

TRANSLATING CREW MANAGEMENT PROCESS INTO A SIMULATION VIDEO GAME

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ABSTRACT

*Management came from an old French word *ménagement*, which means “the art of implementation and regulation”. It is a process of planning, organizing, coordinating, and controlling resources to achieve goals effectively and efficiently, a process which could be found in everyday’s activities. But, every resource management revolves around one particular resource, which is human. The only reason is because humans are the one that can change and improve resources like energy, money, and time into something more valuable. The problem is sometimes humans forget that management is necessary in everyday’s life, even for the smallest thing. Therefore, a research is conducted to create a supporting media to help people learn the value and the importance of management. The media chosen is video game as it is considered as a media that can be used to simulate management process more effectively with its interactivities and fun aspect. The parable that being used is crew management as a representative of human resource to manage all the other resources. Crew allocation, timing management and anything else that could be considered as a good crew management process is to be translated into the simulation video game. Thus, it becomes a media with a more fun way to learn about management without the players being explicitly told that they are learning by playing.*

Keywords: management, human resource, resources, simulation, video game

INTRODUCTION

The origin of the word “management” came from an old French word *ménagement*, which can be translated as “the art of implementation and regulation”. The other definition of management is a process of planning, organizing, coordinating, and controlling resources to achieve our goals effectively and efficiently (Griffin, 2012). Regarding its application, management can be found in our daily life such as system management, human resource management, financial management, etc. So, it is safe to say that management is a really important thing in any occasion. Because the amount of problem caused by bad management is not low. For example, bankruptcy of a company because of financial management failure, not reaching sales target and many other reasons. But, it can’t be denied that basically those management failures and problems appear because of a bad control and management of the human resource, as every resource revolves around it.

We can take an example from a story from Sullivan (2010) about some engine failures in a Toyota car company because of their human resource. It is said that the loss was about 155 million US dollar, and not only because of the bad performance of their engineer, but also more into the lack of human resource management by their HR team. Sullivan said that this case of Toyota was really similar to the infamous Titanic case. The terrible event was caused by human errors which resulted in creating bad decisions right from the beginning. The Titanic is an example of how important crew management and ship management is, before the departure and especially when the ship is on the way. The Titanic which sank in 1912 shows that if your ship is already in the middle of the ocean, only the people inside the ship that can really save themselves. In fact, according to Spignesi (2012) the regulation of sea travel was tightened because of this Titanic case. The regulations are the provision of enough lifeboats, the formation of international ice patrols, and the changes of ship’s designs.

Those management problems will always appear as time goes by and will always follow current developments. But, that doesn’t mean the problems can’t be prevented or at least be tried to suppress its consequences. Surely, one thing that can be done is by introducing those management problems to the people and educate them, whether directly or not, on how to overcome it. One of the fastest ways is by using simulation and one of the good examples is through video game. This is because video game is a media which actually, other than to entertain, can be a good media for education and training. The problem is how to find the most effective way to use video game to help in learning and also training.

Video game is something that can't be separated from the lives of modern human. This is supported by how easy it is today for someone to gain an access to media that can play video games such as PC, console and even smartphone. Plus, the development of video games is interconnected to the development of technology which makes video games keep on following the taste of nowadays' humans. With a situation like that, video game can also be a media for a serious purpose, like learning. According to Djaouti (2011) in a book of Felicia (2011), game for a serious purpose / serious game is a kind of game or a part of a software which mixes the goals of non- entertainment but using the basic structure of a video game.

One type of serious game is edugame or educational game. Edugame has a purpose to deliver an education of something but still tries to keep the fun factor of a video game. Like the phrase "learning while playing", edugame is a good media in term of learning the problems of management which can be found everyday. The video game's ability to help in learning and training can be combined with the method of simulation as it gives more immersivity. Boller (2014) said that the only thing that distinguishes a simulation and a video game is just the situation where the user or the player can lose or win. With that being said, winning and losing in the video game is one way to learn with fewer consequences.

