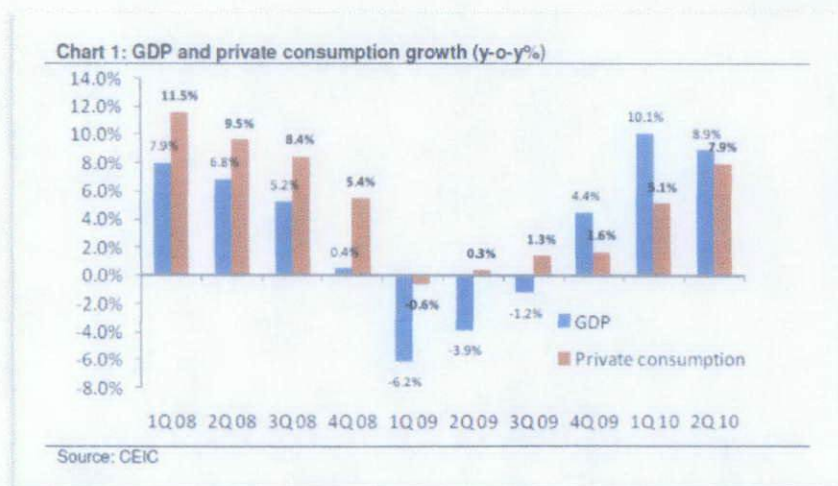


Figure 1: GDP and private consumption growth (Alias et al., 2010)

Figure 1 showed that Malaysian GDP and private consumption (Alias et al, 2010). It also showed that Malaysia citizen loves to spend their money. The consumption growth year of year for gross domestic product (GDP) and also private consumption showed an increase from quarter 3 2009 until quarter 2 2010. During quarter 1 2009 until quarter 3 2009 showed the graph is lower than others because of recession (Alias et al, 2010).

People usually use their purchasing power to buy anything that they want. For economic point of view, it is good because the flow of money is circulated within the country. Moreover, individual people need to know to allocate and manage their money wisely.

One of the articles in newspaper said that Malaysian people are not saving enough money. Based on survey done by Citibank Bhd, they said that about 56% Malaysian people love to spend money instead of saving money. About 37% said that they are worried about their financial future. The rest had followed the financial budget (Leong, 2009). The number for Malaysian people that love to spend money is quite high. This shows that Malaysians' attitude in managing their money is not so good. Figure 2 showed the number of bankruptcies in Malaysia.

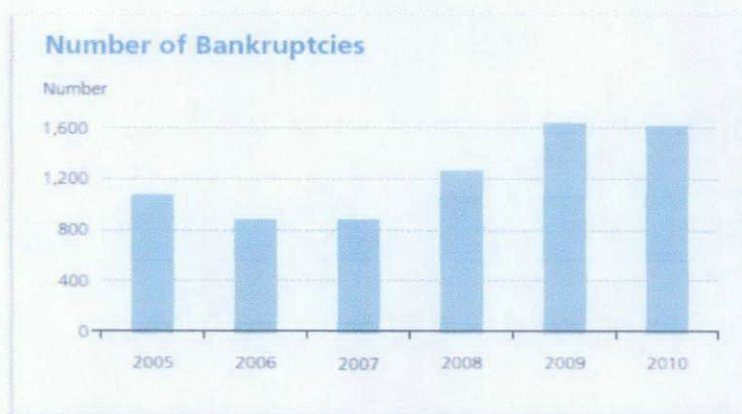


Figure 2: Numbers of Bankruptcies in Malaysia (Bank Negara Malaysia, 2010)

The number showed that bankruptcies are increasing from year to year. These bankruptcies show that Malaysians are not able to manage their wealth properly. They have many debts and are not able to pay it. Debt issues are critical for people if they are not able to pay it. They did not have net income because of their debt burden. As a conclusion, it is important for people to take care and manage wealth efficiently and avoiding individual financial from bankruptcies (Bank Negara Malaysia, 2010).

Nowadays technology is an attractive platform to educate college students about money management skills. Generation Y had been exposed to the modern technology. This generation is also called as 'digital natives'. They are adapting with concept of modern world and born in digital world. Technology advancement that had been exposed to them is internet, mobile phone, latest technology for hardware and software. The technology has become a toy for this generation (Augustin, n.d). Games are very familiar among this generation. Usually, player will become addicted in playing the games and also will spend more time to play it (Carat, 2011). Thus, game will likely be able to provide an attractive learning style for this generation.

1.2. Problem Statement

The degree of personal finance management among college students in Malaysia is considered low. Topic of personal finance among students is considered minimal in Malaysia. The spending style among students showed they are lack in financial literacy. Students with lack of financial knowledge will tend to do mistake in making financial decision. They will not able to manage their budget very well. Financial literacy among students is important because their attitude in managing money will be enhancing from time to time. They need to improve their financial literacy of individuals and have positive money management attitude before they become an adult (Dahlia et al, 2009).

Based on report from Koid (2008), there are a few challenges that people are facing in their financial management.

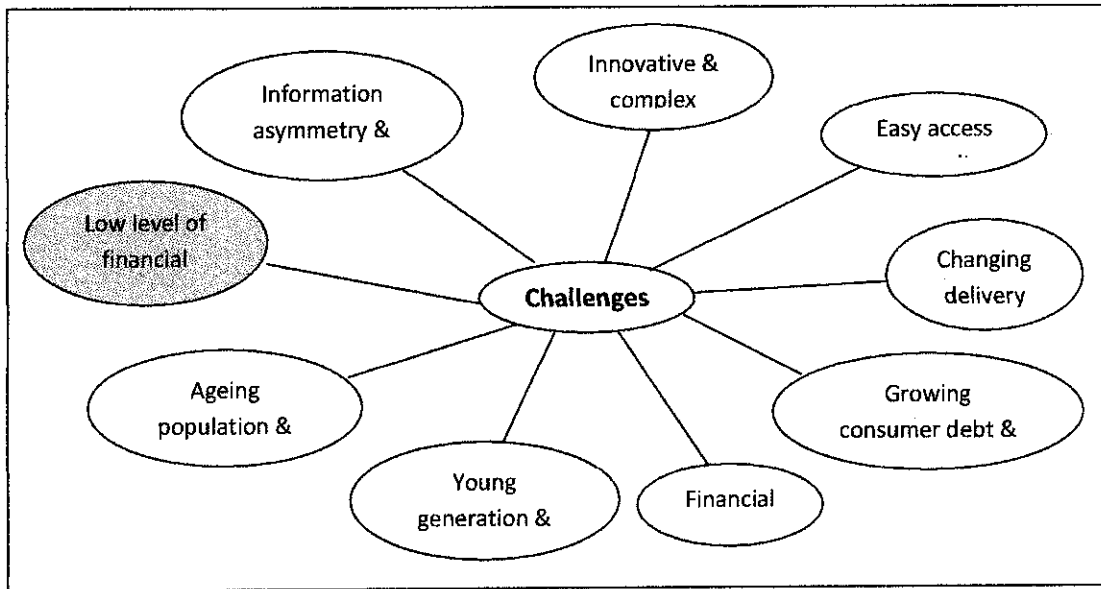


Figure 3: Challenges in Financial Management (Koid, 2008)

Based on Figure 3, the challenges that will be discussed in this project are low level of financial literacy. This will be the subject that this project will emphasize on. This project will focus on young generation about how they manage their money.

In order to give protection to the citizens, Bank Negara Malaysia is also doing many program in order to educate people. There are many approaches that they use in order to give financial education to the citizen. All programs that had been organize not only focusing to educate the children but also an adult. It showed that government also tries to emphasize financial management skills among adult (Koid, 2008). Table 1 is about the programs that are done by Bank Negara which they are focusing on all level of age.

Table 1: Programs by Bank Negara Malaysia

Programs	Description	Comment
Pocket Money Booklet	Learning tool to teach and train students for a smart personal money management	Reachness. Provide section in the booklet for students to write what they are spending every day.
Duitsaku website	To encourage financial literacy among students. Website provides an interactive education tool.	Richness. Provide interactive tools to students to learn and guide about how to manage their financial literacy
Lesson Plan	Tools for teacher to guide students in order to teach them about financial planning.	Richness and Reachness. Teacher teaches students about how to manage the money.
Workshop	Has own module which is involve about personal financial planning.	Richness The content of workshop is good for students to understand and follow.
Poster competition	To create awareness for students through competition.	Richness Use competition to teach children about financial.
Consumer Education Programme	To provide relevant information for informed decision making. Besides, to facilitate comparison of financial products and services.	Richness. Provide tools to public people to calculate about their budget and help them to make decisions.

All programs that organize by Bank Negara Malaysia are goods because they want to create awareness to people. However, some of technique is not effective and not suit to apply for the new generation.

1.3. Objectives

The objectives of this project are:

- To develop a game that can assist college students in making financial decisions.
- To create awareness on financial management among college students from age 18 until 23.

1.4. Scope of Study

The scope of study is focused on college student financial situation. The aim for study is to teach college students to manage their financial wisely. This project will be studying on Malaysian college students from age 18 until 23 about their behavior towards money. This project will also study on how to use game based learning approach to educate the college students on how to make financial decisions. A proper research will also be done to know about the behavior of students in managing their money. Research will also be covered on how computer games can give positive side to them in order to develop their critical thinking to make wise decisions.

CHAPTER 2

LITERATURE REVIEW

2.1 Andragogy approaches

Definition of andragogy can be described as the art and science that helps adults to learn (Knowles, n.d.). Adults learning principles need to focus on real world cases, emphasize on how to applied the learning concept, relate the learning concept and learner's goals, the materials used according to learners' past experiences, allowed more ideas, listen and respect other's opinions, encourage learners to be resources to each others, treat learners as an adults and also give the learners full control to learn about something (Mihall & Belleti, 1999).

