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BIRMINGHAM

INTERACTIVE BRANCHING
GAME-BASED LEARNING FOR
ONLINE SKILLS TRAINING

MSc Final Project 2013 - 2014

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Contents

Figures and Tables.....	4
Abstract.....	5
Acknowledgements.....	7
Chapter (1): Introduction.....	8
1. Background.....	8
2. Research Question.....	9
3. Research Aim	9
4. Research Objectives	9
5. Research Methodology.....	9
6. Research Rationale	10
7. Contribution	11
8. Study Plan	11
Chapter (2): Literature Review.....	13
1. Learning Paradigms	13
2. Online Learning.....	14
3. Gamification	15
4. Role-playing Games	16
5. Linear and Branching Narratives	17
6. Literature Conclusion and Formulated Hypothesis.....	18
Chapter (3): Implementation	20
1. The Lesson	20
2. The Game:	23
2.1 Requirements Analysis	23
2.2 Adequate Implementation Tools.....	24
2.3 Game structure.....	26
2.4 A Run-Through The Game	31
3. The Video Tutorial	35
3.1 Software Used	37
Chapter (4): Methodology	39
1. Methodology	39
2. Questionnaire Design	40
3. Hypotheses	41
4. Analysis.....	42

4.1	Factual Questions	42
4.2	Factual Questions Analysis Summary	52
4.3	Comparing Questions	52
4.4	Comparing Questions Analysis Summary	56
5.	Overall Result.....	56
Chapter (5): Conclusion		57
1.	Future Work.....	58
Chapter (6): Business Plan		59
1.	About FOA	59
2.	Market Research.....	59
3.	Competitors.....	59
4.	Competitors' Analysis.....	59
5.	Validating the Idea.....	60
6.	Proof of Concept.....	61
7.	Financial Forecast	61
References.....		62
Appendices		65
Appendix (I): Introduction scene screens		66
1.	Welcome screen	66
2.	Name screen.....	66
3.	Avatar screen.....	66
4.	Choosing a scenario screen	67
5.	Mission screen	67
6.	Instructions screen	67
Appendix (II): Conversation scene screens		68
Appendix (III): Actions scene screens		72
1.	Creating a Proposal Screen.....	72
2.	Taking Actions Screen.....	72
3.	Score Screen	75
4.	Credits Screen.....	75
Appendix (IV): Video Translation		76
Appendix (V): Feedback Report		78
Appendix (VI): Survey – Video first		79
Appendix (VII): Survey – Game first		81
APPENDIX (VIII): Questionnaire Ethics Form.....		83

FIGURES AND TABLES

Figure 1: Gamification in Gartner Hype Cycle of 2014. Source: Gartner, 2014	10
Figure 2: Lesson Scenario	22
Figure 3: UML Use Case diagram.....	23
Figure 4: Sample screens from the game	27
Figure 5: A sample screen and its timeline.....	28
Figure 6: A sample code snippet	29
Figure 7: A sample pop-up message.....	30
Figure 8: Avatar Screen.....	32
Figure 9: A sample screen from conversation scene.....	33
Figure 10: Code used to track collected items	33
Figure 11: Actions Screen	34
Figure 12: different snapshots from the video.....	36
Figure 13: Video editing process	37
Figure 14: Freelancing course on Udemy.com	61
Figure 15: Welcome Screen.....	66
Figure 16: Name Screen	66
Figure 17: Avatar Screen	66
Figure 18: Choosing a scenario screen	67
Figure 19: Mission Screen.....	67
Figure 20: Instructions screen	67
Figure 21: Creating a Proposal.....	72
Figure 22: Actions Screen	72
Figure 23: Score screen	75
Figure 24: Result avatar statuses.....	75
Table 1: Comparing implementation software	25
Table 2: Variables	30
Table 3: Competitors Analysis	60
Table 4: Actions	74

ABSTRACT

This project looks into the use of interactive branching game-based learning for online skills training. It uses a branching game to teach the skill of managing customer conversations by simulating a business conversation between a potential client and a freelancer. It also compares that game to a video tutorial that teaches the same skill.

The game player plays the role of the freelancer and has a mission to manage the conversation in the best way in order to get a project from the client. The player has some options during the conversation that branch to different scenarios. The player also can collect a number of pieces of important information and notes during the conversation which can then be used later in the game to perform some actions such as emailing a proposal. At the end of the game, the player receives a detailed feedback about the progress.

The theory behind this work is that according to constructivism (Hung, et al., 2008), performing actions makes learners more confident about applying them later. Besides, according to (Hørven, 2011) and (Arjoranta, 2011), playing a role gives the learner a feel for the life of the character. Also, according to the branching narratives experiment in (Andrews & Baber, 2014), such interaction is expected to increase the learner's attention and interaction and help to better achieve the goals of the game. So, presenting an interactive branching game to teach a soft skill online is expected to have better learning outcomes than a video tutorial and to be more engaging, and preferred by learners.

Those expectations are measured by a questionnaire that asks the responders to play the game, watch the video and answer some factual and comparing questions.

The results showed that learners who played the game had higher confidence in their answers than the ones who watched the video when they have been asked about actions that they performed in the game. However, it also showed that learners could miss some important information in their own route in the game because it is self-directed.

The game have been found more preferable, engaging, fun and motivating than the video, especially for the learners who did the video first, then did the game.

It is recommended to use interactive branching games in skills that require performing physical actions. Also, it is recommended to use them in exercises after video tutorials.

Keywords: branching narrative, interactive, gamification, learning, game-based, video, tutorials, confident, active learning, constructivism.

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To the soul of my mum and dad. I hope every day that you were here to tell you how much I missed you.

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To my sisters and brothers. You have been always motivating. I can't be luckier to have you.

CHAPTER (1): INTRODUCTION

Tell me and I forget, teach me and I may remember,
involve me and I learn.

Benjamin Franklin

1. Background

Learners of nowadays are technology natives. They are born with the technology that they will be using in learning experiences. This means that they are prepared to learn the content, the concepts and the skills presented using the emerging trends in technologies while instructors are not going to have to worry about them having to figure out how to use the technology itself. This also means that learners will expect a high level of interaction and are unlikely to accept learning which only requires them to just read textual material.

On one hand, instructors can transfer a lot of the administrative tasks to the technology used, so that they can spend more time on the learning experience and content. On the other hand, learners could get more engaging learning environment.

One of the emerging trends and technologies in learning is the digital game-based learning. Digital media allow readers to watch videos or answer quizzes to transfer and test knowledge. But there are many other attributes besides knowledge that could be modelled, such as motivation and learning goals (Papanikolaou, et al., 2006).

This report considers how ideas from interactive games could be used for learning technology. For this project, an online academy - developed as part of a previous project (Shurrah, 2014) - forms the basis for the study. The online academy presented a course of lectures on 'freelancing'. Each lecture consisted of a series of slides with a voice-over and quizzes to test learning (FOA, 2014). The online academy can be accessed via <http://www.foacademy.com/>

2. Research Question

The current version of the online academy lacked a high degree of interactivity. This could possibly limit the learning outcomes. Previous work has argued that interactivity and branching scenarios could affect learning outcomes. The question addressed by this project is how learning outcomes are affected by either video tutorials or interactive branching game-based learning. Results for video and game are then compared to each other.

3. Research Aim

To measure the impact of using interactive branching game-based learning in online academies for teaching soft skills and to compare it to the impact of video tutorials.

4. Research Objectives

- Review theories, studies and empirical findings about online learning and gamifying it.
- Design a lesson that teaches a soft skill online.
- Design an educational game that comprises of a number of scenarios to enable the player to branch among them according to his/her choices.
- Design a video tutorial that teaches the same skill in the game using a bad and a good scenarios.
- Conduct a survey that measures the outcomes of video tutorials and game-based learning.
- Compare the result of videos and games to each other.

5. Research Methodology

Primary research has been used by publishing a questionnaire that asks responders to play a game and watch a video. After that, responders answer some factual and comparing questions. The questionnaire randomly assigns responders into two groups: game first and video first. Results are then analysed and compared to each other. A full detailed methodology is presented in chapter four of this report.

6. Research Rationale

Online learning is a trend. It is increasing dramatically. The value of the global e-learning sector is expected to hit \$107 billion by 2015, as a study by Global Industry Analysts has reported (Virtual College, 2012). Universities such as: Stanford, Yale, University of London, University of Edinburgh, and many other top ranked universities are publishing their courses to the public on online learning platforms such as Coursera (Coursera Inc., 2014).

Usually, online academies use text and video with a limited interactivity, which could make the learning process boring for some learners. “While it is sometimes possible for learning for its own sake to be an engaging motivator, much of what people need to learn is not intrinsically motivating to most of the population” (Prensky, 2001, p. 19).

Gamification is used to add the element of interactivity to the eLearning process. According to Gartner's Hype Cycles of 2014 (Gartner, 2014), gamification is one of the emerging trends in technology that is expected to reach a plateau in two to five years as shown in figure (1). Therefore, the study of game-based learning receives much concern.

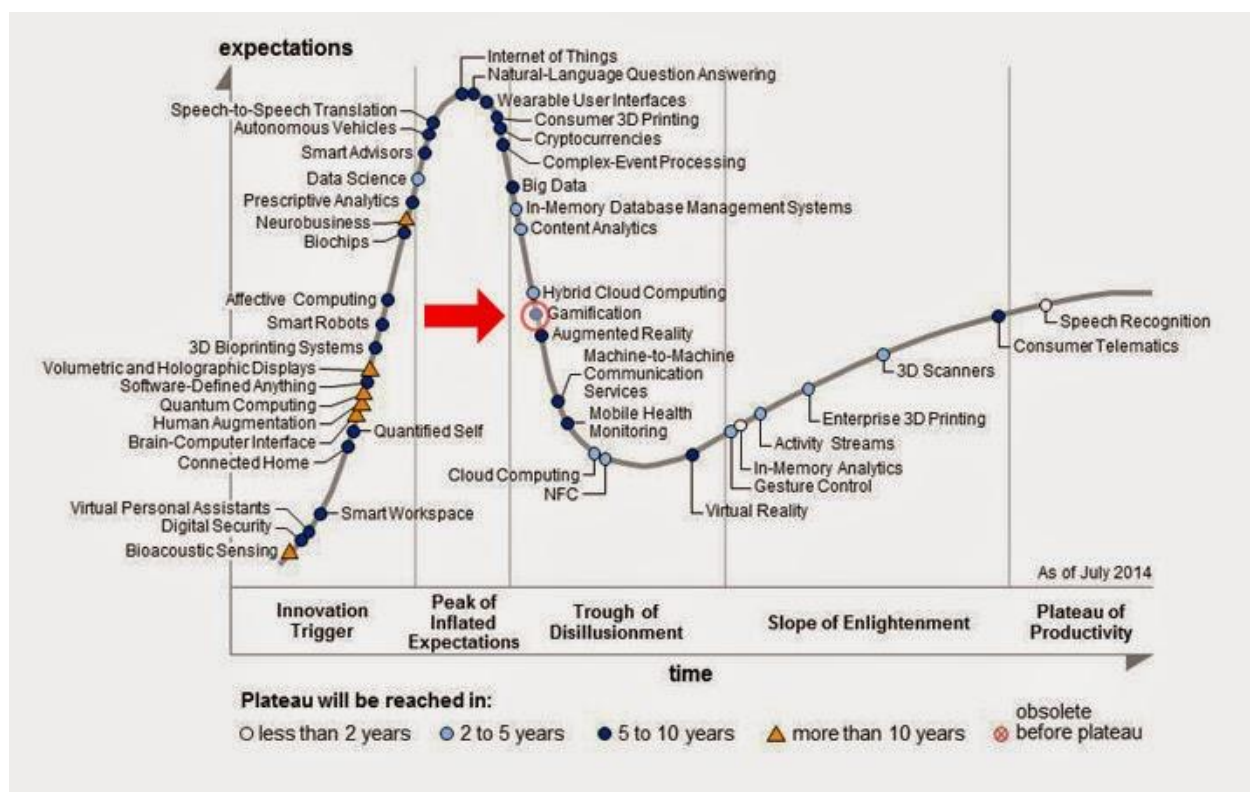


Figure 1: Gamification in Gartner Hype Cycle of 2014. Source: Gartner, 2014

There seems to be three main reasons for the increase in gamification (Learning Solutions Magazine, 2013): (a) marketplace forces: worldwide spending on games is projected to be \$101.6 billion in 2014 and \$111 billion by the end of 2015, according to a report from Gartner (Gartner, 2013). (b) The relation between games and learning in children: brain scientists tend to believe that the loop of challenge-achievement-reward in games promotes the production of dopamine¹ in the brain, reinforcing the desire to play. (c) The rising interest in games among adults: the demographics show that adults have as much fun playing games as children (Entertainment Software Association, 2013).

7. Contribution

This report supports the claim that interaction with branching narrative can have positive benefits on learning outcomes (Andrews & Baber, 2014) (Papanikolaou, et al., 2006). The project produces the following:

- A branching-game for training people on managing customer conversations skill.
- A video for training people on managing customer conversations skill.
- A comparison between training by a branching game and by a video tutorial.

8. Study Plan

This study is organised into six chapters. In the **first chapter**, a background about the project and its importance is introduced. The **second chapter** reviews the literature behind the project. It discusses theories, studies and empirical findings about learning paradigms, online learning and using gamification in online learning. It then puts gamification in comparison with role-playing games. After that, it shows how the use of branching narratives can affect learning outcomes. The chapter ends by formulating the hypotheses of the study according to the literature reviewed. In **chapter three**, a detailed explanation of the implemented work is presented. Chapter three talks about the implementation plan, the work carried out and the software used. After that, **chapter four** establishes the evaluation process of the reviewed literature and its hypotheses. It shows how a questionnaire has been designed to measure to the outcomes of using interactive branching games in learning and compares those results to

¹ a compound present in the body as a neurotransmitter and a precursor of other substances including epinephrine.

the outcomes of using video tutorials. **Chapter five** is the conclusion section. It summarises all the findings, lists the recommendations, and proposes some work for future studies. Finally, **chapter six** considers the business side of the project. It shows how using interactive branching games in online academies could strengthen its business model and boost its sales. The report has an enclosed **appendix** that contains detailed descriptions of the reviewed work.

CHAPTER (2): LITERATURE REVIEW

Many models and paradigms have been proposed to define the learning process (Cooper, 1993). This chapter summarizes the most popular learning paradigms and the concept of online learning. Then, it reviews the use of gamification in eLearning and puts it in contrast with role-playing games. After that, it discusses the claim of that interaction with branching narratives can have positive benefits on learning outcomes. Finally, it shows the formulated hypotheses of the reviewed literature.

1. Learning Paradigms

Behaviourism: This paradigm is based on the principle of “stimuli response”. It assumes that the learner starts with zero-knowledge and then *passively* receives information from the teacher or the environment which will shape her behaviour. The core idea is, events that the learner learnt from will happen again, and the learner will use this knowledge to help her behave (Case & Bereiter, 1984).

It could be considered that presenting learners with a scenario (in the form of text or a video), which to read or watch but cannot otherwise interact with, represents a form of behaviourism. The idea would be that the reader would pair the presented information with the presented scenario and this would allow them to know what to do when the same scenario occurred later.

The problem with this approach is that it assumes that the scenario will always be the same and all the person needs to do is to learn the right pairing of response to the stimulus. If the scenario changes, then it is possible that the person will not be able to make this pairing, and so she is expected to make mistakes. In this project, the learner does not passively receive the information from the teacher. Instead she performs them virtually in a game. Then, when those performed actions are required in life, she is expected to be more confident about applying them again.

Cognitivism: This paradigm was proposed to replace the behaviourism because the latter was viewed as a process of “programming the learner”. The argument is that the learning process is a mental one and it is not observable by the public. Therefore, cognitivism learning paradigm addresses the mental process of learning, influenced by psychology (Case & Bereiter, 1984).

In this case, the presented material is not just 'received' by the learner but needs to be interpreted, perhaps in terms of relating the content of the material to what the person already knows. While this process of interpretation means that the learner will be seen as more active than behaviourism implies, there is still a problem that the learner does not need to physically interact with the content.

Constructivism: This paradigm defines learning as the process of constructing knowledge not acquiring it. The assumption in this paradigm is that the learner accumulates knowledge from all the experiences she meets. That is, teaching is not the only source of learning and the knowledge could be constructed from different and variant sources like watching videos or playing games. One important approach under the constructivism paradigm is the problem-based learning (PBL) which emphasized the self-directed learning and the collaboration between learners. The approach in PBL is to construct the knowledge by presenting a problem; and through discussions within a group a model is developed and refined to solve the problem. Through the discussions and the model development the learners construct the knowledge that is required to solve the problem (Hung, et al., 2008).

This paradigm is used in both the game and the video of this study. With a difference that in the video the learner receives the information passively while in the game the learner directs the learning process by guiding the conversation and therefore guiding what will be shown next; as the conversation branches according to the learner choices. The problem posed to the learner in the game is its mission. That is, to win a project from the client. Through solving this problem, the learner constructs the knowledge embedded in the game. From this, it is expected that the video and the branching narrative would lead to different types of learning (because of different types of interaction) and these differences could be reflected in different learning outcomes.

2. Online Learning

Online learning can be simply defined as the delivery of online courses over the internet. The online courses are designed to be suitable for the online learning environment. For example, the different types of electronic media and technologies, e.g. web pages, videos, games, are used to develop the teaching material and to be delivered online as the instructor and the student will be geographically separated (Moorea, et al., 2011).

Being geographically separated limits the interaction between the student and the instructor; and hence forms a kind of an impediment to the learning process. Therefore, a number of solutions have been proposed to enhance the online learning process such as the use of gamification (Biloch & Löfstedt, 2013) that is introduced in the next section.

3. Gamification

Gamification is a term that is becoming more popular. This term refers to the use of games for purposes other than the gaming itself, e.g. education and management. The objective is to add more 'fun' to the learning or training process which helps to increase users' capabilities to develop the skills intended in the game (Domínguez, et al., 2013) (Muntean, 2011) (Biloch & Löfstedt, 2013).

In order to increase users' engagement and interaction with a game, games designers implement some kind of rewarding techniques that give points to the users when achieving some tasks. Such rewarding techniques are utilized by the following main five components (Deterding, et al., 2011):

- **Points:** The user's performance is modelled as points that are given to this user when performing some activity or accomplish some task. The points' assignment reflects the user's understanding of the game values and goals (Biloch & Löfstedt, 2013).
- **Badges:** A badge is another way of rewarding users. It is assigned to users as a form of feedback or as an indicator for an achievement. Badges are used in games, and websites that depend on users' contributions as well, to increase users' participation and engagement (Easley & Ghosh, n.d.). One example of badges awarding is the "best" badge that is issued by the eBay site to recognize sellers or buyers contributions.
- **Levels:** Generally, a game is designed as a hierarchy in which a user moves from level to another upon accomplishing some task and achieving the levels indented goals. Each level contains new challenges that target a set of skills.
- **Leaderboards:** A leaderboard is a mean which a user can use to compare his/her performance with other users which helps to motivate users more and increase their engagement. One of them is the "high-score table" which displays the users' names and scores in lights (Llagostera, 2012).

- **Challenges:** A challenge is a mission or a task that is given to the users. Upon accomplishing this mission or task, the users is rewarded by some points or badges. Leaderboards are usually used to make challenges more efficient as they will show users achievements (Deterding, et al., 2013).

It is surprising that these forms of gamification seem to focus on outcomes, like rewarding players, rather than in terms of thinking about actually playing the game. Gamification focuses on rewarding the user to increase engagement and interaction but it does not give the user as much clarity about his/her role to play, as in role playing games.

Also, gamification often focuses on the results of playing games, rather than on actually playing games. In the next section, examples of how game playing can be designed by focusing on the role of the game player, are introduced.

4. Role-playing Games

A role playing game is a one in which a player assumes that she is becoming the character she is controlling. That means the player will live the character life during the lifetime of the game but will decide according to her (the player) opinions and favourites (Hørven, 2011) (Arjoranta, 2011).

In the literature, there are different forms in which role-playing games are played. Hitchens and Drachen (Hitchens & Drachen, 2009) listed the following forms of role-playing:

- **Pen-and-paper/table-top:** This is a classical form of role-playing game that is conducted by a group of players discussing around a table. One of the players is called the game master (GM). Each of the other players play a single character of the game characters and the GM is responsible on controlling the game world and coordinating the game among the ordinary players.
- **Live-action role-playing:** This form is similar to the above one. The difference is that the players act the characters not only describe them.
- **Single player digital:** This form translated the table-top form into an electronic version. The difference is that a single player is required in order to run the game while the software acts as the remaining players and the GM.