The purpose of this research is to find the most effective way to use crew management in helping the player learn about the general understanding and value of management, with simulation video game as the media. This research is using mixed method of qualitative and quantitative in collecting theories and data. Questionnaires are given to gamers in order to gain their opinions and suggestions, while interviews are conducted to the people in the industry. Theories and data are also collected from books and journals about game design and also management. All these theories and data will eventually be analyzed in order to have the conclusion of the effectiveness of crew management simulation video game and the recommendations as well.

LITERATURE STUDIES

The potency of this is a video game that is able to represent management from the real world. This is based on simulation, which according to KBBI (Indonesia Dictionary) is a training method which displays something in a form of imitation similar to the real situation. More specifically in this case, the video game is a crew management simulation which uses ship management. The definition of ship management here is a process or a number of activities connected to each other which involves human, technology, method and capital to achieve an organization goal in a ship operation (Nurhasanah, 2015). From all the previous

definitions, simulation video game is considered to be able to represent management in general which is human-centered.

The entertainment gained from this video game creates the probability of the appearance of engagement towards the players and on the other hand, the players learn to not be afraid of failing but still with mature calculations in finishing the game. The video game allows the players to restart or replay, to create fixable mistakes so they are not afraid to fail and further increasing the interest on the video game. Surely, the suspense factor can always be added to the game to give challenges and more entertainment in the form of combat.

Some deeper studies have been done to help connect the dots between crew management, video game and learning so the target can learn management in general effectively and efficiently. According to Gee (2007), when people learn to play video games, they also learn a new literacy at the same time. This is because the wider definition of literacy also includes symbol, image, and graphic as a form of language. Furthermore, video game also includes sound, music, motion and even body sensation to convey an information. It can be said that video game is a multimodal media which gives immersivity because of that.

Gee (2007) said that we have to start from understanding that there is no “learning” in general, because we as a human always learn. We need to know what kind of semiotic domains that we are going into? Is it really needed? Because the truth is there are many semiotic domains that we can find in this modern world. Therefore there are semiotic domains for active learning and they are:

1. We learn to experience (see, feel, and operate on) the world in new ways.
2. Because semiotic domains are usually shared between some people, we have the potential to join and affiliate with them.
3. We gain resources which prepare us to learn and to solve problem in the future within the same or similar domain.

There are 5 principles which can be said are relevant to learning by playing video game (Gee, 2007). Those principles are:

1. Active, Critical Learning Principle

All aspects of the learning environment (including the ways in which the semiotic domain is designed and presented) are set up to encourage active and critical, not passive, learning.

2. Design Principle

Learning about and coming to appreciate design and design principles is core to the learning experience.

3. Semiotic Principle

Learning about and coming to appreciate interrelations within and across multiple sign systems (images, words, actions, symbols, artifacts, etc.) as a complex system is core to the learning experience.

4. Semiotic Domains Principle

Learning involves mastering, at some level, semiotic domains, and being able to participate, at some level, in the affinity group or groups connected to them.

5. Metalevel Thinking about Semiotic Domains Principle

Learning involves active and critical thinking about the relationships of the semiotic domain being learned to other semiotic domains.

In every occasion, there are always some feels that can be experienced by people, whether actively or passively. This also happens in video game, because surely there are some specific feels when we play it, which in this case is called the game feel. Game feel helps in learning and practicing something by playing video game. This happens because the game feel indirectly put the player in a situation which is happening in the video game. There are 3 building blocks of game feel according to Swink (2009):

1. Real-Time Control

Real-time control is a specific form of interactivity. It includes at least two people, which in this case is the player and the computer, who come together to form a closed loop. As we can see in figure 1, the player has some intent and is expressed to the computer by some inputs. The computer receives the inputs, processes it and gives the outputs to the player. The player receives the outputs and if there are changes compared to the original intent, then the player formulates a new action which is expressed to the computer again and so on.