Knowles (n.d) had proposed the theories of learning in education psychology perspectives. According to his principle, there are four groups of adults as learners. The first group belongs to the adults who are usually acted to be more self-directed which result of their maturity. Next, the adults who have their own personal histories can be defined as their identity. Individual histories also can be referred as the resource of experiential learning and new learning concept can be applied. The third group emphasized on enthusiasm among adults which is more relevant for learning environment. The last group of adults usually interested to make immediate actions for problem-solving (Knowles, n.d.).

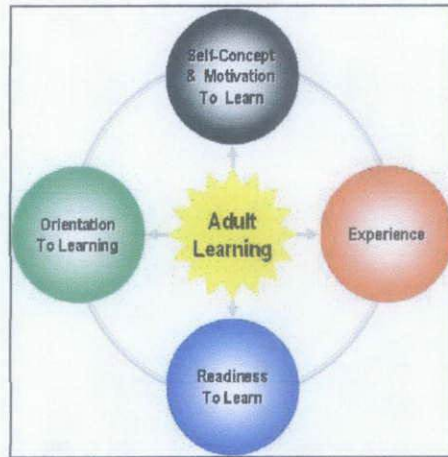


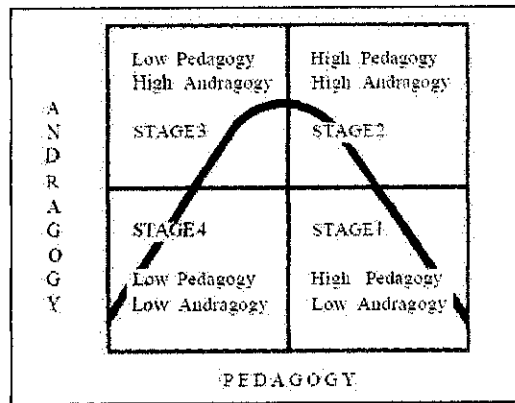
Figure 4: Knowles andragogy concept (Knowles, n.d.).

Figure 4 shows how andragogy concept can be applied for adults. It is through self-concept and motivation to learn, orientation to learning, experience and readiness to learn. There are differences between concept of children learners (pedagogy) and adult learners (andragogy). Knowles had made comparison between pedagogy and andragogy according to six criteria.

Table 2: The differences between pedagogy model and andragogy model (Knowles, 1998)

Assumptions	Pedagogy Model	Andragogy Model
Learners need to know	Teachers need to tell learners what they need to know.	Learners need to know the important to learn about subject matter.
Learners self concept	Learners have reliant personality.	Decisions that learners made are on their responsibility.
Role of the learner's experience	Learners have little experienced and not too worth.	Learners had greater experience. The experience can be resources for learning.
Readiness to learn	Learners prepared to learn based on teacher requires.	Learners will prepare to learn when they feel it is important and relevant to their lives.
Orientation to learning	Learners expect subject centered content.	Learners willing to learn based on task and problem centered.
Motivation	Learners will motivated by rewards or punishment.	Learners motivated from internal forces such as curiosity.

Table 2 shows the differences between pedagogy model and andragogy model.



Figur 5: Andragogy versus pedagogy learning model (Delahaye, Limerick, and Hearn, 1994)

Figure 5 shows the andragogy versus pedagogy learning model. Stage 1 is the learning model that interprets the pedagogy orientation model. Stage 2 is about the partial stage where the learners prefer pedagogical as well as andragogical orientation to study. Meanwhile stage 3 visualize about andragogy learning orientation. However, stage 4 illustrate that the learners are no longer need assistance from the teacher or facilitator (Delahaye, Choy and Delahaye , 1994).

2.2 Financial literacy among college students

Based on research by Fazli and MacDonald (2010), they said that more than half of college students did not save the money when they received their scholarship or education loan. Statistic also said that more than half had used money for shopping. About 45% had spent their money before end of semester and about 17% had given money to their family. Meanwhile, 13% used money to pay the debts. From the percentage itself people can know about the level of financial literacy among university students. Basically, students with high financial knowledge level tend to have more saving money. However students that had been exposed to the greater influence from family, peer group, school, work, religion and mass media are lack of savings behavior. There are six financial best practices identified which related to the financial knowledge. It is good if people can practice this in managing their money. People need to have

emergency fund, credit report, avoid having overdraft, having retirement account and also considering risks that will be happened to them (Robb & Woodyard, 2011).

One of article from Mississippi State University had classified five money spender categories. Table 3 shows categories of people spend the money.

Table 3: People spending categories (Mississippi State University, n. d.)

<ul style="list-style-type: none"> • Spend money only for needs Type of people that save money for emergencies. They also like to have money in their pocket.
<ul style="list-style-type: none"> • Have money to get ahead in life Type of people did not like to buy cheap stuff. They feel buying cheap stuff did not worth for them.
<ul style="list-style-type: none"> • Deserve nice things in life Type of people that feel they should buy the things that they want now. They also think that credit is necessary.
<ul style="list-style-type: none"> • Worrying money will not help Type of people that believe money will come from somewhere.
<ul style="list-style-type: none"> • Money cannot buy the happiness Type of people that think although without money they can live happily.

According to one article from National Student Loan Programme stated that college students had lack of experience to make their own decisions. There are only about 24% of students well prepared to deal with financial challenges after graduation. The percentage is very low. Students need to aware about their financial knowledge in order to make them well prepared to face the real life (NSLP, n. d.).

In Malaysia, Bank Negara of Malaysia had organized a few programs to college students in order to enhance the financial capability among citizen. The objective of the programs is to promote the financial education among students. The programs are designed to encourage savings habit and create awareness among students on the importance of

smart financial management and planning. Bank Negara also had conducted the financial educational outreach programme which is targeted to college students. The key messages for this programme are to teach about wise money management, the benefits and importance of saving from young (Koid, 2008).

Many research agreed that financial literacy among college students is low. There are many programs had organized by college and also government in order to create awareness among students about to manage their financial style.

2.3 Games for learning purposes

Today generations are more intellectual in digital technologies. They are willing to take more challenges, though in a technological way. New generation had several skills based on their own interests (Annetta, 2008). Table 4 shows the percentage of students using different platforms for playing games and also the reasons why they are playing the games.

Table 4: Percentage of students using different platform for playing games (McDaniel, 2009)

Forms of digital/electronic games	Percentage (%)
Television based system (Sony PlayStation® series, Nintendo GameCube™, Microsoft Xbox®, Xbox 360™)	61.6
PC-based DVD ROM or CD ROM	58.8
Games-specific handheld consoles (Nintendo's Game Boy® and DS™ series, Sony's PSP™) with using button and joystick control.	41.8
Other handheld unit [mobile computer, mobile phones, P.D.As (Personal Digital Assistants)]	66.7

Table 5: Percentage of students and their reasons for playing digital games (McDaniel, 2009)

Reasons why students like to play digital/electronic games	Percentage (%)
Fun.	72.9
Fill up free time.	62.7
Enthusiastic with adventure activity.	29.9
To show ability.	30.5
Enthusiastic with fantasy world.	45.2
Other.	6.8

The percentage of students playing games is a proof that one of approaches that can used to teach them is by using game.

Nowadays, ideas to use games as tools to teach have become more popular (McDaniel, 2009). By applying computer games for various pedagogy application approaches especially for education purposes, it will give a better understanding about a subject matter (McDaniel, 2009). Besides, games will also help and support people to think about decision that they make (Johnson, 2007).

Games have their own principles which are designed for players to discover more about the game play and it is good for people because it will develop the learning outcomes (Johnson, 2007). By playing games, it will encourage motivation for player to learn and submerge in a subject matter so that they can learn more effectively. It provides motivation for player in terms of interest, fantasy, fun, social recognition and challenge (Annetta, 2008). Besides, they are also encouraged to learn more if they made some mistakes (Teed, 2009). In games, there are some characters and specifications. These games characters need to solve the problem given in game play and they may precede the games journey if they had successfully solved the problems. Problems are the part of game which is objectively to make player to be motivated to solve the problem and continue their journey of game virtually (Pivec et al, 2005).

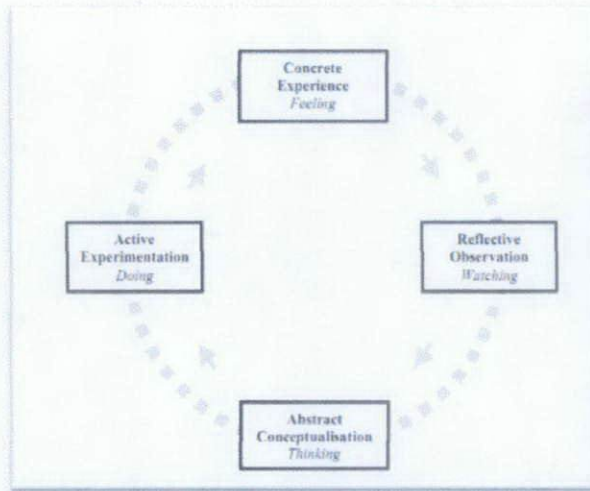


Figure 6: Impact of games (Kearney, 2007)

Figure 6 explained about how the flow of games had engaged the players and give impact to people to learn. Game is about strategy which needs player to make decisions and actions. After player had taken an action and struggle to achieve the goals of the games, the result will be the learning outcomes (Kearney, 2007). What people can learn from gaming is that they can take an action, experience and also the game role play (Annetta, 2008).