- **Massively Multi-Player Online:** This form is also an electronic game in which many players participate in the game. In this form the game is characterized by a geographically large area and very long playing time.
- **Pervasive:** This form is viewed as an extension to the live-action form but with 'relatively' unlimited objects included in the game, i.e. the game world can contain any part of the real world, whether electronic or physical.

Role-playing games have been used for different purposes in the literature. Education has been a major focus in this context (Dickey, 2007). In (Squire & Jenkins, 2003) the authors look at the extent to which role-playing games might be suitable for education through presenting a series of scenarios. They found that a well-designed game helps learners to explore ideas virtually and increases their interaction with and understanding of those ideas. However, this requires educators and game designers to collaborate. Another example is (Dickey, 2005) who explores how the use of various design elements in video games helps to create more engaging and interactive learning environments. The findings were that role-playing games support the development of architectural models for learning by the instructional designers. The work in (Smith & Mann, 2002) proposed a model that can be employed to describe the requirements of role-playing games in education. The model helps educators to understand the aspects of the games, supporting them to enrich their teaching material by games. The model consists of four components, namely, interface, engine, interactivity, and narrative.

Narratives are the stories of the games and the scenarios that players go through. Next section reviews the effects of using linear and branching narratives in learning.

5. Linear and Branching Narratives

Narration in video games and storytelling can be either linear or branching. In the former, the classical way of showing or telling the events of the game or story serially is used. Here, the user only receives what the video or the story tells. In the latter, at specific points, the user can choose a branch that the video game or the story will go through leading to an end according to the user's choices (Riedl & Young, 2006).

The work in (Andrews, et al., 2012) addressed the branching narration in storytelling; which can also inform on branching in educational games. The authors explored the possibility of

combining the information presented in a story and the model that the reader draws in her mind for that story, during her reading. The purpose is to investigate the possibility to build on the reader's mental interaction with the story in order to create high level interactive comics in which the reader can choose a branch of the story at specific points in the story. Andrews and Baber (Andrews & Baber, 2014) have extended that work and conducted a comparison between a branching comic and a traditional, paper-based version of the same comic in order to explore how the reader's attention and interaction differ in the two cases. They found that branching storytelling helps to increase readers' attention and interaction with the comic, which in turn helps to better achieve the goals of the learning session.

In consistent with that, researchers from University of Athens, Greece and University of Birmingham, UK suggested that "it is more useful to recommend educational interactions based on the learner's observable behaviour, allowing learners to make the final choice, selecting amongst alternative approaches" (Papanikolaou, et al., 2006, p. 358).

In this project, a branching narrative acts as the story of the game. The game is used to teach the soft-skill of "managing a client conversation", where the player plays the role of a freelancer who tries to solve the problem (challenge) of winning a client's project.

6. Literature Conclusion and Formulated Hypothesis

Based on the previously demonstrated literature, presenting an interactive branching game to teach a soft skill online, is expected to have more positive learning outcomes than a video tutorial and to be more engaging, and preferable. Specifically, (a) according to constructivism (Hung, et al., 2008), performing actions within the game is supposed to help learners in being more confident about applying those actions later or agreeing with them. (b) According to role-playing theories in (Hørven, 2011) and (Arjoranta, 2011), it is predicted to give the learners a feel of living the life of the character (the freelancer). So, it is expected that learners find the game more engaging. (c) According to the branching narratives experiment in (Andrews & Baber, 2014) it is expected to increase the learner's attention and interaction and help to better achieve the goals of the learning activity.

Therefore, this project's hypotheses are formulated as follows:

- H₁: Learners who played the game are more likely to agree with physical actions they performed.
- H₂: The game players to have more correct answers than the video watchers.
- H₃: The game to be more preferred in general than the video.

These hypotheses are to be evaluated in this study by implementing a lesson using an interactive branching game and a video. Then, by measuring the learning outcomes in both cases. After that, a comparison between the outcomes of using a branching game and the outcomes of using a video, is conducted.

CHAPTER (3): IMPLEMENTATION

This chapter talks about the implementation of the main parts of the project: the lesson, the game, and the video tutorial. It explains how each part of them has been developed and for what purposes. It shows the tools and software used in developing them.

This project is trying to investigate whether interactive branching game-based learning gives learners more confidence about applying the skills they learnt. It also compares that method of learning with video tutorials. For evaluation purposes, a lesson has been designed and developed using two different techniques: an interactive branching game and a video tutorial. The two techniques teach the same skill of ‘managing client conversations’. They have the same content and graphics to eliminate any potential effect on learning outcomes due to differences in content or visual illustrations. The video version has been chosen to be compared to the game version because video tutorials are the common way of presenting learning media at online training platforms.

1. The Lesson

The lesson has been designed as a phone conversation between a web developer and a potential client who needs to have a new website.

“Managing client conversations” has been chosen as the skill to be taught in the lesson. This skill has been chosen because of the following reasons:

- a. The scenario of a conversation can vary depending on the responses from the two parties of the conversation. Thus, provides the branching element that is required in an interactive branching game.
- b. Most client conversations require a kind of follow-up actions such as sending an email. Thus, the skill is suitable to have an interactivity element by giving the learner the ability to perform a number of actions later in the game. Also, these actions can call back what have been learnt from the lesson.
- c. Clients’ conversations often contain important information that are required to be written down or saved. That adds more interactivity to the lesson if the learner is required to pick up and store these important information that she can identify.

The scenario of the conversation includes a number of options to select from in order to guide the conversation successfully. According to the chosen selection, the scenario branches to different routes. Within the conversation, a number of important information is said by the client.

The flow chart in (Figure 2) shows the complete scenario. It starts with an incoming call from a client called Katie to the web developer. The client mentions that she has been referred to the developer by a person called Chris Baber to get a website. The names “Katie” and “Chris Baber” are considered important information that the learner has to write down in the video version or collect in the game version. Important information is highlighted in the scenario flow chart with orange text.

Two options are available in each response to the client speech. For instance, the developer can choose either to ask the client about her budget or to ask her whether she prefers to learn more about the developer’s work. According to the chosen option, the scenario branches to a certain route. Options are shown in the flow chart with a green rectangle.

The scenario has 12 different routes to reach an end. Through each route, the learner can find some important information. Therefore, any chosen route gives the ability to collect a certain number of information, which means that guiding the conversation successfully yields to collecting more important information and vice versa.

A full description of the scenario is provided in section 2 (The Game) with illustrated drawings. This scenario is used as a base in creating an interactive branching game and a video tutorial.

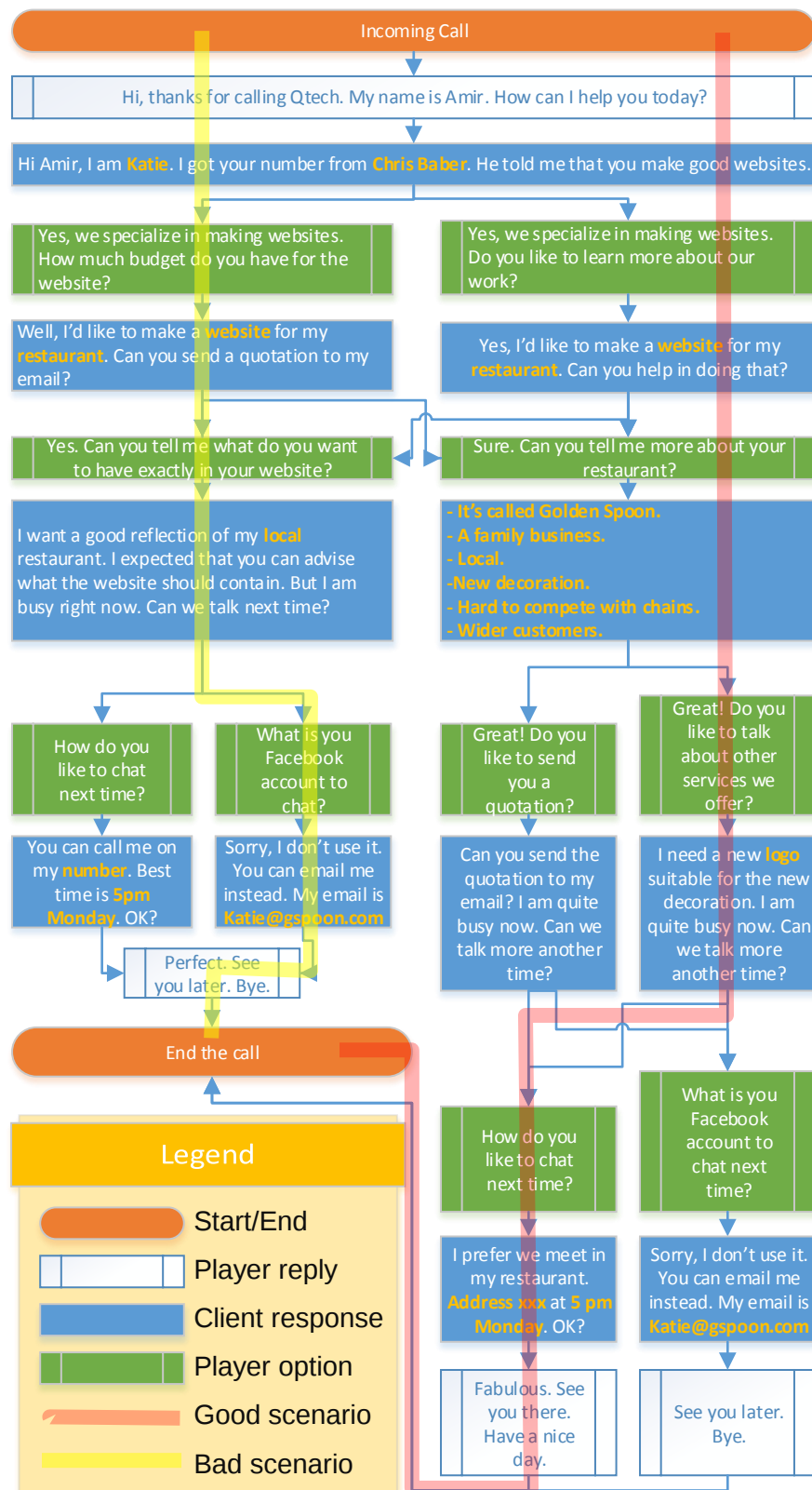


Figure 2: Lesson Scenario

2. The Game:

The game has to utilize the lesson in an interactive way. The responses from the developer to the client are to be offered as options to select from. The important information said by the client is to be made as draggable items to be collected.

The game player will play the role of the web developer. The aim of the player is to increase the chance of getting the client's project. The player's mission is to guide the conversation in order to provide services to the client and to collect important information that is required to create a winning proposal. Then, the player will do a number of suitable follow up actions such as sending the proposal to the client. Therefore, after the conversation, the player has to have the ability to create a proposal and take actions.

2.1 Requirements Analysis

In order to define the technical requirements for developing the game, a UML use case diagram has been created as shown in (Figure 3). There are two actors in the game: a developer and a customer. Actions done by the developer are: (a) responding to customer conversation, (b) collecting information from customer, (c) creating a proposal to the customer and (d) taking

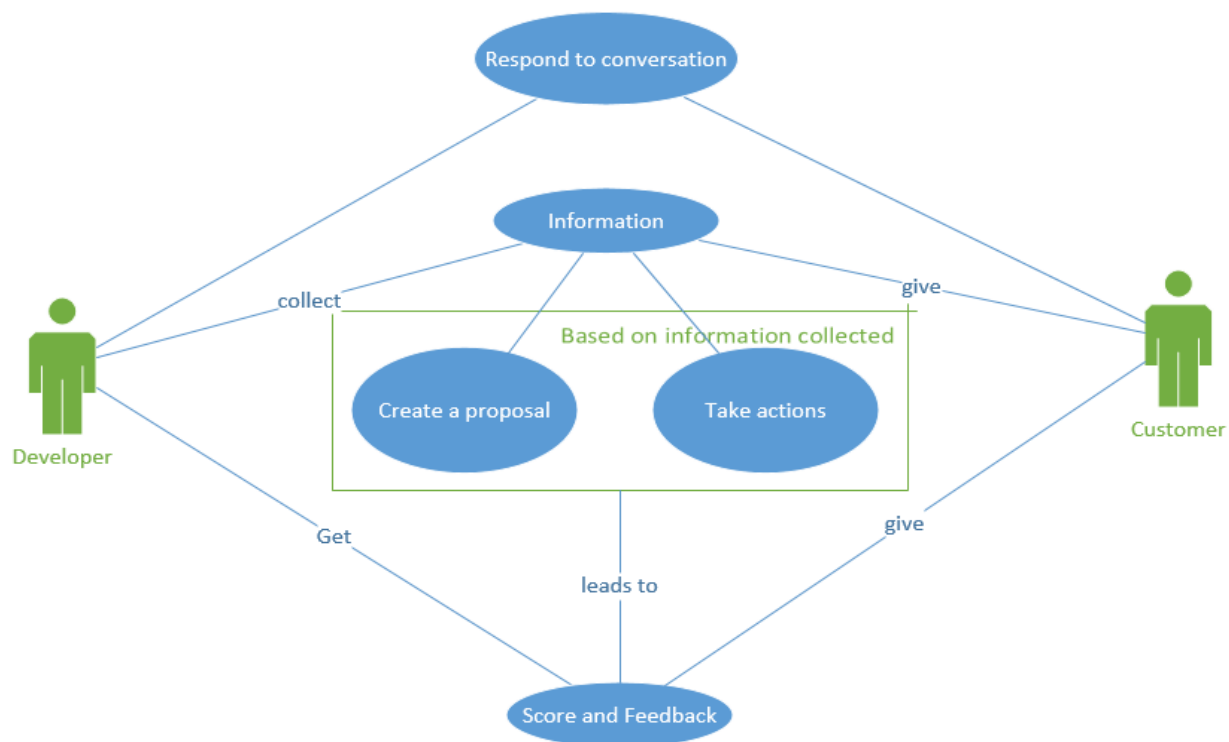


Figure 3: UML Use Case diagram

suitable actions after conversation. Actions number (c) and (d) are dependent on action number (c), so they have their own group of actions.

Through the game, the player needs to choose from a number of branching options. Therefore, the game needs to provide a number of scenes to organize those options. The game needs to provide the player the ability to interact using buttons, text entry and drag and drop items. It also needs to have a coding mechanism to trigger required actions and to track the progress of the player. In order to show a score, the game needs to store data in variables. Besides, the game has to include some animation to make the playing process more engaging.

The game will be published on the freelance academy website (<http://foacademy.com>); it needs to be accessible via the web and to work on most of the major web browsers without a need to install any player application. It also needs to be accessible using mobiles and tablets. Therefore, publishing it using HTML5 technology has been chosen because HTML5 meets all these requirements.

According to the mentioned requirements, a number of suitable development software has been investigated.

2.2 Adequate Implementation Tools

Exploring software that is used to implement such games yielded to list the following as the top most suitable applications to be used in developing the game:

- Adobe Captivate.
- Adobe Flash.
- Articulate Storyline.
- Lectora Inspire.

Adobe Captivate and Adobe Flash provide similar capabilities with the first focused on developing eLearning applications and the latter is more comprehensive for wider use to build a variety of applications. As the two are from the same company and are compatible to each other, Adobe Captivate has been chosen to be a candidate program and Adobe Flash was neglected. Because Adobe Captivate is specialised in eLearning and provides some tools to help in building this type of applications.

The requirements of the game have been revised. Then, a comparison criteria have been developed to compare the capabilities of the candidate programs to those requirements.

The criteria consist of the following parameters. The comparison has been formed as shown in table (1).

Parameter	Adobe Captivate	Articulate Storyline	Lectora Inspire
Branching capabilities and organization.	4/5	5/5	3/5
Interactivity tools such as drag-and-drop.	4/5	5/5	3/5
Variables and conditional actions.	5/5	4/5	3/5
Animation and timeline.	5/5	4/5	3/5
Publishing to the web, mobile and tablets.	5/5	5/5	4/5
Ease of use.	4/5	5/5	3/5
Resources.	5/5	4/5	3/5

Table 1: Comparing implementation software

The comparison has been conducted according to the features page of each software (Articulate Global, 2014) (Adobe, 2014) (Lectora, 2014). It shows that they got similar features and capabilities. Storyline is found to be better in certain parameters. Namely, Storyline is easier to use and has wider branching and interactivity tools. Ease of use is a very important factor because the timeframe given to develop this game is limited. Therefore, Storyline has been chosen to be the software used in developing the game.

Articulate Storyline software is used to create interactive e-learning (Articulate Global, 2014). It provides a number of tools that enhance the process of making animations and interactions to build more engaging learner experiences. The features of the application cover and go beyond the scope of developing the game required by this project. Among its features, the following led to choose it as the software for developing the game (Articulate Global, 2014):

- Intuitive User Interface
- Timeline
- Story View
- Customizable Player
- Motion Paths
- Triggers

- Variables
- Hotspots
- Data-Entry Fields
- Buttons
- Supporting HTML5

Articulate Storyline version (2) has been used in developing the game. It has been published in September, 2014.

2.3 Game structure

The structure of the game is based on multiple scenes where every scene focuses on a main objective. Every scene consists of a number of screens. The game has been divided into three main scenes:

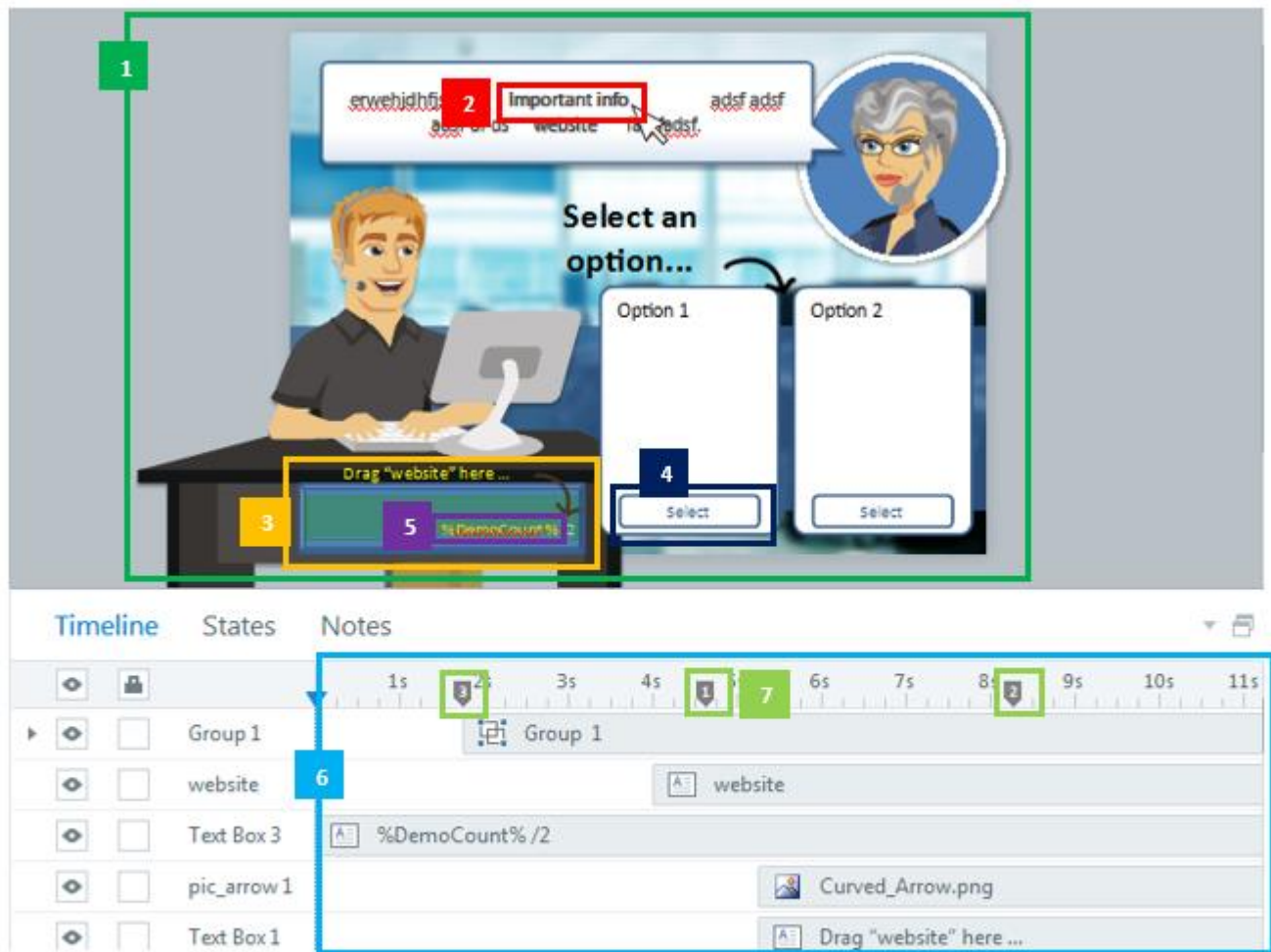
- **Introduction:** Introduces the game and provides instructions on how to play.
- **Conversation:** The actual conversation between the player and the client. Screens are shown depending on the player's selected options.
- **Actions & Feedback:** Enables the player to create a proposal and take some actions. Then, displays the score of the player and a detailed feedback.

