REPUBLIC OF TURKEY
FIRAT UNIVERSITY
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ESSENTIAL ENGLISH VOCABULARY: MAINTAINING ENTERTAINMENT IN EDUCATIONAL GAME WITH KINECT XBOX 360

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Master Thesis
Department of Software Engineering
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MASTER THESIS

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ABSTRACT

Essential English Vocabulary: Maintaining Entertainment in Educational Game with Kinect XBOX 360

Pervasiveness of technology, continuous evaluation of educational tools and the mode of knowledge delivery, necessitate the need of integrating game into educational environment due to its fun nature. Having lot of the fun catching games coming from commercial games, while those considered educational the pedagogy ended up distorting the fun nature of the game. Language Learning (LL) is one of the educational field that welcome the idea of game integration. Kinect Xbox 360 is the tool selected in this thesis to serve as an integrated device that provide the fun needed for the educational game. Many researchers reported the effectiveness of Kinect in different learning fields but its effectiveness in maintaining the fun were limited or not available especially in classroom implementation. Therefore, this thesis set the target of finding the effectiveness of using Kinect Xbox 360 in maintaining the entertaining nature of games in Language Learning to achieve that the target was broken into three hypotheses; Is there any significant difference in the participant's achievement between the pre-application and the post-application? Is there any significant difference in the participant's motivation between the pre-application and the post-application? What is the participant's perception? To get such answers achievement test, motivational test, and open-ended questions were implemented. Essential English Vocabulary (EEV) application were develop and integrated with Kinect Xbox 360 for effective implementation. The results support the hypothesis which indicated that there is a significant difference after the implementation of the application and positive reaction were recorded from the participants through the open-ended question. The result proved that with the integration of Kinect into educational games learner's achievement and motivation can improve and the Kinect has the potentiality of improving the learner's fun status.

Key words: Entertainment, Educational game, Kinect, Achievement, Motivation

ÖZET

Temel İngilizce Kelimeler: Kinect Xbox 360 İle Eğitsel Oyunda Eğlenceyi Sürdürme

Teknolojinin yaygınlaşması, eğitim araçlarının sürekli değerlendirmesi ve bilginin iletim biçimi eğlenceli yapısından dolayı eğitim ortamlarına oyunları entegre etme ihtiyacını ortaya koymaktadır. Eğlenceli oyunlar çoğunlukla ticari oyunlardır ve ancak bu tarz oyunlarda eğitsel yönün eklenmesi ile birlikte eğlence boyutunun zayıflayacağı düşünülür. Dil öğrenme eğitime oyunların entegre edilmesi fikrinin olumlu karşılandığı alanlardan birisidir. Bu tez kapsamında Kinect Xbox 360 eğitsel oyunlar için gerekli olan eğlence boyutunu sağlayan bir araç olarak seçilmiştir. Birçok araştırmacı Kinect'in farklı öğrenme alanlarındaki etkinliğini dile getirmiş fakat eğlencenin devamlılığını sağlama konusundaki etkililiğine özellikle sınıf ortamlarında çok sınırlı değinilmiş ya da hiç değinilmemiştir. Böylece, bu tezin amacı; dil öğrenmede oyunların eğlenceli doğasının sürekliliğini sağlamada Kinect Xbox 360 kullanmanın etkililiğini incelemektedir. Bu amaca ulaşmak için üç hipotez belirlenmiştir. Verilerin toplanmasında başarı testi, motivasyon testi ve açık uçlu soruları içeren bir anket kullanılmıştır. Tez kapsamında, Temel İngilizce Kelimeler (Essential English Vocabulary-EEV) adı verilen uygulama geliştirildi ve Kinect Xbox 360'a entegre edildi. Sonuç olarak açık uçlu sorular ile alınan katılımcıların görüşlerine göre uygulamaya yönelik olumlu bir bakış açısına sahip oldukları, uygulama sonunda öğrencilerin başarıları ve motivasyonlarının yükseldiği dolayısıyla Kinect'in öğrencilerin eğlence durumunu geliştirme potansiyeline sahip olduğu görülmüştür.