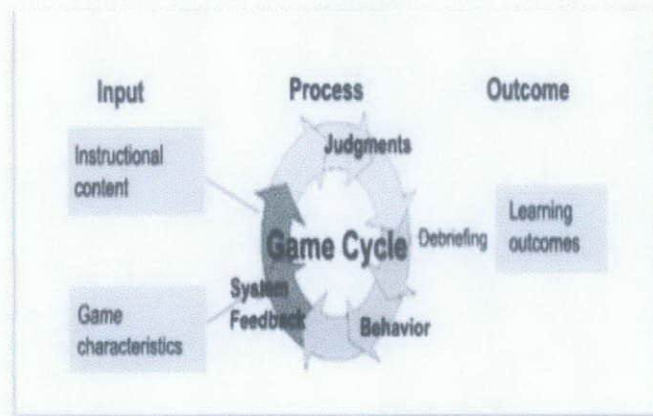


Figure 7: Game Based Learning Model (Garries et al., 2002)

Based on model of game-based learning, it showed how the learners interact with games and produce the learning outcomes. In this model, instructional content and game characteristics are the characteristics of educational games. Meanwhile, the game cycle will be repeated by learners within game context if the game is motivating. In the game

cycle, behavior and system feedback had interacted with each other. When player have a desirable behavior to play the game, it will encouraged player to play and repeat the game cycle. Debriefing process in the game cycle means the process of game cycle linked to achievement of learning outcomes. Debriefing had provides connection between virtual world (simulation) and real world. It is connected by giving an experience and learning to player. As a result, learning outcomes had comes out from the combination of game characteristics, contents and the game cycle process.

2.4 Related work

Table 6 showed the comparison between games, courseware and programs which related with managing money.

Table 6: Games/Courseware/Programs which related with money management

Games/Courseware/Program	Description	Pros	Cons
Hands on Banking	Type: Courseware Target user: Childrens, teenagers and adults About: - Purposely to educate people for all level which for children, teens, parents and teachers.	- Learner can identify 'needs' and 'wants' clearly. - Learner can learn more skills. - Attractive courseware.	-Too many words used.
The great piggybank adventure	Type : Adventure game Target user: Childrens and adults About: -Purposely to educate children and adults about the importance of making wise financial planning. - Player will learn about the importance of financial concepts in order to complete the game and achieve the goals.	- Player can learn about the basic things first before proceed to next level. For example by setting financial goals, how to saving and spending wisely, inflation, how to allocate their asset and also making financial diversification. - An attractive game	- The adventure of the game more suitable for students from age 8 until 14 years old but for those adults who are like to have fun play game they also can try.
The mint	Type: Community website which has much section. Target user: Adults and childrens About : - Purposely to educate people for all level which for children, teens, parents and teachers. - User can choose which articles they want to read. -Provide simple game like simple saving calculators.	-Suitable for all level of user. - More to educational learning tools.	Quite boring and not too interactive.
Moneytopia Online games	Type: Simulation games Target user: Adults About: -Teach people about how to manage the financial.	-Content is good for adult in order to them to learn about their financial -Provide tutorial and guide for player who had trouble	- The instruction of game does not too clear

	-Adult level: teach adult about how to manage the budget. -Covered saving, income, investment and spending	in managing their financial -Interactive education simulation games -Attractive learning tools	
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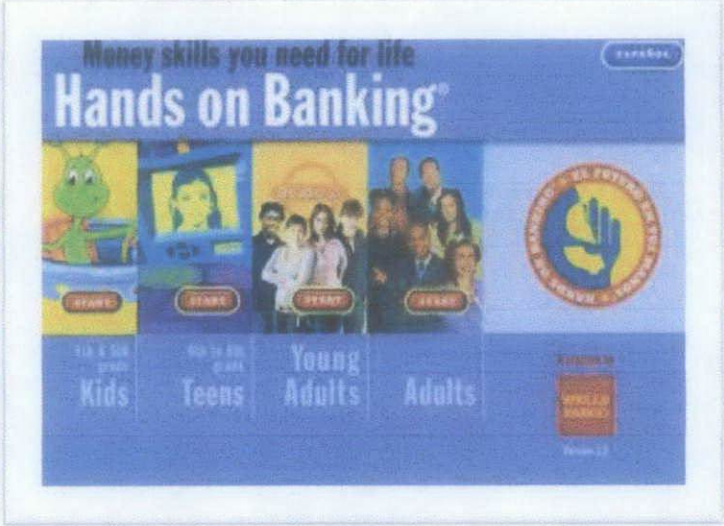


Figure 8: Snapshot game courseware 'Hands on Banking' (Handsonbanking, n.d.)



Figure 9: Snapshot game from 'The great piggybank adventure' (Piggybank, n.d.)

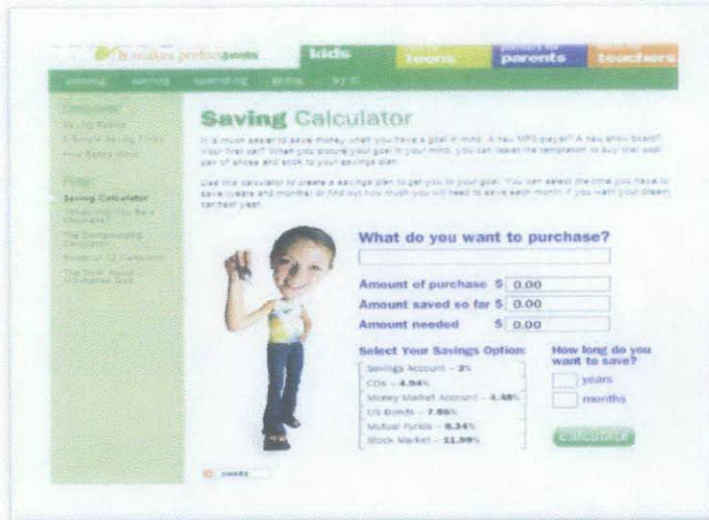


Figure 10: Snapshot game from TheMint website (Themint, n.d.)



Figure 11: Snapshot game from Moneytopia (Community bank: Bank of America, n.d.)

As a conclusion, there are many alternatives to teach and guide people in order to manage their money. Most of online games which involve money are using US currencies. Some of the game is more to text able which is not really attractive for player to understand and play with. Games need to be more colorful, nice sound and also having more pictures in order to attract player. So that, people will be enjoy and having more fun to play the game.

CHAPTER 3 METHODOLOGY

3.1 Research methodology

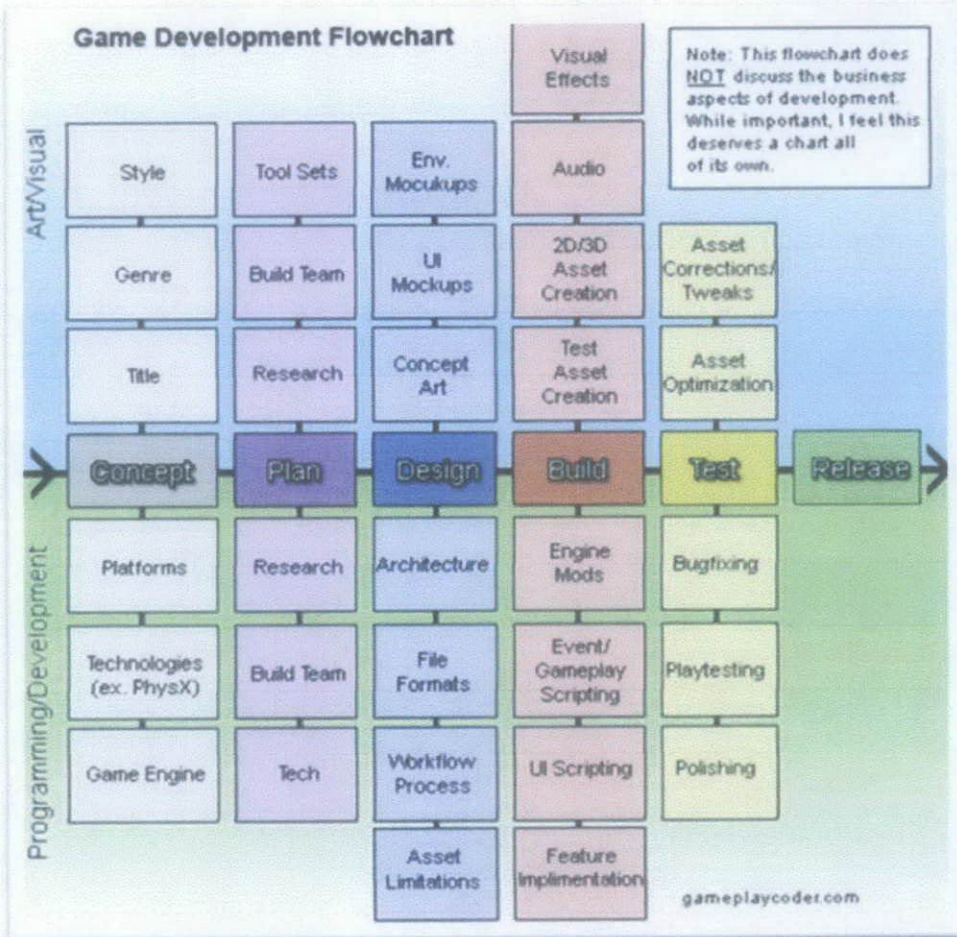


Figure 12: Game development methodology (Voman, 2009)

- **Concept**

Game concept that used for this project is game based learning. Game based learning had focus to college students' age from 18 until 23 years old. The project title is 'Money Master Game'. MMG purposed to assist college students to manage their money through game. Game developed based on objective and

target that had been set up for this project. Table below showed the identification this project:

Table 7: Game identification

	Art / Visual	Programming/Development
Title	Money Master Game	-
Platform	-	Game Maker 8.0 Lite Edition
Technologies	-	Using gaming application software.