Contents of the different screens are organised onto layers and displayed using a timeline that manages the order of displayed items. Simple animations are used as appropriate to show the content on the screen. Figure (4) shows different screens from the game. The game can be accessed via <http://www.foacademy.com/game/>



Figure 4: Sample screens from the game

The timeline of a typical screen is divided - when needed - into a number of cue points. Cue points are marks used to identify a certain frame on the timeline (Articulate Global, 2014). The use of cue points eases the process of pausing and resuming the timeline using triggers. Figure (5) shows a sample screen and its timeline that is divided into three cue points marked by 1, 2 and 3 in grey.



1. Whole screen.
2. Collectable Item.
3. Hotspot.
4. Button
5. A variable shows the number of collected items.
6. Timeline.
7. Cue points.

Figure 5: A sample screen and its timeline

To guide the conversation, the player is required to select the most appropriate response by pressing the suitable button on the screen. Interaction with the user, e.g. dragging and dropping items, is developed using triggers. Triggers are snippets of code that can control elements on the screen according to specified conditions and are able to sense the input from the player (Articulate Global, 2014). A sample trigger is to increment the number of collected items by one

when the player drops a draggable item on a hotspot. Code used for this trigger is shown below in (Figure 6).

```
01 Add 1.00 to DemoCount
02 When the user drops a shape on Pocket - "Hotspot"
03
```

Figure 6: A sample code snippet

Triggers use variables to store data. A sample variable in the previous code is DemoCount that appears on the first line of code. It is a numeric variable that stores integer numbers. Its value starts with zero which is its default value. A full list of variables used in the game is shown in table (2). The list shows the variables, their types and default values. It also shortly explains about each variable.

#	Name	Type	Default Value	Explanation
1.	Address	True/False	False	Collectable item
2.	Avatar	Number	0	Chosen avatar number
3.	CalenderDone	True/False	False	Action status
4.	CallDone	True/False	False	Action status
5.	ChrisBaber	True/False	False	Collectable item
6.	CompeteChains	True/False	False	Collectable item
7.	DemoCount	Number	0	Number of collected items in instructions
8.	Email	True/False	False	Collectable item
9.	FBadded	True/False	False	Action status
10.	InfoCount	Number	0	Number of collected items in conversation
11.	Katie	True/False	False	Collectable item
12.	Local	True/False	False	Collectable item
13.	Logo	True/False	False	Collectable item
14.	Mobile	True/False	False	Collectable item
15.	NewDecoration	True/False	False	Collectable item
16.	Opt1	True/False	True	First conversation selected option

17.	Opt2	True/False	True	Second conversation selected option
18.	Opt3	Number	0	Third conversation selected option
19.	Opt4	True/False	True	Fourth conversation selected option
20.	PostCode	True/False	False	Collectable item
21.	ResturantName	True/False	False	Collectable item
22.	PlayerName	Text	Name here	Entry text
23.	ThankyouSent	True/False	False	Action status
24.	Time	True/False	False	Collectable item
25.	WebsiteResturant	True/False	False	Collectable item
26.	ActionsScore	Number	0	score
27.	ConvScore	Number	0	score
28.	Likelihood	Number	0	score
29.	MapChecked	True/False	False	Action status
30.	NotesScore	Number	10	score
31.	ProposalScore	Number	0	score
32.	ProposalSent	True/False	False	Action status

Table 2: Variables

Notifications within the game are displayed using pop-up messages that appear on top of the screen. Figure (7) shows a sample pop-up message.

The progress of the player is tracked through the game. The progress is expressed using a number of measurements that represent the following:

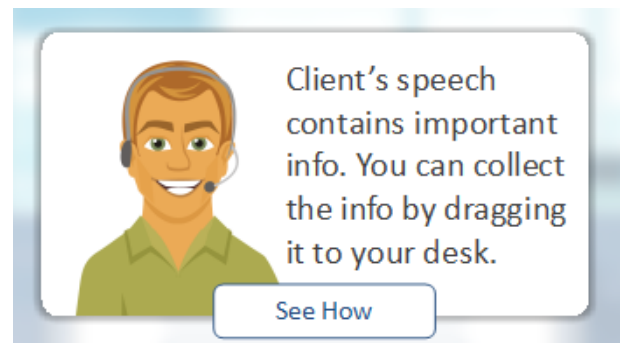


Figure 7: A sample pop-up message

1. **Conversation Skills:** express the player's ability to guide the conversation successfully by selecting the best options and represented by a score that increments by 25 whenever the player selects the best response. It also increments by 10 when the player selects the other response.

2. **Note Taking Skills:** express the player's ability to collect important information during the conversation and represented by the number of items collected which is a counter (integer number) that increments by one whenever the player collects an item. Also, a Boolean variable that holds the name of that item is changed to TRUE to track which item has been exactly collected.
3. **Proposal Quality:** expresses the player's ability to create a good proposal using the collected information and represented by a number that increments by 10 whenever the player drags the correct information to the right place within the proposal.
4. **Actions Taken:** express the player's ability to take appropriate follow up actions to boost the conversation to make a deal. In order to access any action, specific information should be collected. For example, to send the proposal to the client, the player has to collect the client's email address. There are a variety of actions; some of them affects the actions score positively while others affect it negatively. Each action increments or decrements the action's score by its own number of points.

Detailed explanation of the user progress is provided in the feedback screens of "Actions & Feedback" scene.

2.4 A Run-Through The Game

This section illustrates game's scenes, screens and triggers in details. It also explains the objectives of using them.

2.4.1 Introduction Scene

In order to give the player the feel of playing the role of the character used in the game, the introduction scene tries to mimic video games by enabling the player to choose a name and an avatar before starting to play. It mimics video games to add more fun to the learning process.

Introduction scene consists of six screens:

1. **Welcome screen:** introduces the game to the player by showing a title, graphics and some animation.

2. **Name screen:** enables the player to enter his/her name which will be used afterwards through the game.
3. **Avatar screen:** the player is offered three avatars to choose from. The chosen avatar will appear in the whole coming screens to present the player. Shown in figure (8).
4. **Choosing a scenario screen:** enables the player to choose from a number of different client conversations scenarios.
5. **Mission screen:** shows the player's mission, avatar and name.
6. **Instructions screen:** teaches the player how to find important information and collect them.

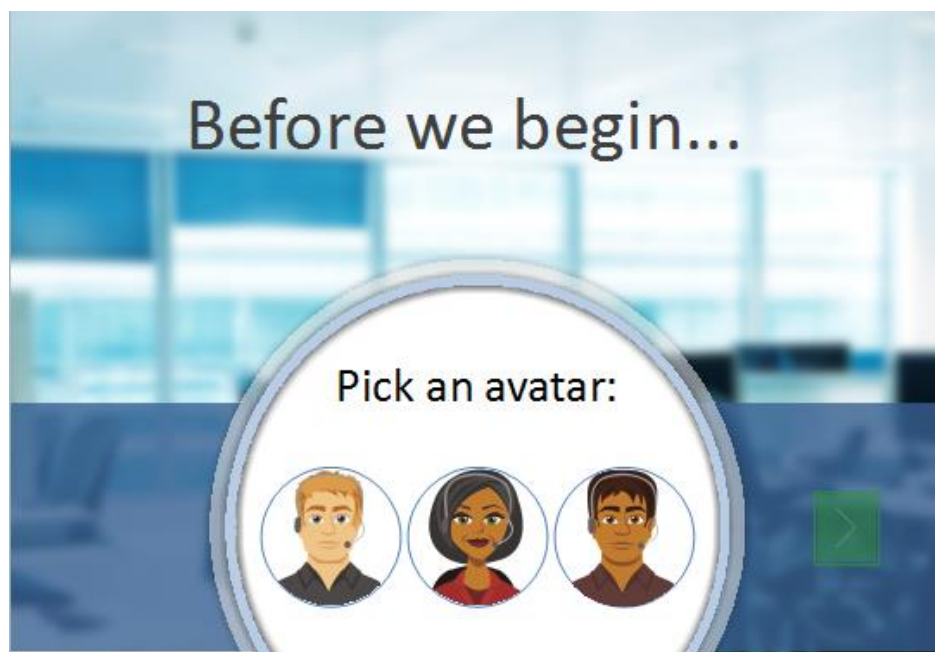


Figure 8: Avatar Screen

The name and the avatar are used to give the player a feel that the character in the game is him or her. A full description and a snapshot of every screen can be found in appendix (I).

2.4.2 Conversation Scene

This scene comprises of a number of different screens. The player will not see all of them. The player will see only some screens according to her selected choices during the conversation. Then, the conversation branches according to the flow chart shown earlier in figure (2) in the lesson section.

The progress of the player is started to be tracked. The different scores are started to be calculated as well. Appendix (II) shows every screen in the conversation scene and identifies where its options do branch. It also shows a description of the available important information to be collected in an individual screen. Screen number four is a sample conversation screen that is shown in figure (9) with its description.

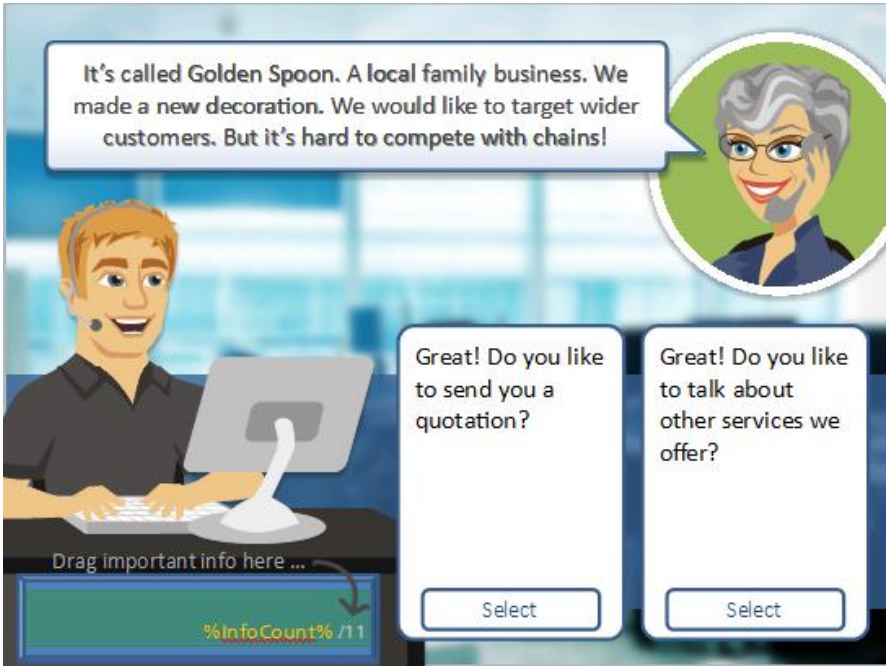
#	Screen	Description
04		<u>Collectable items:</u> 1. Golden Spoon. 2. Local. 3. New decoration. 4. Wider customers. 5. Compete with chains. Selecting option on the <u>right</u> jumps to slide number (06). Selecting option on the <u>left</u> jumps to slide number (05).

Figure 9: A sample screen from conversation scene

Items are collected by dragging and dropping them to a rectangular hotspot that appears on the desk of the developer on the screen. The following code snippet is used to increment the number of collected items and to define that a specific item – “ChrisBaber“- is collected by changing its Boolean status to true.

```

01  Add 1.00 to InfoCount
02      When the user drops a shape on Pocket - "Hotspot"
03      If ChrisBaber is equal to False
04
05  Set ChrisBaber equal to True
06      When the user drops a shape on pocket - "Hotspot"
```

Figure 10: Code used to track collected items

By finishing the conversation, the player goes to the next scene to take actions.

2.4.3 Actions and Feedback Scene

In this scene, the player can apply what has been learnt. Starting by creating a proposal for the client and ending by taking follow up action such as emailing the proposal to the client. The scene also provides a detailed feedback report about the progress of the player.

The scene consists of four screens:

1. **Creating a proposal screen:** The proposal is created by dragging and dropping important information that has been collected through the game to a proposal template. For every item dropped correctly, the player gets 10 points towards the proposal quality score.
2. **Taking actions screen:** in this screen, shown in figure (11), the player can take a number of actions that follow the conversation such as checking the client's project location on the map or emailing her the proposal. For every action there is an icon on the office of the player. Icons are connected with the collected information. That is, in order to access any icon, the player has to have already collected the required information. For example, to access the map icon the player has to collect the postcode

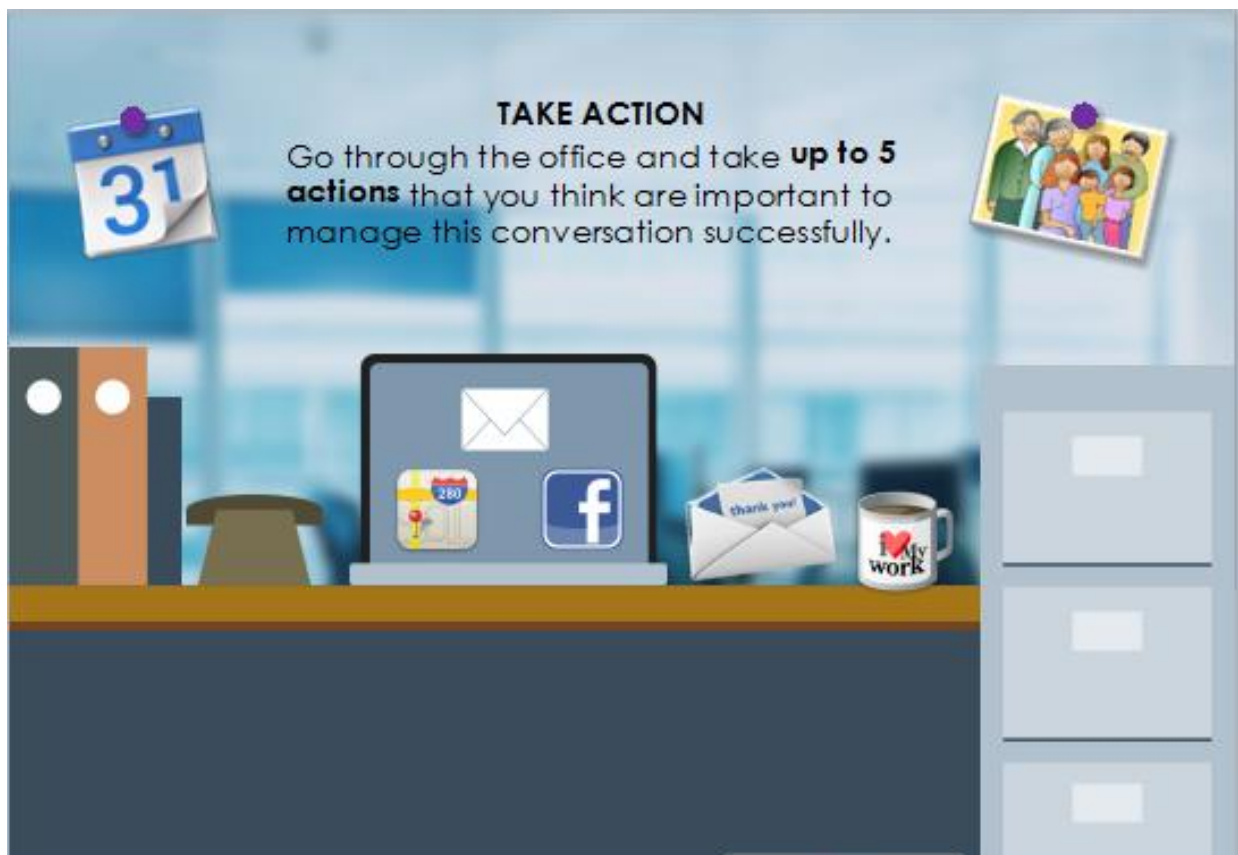


Figure 11: Actions Screen

from the conversation. If the required information is not collected, the player faces a “Can’t access” notification message. Doing every action gives the player a number of points towards actions’ score. Appendix (III) shows all the actions and their icons, screens and points. Actions varied between positive, negative and neutral actions. Positive actions increment the score while negative ones decrement it. Neutral actions do not affect the score.

3. **Score and feedback screen:** calculates and shows the score obtained through the game. It also calculates the likelihood of getting the customer’s project. Likelihood is calculated by summing all the scores and dividing the sum by 3.4 because the maximum score the player can get is 340. Appendix (IV) shows the detailed feedback report.
4. **Credits screen:** Shows the credits of developing the game and a button to restart it.

3. The Video Tutorial

The video has been designed using the same graphics used in the game. It has been divided into two parts: a bad scenario and a good scenario. In the bad scenario, the web developer responses are not guiding the conversation to a successful one. It yields to an unhappy client and a very weak likelihood to win her project. In the good scenario, the web developer acts in a better way that guided the conversation to a success. That yields to a happy client and a high likelihood to win the client’s project. Good and bad scenarios are shown in a red and yellow routes respectively on the conversation flow chart shown earlier in figure (2) in the lesson section.

The method of bad and good scenarios has been used to make the video as close as possible to the game; to decrease the differences between the video and the game in order to have a more fair and reliable comparison. During the video, the learner is asked to compare between both scenarios by writing down what was wrong with the bad scenario and what have been learnt from the good scenario, to create an element of activity in the video. Each time the watcher is asked to write down something, the video pauses for five seconds approximately.

Unlike the video, the game does not have a good and a bad scenarios. Meanwhile, playing the game provides learners with the branching ability that depends on their choices. It is expected that some learners would finish it with a ‘bad’ scenario because they did not guide the conversation successfully while other learners would finish it with a ‘good’ scenario. Therefore,

there is no need to provide a 'good' and 'bad' versions for the game and so these two extremes were put as separate versions in the video.

To record a video using same game visual elements, other two versions of the game has been developed just for video recording purposes. The first version plays the bad scenario automatically and the second version plays the good scenario automatically. The video has been recorded by running both versions and recording the screen. Then, the video has been produced for editing by a video editing software called Camtasia Studio. Figure (12) shows an image that shows different snapshot from the good and bad scenarios of the video.



Figure 12: different snapshots from the video

After recording the video, voices of the two conversation parties have been recorded and added over the video. Voice noise has been removed. Then, the clear voice has been synchronised manually with the video.

The video has been manipulated. Pauses in voice and animation have been cut to make the length of the final video about two minutes in order to minimise the time spent to do the questionnaire, which requires watching the video. During the video editing process, some visual effects have been added.

Finally, the narration had been translated into Arabic in order to publish the video to Arabic-speakers as well; because they represent the targeted segment for the Freelance Online Academy (FOA), where the game and the video will be published. The full translation is enclosed in appendix (V). Translation was added over the video as captions. Figure (13) shows how the elements of the video were organised and edited within the software. The final version of the video can be accessed online using this link:

<http://www.youtube.com/watch?v=sic-XiQsF8Q>



Figure 13: Video editing process

3.1 Software Used

A screen recording and video editing software, called Camtasia Studio, has been used for doing the video version. Camtasia Studio is a screen recorder that helps in creating professional

videos (TechSmith, 2014). It has the ability to customize and edit content. It publishes videos for sharing with viewers on a variety of devices including PCs, laptops, mobiles and tablets.

The features of the application cover and go beyond the scope of what is needed in this project. Among its features, the following led to choose it as the software for designing the video (TechSmith, 2014):

- Screen Recording.
- Video Customization.
- Record high-quality videos.
- Multi-track Timeline.
- Visual Effects.
- Easy Sharing.

Also, the author experience in using this software assisted in choosing it. Camtasia Studio version (8) has been used for the video production.

CHAPTER (4): METHODOLOGY

A research methodology is defined as the range of practical skills and activities which are used to conduct the research; including the types of data collected, collection methods and procedures, and analysis techniques (Walsh, 2001). This chapter aims to explain and justify the various methods of data collection and data analysis used for the purpose of this study. It then, shows the results and explains what they mean to the study.

1. Methodology

Denscombe (2007) defines three main methods of collecting primary data; these are observations, interviews, and questionnaires. The three ways have been investigated to do the evaluation.