Anahtar Kelimeler: Eğlence, Eğitsel Oyun, Kinect, Başarı, Motivasyon

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ABBREVIATIONS

ATI : Array Technology Incorporation
AV : Audio-Video
AVHD : Automatic Virtual hard disk
CD-DA : Compact Disk Digital Audio
CD-R/RW : Compact Disk Read Once/Rewritable
CEFR : Common European Framework Reference
COTS : Commercial Off-The-Shelf
CPU : Central Processing Unit
DRAM : Dynamic Random Access Memory
DVD-R/RW : Digital Versatile Disk Write-once/Rewritable
DVD-ROM : Digital Versatile Disk – Read Only Memory
EEV : Essential English Vocabulary
FEC : First English Certificate
GB : Giga Bytes
GHz : Giga Hertz
IELTS : International English Language Testing System
JPEG : Joint Photographic Expert Group
KHz : Kilo Hertz
LL : Language Learning
LLG : Language Learning Game
MB : Mega Bytes
MHz : Mega Hertz
MMORPG : Massive Multiplayer Online Role-Playing Game
MP3 : Motion Picture expert group layer 3
OTS : Off-The-Shelf
RGB-D : Red, Green, Blue-Depth
SCART : Syndicat des Constructeurs d'Appareils Radiorécepteurs et Téléviseurs
S-Video : Separate Video
TLCTS : Tactical Language and Culture Training System
TOEFL : Test of English as a Foreign Language
TV : Television

UML **:** Unified Modelling Language

USB **:** Universal Serial Bus

VGA **:** Video Graphics Array

WMA CD **:** Windows Media Audio Compact Disk

1. INTRODUCTION

"The whole purpose of education is to turn mirrors in to windows." – Sydney D. Harris

The technology revolution does not leave the education sector behind as it is literally clear that the modern educational environment is trying as much as they can to incorporate technology into their system. Thus, making it simpler to locate the windows through the mirrors. One of those technology that are trying to find their permanent seat in the educational environment are Educational games. Generally, game is a social competitive activity that serve the pleasure of a moment of an individual or a group. Games are commonly known to be used for mental and strategic thinking improvement through providing a challenging task which the player(s) have to solve. According to Wikipedia [1] computer games were not left behind as the introduction of computer pave a way for computer games around 1950s to 1960s which was firstly witnessed by USA. The pervasiveness of computer games yields the video arcade games in 1971 this technology continues to yield positive result up to this era that viewed the game as a tool that can be used for educational purpose. This thesis is focusing on finding the effectiveness of using Kinect Xbox 360 in maintaining the entertaining nature of games in Language Learning. This lead to the question saying, can Kinect be used in maintaining the entertainment of language learning games?

1.1. Problem of the Study

In a case study conducted in USA by Aamoth [2] ; game players of age 13 and above can spend 5 hours 6 minutes averagely playing video game in 2011 report, in 2012 report it takes the player an average of 5 hours and 36 minutes, while in 2013 shows an average of 6 hours 20 minutes. This indicate the increasing growth of video games usage in the society. In addition, the system use in the game also varies, where game consoles (including Xbox 360, PS3 and Wii) receive the highest usage statistics with 34% followed by PCs with 33%, mobile phones 10% while tablets computer receive the list of 9% of usage statistics. However, a contracting report was also published by Frank [3] reporting that most frequent used devices are PCs with 56%, Console 53%, Smart Phones 36%, and Handheld devices

with 17%. This is a result of a survey carried out on more than 4,000 American Households. Nonetheless, the point of consideration is the Console position from both reports, which shows a significant usage of the console.

Moreover, upon all the statistics stated above, according to 123kinect.com [4] with the list of 239 games, none of the Language Learning games made it through the list. If a question of "Why" is asked we can then analyze the primary purpose of a game, which we can literally define in one word as entertainment and then look into the commonly available English learning games as example, which can be accessed from www.gamestolearnenglish.com [5] and http://www.english-online.org.uk [6]. The entertainment nature of the language learning games is very limited or absent as it lacks the basic game function [7]. To upgrade the entertainment nature in Language Learning Games, Essential English Vocabulary (EEV) application is proposed which is integrated with Kinect Xbox 360. The Kinect focus on providing the fun instead of expecting all from the application so as to allow the application to focus on the pedagogical aspect of the learning.