Figure 1. Interactivity involves the exchange of information and action between at least two participants (source: Game Feel book)

In his book, game designer Chris Crawford prefers to look at this process as a conversation, a “cyclic process in which two active agents alternately (and metaphorically) listen, think and speak.” As we can see in figure 2, Bob begins to speak and Bill listens to

what was said. Bill thinks about it, formulates a response and speaks in return. Now, it's Bob's turn to listen, think and speak.

Figure 2. Interactivity as a conversation (source: Game Feel book)

Figure 3. Street Fighter II without animation: just odd fighting boxes
 (source: Game Feel book)

Now, the basic principles will not be complete without the simulation for learning. According to Lateef (2010), simulation is a technique to practice and learn which can be applied to any discipline and to various type of trainee. This simulation is a way to replace and enhance the real life experience by replicating basic aspects of the real world interactively so it can be more immersive. A simulation-based practice can even be used as a measurement to know the competence and the purpose of the practice.

1. However, the metaphor of a conversation between human and computer doesn't fit all situations. Real-time control is not like a conversation but it's more like driving a car. If the driver wants to turn left, it's gonna need more action than thought. The process is nearly instantaneous, because when the driver takes an action, the car receives the message and gives output almost at the same time. The "conversation" takes place below the level of consciousness and in an uninterrupted flow of command. So this is the basic of game feel: precise, continuous control over a moving avatar.

2. **Simulated Space**

Simulated space here means a simulated physical interactions in a virtual space, perceived actively by the player. This also means level design, like the construction and spacing of objects relative to the speed of the avatar's movements. The simulated space gives the feeling of interaction between the avatar and its world the same way we interact with the environment of the real world. By this, we experience the worlds in the game at the tactile, physical level of the world around us.

3. **Polish**

Polish refers to the artificial enhancements of interaction by any effect without changing the basic of simulation. This could mean anything that gives deeper feeling of the real world in the virtual world like the crashing sound when two cars collide, the dust particles at a character's feet as it slides, a "camera shake" to empathize a weighty impact and the stretches of a character's animations as it moves. If the polish is removed, the essential function of the game would not be changed, but the game will be less appealing and convincing. For example in figure 3, if you take away the animations from Street Fighter II, you will end up with some blocky figures only.

Figure 4. The similarity of the real world and the flight simulator (source: youtube.com)

Skills which can be improved and developed by using simulation are:

1. Technical and functional skills.
2. Skill in problem solving and decision making.
3. The competence in interpersonal things and in team-based or communication skill.

According to Saenz (2009), there are 3 principles, which are essential to learning effectively by playing simulation game, they are:

1. Learn from the content: spreading the new idea, principles and concept.
2. Learn from the experience: an opportunity to apply content to experiential environment.
3. Learn from the feedback: the result of action and the connection between performances from every chronological phase in an experiment and the next result.

In learning through simulation video game, the source of the education/training is what the player do rather than what is told by the “trainer/teacher”. Rather than showing different ways to do something right, video games offer the ability to improve your skill and knowledge in a relatively safe environment and without the full consequence like in the real world.

We can now combine everything with the crew management process. Crew management is basically a human resource management, but in this case is specific to the environment of a moving vessel like ship. According to Ciziuniene (2016), human resource management is one of the most important processes in every organization. No organization can achieve their goals without the proper skilled and qualified people. In a competitive advantage, human resource is to change and organize material, financial and also another capital to be a new value. This is very similar to the definition of ship management according to Nurhasanah, with human resource as the crew.

Figure 5. Human Resource Management System (source: quora.com)

A data collecting process was conducted using questionnaire given to the people who are a gamer or interested in game industry. The main purpose is to gain their opinion and suggestion as to what is supposed to be in a crew management simulation video game that is good for learning. According to this data from 44 respondents, these are the psychographics:

1. 70,5% of respondents were male.
2. 81,8% of respondents were around 17-25 years old.
3. The majority of them (47,7%) preferred to use PC as a media to play video game.
4. The majority of them (52,3%) played video game for about 1-3 hours per day.
5. The majority of them (43,2%) chose the story as an important aspect that interest them in playing a digital game. With the second top answer is the gameplay (34,1%).
6. 63,6% of respondents had heard about simulation game before filling the questionnaire.