Observations can be either participant or non-participant. In a participant observation, the observer participates in the interaction or event studied, while a non-participant observation does not involve the observer in any way (Saunders et al, 2009). Thus the first option would be to recruit people individually and to ask them to talk aloud while they are playing the game or watching the video. This method allows the experimenter to closely observe what decisions learners are taking. But talking aloud during the experiment could make it disruptive because learners may stop performing the task to have a conversation with the administrator. Therefore, this method has been considered disruptive and inappropriate.

Interviews are considered as oral-verbal conversations aiming to collect information for special purposes. Interviews differ from normal conversations in that it is associated with a set of assumptions and understanding about the situation (Denscombe, 2007). According to Kothari (2004) an interviews is a preferable method when the data collection is based on feelings, opinions, experiences and sensitive issues. However, it is considered an expensive method, a time consuming and has a high possibility of bias.

Using interviews can be implemented by gathering a group of people in a class. To let them watch the video and a recorded clip of playing the game. Then, to ask them a number of questions. This method would give the learners the same experiment and they will see the same route in the game. But it will not give them the ability to drive their own route.

Questionnaires are written lists of questions designed to collect data directly from people. Questionnaires are usually used to collect brief and uncontroversial information from large

number of respondent. The main advantages of this method is that it can be a cheap method to reach a large number of respondents (Denscombe, 2007). Also, this method enables respondents to drive the game in their own way. Thus, they will have a variety of experiences; and according to their experiences, they can compare between the game and the video.

This study employed an online questionnaire to collect the required primary data. The primary data are those data collected directly and for the first time by the researcher, so it represents the new and original research information (Kumar, 2005). Therefore, a questionnaire was designed with the aim of answering a variety of questions posed. For example, which is making learners more confident in applying what they have learnt, the game or the video.

Responders were required to play the game, watch the video and answer the questions of the questionnaire. So, they were divided into two groups. The first group is assigned to watch the video firstly, answer some questions about learning outcomes gained from the video, and then play the game and answer other questions about comparing the game to the video. The second group is assigned to play the game firstly, answer some questions about learning outcomes gained from the game, and then watch the video in order to compare it with the game by answering comparing questions. Same questions were used with the two groups. A randomization script were used to assign responders to each group (video-first or game-first) in order to make the questionnaire unbiased towards any of them.

The questionnaire was posted on a variety of students' groups and was spread using social media with the expectation that the public would answer. It has been translated into Arabic in order to reach a wider range of responders. Upon receiving a sufficient number of responses, the answers were analysed. A total of 97 responders completed the questionnaire. 51 of them completed the video first while 46 completed the game first.

2. Questionnaire Design

The purpose of this project is to measure the learning outcomes of using interactive branching games in web-based educational context. The questions of the questionnaire have been chosen to reflect this purpose. The survey consists of 17 questions. Questions have been divided into two main categories:

1. Factual questions that ask about the learnt skills.
2. Comparing questions that ask to compare between the game and the video in several aspects.

The first ten questions were factual. They reflect the skills that have been introduced in the game or the video. The aim of these questions is to measure whether the video or the game gave the learners the introduced skills. Answers have been formulated on a 3-point Likert scale (Agree, Not Sure, and Disagree).

The latter seven questions are for comparing between the video and the game. Full survey can be found in appendix (VI) and appendix (VII).

To provide a trustworthy and reliable comparison between the game and the video, all questions have been designed to be answered by either watching the video or playing the game. Some questions are positive while others are negative to make sure that the questionnaire is neither biased for positive nor negative answers.

An introduction has been added to explain why the data is being collected, for whom and for what purposes. After that, these questions were reviewed during discussions with the supervisor and tested before administering them. No demographics questions have been used as they are not relevant to the purpose of the study and to maintain the ethics of the questionnaire. The study had University Ethics Approval. Ethics application is included in appendix (VIII). A pilot survey has been published to get a feedback and amend accordingly. The results of the pilot survey have not been considered part of the actual results.

3. Hypotheses

The hypotheses are derived from the literature review and repeated in this section. The null hypothesis is added to measure whether the study had any difference between using videos and branching games in learning.

- H_0 : There is no difference between using interactive branching games and videos in learning.
- H_1 : Learners who played the game are more likely to agree with physical actions they performed.
- H_2 : The game players to have more correct answers than the video watchers.
- H_3 : The game to be more preferred in general than the video.

4. Analysis

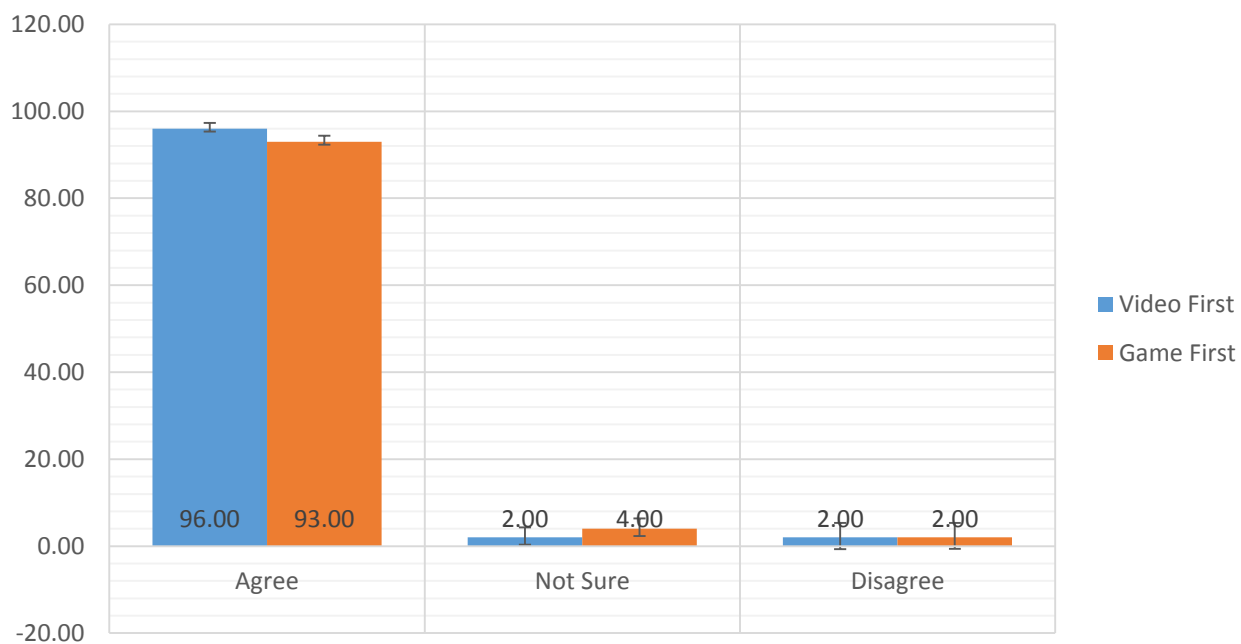
The questions are used as a framework around which the answers are posed.

4.1 Factual Questions

Responders had to answer the following ten factual questions by either agree, not sure or disagree. The responses have been assigned the values 1, 2 and 3 respectively. Next to each statement, the right answer is written down. To illustrate a clear statistical view, the mean and the standard deviation are shown below each result and error bars are added to each graph.

According to the video/game, do you agree with the following sentences? (Question 1 - 10)

1. Introducing myself and my company when replying to a client's call makes a professional impression. (Right answer: agree)

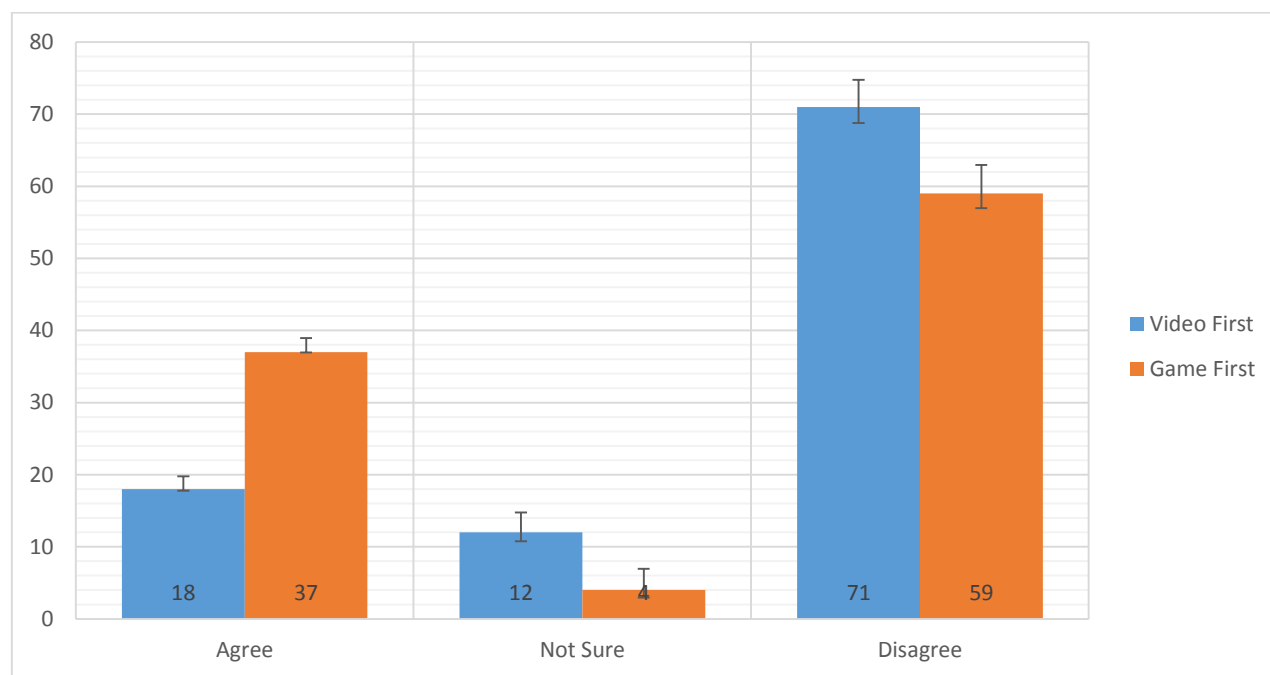


Video First	Game First
Mean: 1.06 Standard Deviation: 0.31	Mean: 1.09 Standard Deviation: 0.35

The aim of this question is to measure the understanding of making a professional first impression skill. The result shows that almost all of the learners agree to the statement

regardless starting with the video or the game. That could be because learners might use their common sense to answer the question because it is a situation that they face in their daily life. The result does not show any difference between the two methods (branching games and videos), and hence no further statistical analysis will be used.

2. Asking about budget early is a good way to determine client's requirements. (Right answer: disagree)



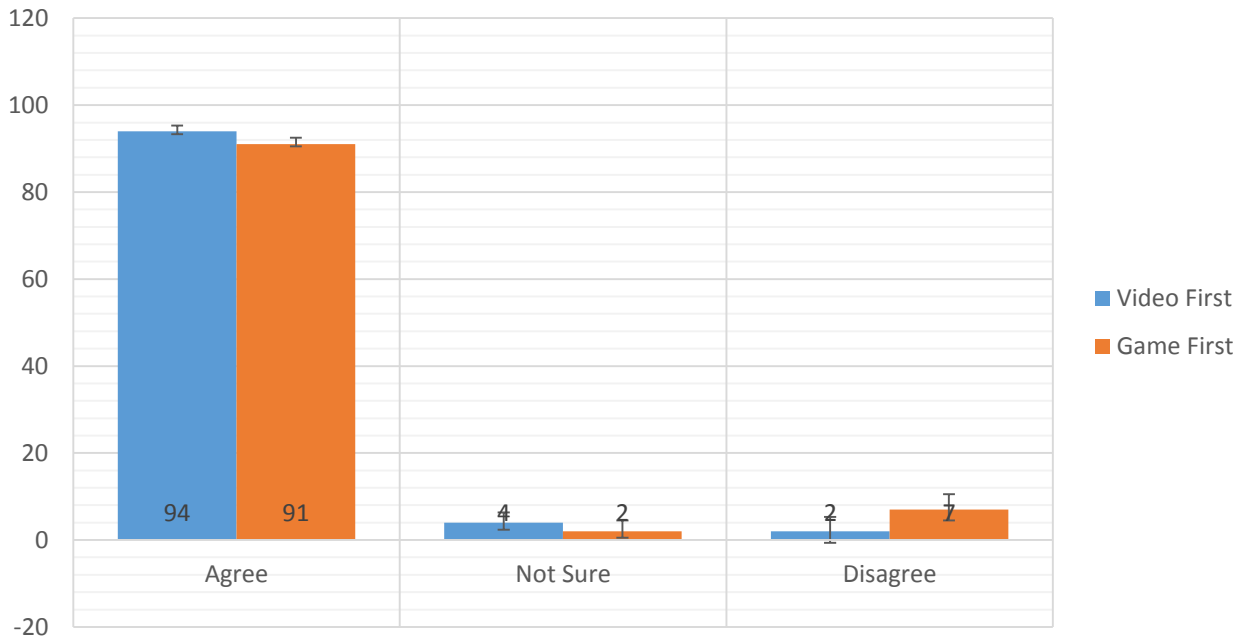
Video First	Game First
Mean: 2.53	Mean: 2.22
Standard Deviation: 0.78	Standard Deviation: 0.95

This question is to test the understanding of a skill presented differently in the video and the game. On one hand, the result shows that responders who took the video first have answered correctly by (%71) which is higher than the ones who took the game first (%59). This could be due to that learners who watched the video first have seen this skill in the bad scenario with a real-time reaction from the customer, which confirms the received information. It indicates that providing feedback to the learners could help in their understanding.

On the other hand, game players had selected an option regarding this skill. It could be either the right or the wrong answer, which might make them unsure about the consequence of the

other option. This question’s result may guide to that showing consequences of different options could make learners more confident about choosing the right option. This could be investigated more in future studies. Also, the result shows that having the ability to branch within the game might cause the learners to miss some important alternatives to his/her own route.

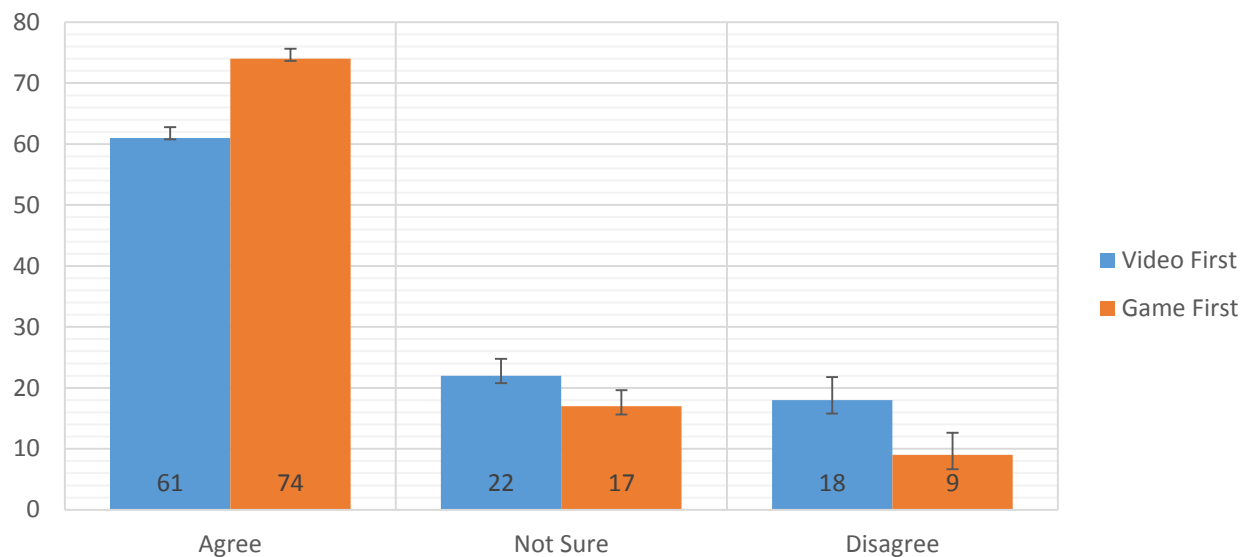
3. Trying to understand the client’s needs in layperson language and translate them into technical specifications is one of my responsibilities. (Right answer: agree)



Video First	Game First
Mean: 1.08	Mean: 1.15
Standard Deviation: 0.33	Standard Deviation: 0.51

Another question with a bulk agreement from both groups of responders. The result does not show any major different between both methods in learning.

4. It is a good idea to find out your customer's name, budget, and by whom she has been referred. (Right answer: agree)



Video First	Game First
Mean: 1.57	Mean: 1.35
Standard Deviation: 0.77	Standard Deviation: 0.63

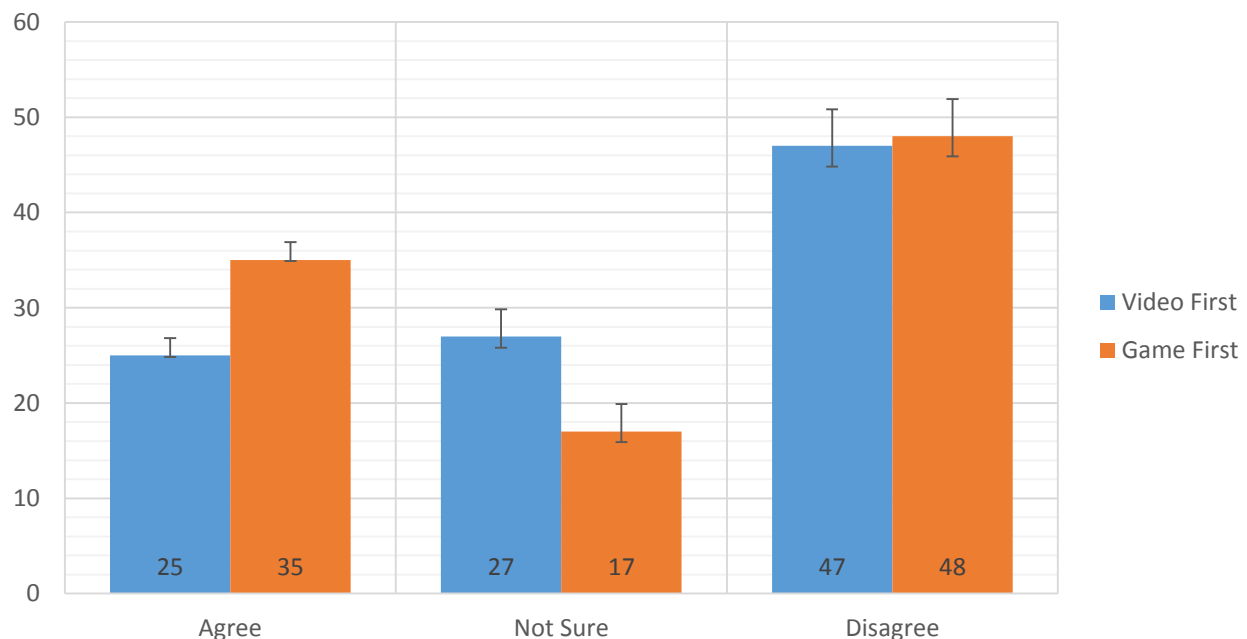
It is clear that answers of the game-first group are more correct than the ones of the video-first group. That is, game-first group has more “agree” and less “disagree” and “not sure”. The difference could be because in the game learners were required to perform a physical action of finding out the required information and collecting them. That indicates that performing physical actions is more likely to give learners the confidence about agreeing with them or applying them later.

In order to see whether this result could be generalized on the population or not. A statistical test should be used to examine the result. Several statistical tests have been investigated according to three criteria: data, sample and purpose. Among them, T-test has been chosen because: (a) The data represented in this analysis is nominal, qualitative and non-parametric, which is the type of data analysed by t-tests. (b) The study has two samples: game-first group and video-first group, and t-test is used to test the difference of two proportions. (c) The purpose of the test is to compare between two statistics. Therefore, t-test is the appropriate statistical test to be used (Statistics Learning Centre, 2014).

T-test shows that the result is not statically significant as p is greater than 0.05 as shown below. Therefore, the first hypothesis (H_1) cannot be accepted. However, there is another statement that measures the same hypothesis and hence the hypothesis is still under evaluation.