1.2. Aim of the Study

This thesis is focusing on finding the effectiveness of using Kinect Xbox 360 in maintaining the entertaining nature of games in Language Learning. In order to achieve this goal, the question is broken into three hypotheses;

1. Is there any significant difference in the participant's achievement between the pre-test and the post-test?
2. Is there any significant difference in the participant's motivation between the pre-test and the post-test?
3. How are the participant's perceptions towards the implementation?

A simple vocabulary application is to focus on the pedagogical aspect while the Kinect serve as the tool of maintaining the fun in Language Learning Games (LLG). The game, which has the title Essential English Vocabulary, is aimed at playing off-line. The game fall within educational applications targeting entertaining nature of educational games, aiming at providing effective solution to language learning that can maintain the fun status of serious games.

1.3. Contribution

The findings of this research will assist educational institutions in finding out the effectiveness Kinect in a classroom setting. It will also help scholars in finding out how much Kinect can contribute in maintaining fun when integrated with educational game.

1.4. Educational games

An educational game, which is sometimes referred to as serious game is prepared for the purpose of teaching learners certain knowledge and equip them with required skills. *"Games are interactive play that teaches us goals, rules, adaptation, problem solving, and interaction all presented as a story. They give us fundamental needs of learning by providing – enjoyment, passionate involvement, structure, motivation, ego gratification, adrenalin, creativity, social interaction and emotion"* [8]. The motive behind educational game is learning and entertainment. The best game might require the learners total cognitive thinking, physical action and emotional attachment. Large number of scholars reported that what keep the learners entertained may include the following:

- The feeling of discovering and exploring new things.
- New knowledge development.
- Interacting and communicating socially.
- The feeling of accomplishment and superiority over these without game learning experiences.
- The challenge.

Educational game can be close-ended or immersive. Close-ended games referred to as simple games, which are basically for the practice of a particular skill or memorization of a certain subject, example of such might include vocabulary practice of a second language, memorization of formula, trouble shooting and problem solving. The immersive game has a clear rule of play and rewards. Some of such kind of games capture the reality of human life, containing scenarios with avatars as objects of game play. The commercial games that are being converted to educational games are called commercial off-the-shelf (COTS), while those designed specifically to achieve a set of learning goals are called off-the-shelf (OTS) [9]. It is concluded that digital games can boost the motivational level of the learners, and it also can provide a shift of learning style from the old traditional to the modern [10].

1.5. Kinect Xbox 360

Mike Fahey [11] defined Kinect as “a hand-free motion control device for the Xbox 360.” This gives you direct access to interact with the game without having to worry about using third party device, but only using body movement and spoken instructions. Kinect offer you total control of the machine.

Kinect is an intelligent RGB-D camera with horizontal bar structure; multi-array microphone and a depth sensor accompany the camera (Figure 1.1). These gadgets form of a system that can capture the player’s image in 3D with facial and voice recognition, this function allow the system to recognize the player’s movement and transform it into data that can be used for the Kinect control. Kinect cost is reported to be around $149, which makes it feasibly cheap, especially when the class is equipped with the basic modern learning tools like computer and projector [12].