As for the opinions and suggestions about the management simulation video game:

1. The majority of respondents said that The Sims is a video game which gives a good education about management while still fun to play. The rest of the respondents give one answer (one game title) each.
2. 56,8% of respondents said that variations of game feature is what make them giving the game title for the previous question.
3. 52,3% of respondents said that a complex UI is important for management video game.

Figure 6. Graphic of good management game titles according to the respondents

Some data were also collected by interviewing people who are in industry and have at least 2 years experience in management, especially human resource management. There were 3 interviewee with the role of each are Project Manager, Scrum Master, and Chief Operating Officer. The summaries of the interview are:

1. Management is important for shifting, planning and helping outside the production. It is important to prepare for the unexpected events which could be halting the progress in achieving the organization's goals.
2. Learning process can be effective by playing video game. But, it depends on how it is implemented.
3. The process of management from all the interviewee can be summarized into planning, implementation and evaluation.
4. The learning and training by playing video game can be more effective by simulating the real world's management. For example, management tools from the real world can be applied into the video game because those tools are already used for proper management process.

ANALYSIS

From the literatures and data above, we found out that video game can be an effective media for learning. This is based on the fact that video game is basically a kind of literacy with many factors. Those factors are what will influence how the players play while having fun. With the active role of the players, they learn how to think fast in a dire situation. With the game feel as another factor, the engagement of the video game can be strong enough to make the players learn without them noticing that they are learning.

To gain an even deeper immersivity for more effective learning, then the concept of simulation method is really important. It's because the simulation method is used in many fields in the real world for learning and training/practicing. Combined with the concept of video game, the players are bound to be more interested in doing this simulation. While focusing on the crew management as the main topic, the learning of management in general can also be implemented in the video game as the player organize and controlling the crews to manage another resources.

From here, we can combine the basic theories and principles with the data according to the people who are already experienced in management and video game and both. The preferable processes or steps for the management are starting from planning, to implementation, and to evaluation. This process can be further divided depending on the needs. For example we can divide it into POAC or Planning, Organizing, Actuating and Controlling with the original order. The complexity of the gameplay is needed because the player need to be able to control almost everything in the game. The more immersive the game is or the more similar it is to the situation of the real world's management, the more effective the simulation video game can be for learning about management.

CONCLUSION

The theories and data collected are more inclined to support that crew management simulation video game can be an effective media to learn the general understanding and value of management. This type of gaming is preferred to be on PC as the control for the game can be as complex as possible and as needed. With the polish that can represent the similarity of the real world, the depth of the immersivity can be achieved. According to this, 3D graphic is more preferable rather than 2D. Simulation of real ship management can be specifically used for this type of simulation video game. It's because the management is more compact as it focuses in one moving vessel with a variation of resources inside.

With the technical parts already filled in, the process of the management can follow them. The recommendation is using “easy to learn, hard to master” concept for the gameplay and the management process. The UI, the story and the objective of the game must be able to be learned by the players easily but to master it needs a long time. This will result in the existence of engagement from the beginning as it is easy to learn, but the difficulty is developed according to the player’s progress. Because of it, the chance of the people more engaged is higher and the higher the engagement, the higher the chance of learning process.

The crew management process in the game can start with the planning step. This allows the players to do some preparation before going on an adventure by buying stuff, upgrading their vehicle (ship) and they do it with the destination in mind. After that, the implementation step is when the players are already on their way, for example, when there is a combat with another ship. The players have to reallocate their crews so the ship’s combat ability can be at it’s peak. But the allocation of the crews to the weapon room can affect the other room abandoned, and this is where the players have to think fast and using their already prepared plan when this dire situation comes. The evaluation process is where the players learn from their mistakes. They will learn from their mistakes whether they arrived successfully on their destination or not. They will learn from what they lost, from what they should have prepared beforehand and the more efficient allocation of crews in a similar situation.

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