	Video	Game
Mean	1.568627451	1.347826087
Variance	0.610196078	0.409661836
Observations	51	46
Hypothesized Mean Difference	0	
df	94	
t Stat	1.528400555	
P(T<=t) one-tail	0.064885645	
t Critical one-tail	1.661225855	
P(T<=t) two-tail	0.129771289	
t Critical two-tail	1.985523442	

5. The client can technically describe her requirements better than you because she knows what exactly she wants. (Right answer: disagree)



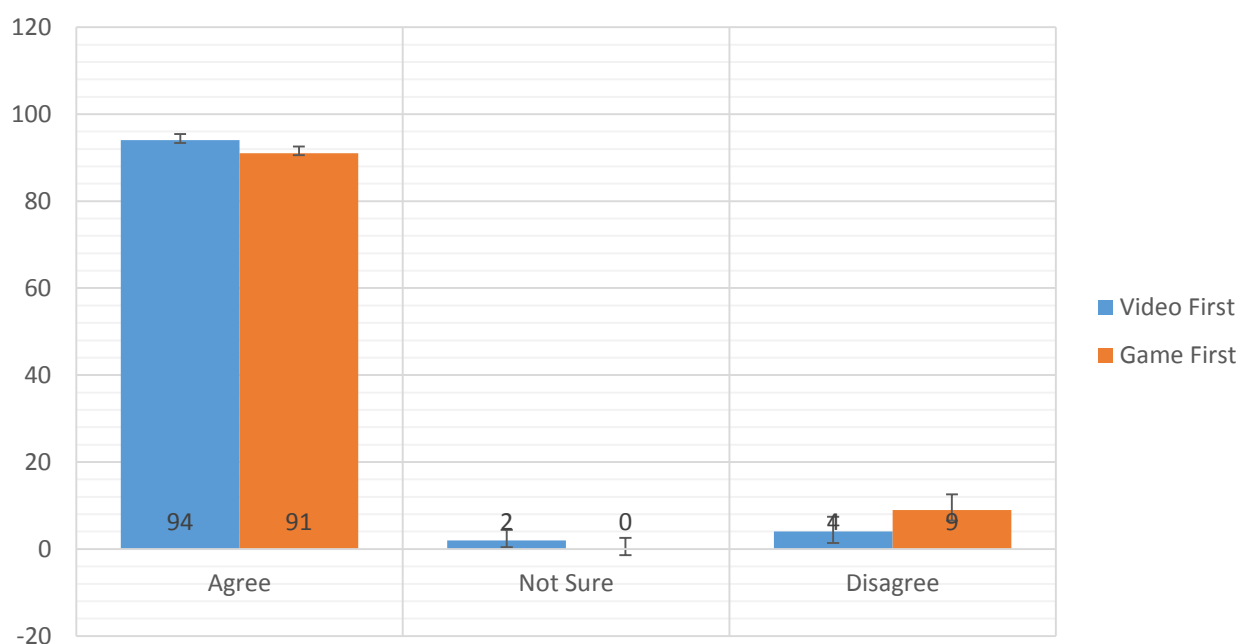
Video First	Game First
-------------	------------

Mean: 2.22 Standard Deviation: 0.82	Mean: 2.13 Standard Deviation: 0.90
--	--

This is a confusing result because more than 50% of responders were either not sure or got this question wrong. The result of this question does not show significant differences between the two ways of learning; because the answers of the two groups are not accurate and almost identical at the same time. That could be because the skill has not been presented directly neither in the video nor in the game. That is, the nature of this question is indirect. Also, it could be because learners might relied on their common sense in replying to this question without referring to what the lesson presented because it is a situation that they usually face in daily life.

6. Asking customers about their preferable way of communication is a good practice.

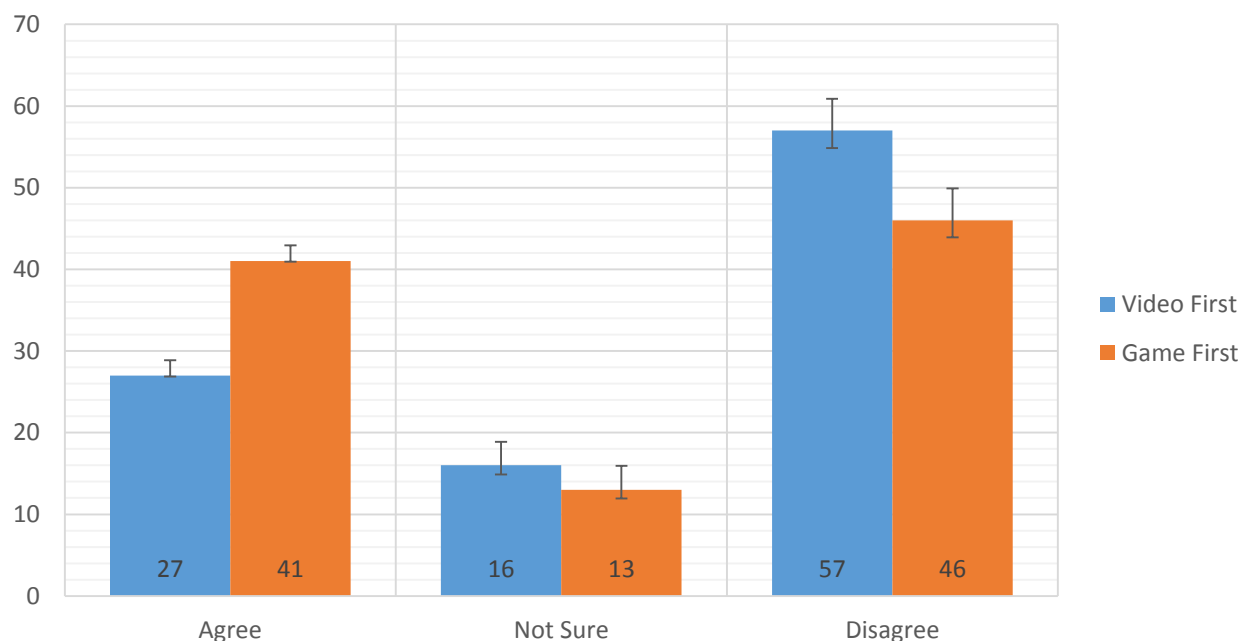
(Right answer: agree)



Video First	Game First
Mean: 1.10 Standard Deviation: 0.41	Mean: 1.17 Standard Deviation: 0.56

Another question with an almost identical bulk agreement from both groups of responders. Again, the result does not show major differences between both methods in learning.

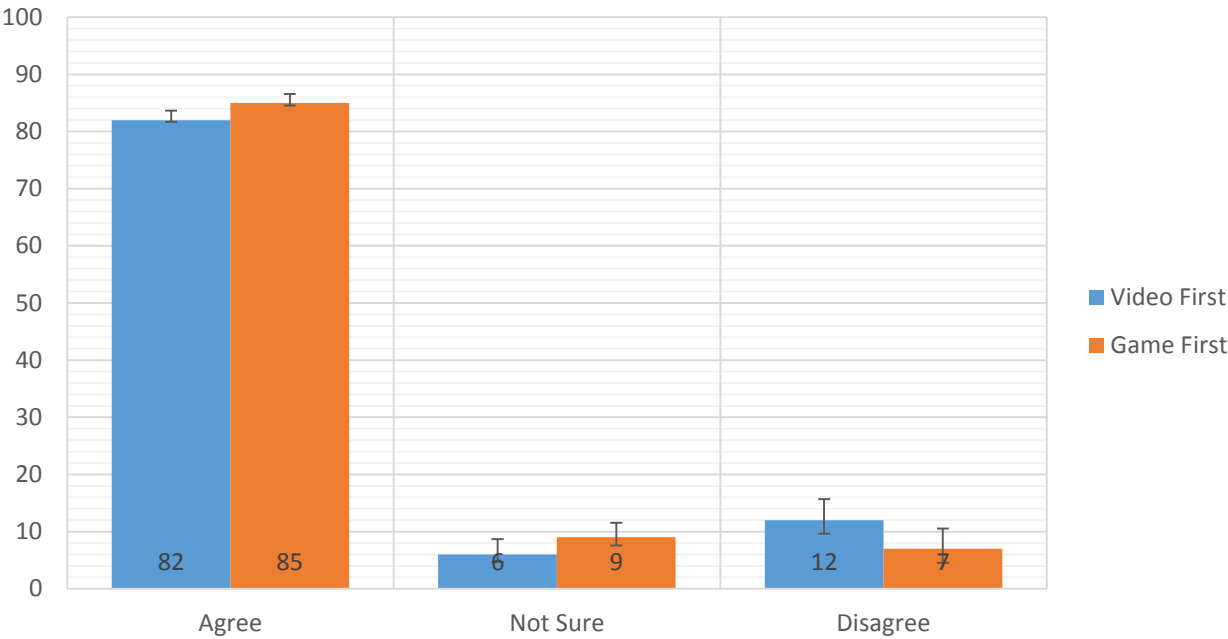
7. Adding a new client to your Facebook account could strengthen your business relationship. (Right answer: disagree)



Video First	Game First
Mean: 2.29	Mean: 2.04
Standard Deviation: 0.87	Standard Deviation: 0.93

At this question, video-watchers have more correct responses than game-players. A logical explanation could be that, in the game, learners saw the action of “adding a client to Facebook” among other actions that were positive. Also, the evaluation of actions in the game is not real-time, which means that some of the game players might do this action having in mind that it is a positive one and they might not check their score report.

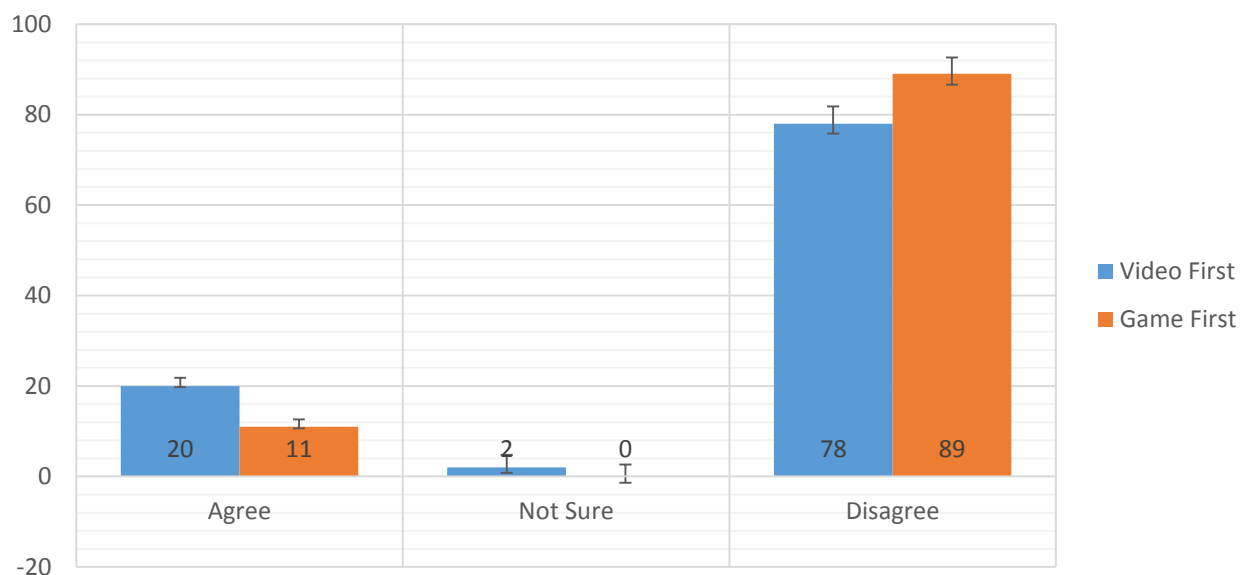
8. When someone refers you, it is a good practice to send him a thank you note. (Right answer: agree)



Video First	Game First
Mean: 1.29	Mean: 1.22
Standard Deviation: 0.67	Standard Deviation: 0.55

Another question that responders face regularly in life and can be answered with common sense. The recommendation here is to use more specialised questions in future research. Also, to test whether the question could be answered by common sense before publishing them.

9. Taking notes of important information during the call is not necessary. (Right answer: agree)



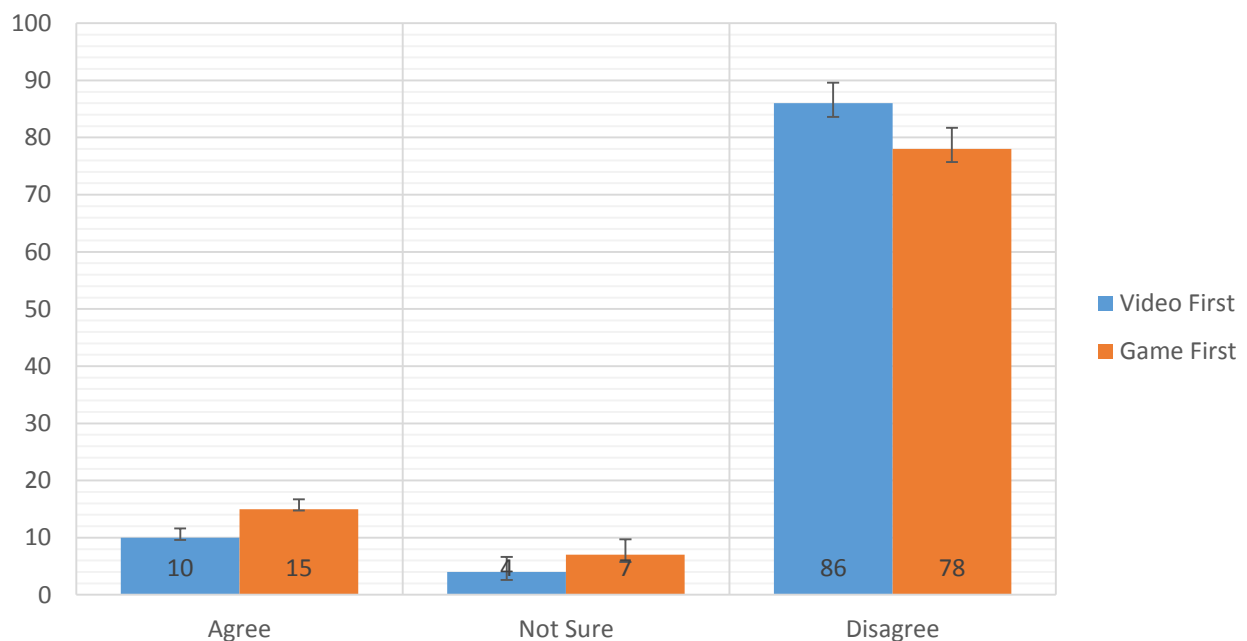
Video First	Game First
Mean: 2.59	Mean: 2.78
Standard Deviation: 0.80	Standard Deviation: 0.62

The result of this question is similar to the result of question number four. It is clear that the answers of game players are more correct than the ones of video watchers. That could be because in the game, learners were required to perform a physical action. The result of this question supports the conclusion of question number four that asking learners to perform physical actions is more likely to give them the confidence about agreeing with or applying them later. A T-test has been done to see whether generalizing this result is possible or not. As p is lower than 0.05, this result can be generalized to the whole population. However, having another statement (question 4) that measures the same hypothesis and having that its result was not statically significant yields to say that hypothesis one (H_1) is, to some extent, true.

	Video	Game
Mean	2.588235294	2.782608696
Variance	0.647058824	0.396135266
Observations	51	46
Hypothesized Mean Difference	0	

df	93	
t Stat	-1.331853862	
P(T<=t) one-tail	0.043081579	
t Critical one-tail	1.661403674	
P(T<=t) two-tail	0.046163158	
t Critical two-tail	1.985801814	

10. Checking extra information about your client's project before making a deal is a wasting-time effort. (Right answer: disagree)



Video First	Game First
Mean: 2.76	Mean: 2.63
Standard Deviation: 0.61	Standard Deviation: 0.73

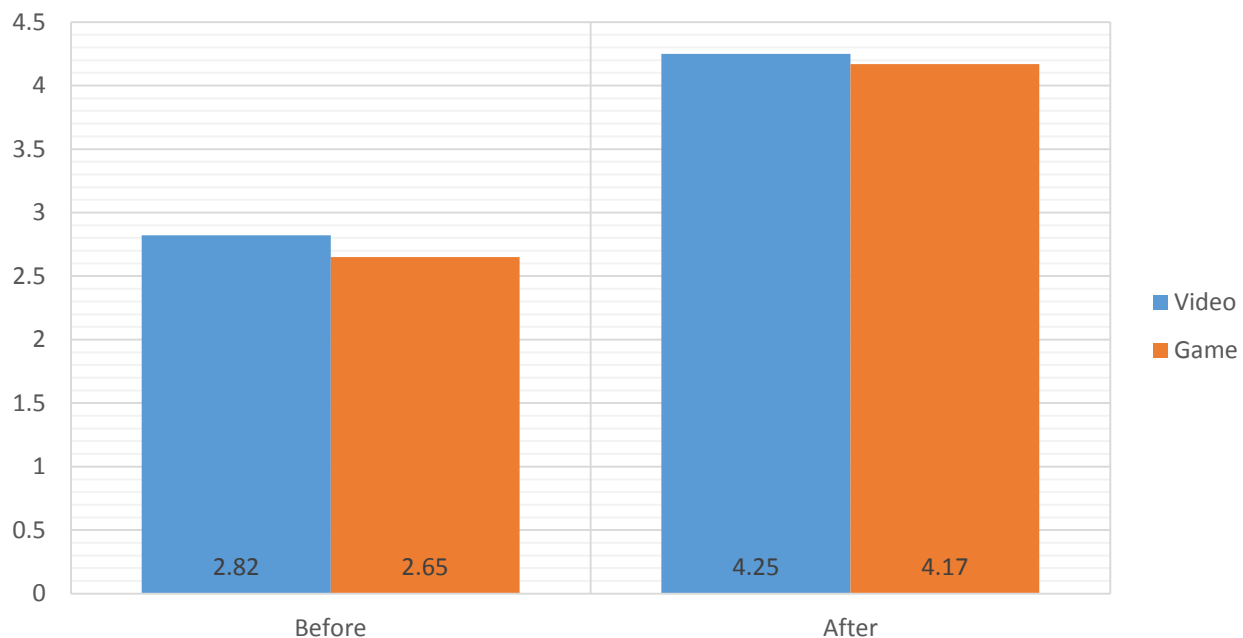
Again, the result does not show major differences between both methods in learning. However, video watchers tend to have slightly more accurate answers.

4.2 Factual Questions Analysis Summary

From the 10 questions that participants answered, seven showed a similar response regardless of the medium used. Of these, question (5) showed people were equally incorrect in their response. This suggests that often participants might not have been using any of the material that were presented in the learning phase, but relying on their own common sense. Of the questions which showed a difference, two (questions 2 and 7) showed better performance when people saw the video. This was because the reaction of the characters in the video showed an action was no good – but this reaction was only seen in the game condition if the players had made that choice. One question showed better performance when using the game. Before discussing these results, the next section looks at the subjective ratings from the participants, in terms of whether they felt that the video or the game had a more positive impact on their learning.

4.3 Comparing Questions

11. How easy was it for you to manage customer conversations? (out of 5)



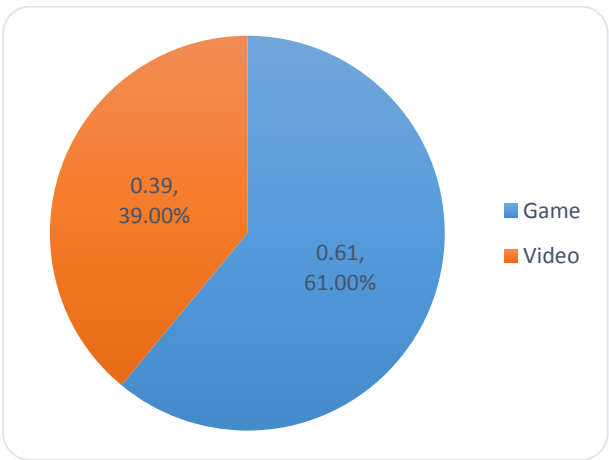
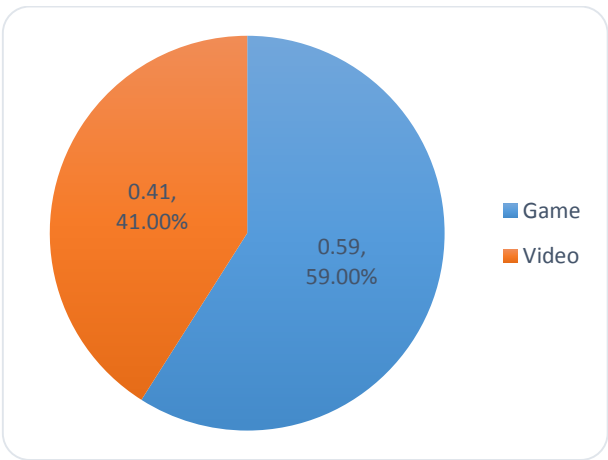
The graph shows that the skills of the learners have been enhanced by either the video or the game with a slight better advancement for the game. The average advancement of watching

the video is $4.25 - 2.82 = 1.43$ while the average advancement of playing the game is $4.17 - 2.65 = 1.52$, but this difference is not large enough to claim any benefit of game over video.