- **Plan**

To develop MMG, planning phase is important to set up the game methodology. Every project has datelined. Gantt chart and key mile stone are needed to make sure the flow of the project is done efficient and effectively. Every activity that had been assign in the gantt chart need to be achieve based on what month it is targeted. Key mile stone also used to measure the working process of the project. Below is gantt chart and key miles stone for this project:

o Gantt Chart

Table 8: Gantt chart

ID	Task Name	Start	Finish	Duration	Jul 2011				Aug 2011				Sep 2011			
					7/3	7/10	7/17	7/24	7/31	8/7	8/14	8/21	8/28	9/4	9/11	
1	Submission Progress Report	7/6/2011	7/6/2011	.2w												
2	Interface Design	7/5/2011	7/15/2011	1.8w	■											
3	Score Design	7/12/2011	7/22/2011	1.8w	■											
4	Summary Part	7/18/2011	7/29/2011	2w	■											
5	Integration	7/29/2011	8/9/2011	1.6w	■											
6	Questionnaire survey	8/8/2011	8/12/2011	1w	■											
7	Technical Report	8/15/2011	8/17/2011	.6w	■											
8	Oral Presentation	8/23/2011	8/25/2011	.6w	■											
9	Submission of Project Dissertation	8/29/2011	8/31/2011	.6w	■											

Table 9: Key milestone

Activities	Status
Proposed proposal	Done
Extended Proposal	Done
Proposal defense and progress report	Done
Interim report	Done
Planning Phase	Done
Design Phase	Done
Implementation Phase	Done
Integration	Done
Release	In Progress
Technical Report	In progress

Planning is important to allocate time and to make the activities achieved for the target. All activities such as research, implementation, testing and release require some period of time to implement. So, it is important to plan and manage the time wisely to those kinds of activities. Besides, other thing such as tools and technology used for this project also need to be plan.

✦ Tools and technology

Planning for tools and technology required some information about tools and technology to use. Find and search the suitable tools with analyze the best application to used for the project.

Table 10 and table 11 below showed tools and technology used to support the development of the project.

Table 10: Application and software

Development Tools	<ul style="list-style-type: none"> • Game Maker 8.0 Lite Edition
Image Editor	<ul style="list-style-type: none"> • Adobe Firework CS5 • Microsoft paint

Table 11: Computer specification

CPU	2.0 Gigahertz and above
RAM	Two gigabytes
Hardisk	50 gigabytes and above
Operating system	Window XP, Window Vista, window 7

✦ Planning for Questionnaires

After development process had been done, feedback from user will be collected through questionnaires. Questionnaires will be done to university students. It will be tested to know whether the game had met the objective of the project or not. About 20 questionnaires will be distributed after development of game is finish.

✦ Feasibility analysis

Feasibility study will be done in order to ensure project had been successfully developed and implemented within the timeframe. In order to ensure the game is successful develop and implement, all factors should be come out with the solutions. It also important to make sure all functionality of the game is functioning perfectly.

- **Design**

Design phase involve design the flow of the project. It is important to ensure development process is well organized. Flow chart and tables for comparison is needed to design in order to make development process will become easy. Below are the flowchart and the sequence diagram for MMG.

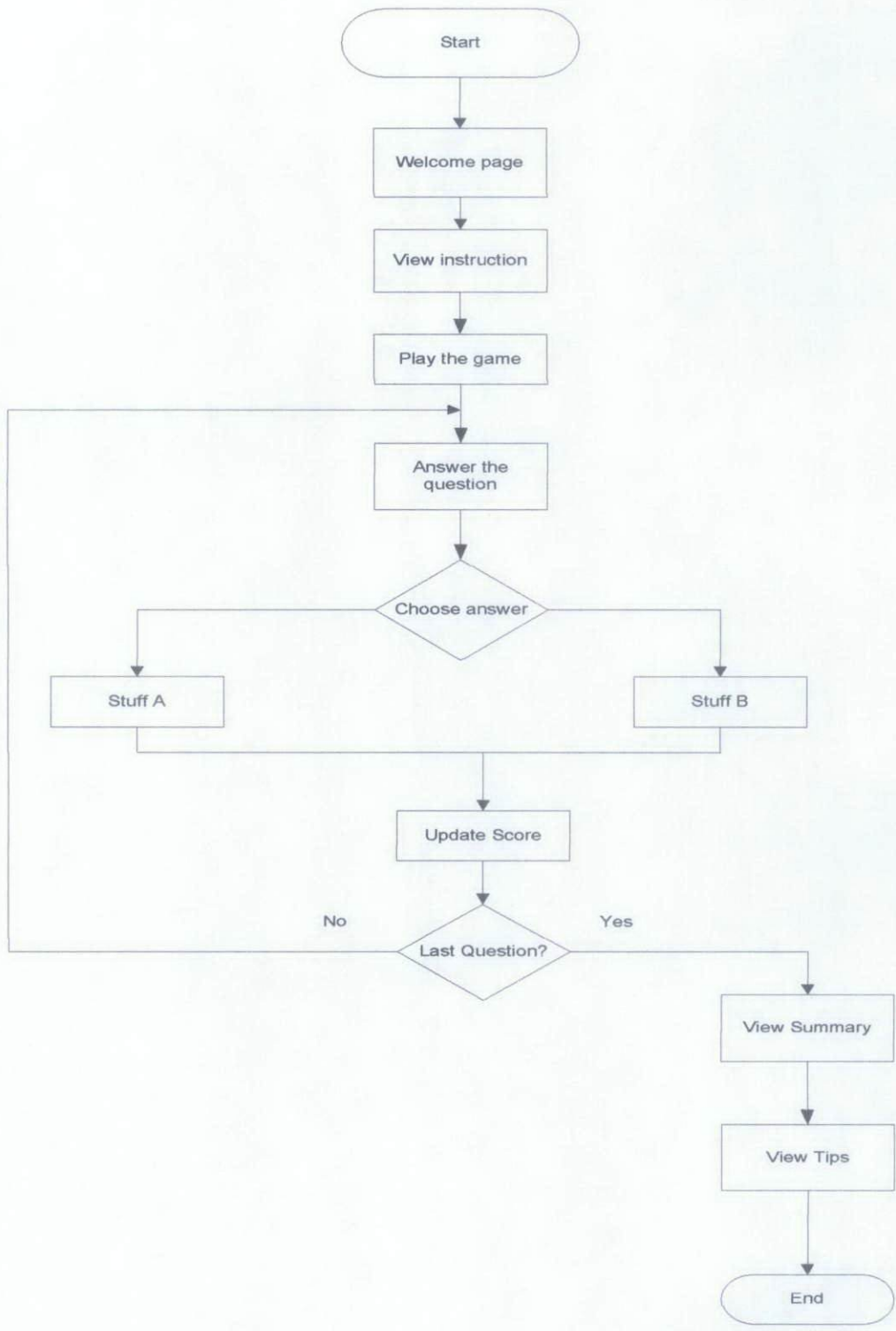


Figure 13: MMG Flowchart

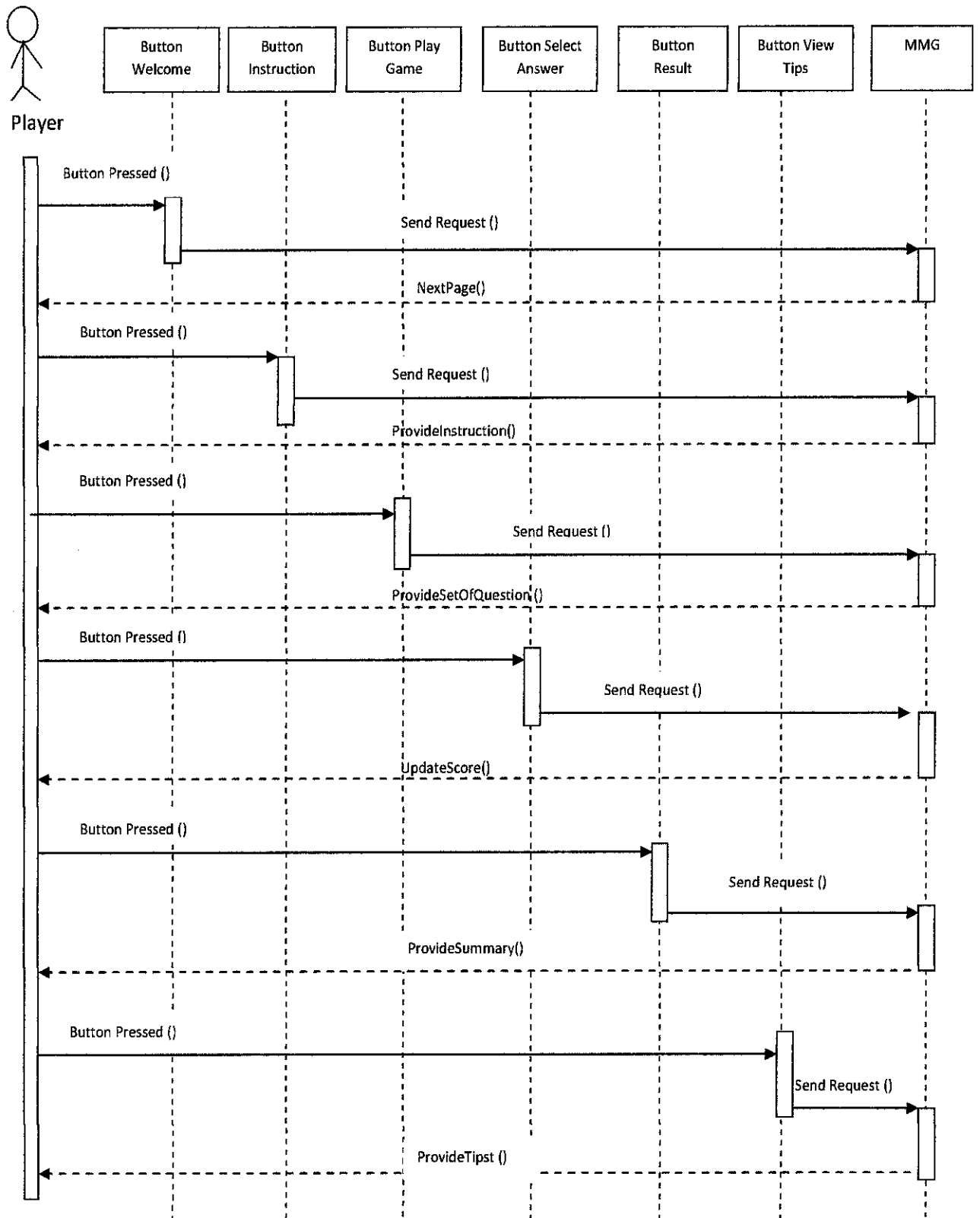


Figure 14: MMG Sequence Diagram

- Storyboard for the game

A storyboard of this game built to show the visual interpretation about the project. By having storyboard, the development process will be much easier.