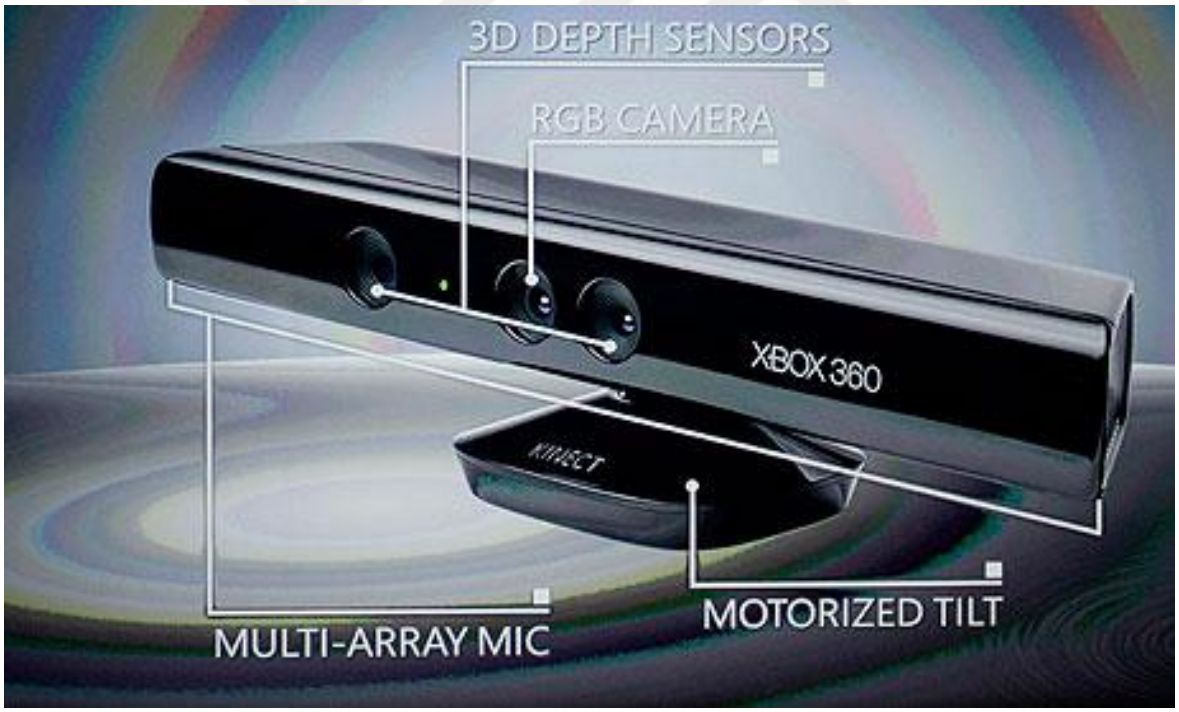

Figure 1.1 Kinect [13]

1.5.1. Kinect Space Requirements

As described by Mike Fahey in kotaku.com [11], Kinect requires to capture the whole player’s body for it to work effectively. This necessitate the need to have a free barrier space

that is enough for the camera to capture the whole image, as shown in fig. 1.2. Six feet is the standard space between the game player and the Kinect sensor for single-player games, recommended by Microsoft while eight fit is recommended for two-player games, however if the player is taller than average, there is a need for a little adjustment depending on his/her height.