Which do you believe is better at: (Questions 12 – 16)

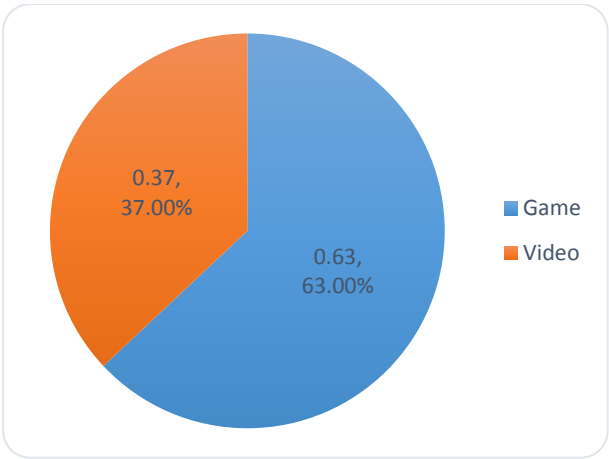
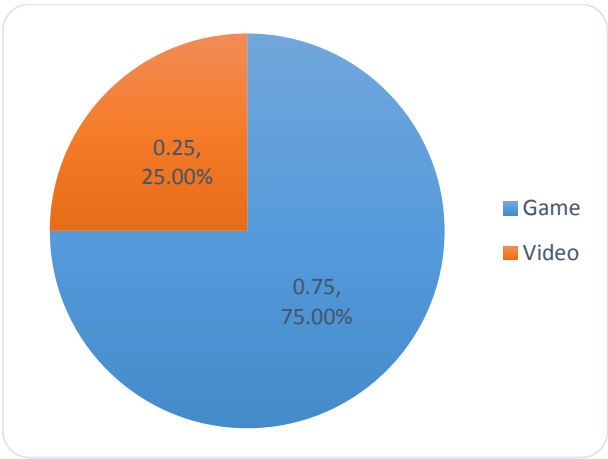
In these figures, we will assume that a difference > 10% between the conditions indicates a noteworthy finding, and these questions are shown in *italics*.

12. Helping you in your learning



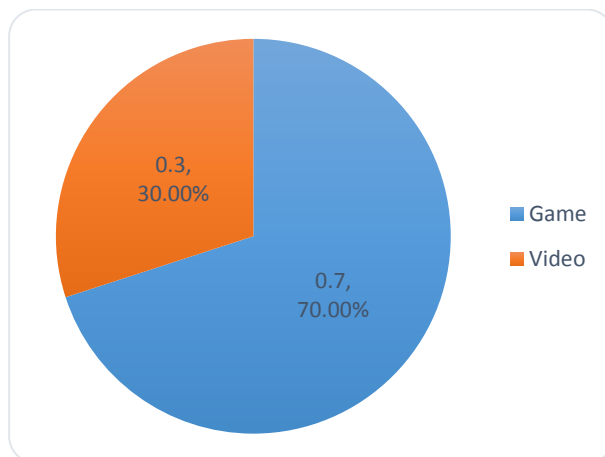
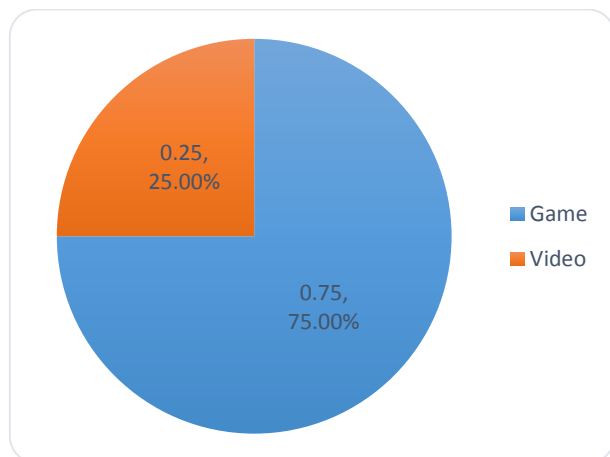
Video First	Game First
Mean: 1.412	Mean: 1.391
Standard Deviation: 0.497	Standard Deviation: 0.493

13. Motivating your learning



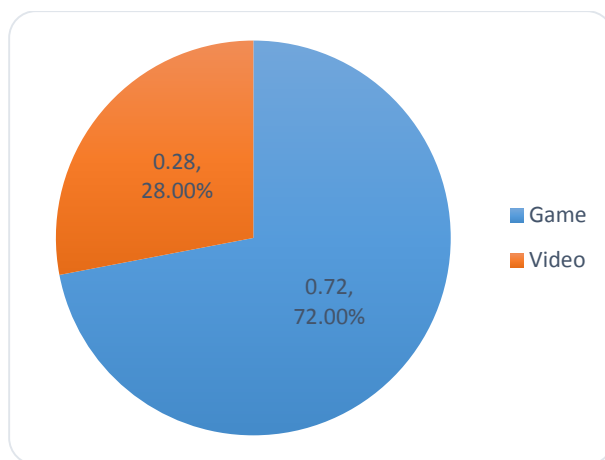
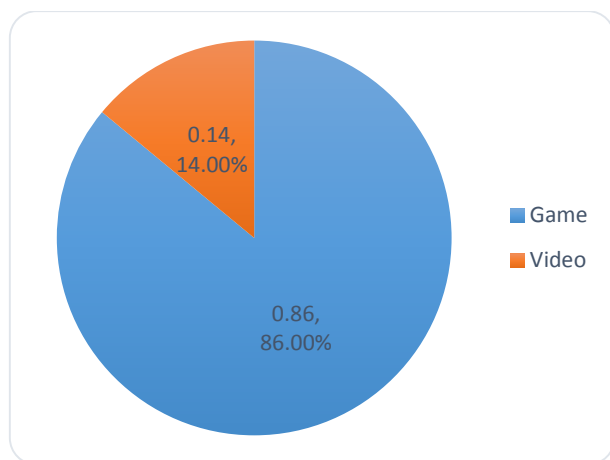
Video First	Game First
Mean: 1.255	Mean: 1.370
Standard Deviation: 0.440	Standard Deviation: 0.488

14. Making your learning more engaging



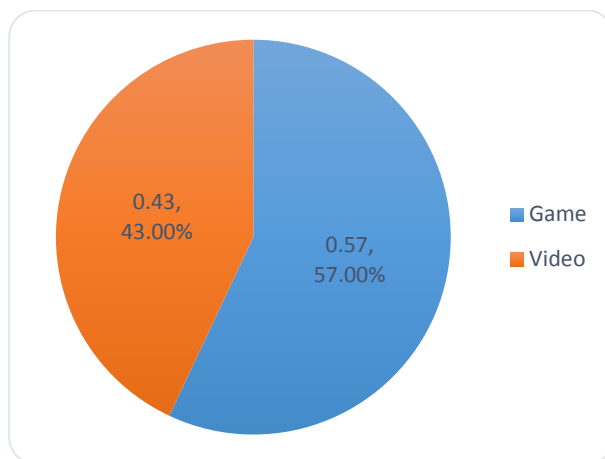
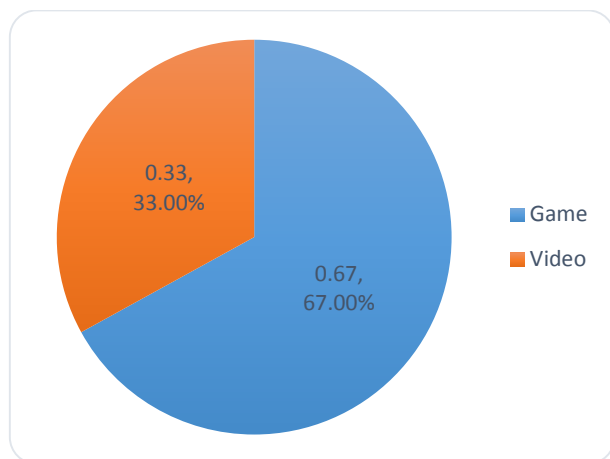
Video First	Game First
Mean: 1.255	Mean: 1.304
Standard Deviation: 0.440	Standard Deviation: 0.465

15. Making your learning fun



Video First	Game First
Mean: 1.137	Mean: 1.283
Standard Deviation: 0.348	Standard Deviation: 0.455

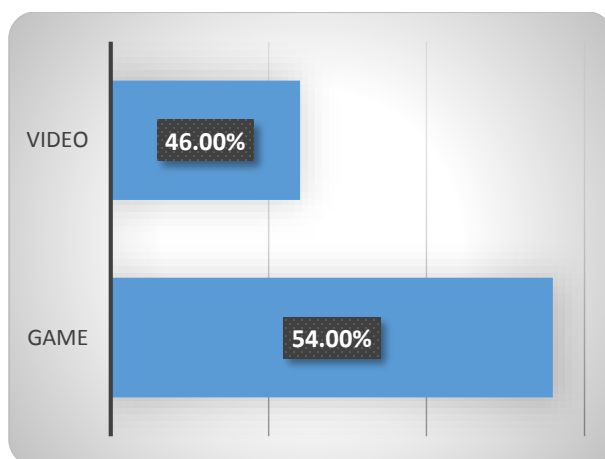
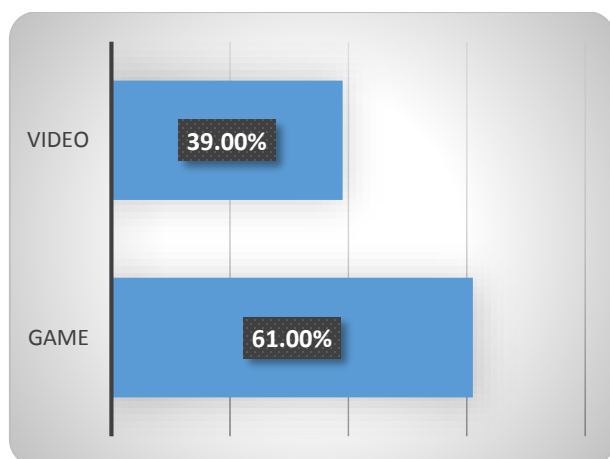
16. Making you more confident in applying what you have learnt



Video First	Game First
Mean: 1.333	Mean: 1.435
Standard Deviation: 0.476	Standard Deviation: 0.501

Comparison questions show a clear preference for games on all the areas posed. Especially for motivating learning, making learning more fun and helping people become more confident in their learning. The results indicate that learners tend to be more enthusiastic about using games in learning.

17. Which would you prefer in your future training?



Video First	Game First
Mean: 1.392	Mean: 1.457
Standard Deviation: 0.493	Standard Deviation: 0.504

4.4 Comparing Questions Analysis Summary

This result suggests a slight preference for using interactive branching games in learning. However, the factual questions showed some advancement for videos in certain results. Therefore, using interactive branching games could have more positive outcomes in certain skills training. Which could be skills that require performing physical actions.

5. Overall Result

In overall, learners who did the video first tend to prefer the game more than ones who did the game first. This could be explained by that they got the information from the video and then applied it in the game which made their experience better.

CHAPTER (5): CONCLUSION

The learning outcomes of video tutorials and branching games were good; because both methods improved the learners' ability to manage a customer conversation as seen in the result of question (11). The results of the first group (video watchers) and the second group (game player) were similar at most of the questions. However, there were some results that indicated a slight better performance for video watchers and other results that indicated a slight better performance for game players.

On one hand, video watchers had more correct answers when they have been asked about skills that have been shown in the bad and good scenarios of the video with a real-time feedback, as seen in the result of question (2). This indicates that showing direct consequences confirms learning. The result also contrasts that players in a branching game may take a route in their branches that avoids essential bits of information. So, they may miss part of the learning.

On the other hand, game players had better performance on questions that required them to perform physical actions in the game such as sending an email or scheduling a meeting, as seen in the results of questions (4) and (9). But sometimes, learners might use their common sense to answer questions, as the results of questions (1), (3) and (5) showed.

The results of the six comparing questions showed a modest preference for the game regardless of whether the learners saw the game or the video first, with more preference from video watchers. That could be because video watchers used the game after the learning material to exercise or to confirm understanding.

Applying those findings to the following hypotheses:

- H₀: There is no difference between using interactive branching games and videos in learning. (refused)
- H₁: Learners who played the game are more likely to agree with physical actions they performed. (to some extent)
- H₂: The game to have more correct answers than the video. (refused)
- H₃: The game to be more preferred in general than the video. (accepted)

According to the previous findings, the null hypothesis (H₀) is refused, as there are some differences between the results of using branching games and videos. Those differences are

explained in the next findings. The first hypothesis could not be accepted nor refused because even though there were two results that supported it, only one of them is statically significant. Therefore, the hypothesis might be true to some extent and needs further experimentation.

The second hypothesis is refused because most of the questions showed similar results in both methods besides the video watchers had more correct answers in specific questions. The third hypothesis is accepted because all the six comparing questions are supporting it.

In general, branching games might help in confirming the understanding of the knowledge being presented and yields to more positive learning outcomes. However, it could sometimes get on the way of the right answer because learners might not pay attention to what they are doing while playing a game. Branching games are not always the best practice because they could move the learner from thinking about what to learn from the performed action to think about the action itself (playing the game). Therefore, learners may need a combination of both active (such as games) and passive learning (such as videos).

1. Future Work

One of the possible future works is to modify the game to make sure that the route through the game encourages learners to do what is being tested and to provide appropriate real-time feedback about the performed actions. Also, to eliminate any differences between the game and the video, such as, in the game the user can add the client to Facebook while in the video the user asks the client about her Facebook account. Furthermore, the game can be developed to be a quest and to contain a number of different scenarios.

The evaluation process lacks to a control condition. The control condition could have given the questions to a group of people who had not seen the video or played the game, to test how easily they would have answered the questions by using common sense only. So, the result could be used to support the claim that the game or the video improved skills. Therefore, it is recommended to use a control condition.

CHAPTER (6): BUSINESS PLAN

Commercializing of the interactive branching game is going to be done by integrating it with an online academy specializing in teaching soft skills. Freelance Online Academy (FOA) is a platform that has been developed as mini-project to teach freelance soft skills (Shurrab, 2014). Featuring the academy with the gamification approach gives it a unique selling property.

1. About FOA

FOA is an online academy that provides freelancers-to-be the knowledge of freelancing and online business soft skills to prepare them to get jobs online and secure income. FOA offers a number of online courses that comprises of video tutorials that teach freelancing skills. It aims to help in decreasing the rate of unemployment by reaching new markets.

2. Market Research

FOA targets Middle East and North Africa (MENA) because it has one of the highest unemployment rates in the world. According to the International Labour Organization (ILO), the youth unemployment rate in the Middle East was %29.1 in 2013, compared to a global youth unemployment rate of %12.6. Therefore freelancing has a high potential at MENA.

3. Competitors

Direct competitors are online Arabic training courses that teach Freelancing such as some individual videos in YouTube. Indirect competitors are general online Arabic training platforms such as: Et3lam and Rawaq.

4. Competitors' Analysis

The table below compares the features of FOA and its competitors. Features with a green tick are available while feature with a red cross are not available. The comparison clearly shows

that FOA has more features, especially after providing it with the interactive game-based learning with branching scenarios.

Feature/ Website	FOA	YouTube Videos	Et3lam	Rawaq
Freelancing focused	✓	✗	✗	✗
Social Network	✓	✗	✗	✗
Branching narratives	✓	✗	✗	✗
Responsive	✓	✓	✓	✓
Exams	✓	✗	✓	✓
Certificates	✓	✗	✓	✓
Game-based learning	✓	✗	✗	✗
Blog	✓	✗	✓	✗
Price (\$)	5-50\$ per course	Free	100\$ per year	Free

Table 3: Competitors Analysis

Adding the interactivity elements to FOA gives it a unique advantage over its competitors. Because none of them is using this approach that creates high engagement.

5. Validating the Idea

A survey has been published before developing FOA. About 166 responses have been completed and analysed. 55% of responders describe themselves as either unemployed or on part-time jobs. This confirms the need of such courses. This result was consistent with the fact that 52% never tried to work as freelancers; which indicates how much this culture of work is not widespread. 80% of responders due the reason for not working online to the lack of freelance know-how and 81% of them think that having training on freelance soft skills is very important to them. Also, 98% would like to freelance online (Shurrab, 2014).

6. Proof of Concept

A complete course about freelancing has been developed and recorded. The course comprises of 25 episodes. It has been approved and published by Udemy.com, one of the world's leading online academies. Over 300 students have enrolled. Some students completed the course and rated it as 5-stars course. This effort has been done with zero-dollar marketing. Figure (14) shows the course on Udemy.com which can be accessed via this link: <http://www.udemy.com/foacademycom-1/>



Figure 14: Freelancing course on Udemy.com

7. Financial Forecast

According to its business plan (Shurrab, 2014), FOA requires an investment of \$65,400. A sale of 1870 courses is needed to reach the breakeven point, while the payback period is about one year. In the modest case, FOA is expected to start making profit after a year and two months. Its return on investment (ROI) is forecasted to be %66.5. However, the use of interactive branching game based learning is expected to change the financial forecast of FOA. One on hand, it will increase the cost of developing a course by 17% if one game has been developed for every course. On the other hand, it is expected to increase sales by about 40%. This increment of sales is forecasted according to the average difference between preferring games and videos in the questionnaire conducted by this project. The increase of sales is expected because learners tend to like games and would be more satisfied by courses with games, hence they are more likely to recommend the course to others, which could lead to an increase of the number of purchases.

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APPENDICES

APPENDIX (I): INTRODUCTION SCENE SCREENS

1. Welcome screen

The welcome screen shows the title of the game, “Managing Customer Conversations”, to introduce the game to the player. Contents of the screen appear with simple animation. A “next” button has to be clicked to jump to the next screen. Figure (14) shows a snapshot from the welcome screen.

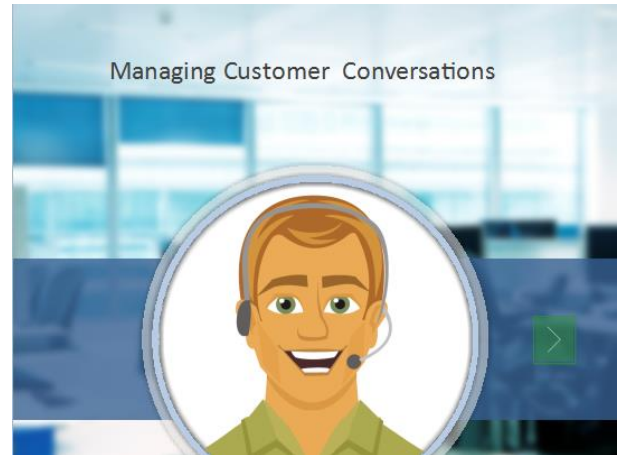


Figure 15: Welcome Screen

2. Name screen

Name screen, shown in figure (15), enables the player to enter his/her name before starting the game. The name and the avatar – in the next screen - are used to give the player a feel that the character in the game is him or her.

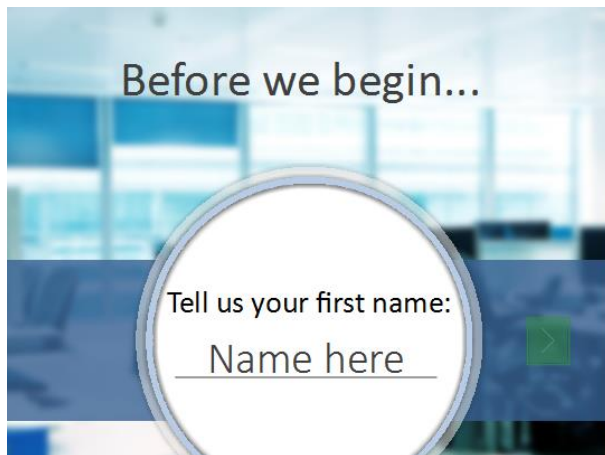
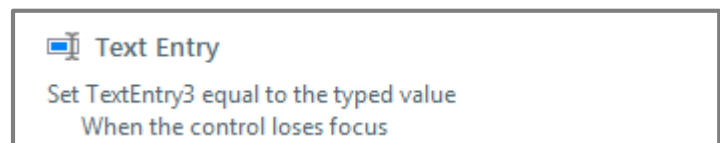


Figure 16: Name Screen

A text entry field is used to enable the player to enter a name which is stored in a text variable when the field loses focus. This code snippet is assigned to the text entry field to store the entered value (the name) which will be used afterwards through the game.