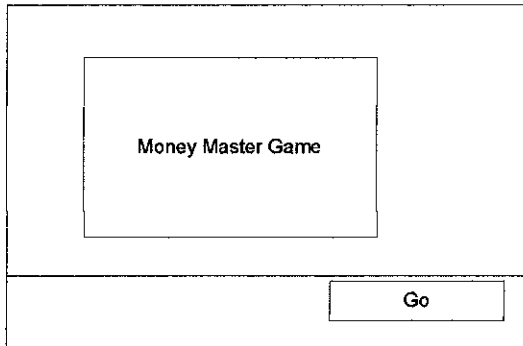


Figure 15: Welcome page sketch

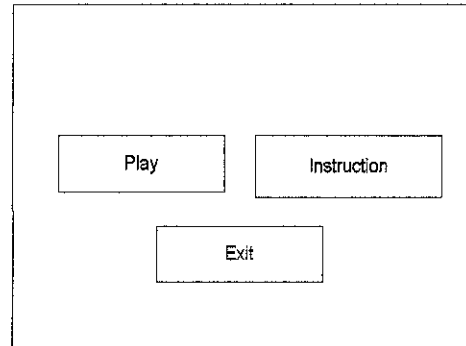


Figure 16: Menu sketch

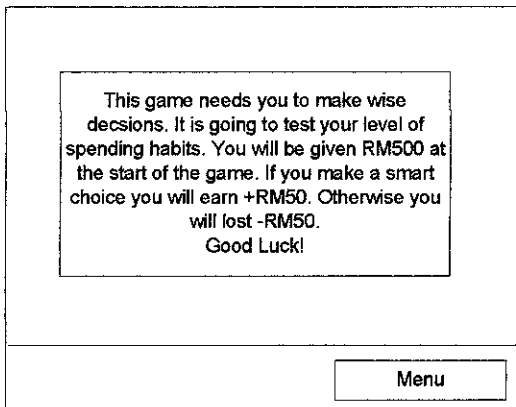


Figure 17: Game instruction sketch

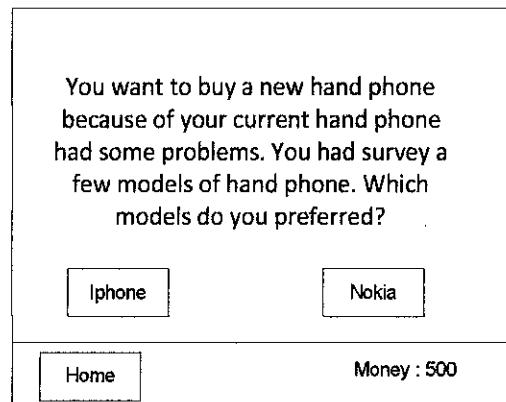


Figure 18: Question sketch

You feel that like to eat burger. Which burger do you prefer?

Money : 550

Figure 19: Question sketch

Your lecturer had asked you to buy the text's book for the subject. Do you want to buy the new text book?

Money : 600

Figure 20: Question sketch

You had plan with your friends to have holiday trips in this end of month. Which place do you preferred?

Money : 650

Figure 21: Question sketch

You semester break had started. Your semester break is about 2 months. Are you thinking to having rest at home or doing part times job to earn some money?

Money : 600

Figure 22: Question sketch

For the new system applied by the university, all students are required to pay the hostel fee. Your exam slip will be suspended if you fail to do so. Your hostel fee is RM150. Do you want to pay now or pay later?

Money : 550

Figure 23: Question sketch

You are going shopping with your colleagues. Which stuff do you prefer to buy?

Money : 600

Figure 24: Question sketch

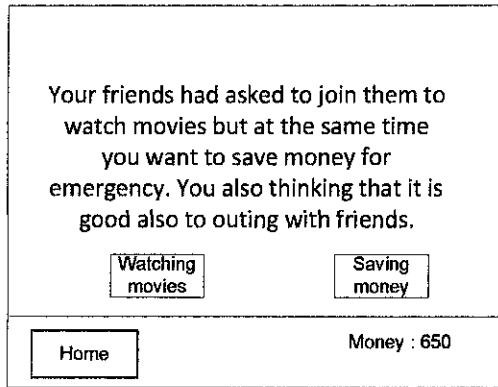


Figure 25: Question sketch

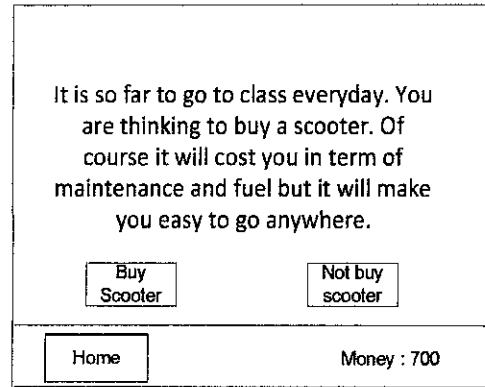


Figure 26: Question sketch

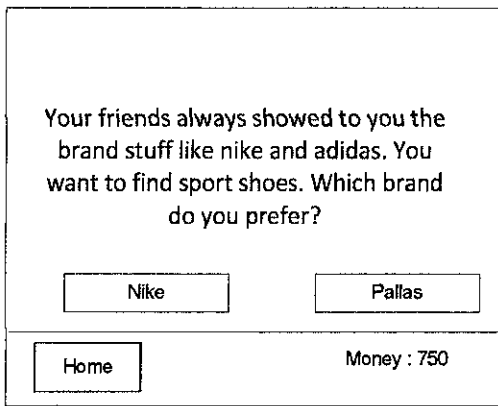


Figure 27: Question sketch

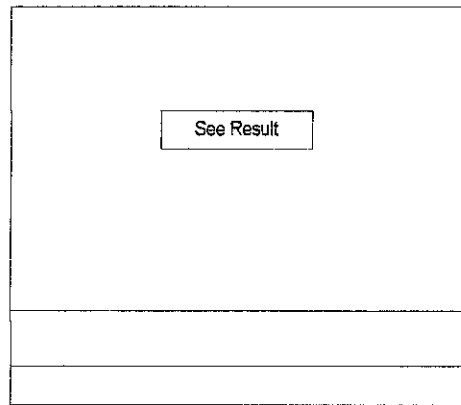


Figure 28: Button 'See Result' sketch

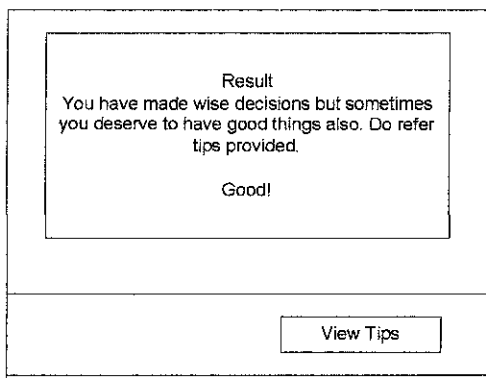


Figure 29: Result sketch (showed player spending type)

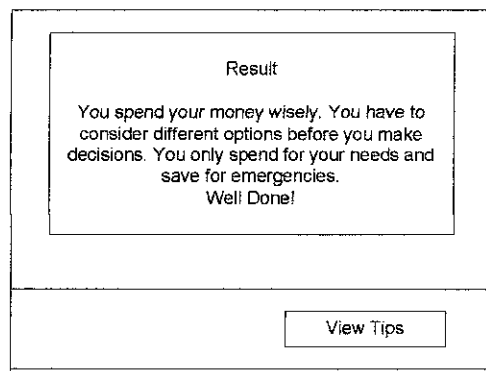


Figure 30: Result sketch (showed player spending type)

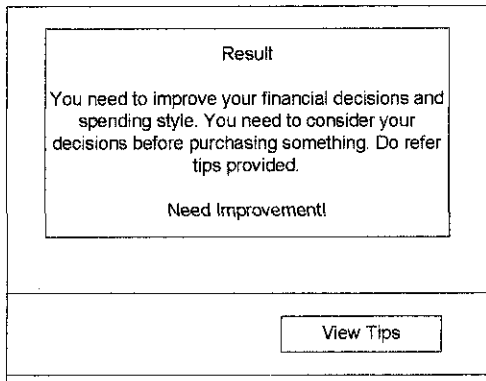


Figure 31: Result sketch (showed player spending type)