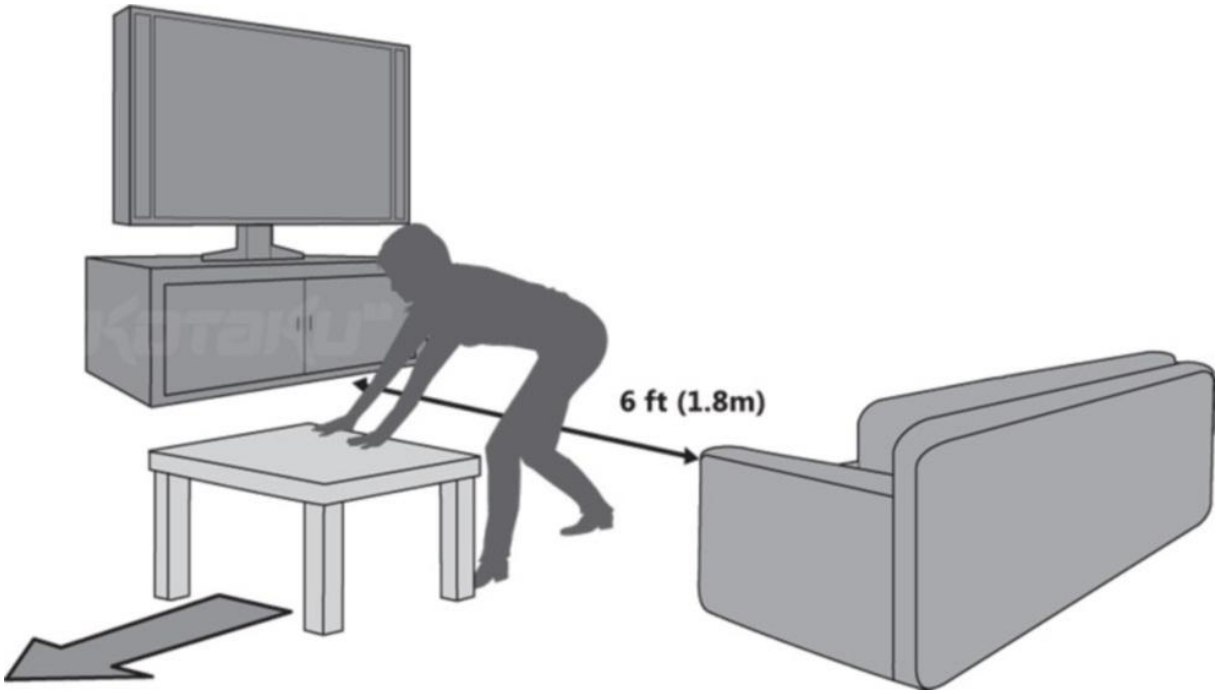

Figure 1.2 Kinect Space Requirement [11]

Not only the distance between the player and Kinect, but also the Kinect itself need to be placed properly, which help in improving its performance. The do's and don'ts provided by Xbox support are here below (figure 1.3):

- The Kinect sensor should not be placed directly under sunlight.
- Avoid manually tilting the sensor position, let it do that automatically to capture the correct position.
- Place the Kinect sensor at a specified standard height. The sensor operates better when placed between the distances of 0.6 meters to 1.8 meters above the flow. In a normal situation, the sensor should be within 0.15m below or above the display unit.
- Centralize the Kinect sensor in a horizontal manner. However, centralized or not, the sensor can work but works better when it is centralized.

- Avoid placing the Kinect sensor on a vibrating object or close to a speaker. The sensor should at least be 0.3 meters away from the speakers, if in very loud television volume the make it possible to have a distance of 0.9 meters or even more than that.
- Place the Kinect sensor close to the edge of its carrier, a flat unshakeable surface. If placed away from the edge the player's leg may not be captured.
- Place the Kinect sensor where it can have free movement (unrestricted position), so as to give opportunity to the sensor for tilting to any position it senses appropriate for the image capture.

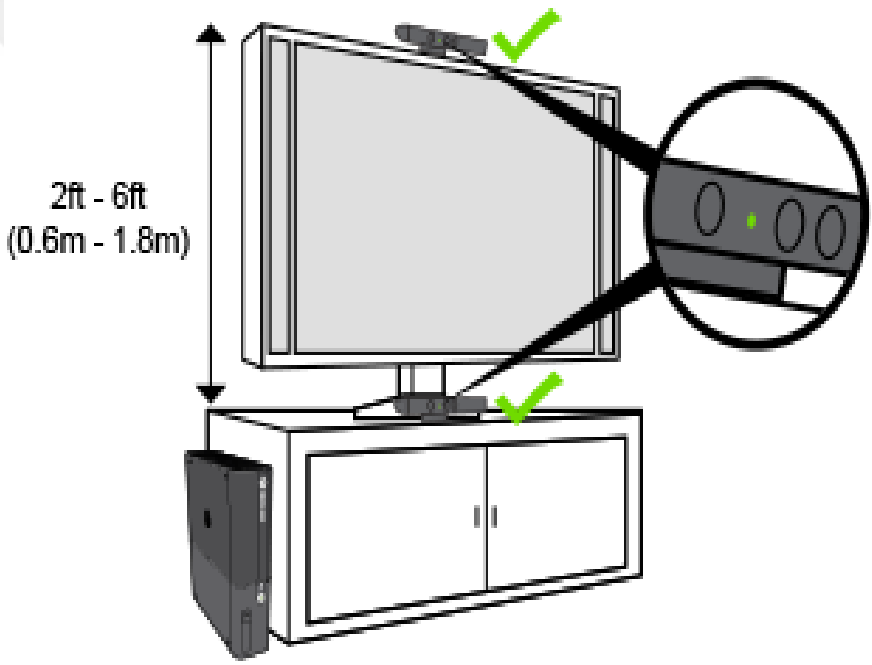

Figure 1.3. Kinect Correct Position [14]

1.5.2. What is Xbox 360 Console

According to Wikipedia [15, 16], definition Xbox 360 "is a home video game console developed by Microsoft" as shown in figure 1.4. Xbox 360 is an upgraded version of Xbox One which runs a competition with likes of Nintendo's Wii and Sony's PlayStation consoles.