A next button is to be clicked to take the player to the avatar screen.

3. Avatar screen

The player is offered three avatars to choose from. The avatars include both white and black males and a female to suite most ethnicities. The chosen avatar will appear in the whole coming screens to present the player.

When the user hovers the mouse over any avatar, it changes its state to a smiling one.

Each avatar is assigned a numeric value: 1, 2, and 3 respectively. When the player chooses an avatar, the value of that avatar is stored in a numeric variable to be used on the coming screens. Figure (16) is a snapshot from the avatar screen.

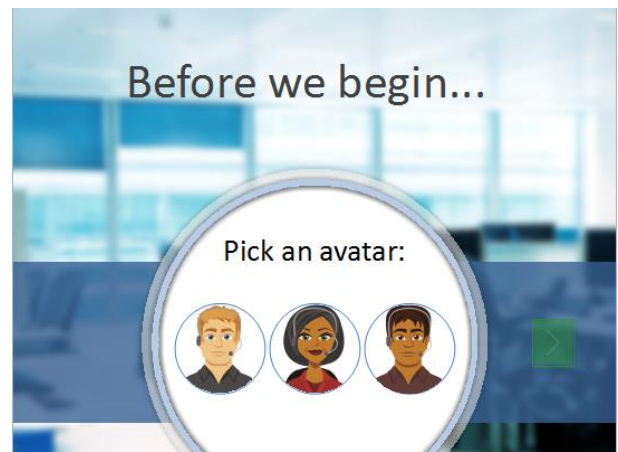


Figure 17: Avatar Screen

4. Choosing a scenario screen

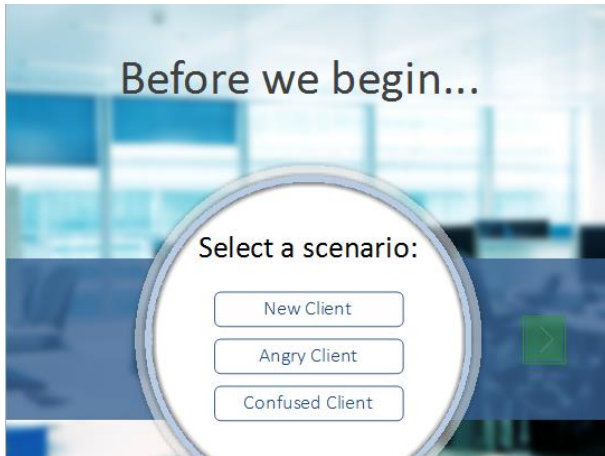


Figure 18: Choosing a scenario screen

“Choosing a scenario” screen, shown in figure (7), has been designed to enable the player to choose from a number of different client conversations scenarios. For the purpose of this study, only the first scenario “New Client” is completed. If the user chooses the other scenarios, a notification pop-up message will appear to tell that it is not available in the current version.

5. Mission screen

Before starting the new client scenario, the player is introduced to some instructions. The first screen shows the player’s mission, avatar and name. It has a button to skip instructions for second-time players. Figure (18) shows the mission screen. The program retrieves the name variable and the avatar number to display the name and avatar chosen by the user.

Clicking “Instructions” button jumps to the instructions screen that introduces the user on how to play, how to select preferred options and how to collect important information.

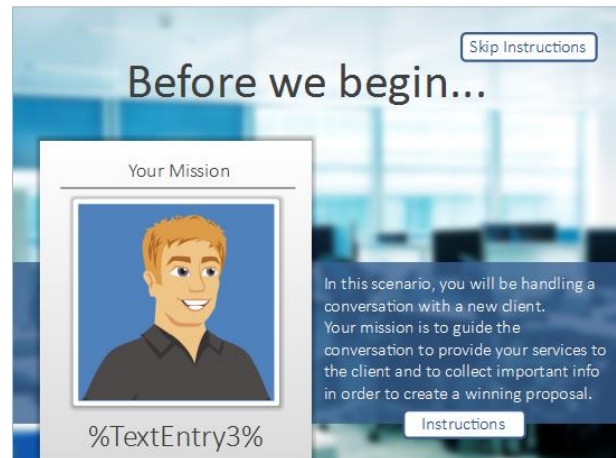


Figure 19: Mission Screen

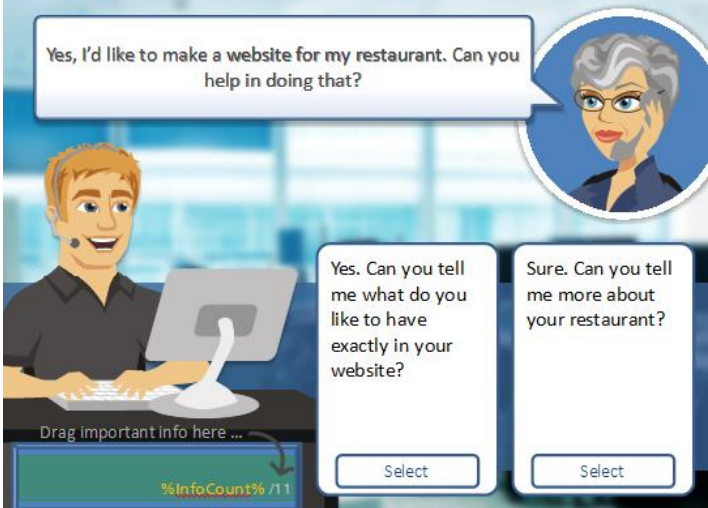
6. Instructions screen

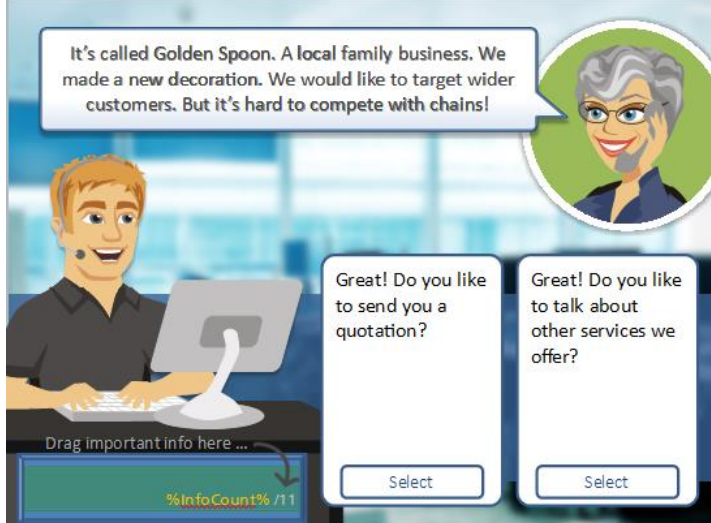
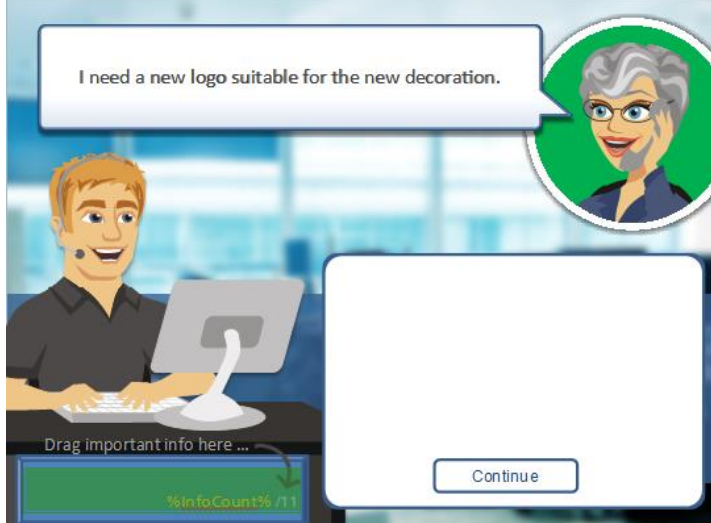


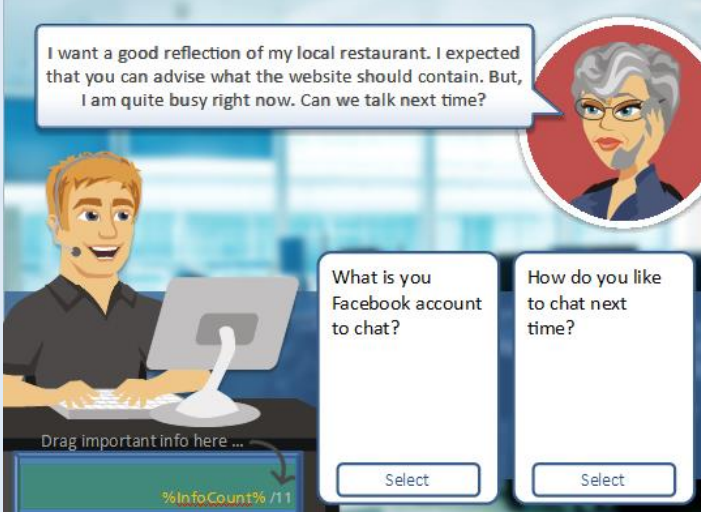
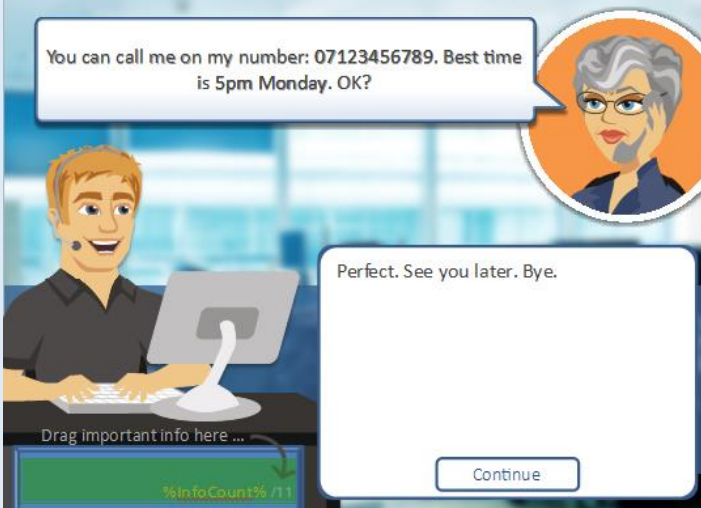
Figure 20: Instructions screen

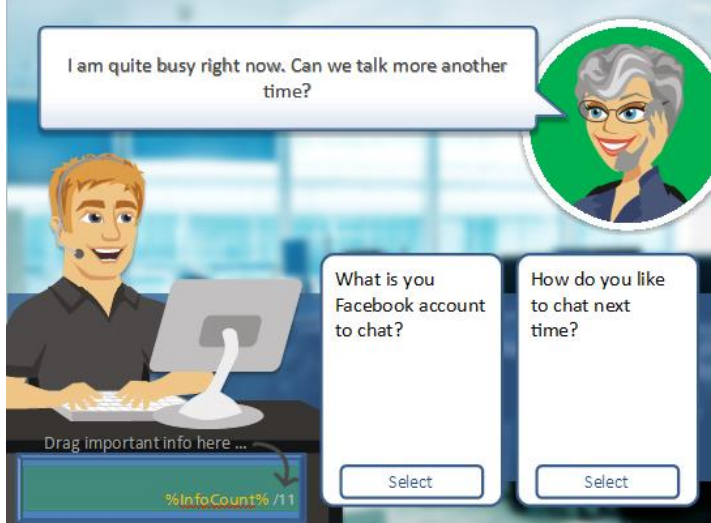
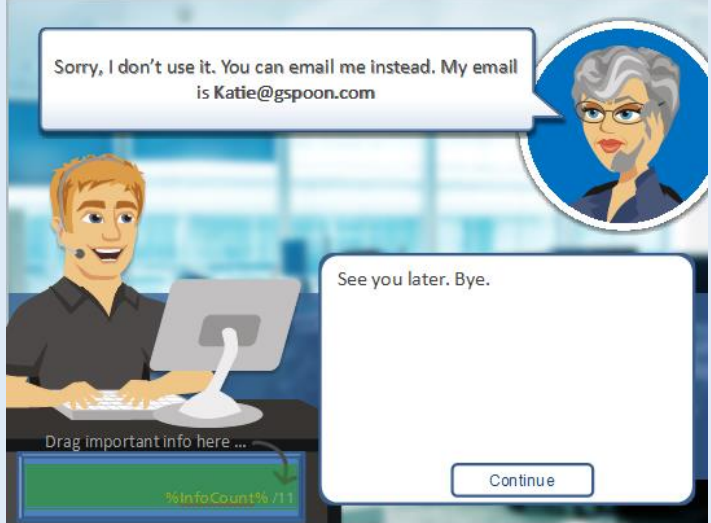
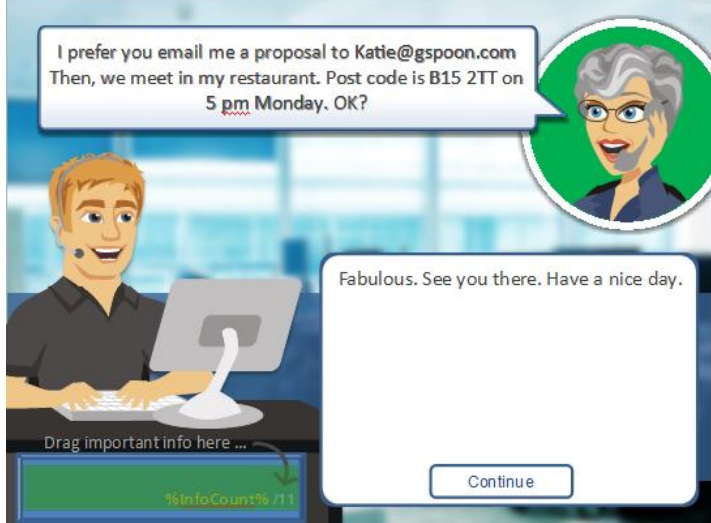
The timeline of the instructions screen, shown in figure (19), is divided into three cue points. First one, to tell the player that she can collect important information. Second, to show the player how to collect those information. Third, to give the player the opportunity to try to collect a demo item. Triggers are used to track the progress of the player and to pause or resume the timeline accordingly. The whole used code is provided in appendix (I). By finishing this screen, the conversation between the developer and the client starts.

APPENDIX (II): CONVERSATION SCENE SCREENS

#	Screen	Details
01		Collectable items: 1. Katie. 2. Chris Baber. 3. Telephone number. Selecting option on the right jumps to slide number (02). Selecting option on the left jumps to slide number (03).
02		Collectable items: 1. Website for my restaurant. Selecting option on the right jumps to slide number (04). Selecting option on the left jumps to slide number (07).
03		Collectable items: 1. Website for my restaurant. Selecting option on the right jumps to slide number (04). Selecting option on the left jumps to slide number (07).

04		Collectable items: 1. Golden Spoon. 2. Local. 3. New decoration. 4. Wider customers. 5. Compete with chains. Selecting option on the right jumps to slide number (06). Selecting option on the left jumps to slide number (05).
05		Collectable items: 1. The email. Mandatory jump to slide number (10).
06		Collectable items: 1. Logo. Mandatory jump to slide number (10).

07		Collectable items: 1. Local. Selecting option on the right jumps to slide number (09). Selecting option on the left jumps to slide number (08).
08		Collectable items: 1. The email. Mandatory jump to next scene.
09		Collectable items: 1. The telephone number. 2. The time. Mandatory jump to next scene.

10		Collectable items: None. Selecting option on the right jumps to slide number (12). Selecting option on the left jumps to slide number (11).
11		Collectable items: 1. The email. Mandatory jump to next scene
12		Collectable items: 1. The email. 2. The post code. 3. The time. Mandatory jump to next scene

APPENDIX (III): ACTIONS SCENE SCREENS

1. Creating a Proposal Screen

The proposal is created by dragging and dropping important information that have been collected through the game to a proposal template.

Collected items appear to the left of figure (20) that shows the proposal creation screen. The proposal template has a number of hotspots to drop the draggable items on. For every item dropped correctly, the player gets 10 points towards the proposal quality score. By pressing on “Create Proposal” the player is taken to the actions screen.

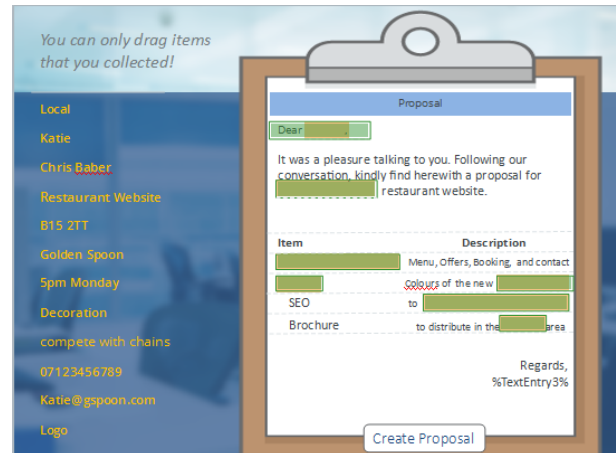


Figure 21: Creating a Proposal

2. Taking Actions Screen



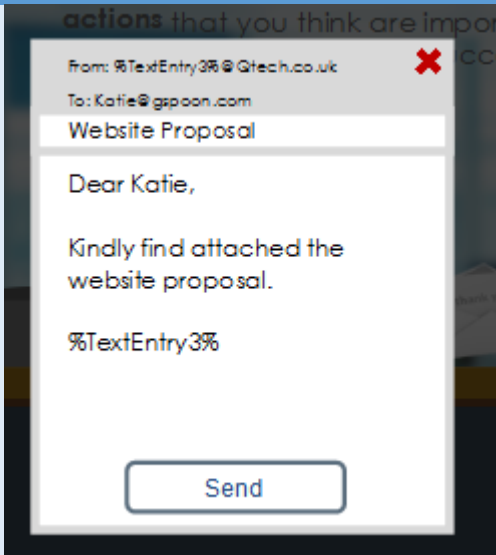
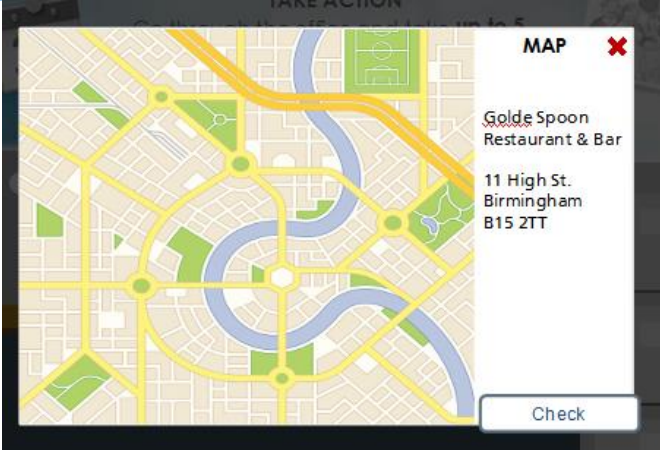
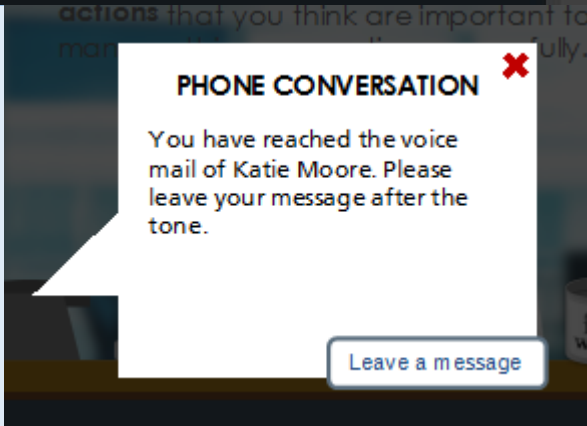
Figure 22: Actions Screen

In this screen, the player can take a number of actions that follow the conversation such as checking the client's place on the map or emailing her the proposal. For every action there is an icon on the office of the player. Icons are connected with the collected information. In order to access any icon, the player has to have already collected the required information.

For example, to access the map icon the player has to collect the postcode from the conversation. If required information is not collected the player faces a “Can't access” notification message.

Doing every actions gives the player a number of points towards actions score. Table (4) shows the actions and their icons, screens and points.

Actions varied between positive, negative and neutral actions. Positive actions increment the score while negative ones decrement the score. Neutral actions do not affect the score.