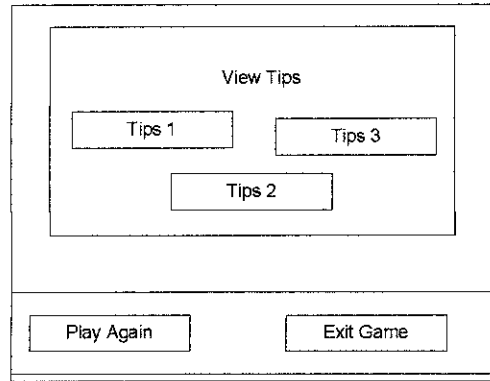


Figure 32: Page for view tips selection

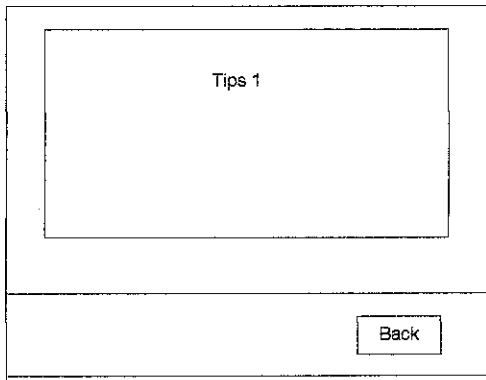


Figure 33: Tips 1 sketch

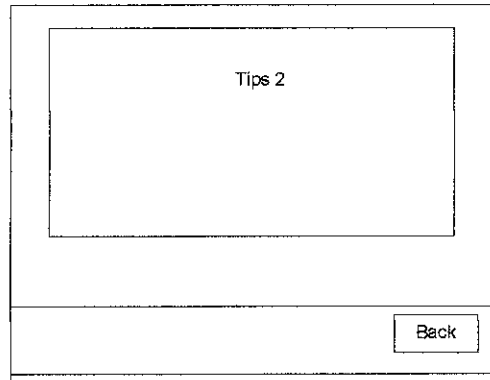


Figure 34: Tips 2 sketch

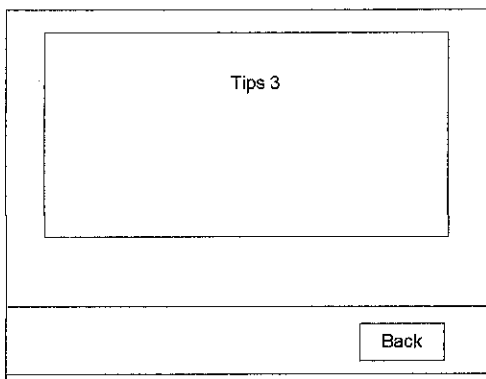


Figure 35: Tips 3 sketch

- **Build / Implementation**

Next is implementation phase which is development for the project. Project will be developing after all requirements had been gathered. Based on game flows that had been designed earlier, implementation part will follow that the design of the system. Games will be developing by appropriate application. Elements such as music, colors, pictures and wording will be adapted in the game. Game Maker 8.0 Lite Edition had been chooses to develop the game. All functionalities of the game need to be considered while in implementation phase. Graphic and sound effects for the game also used in order to make the make more interactive. Software that used to edit the graphic is Adobe Fireworks CS4. After game prototype had been finished, it will be tested by the user. The problems will be rectified and every feedback and comment will be gathered for further enhancement.

- **Testing and integration**

This phase is purposely to test the systems. After integrating all parts of the modules, testing will be for the next steps. Questionnaires and survey will be done in this phase. It is purposely to measure whether the game is meeting the objective or not.

- **Feedback gathering**

Once game prototype for design had been decided, testing will be done by the user. Collecting feedback is important in order to know if there anything that need to enhanced for the game. By enhancing the games base on feedback, it will determine the future for the game especially to meet their objectives. The method to get the feedback from the people is by using questionnaires.

- **Questionnaire**

Questionnaires will be distributed to get the feedback about the systems. Target people to get the feedback about this game are around twenty people with different gender. All feedback gather and ready to make the improvement of the game.

- **Release**

In this phase, system is being implemented by users. Target player for this game is for students. This game will be release for them. All feedback will be collect and the systems will be improved from time to time. Questionnaire will help the game to get the feedback and comments from users. So, it will be some maintenance in order to make it more valuable to the users.

CHAPTER 4
RESULT AND DISCUSSION

4.1. MMG prototype

4.1.1 Welcome Page

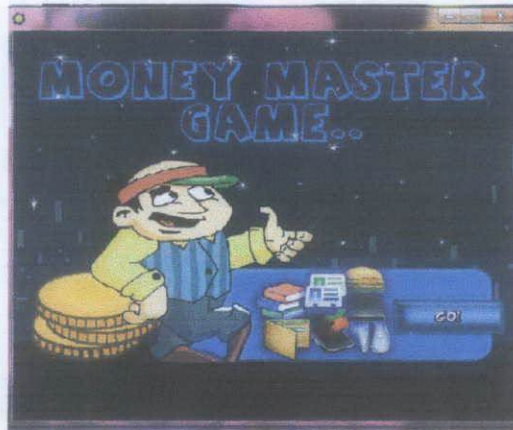


Figure 36: MMG Welcome page

Figure 36 shows the welcome page for the MMG game. Player needs to click on 'go' button in order to continue the journey.

4.1.2 Menu



Figure 37: MMG menu

Player will be able to see the main menu screen as shown in Figure 37 they can choose whether to view the instruction or play the game.

4.1.3 Instruction

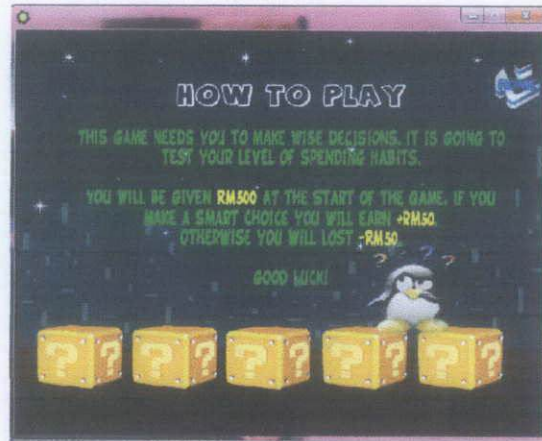


Figure 38: MMG Instruction

Before player starts the game, they will first need to know how to play it. Above is the instruction for the game.