Figure 1.4 Xbox 360 Console [15]

The Xbox 360 that operates at 3.2GHz is a multi-core processor, which provides computational capacity with reasonable power usage, is designed with 165 Million transistors, and the cores operate as an independent operator, which maximizes the machine efficiency. The introduction of Xbox 360 graphics processor provided an upper hand of fine-tuned images, where the processor runs at 500MHz with available space of 10MB DRAM that grant enough space for effective and efficient job execution under the unified Shadar Architecture. Having the pixel and vortex, Shader unified made the ATI graphics processor very fast due to the minimized communication difficulties.as reported in the howstuffworks.com the unified Shader Architecture was firstly implemented on Xbox 360 device.

1.5.2.1. Xbox 360 Input/Output

The Xbox 360 has a capacity of accommodating 4 wireless controllers synchronously, and three 2.0 USB which are used to establish connection with external devices. As shown in figure 1.5.

1.5.2.2. Online

The inbuilt Ethernet port and Wi-Fi card slot provided connectivity with the wider community.

1.5.2.3. TV Connection

The Xbox 360 supports the simple and complex video connection with TV. Moreover, the user (player) has an option of S-Video and VGA; also, the console can accommodate SCART-Type adapters used mostly in the European region. The Xbox 360 comes in the package with AVHD cable and a media remote; also, it can accommodate standard definition AV cable.

1.5.2.4. Audio Connection

The audio responsibility lies on the CPU with 32bit audio processing capacity. It uses 356 channels of 48 KHz, 16-bit digital audio of multi-channel surround sound. Xbox 360 audio is flexible as it supports the sound tracks customization.

1.5.2.5. Removable Hard Drive and Storage

The older version of Xbox supported 8-GB hard drive, but the Xbox 360 upgraded it to 20-GB Hard drive, also Xbox 360 Elite has to the tune of 120GB, and now, Xbox 360 S has the capacity of 250GB, additionally, it can concurrently accommodate two 64-MB memory cards.

1.5.2.6. The Disk Drive

With its renounce media capabilities, it runs 12x dual-layer DVD-ROM which reads DVD-R/RW, DVD+R/RW, DVD ROM, DVD Video, CD-DA, CD-R, CD-RW, CD-ROM, WMA CD, MP3 CD and JPEG photo CD, but with all these disk collection Xbox 360 doesn't accept the use of Blue-Ray.

1.5.2.7. Cooling System

The earlier Xbox was big in size due to the large space occupied by the cooling system, which is one of the interesting factor addressed by the Xbox 360. The construction of small powerful fan that provides a regulated breeze to the vacuum-sealed and liquid-

cooled system for the attainment of required temperature that keeps the machine going smoothly without over-heating. To provide effective cooling system, the system looks over the cores and checks the workload, if some are found ideal for the ongoing process the system shutdown those ideal one for maximum and healthy machine utilization.

Figure 1.5 Xbox 360 Console Ports [17]

1.6. Literature Review

1.6.1. Educational Games and Motivation

It is clear that computer game play can be captivating and preoccupying to the extent of being addictive [18]. Squire views game as an educational tool that receive a positive commendation of being fun and deeply engaging, which is cognitively demanding problem solving [19]. Educational games have been receiving positive research outcome as Backlund and Hendrix [20] presented an evaluation of 40 papers research of the effectiveness of educational games in learning environment, the result shows 72.5% as positive outcome to learning, 17.5% as negative, 5% as neutral, and another 5% as blurred outcome.

There are lot of authentic proof which support the positivity of using computer games for instructional purpose [21].

1. School achievement: this enrich the students with higher performance in mathematics and improve reading skills [18], easy understanding of grammatical structure and pronunciation [22]. When comparing with old way of learning, the outcome of different meta-analysis presented computer games with higher percentage of improving the student self-concept approach to learning and achievement [23].