Action and Icon	Screen	Score
Emailing the proposal  Access requirment: Collect the email		+20
Checking the place on the map  Access requirment: Collect the post code		+10
Call the client  Access requirment: Collect the telephone number		+10

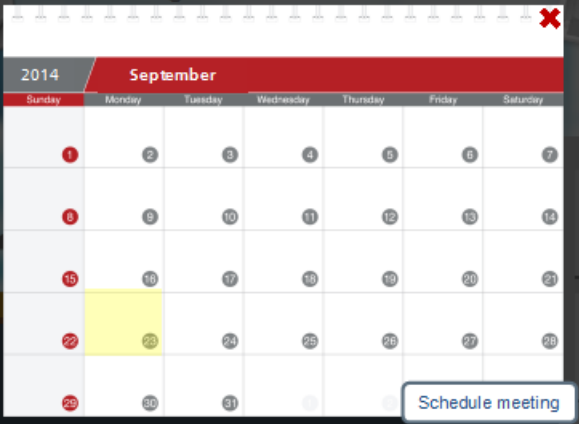
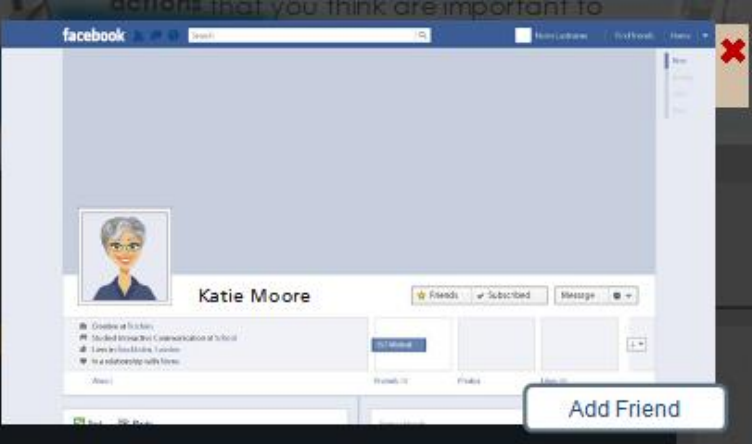
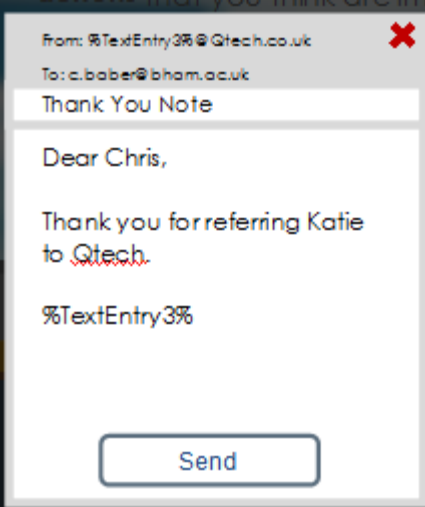
Schedule a meeting  Access requirement: Collect the time and date		+10
Add a client to Facebook  Access requirement: None		-10
Send a thank you note to the referer  Access requirement: Collect the referer name		+10
Check previous projects  Access requirement: None	N/A	0

Table 4: Actions

3. Score Screen

Score screen is simply the screen that calculates and shows the score obtained through the game. Clicking on every part of the score gives a detailed feedback about the player's progress.

The screen also calculates the likelihood of getting the customer's project. Likelihood is calculated by summing all the scores and dividing the sum by 3.4 because the maximum score the player can get is 340.

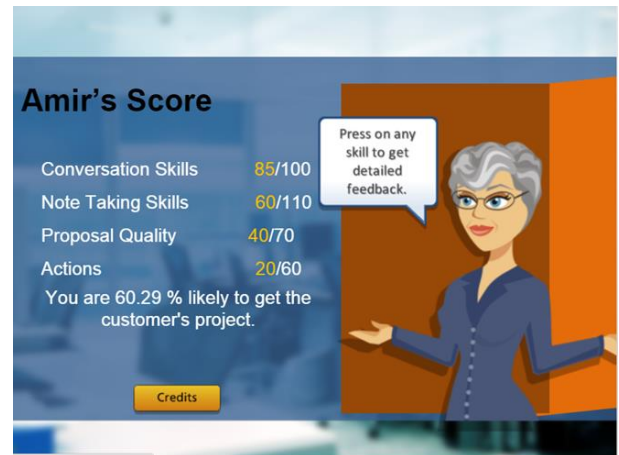


Figure 23: Score screen

$$\text{Likelihood} = (\text{ConversationSkills} + \text{NoteTakingSkills} + \text{ProposalQuality} + \text{Actions})/3.4$$

According to the likelihood score, the client final status changes as follows:

- Normal: default value (does not change when likelihood is greater than or equal to 70).
- Neutral: likelihood is less than 70 and greater than or equal to 50.
- Disappointed: likelihood is less than 50.



Figure 24: Result avatar statuses

4. Credits Screen

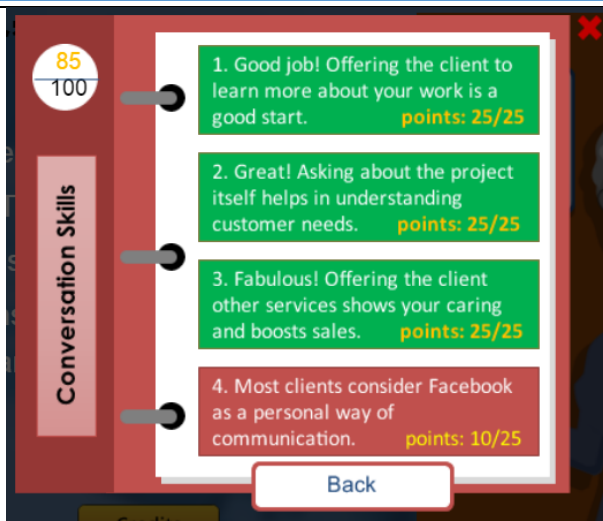
Shows the credits of developing the game and button to restart it.

APPENDIX (IV): VIDEO TRANSLATION

English	Arabic (العربية)
Hi, How can I help you today?	مرحباً، كيف بإمكانني مساعدتك؟
Hi, I am Katie. I got your number from Chris Baber. He told me that you make good websites.	مرحباً، اسمي كايتي، لقد حصلت على رقمك من كريس بيبر. لقد أخبرني أنك تنشئ مواقع انترنت جيدة
Yes, we specialize in making websites. How much budget do you have for the website?	نعم، نحن مختصون في تطوير مواقع الانترنت. كم الميزانية المخصصة لموقعك؟
Well, I'd like to make a website for my restaurant. Can you send a quotation to my email?	حسناً، أنا أريد موقعاً لمطعمي. هل بإمكانك ارسال عرض سعر الى ايميلي؟
Yes. Can you tell me what do you want to have exactly in your website?	نعم. هل بإمكانك أن تخبريني ما الذي تريدينه بالضبط في الموقع؟
I want a good reflection of my local restaurant. I expected that you can advise what the website should contain.	أريد موقعاً يعطي انطباعاً جيداً عن مطعمي المحلي. لقد توقعت أن بإمكانك تقديم المشورة بخصوص ما يحتويه الموقع
But I am busy right now. Can we talk next time?	لكنني مشغولة الان، هل بإمكاننا الحديث في المرة القادمة؟
What is you Facebook account to chat?	ما هو حسابك على فيسبوك للمحادثة؟
Sorry, I don't use it.	عذراً، أنا لا استخدمه
You can email me instead. My email is Katie@gspoon.com	بإمكانك مراسلتي بدلاً من ذلك ، ايميلي هو كايتي@جي سبون.كوم
Perfect. See you later. Bye.	حسناً، أراكي لاحقاً، مع السلامة
Can you write down 5 things that you believe were wrong in this scenario?	هل بإمكانك تدوين 5 أشياء تعتقد أنها كانت خاطئة في هذا السيناريو؟
Let's see another scenario.	لنرى سيناريو آخر
Hi, thanks for calling Qtech. My name is Amir. How can I help you today?	مرحباً، شكراً لاتصالك بـ كيوتيك، اسمي أمير، كيف يمكنني مساعدتك اليوم؟
Hi Amir, I am Katie. I got your number from Chris Baber. He told me that you make good websites.	مرحباً أمير، اسمي كايتي، لقد حصلت على رقمك من كريس بيبر. أخبرني أنك تنشئ مواقع انترنت جيدة
Yes, we specialize in making websites. Do you like to learn more about our work?	نعم، نحن مختصون في تطوير مواقع الانترنت. هل ترغبين بالتعرف أكثر على أعمالنا؟
Yes, I'd like to make a website for my restaurant. Can you help in doing that?	أجل، أود عمل موقع لمطعمي، هل بإمكانك المساعدة في ذلك؟
Sure. Can you tell me more about your restaurant?	بالطبع، هل من الممكن أن تخبريني مزيداً عن مطعمك؟
It's called Golden Spoon. A local family business. We had a new decoration.	إنه يسمى المعلقة الذهبية. وهو مشروع محلي ملك العائلة. لقد قمنا بعمل ديكور جديد
And would like to target wider customers. But it is hard to compete with chains.	ونرغب باستهداف المزيد من الزبائن، لكنه من الصعب منافسة سلاسل المطاعم
Great! Do you like to talk about other services we offer?	عظيم، هل ترغبين بالتعرف على الخدمات الأخرى التي نقدمها؟
I need a new logo suitable for the new decoration.	أحتاج شعاراً جديداً مناسباً للديكور الجديد

I am quite busy now. Can we talk more another time?	أنتي مشغولة نوعاً ما الآن، هل بإمكاننا الحديث مرة أخرى؟
How do you like to chat next time?	كيف ترغبين أن نتواصل في المرة القادمة؟
I prefer to email me a proposal to Katie@gspoon.com , then we meet in my restaurant.	أنا أفضل أن ترسل لي مقترحاً على إيميل كايتي@جي سبون. كوم ثم نلتقي في مطعمي.
Postcode is B15 2TT at 5 pm Monday. Is that OK?	العنوان البريدي هو B15 2TT يوم الاثنين الساعة الخامسة مساءً، هل يناسبك ذلك؟
Fabulous. See you there. Have a nice day.	رائع، نلتقي هناك، يوماً سعيداً
Can you write down 5 things you learnt from this scenario?	هل بإمكانك تدوين 5 أشياء تعلمتها من هذا السيناريو؟

APPENDIX (V): FEEDBACK REPORT



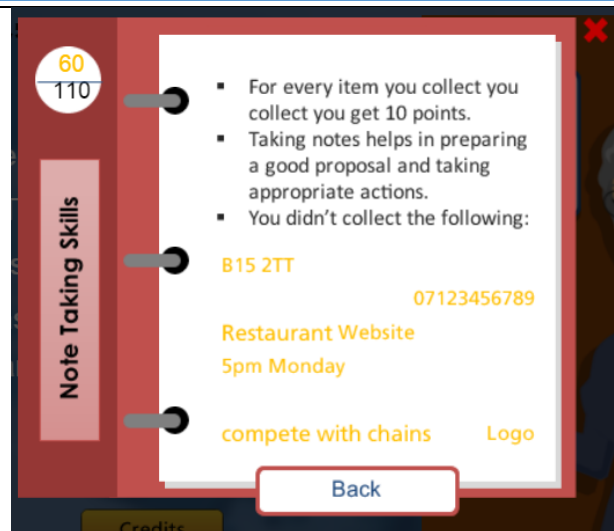
85/100

Conversation Skills

1. Good job! Offering the client to learn more about your work is a good start. **points: 25/25**
2. Great! Asking about the project itself helps in understanding customer needs. **points: 25/25**
3. Fabulous! Offering the client other services shows your caring and boosts sales. **points: 25/25**
4. Most clients consider Facebook as a personal way of communication. **points: 10/25**

Back

Conversation Skills feedback



60/110

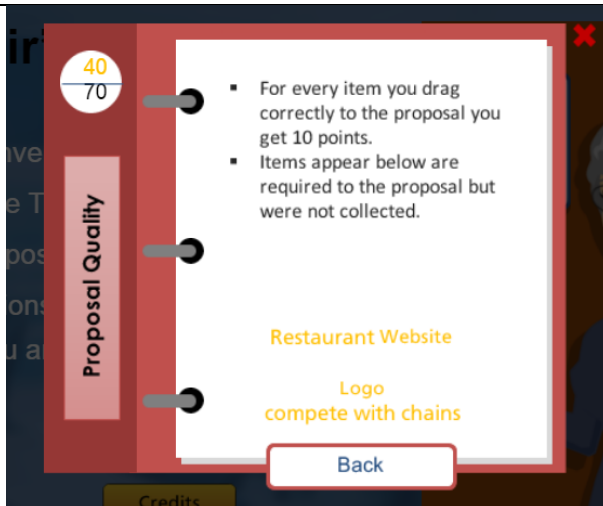
Note Taking Skills

- For every item you collect you collect you get 10 points.
- Taking notes helps in preparing a good proposal and taking appropriate actions.
- You didn't collect the following:

B15 2TT
07123456789
Restaurant Website
5pm Monday
compete with chains Logo

Back

Note Taking Skills feedback



40/70

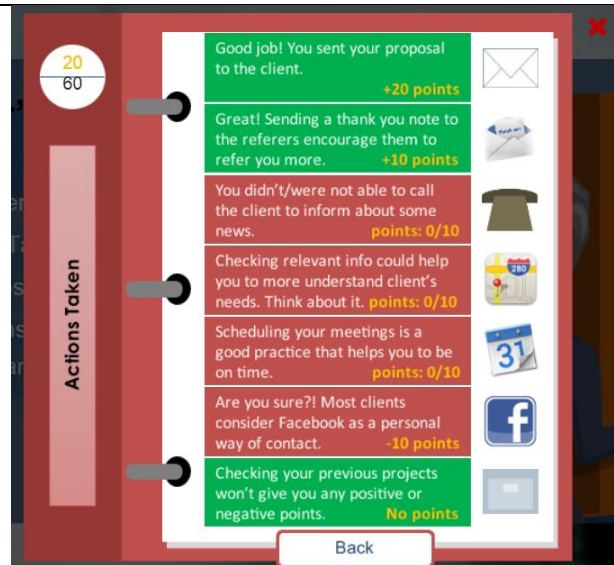
Proposal Quality

- For every item you drag correctly to the proposal you get 10 points.
- Items appear below are required to the proposal but were not collected.

Restaurant Website
Logo
compete with chains

Back

Proposal Quality Feedback



20/60

Actions Taken

- Good job! You sent your proposal to the client. **+20 points**
- Great! Sending a thank you note to the referers encourage them to refer you more. **+10 points**
- You didn't/were not able to call the client to inform about some news. **points: 0/10**
- Checking relevant info could help you to more understand client's needs. Think about it. **points: 0/10**
- Scheduling your meetings is a good practice that helps you to be on time. **points: 0/10**
- Are you sure?! Most clients consider Facebook as a personal way of contact. **-10 points**
- Checking your previous projects won't give you any positive or negative points. **No points**

Back

Actions Taken Feedback

APPENDIX (VI): SURVEY – VIDEO FIRST

Your opinion is very important for us. You are invited to participate in this survey that measures the learning outcomes of both video tutorials and game-based learning. It will take approximately 10 minutes. You will be given a video tutorial and a game about the same thing (managing customer conversations). Data from this research will be reported only in the aggregate. If you have questions about the survey, you may contact Amir Shurrab via amirshurrab@gmail.com

Please watch this video (3 minutes) to the end, then answer the following questions:



#	According to the video, do you agree with the following sentences?	Agree	Disagree	Not Sure
1.	Introducing myself and my company when replying to a client's call makes a professional impression.			
2.	Asking about budget early is a good way to determine client's requirements.			
3.	Trying to understand the client's needs in layperson language and translate them into technical specifications is one of my responsibilities.			
4.	It is a good idea to find out your customer's name, budget, and by whom she has been referred.			
5.	The client can technically describe her requirements better than you because she knows what exactly she wants.			
6.	Asking customers about their preferable way of communication is a good practice.			
7.	Adding a new client to your Facebook account could strengthen your business relationship.			

8.	When someone refers you, it is a good practice to send him a thank you note.			
9.	Taking notes of important information during the call is not necessary.			
10.	Checking extra information about your client's project before making a deal is a wasting-time effort.			

11. How easy was it for you to manage customer conversations



Now let's play the game. Please use this link to play the game then answer the following questions.

<http://foacademy.com/game/>

Which do you believe is better at

		Game	Video
12.	Helping you in your learning		
13.	Motivating your learning		
14.	Making your learning more engaging		
15.	Making your learning fun		
16.	Making you more confident in applying what you have learnt		
17.	Which would you prefer in your future training?		

APPENDIX (VII): SURVEY – GAME FIRST

Let's start by playing the game. Please use this link to play the game then answer the following questions.

<http://foacademy.com/game/>

#	According to the game, do you agree with the following sentences?	Agree	Disagree	Not Sure
1.	Introducing myself and my company when replying to a client's call makes a professional impression.			
2.	Asking about budget early is a good way to determine client's requirements.			
3.	Trying to understand the client's needs in layperson language and translate them into technical specifications is one of my responsibilities.			
4.	It is a good idea to find out your customer's name, budget, and by whom she has been referred.			
5.	The client can technically describe her requirements better than you because she knows what exactly she wants.			
6.	Asking customers about their preferable way of communication is a good practice.			
7.	Adding a new client to your Facebook account could strengthen your business relationship.			
8.	When someone refers you, it is a good practice to send him a thank you note.			
9.	Taking notes of important information during the call is not necessary.			
10.	Checking extra information about your client's project before making a deal is a wasting-time effort.			

11. How easy was it for you to manage customer conversations

How easy was it for you to manage customer conversations



Now, please watch this video (3 minutes) to the end, then answer the following questions:



	Which do you believe is better at	Game	Video
12.	Helping you in your learning		
13.	Motivating your learning		
14.	Making your learning more engaging		
15.	Making your learning fun		
16.	Making you more confident in applying what you have learnt		
17.	Which would you prefer in your future training?		

APPENDIX (VIII): QUESTIONNAIRE ETHICS FORM

Participant Information Sheet For Project Entitled:

Interactive branching game-based learning for online skills training

This is project forms part of a course of study for a MSc degree in the School of Electronic, Electrical and Computer Engineering in the University Of Birmingham.

The aim of the study is to measure the impact of using interactive branching game-based learning in online academies to teach soft skills.

You are invited to participate in this study on a voluntary basis and you may withdraw at any time. You have been selected randomly.

The study will require you to play a game, watch a video and complete a survey and this will take approximately (30 minutes). If you do not understand, prior to participating, you may seek further clarification from the researcher.

Your responses will be recorded using a questionnaire

Reward/reimbursement/expenses

You will not receive payment for participating in this study

Results of the study

The results of the project will be analysed and contribute to a MSc project report and may result in a publication which will appear in a technical journal or other forum. Participants can find out about the outcome of the project by contacting the researcher and their supervisor whose details are given below

Contact details

Researcher

Amir Shurrab

amirshurrab@gmail.com

Supervisor

Prof. Chris Baber

c.baber@bham.ac.uk

Consent Form for project entitled:

Interactive branching game-based learning for online skills training

Fair Processing Statement

This information is being collected as part of a research project concerned with (measuring the impact of using interactive branching game-based learning in online academies to teach soft skills.) by the School of Electronic, Electrical and Computer Engineering in the University of Birmingham as part of a (MSc) project.

The information which you supply and that which may be collected as part of the research project will be entered into a filing system or database and will only be accessed by authorised personnel involved in the project. The information will be retained by the University of Birmingham and will only be used for the purpose of research, and statistical and audit purposes. It may form part of a publication in a technical journal or other forum.

By supplying this information you are consenting to the University storing your information for the purposes stated above. The information will be processed by the University of Birmingham in accordance with the provisions of the Data Protection Act 1998. No identifiable personal data will be published.

Statements of understanding/consent

- I confirm that I have read and understand the participant information leaflet for this study. I have had the opportunity to ask questions if necessary and have had these answered satisfactorily.
- I understand that my participation is voluntary and that I am free to withdraw at any time up to (07/10/2014) without giving any reason. If I withdraw my data will be removed from the study and will be destroyed.
- I understand that my personal data will be processed for the purposes detailed above, in accordance with the Data Protection Act 1998.
- Based upon the above, I agree to take part in this study.

Name, signature and date

Name of participant.....	Individual obtaining consent.....
Date.....	Date.....
Signature.....	Signature.....

Name of researcher/.....

A copy of the signed and dated consent form and the participant information leaflet should be given to the participant and retained by the researcher to be kept securely on file.