4.1.4 Game Play

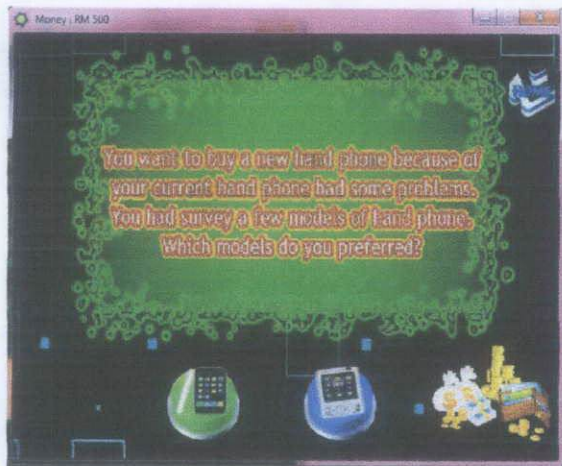


Figure 39: MMG Game Play



Figure 40: MMG Game Play

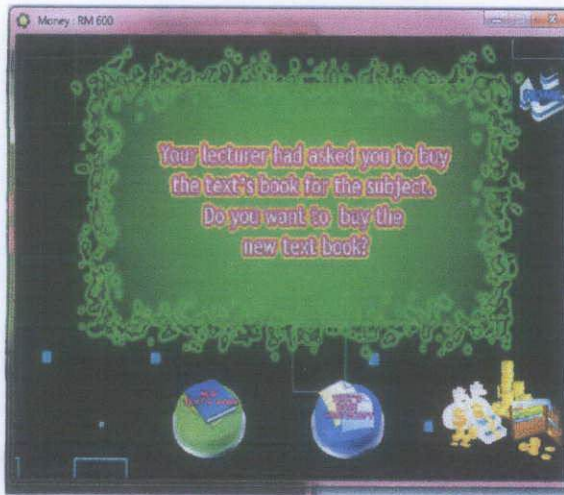


Figure 41: MMG Game Play

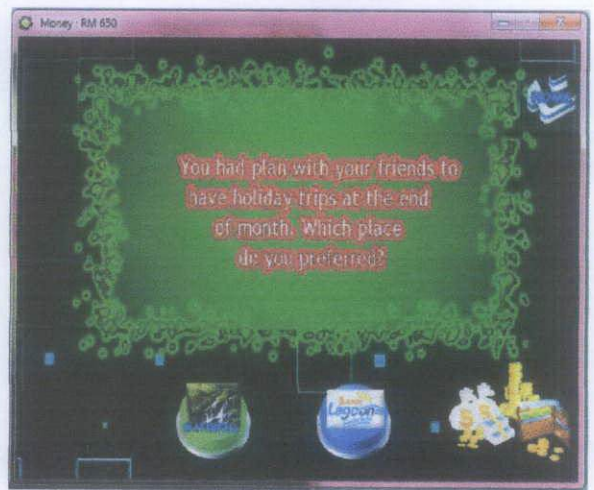


Figure 42: MMG Game Play

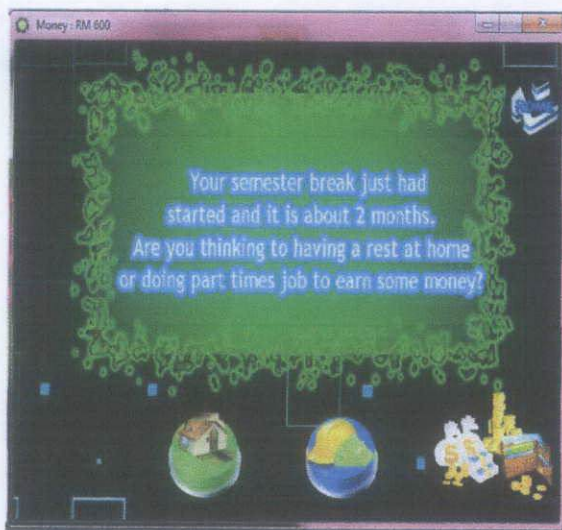


Figure 43: MMG Game Play

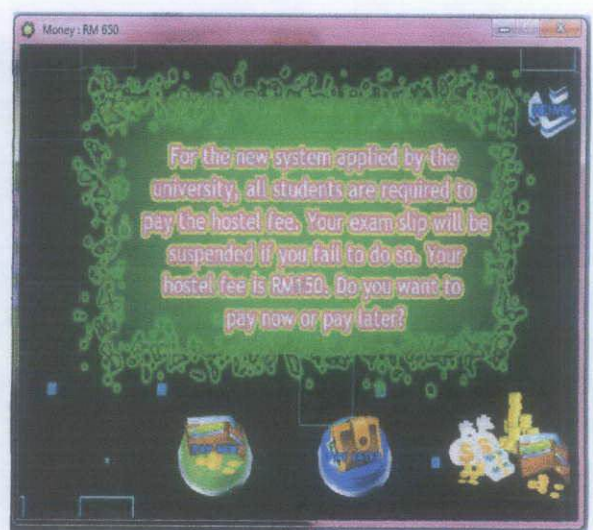


Figure 44: MMG Game Play



Figure 45: MMG Game Play



Figure 46: MMG Game Play

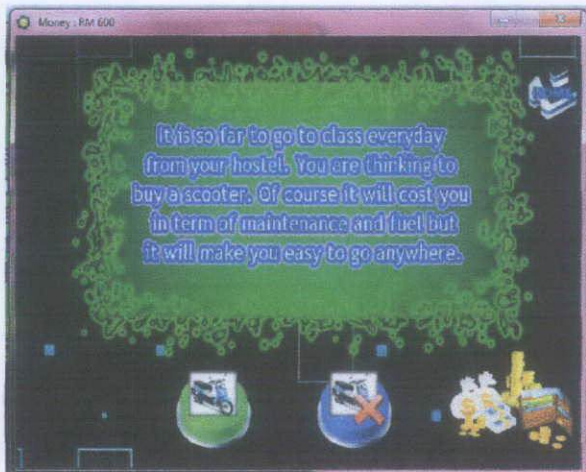


Figure 47: MMG Game Play



Figure 48: MMG Game Play

Figure 39 until 48 are the set of question in MMG. Player will get the score once their answer is correct. They will gain RM50 if they make wise decisions and otherwise they will loss RM50.

4.1.5 Result

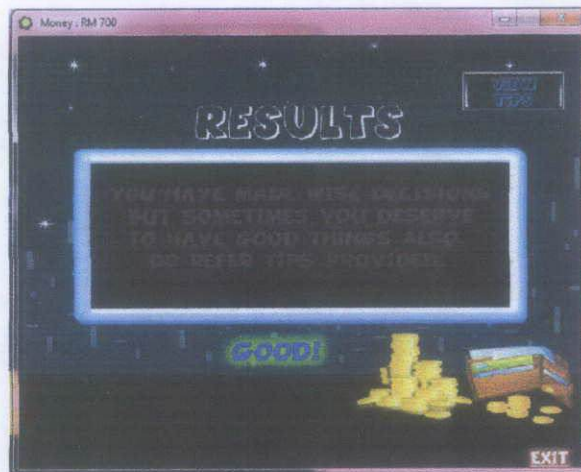


Figure 49: MMG player's result

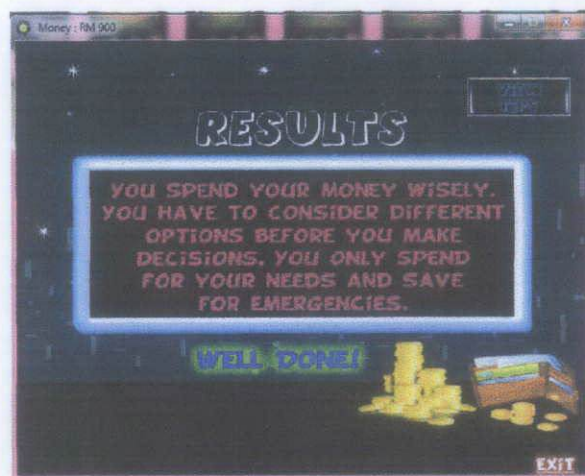


Figure 50: MMG player's result

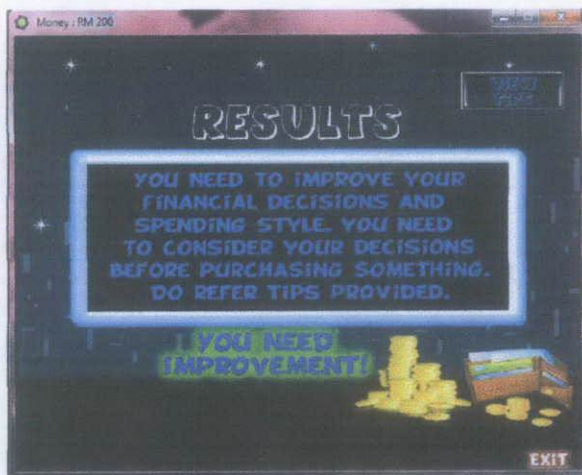


Figure 51: MMG player's result

Once the player finishes play the game, the result will be displayed. From the score that player gain, game will analyze and come out with the result. The result will showed the level of player spending level. Player can click on 'view tips' in order to get the tips to spend money.

4.1.6 Tips



Figure 52: Money management tips for player

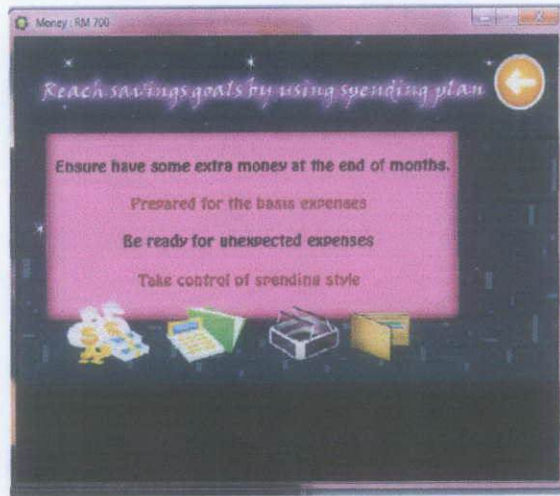


Figure 53: Money management tips for player

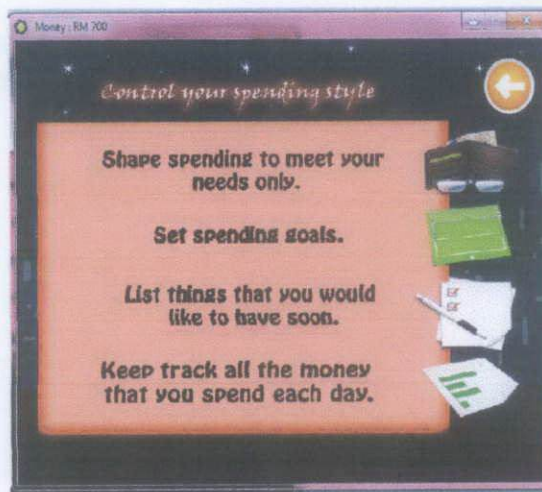


Figure 54: Money management tips for player

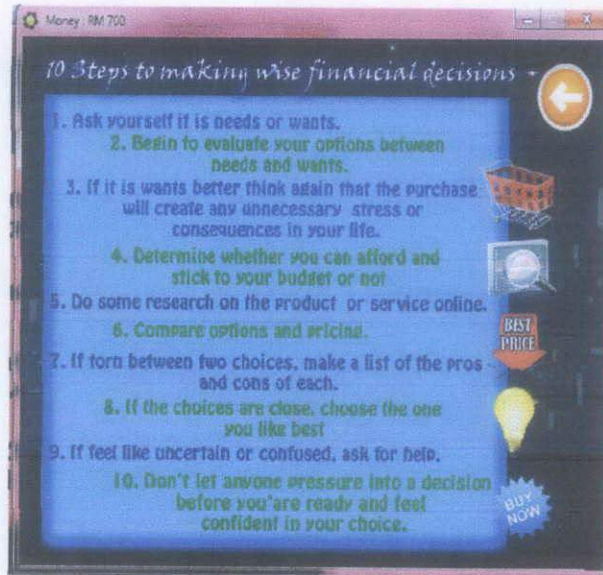


Figure 55: Money management tips for player

The game also produces tips about spending money to player. By providing tips for player, they can make better decisions in real life situation. Not only playing the game but player also will gain some knowledge from here.

4.2. User Testing Survey Result

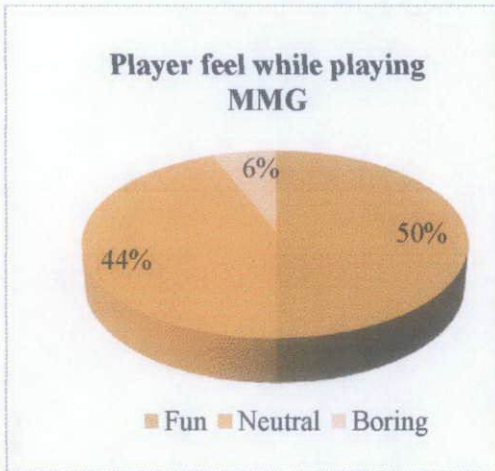


Figure 56: User Testing Survey Result

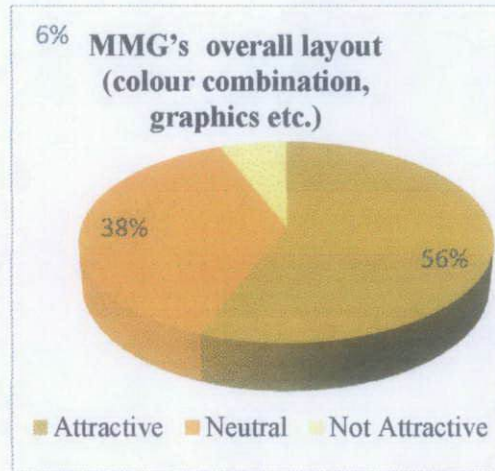


Figure 57: User Testing Survey Result

Figure 56 shows the result of what player feel while playing MMG. About 50 percent of student played MMG said it is fun and 44 percent said it is Neutral and 6 percent said it is boring. This is the positive reaction from player because the concept of game itself to give excitement to the player. Figure 57 shows the result of the MMG design. About 56 percent said that MMG is attractive, 38 percent said that it is neutral and 6 percent said that it is not attractive. For the game design, MMG might need future enhancement.

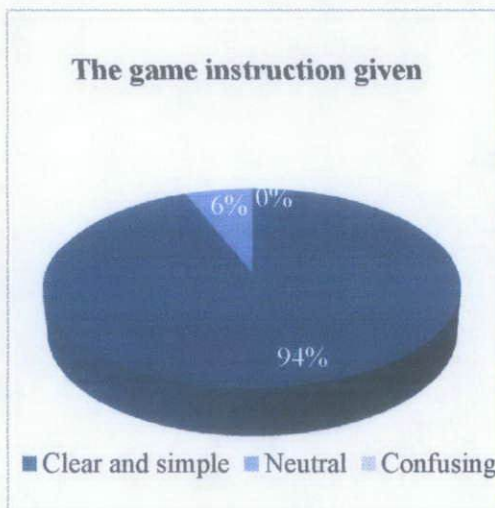


Figure 58: User Testing Survey Result

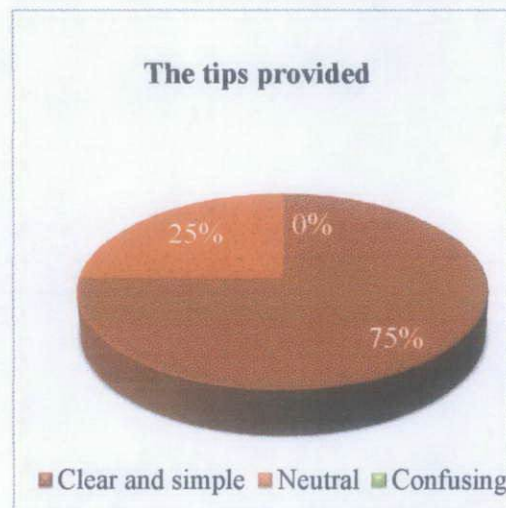


Figure 59: User Testing Survey Result

Figure 58 showed the results of the game instruction given in MMG. About 94 percent said it is clear and simple, 6 percent said it is neutral and no one said it is confusing. It shows that most of students do understand the game instruction clearly. Figure 59 shows about the results of tips provided in MMG. Same goes to game instruction, most of players do understand the tips provided to them. 75 percent said it is clear and simple to understand. About 25% said it is neutral and no one said it is confusing.

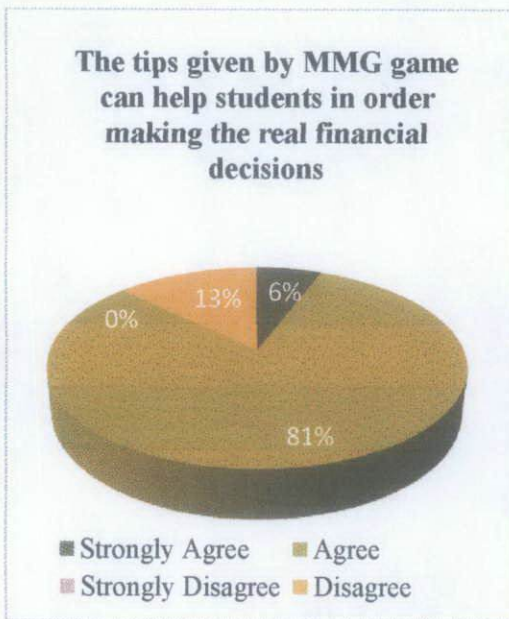


Figure 60: User Testing Survey Result

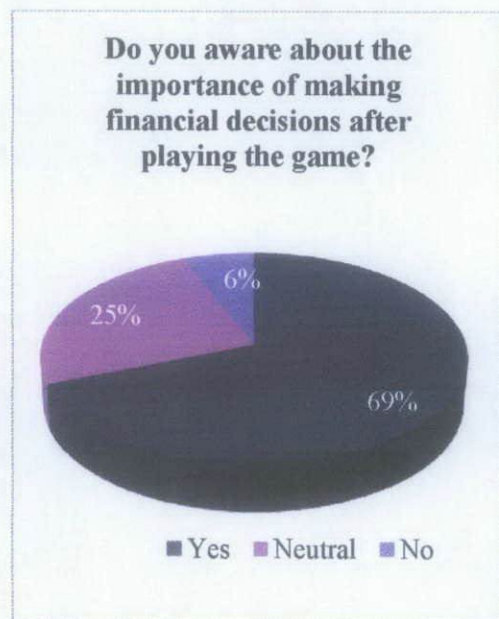


Figure 61: User Testing Survey Result

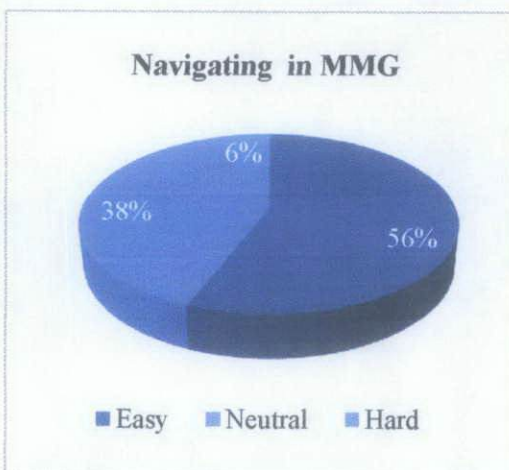


Figure 62: User Testing Survey Result

Figure 60 shows the feedback from player whether the tips given by MMG game can help students in order to making the real financial decisions or not. About 81 percent agreed that tips given can help them to make real financial decisions. About 13 percent disagreed and about 6 percent strongly agreed. It shows that player do agreed that the game provide benefit to them. Figure 61 shows the feedback from player whether they aware or not about the importance of making financial decisions after playing the game. About 69 percent agreed and 25 percent said it is neutral and 6 percent said no. Most of them do agree they realized the importance of making wise decision making. Some of them said it is neutral might be because they already aware about how to make wise decisions in their financial standing. Figure 62 shows the results from player about navigation in MMG. About 56 percent said it is easy, 38 percent said it is neutral and 6 percent said it is hard to understand. Most of them agreed MMG provide easy navigation. Through an easy navigation, it will easily capture player attention to play the game.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1. Conclusion

To conclude, MMG game is developed to assist college students in making decisions. MMG provide feeling, watching, thinking and doing to player. Player will visualize and imagine while they are playing the game. Through set of questions that provided by MMG, player required to think and make wise decisions. Player will put them in the situation while playing MMG. MMG is about strategy that needs player to make decisions and actions. Player will gain money if they make wise decisions. Player will be motivated to play and make wise decisions because they know that if they make wise decisions, they will gain some money. From money gain by player, it will calculated by MMG and MMG will produce result to player. Result showed the type of player spending habits. MMG also provide tips to player which also added value for player to learn and know the steps to make wise financial decisions.

It is important to teach college students about how to manage their money. Not only knowing about to how to manage the money but people also should have the responsibility, honesty, generous, gratitude and also self-identity towards money. This behavior need to adapt in individuals while they become an adult. The purpose of this project is to create awareness among college students from age 18 until 23. Through game, students will be able to learn about their spending habit. Not only playing the game but also will benefit them by transferring knowledge to them. This project is going to help them in making good decisions while spending based on their financial standing.

5.2. Recommendation

There are several things can be done in order to improve MMG. All recommendations had gathered from all feedbacks. For the future, MMG will be design more game strategies which involved with more decision making and actions. The game also will be design in multiage. MMG will ask the age of the player and game play level will be suit with the player's age. MMG also will be having appropriate parameters to measure the accuracy for the player's result. Besides, MMG also will calculate the risks involved so that player will aware with the risks of their financial virtually while playing the game. By providing overview of risks will appear, it makes player thinks deeply to make decisions. MMG also will be provided pros and cons about financial literacy for player so that they will aware about their financial standing. Price for the items also will be displayed so that player can viewed the price and easy to them to make the choices. MMG also will be design in more stages. Player will eager to accomplish the game mission if there are many stages involved. Every stage will have own learning values. By adding more stages, player can learn more. For the future, MMG will provide tips that will present in animation and also video. By presenting tips in animation or video, it will attract player to view it also will get the value from it. Other than that, MMG also will improve into 2D or 3D game. All recommendation for MMG will be considered. It is to make sure the objectives of the game are achieved.

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APPENDICES

APPENDIX A: USABILITY TESTING SURVEY

This survey is to gather feedback on the game Money Master Game (MMG) that was developed to assist college students in Malaysia in making financial decision. Appreciate if you could answer the questions below.

Indicate (/) where necessary and provide any comments.

General

1. When playing MMG, I feel that it is

- Fun.
- Neutral.
- Boring.

2. MMG's overall layout (colour combination, graphics etc.) is

- Attractive.
- Neutral.
- Not attractive.

Content

3. The game instruction given is

- Clear and simple.
- Neutral.
- Confusing.

4. The tips provided are

- Clear and simple.
- Neutral.
- Confusing.

5. The tips given by MMG game can help you in order making the real financial decisions.

- Strongly Agree
- Agree
- Disagree
- Strongly Disagree

6. Do you aware about the importance of making financial decisions after playing the game?

- Yes
- Neutral
- No

Navigation

7. Navigating in MMG is

- Hard.
- Neutral.
- Easy.

Other questions

8. Does MMG need any improvement?

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Thank you for your co-operation.