2. Cognitive ability: the use of computer games supports the growth of critical thinking skills that might have relation with planning strategically, solving problems and self-controlled learning. Moreover, computer games support the growth of different learning strategy as every level differ from the other level speed and difficulty [24].

3. Motivation towards learning: the use of computer games reported to be more motivating in compares of the old way of instruction, and that proved the technology to have more special features that increases the motivation of learning [21].

4. Attention and concentration: motivation cannot be achieved without the presence of attention and concentration, therefore, motivation is directly proportional to attention and concentration [18]. The students that uses instructional software take most of their time of learning concentrating on details, and is even more to the students with slow learning ability, low achievement and or attention problem [21].

Development of an appropriate learning environment plays a vital role aiding institutional learning, portraying different way of defining a system, changing conceptual representation, providing new interaction and action style, and rebuilding the socio-technical features of organizations [25]. Complexity, challenge, control, and fantasy are viewed as the characteristics of educational games. However, Garris et al. believes that scholars use different way and terminology in portraying similar game dimensions [26]. The researchers further describe fantasy, rules/goals, sensory, stimuli, challenge, mystery and control to be the characteristics of educational games. Here the topic of discussion is that, can all those characteristics be set to motivate the learner and maintain the fun level of the game? It was argued that, some instructional content can be inserted into game fantasy, which might increase the learner interest and add value to the learning. Having clear, precise and tough goals can improve motivation and increase performance. Adding that greater motivation and improve learning can be achieved by giving the learner a sense of personal control when giving the opportunity to choose their desired strategy, making decision and management even if the choice is not instructionally relevant [26]. Animated graphics can also improve the motivational satisfaction of educational activities. It was discovered that students irresistibly engage in an iterative practice of application with dynamic graphics [21, 26]. To make the stated features effective Garris et al. further to design what they thought to be a game life cycle using a model input-process-output, portraying the repetitive nature of computer game [26]. The life cycle is viewed as a hope of professionals to capture and

integrate instructional applications into games where learner can actively use experience in constructing knowledge.

The proposed game features described by the scholars which can activate the repetitive nature of playing game is really a wonderful idea. However, that only explains the internal feature of the game. Developing instructional games with such model might cause the game play a sedentary activity which can cause health problems to the learners and lead to an unhealthy learning environment. A report indicating that persistent increase of sedentary activity may cause health problems especially in children. Replacing sedentary time with physical action can improve the learner's ability physically and mentally. Additionally, physically active learners feel more content with their body shape and are more self-confident than their sedentary counterparts [27]. The said problem can cause the parent/guardian to reject the material. Solution to the sedentary game play can be found through integrating the said internal features with another external feature that can engage the player into physical activity which can lead to the whole body movement.

1.6.2. Challenges facing the integration of Educational games

Educational games which are sometimes refer to serious game are designed specially targeting the educational environment but the entertainment flow does not match with the commercial games, many at times the pedagogical structure obstruct the flow of fun. Majority of the games are for commercial purpose, but that does not make them ineffective to the educational environment, as there are some educational benefits that can be gained from them. These include making the user familiar with the technology, improving the level of socialization, and developing the user confidence [7]. Integrating education with games can give schools greater advantage of teaching children through their natural way of learning. Even though, some educational games are being used in the classrooms, but it is still facing some defiance which may be due to the following reasons. Some of the teachers view the game as just a tool of entertainment that cannot serve for instructional purpose; the teacher's poor knowledge and ability to teach using any computer/computer supported tool; lack of standardized instructional software and hardware. Additionally, the hitches can include coverage, teacher resistance and edutainment complexity. Furthermore, the general fear of the negative effect of video games transferred unto the educational games, which include, the aggressive nature of some of the video games, gender bias and immersion effect which

might affect the social relation and academic development of the learners [21]. Problems preventing the integration of games into learning process may also include the "Cost" [28, 29] which can be scary at the production stage "Balancing educational value and entertainment" which are both essential when referring to the term "Educational game" also "Delivery and assessment". According to the researchers the later problems can be solved by reducing the development cost and increasing the educational value, which will take care of the first two problems, while integrating the educational games with e-learning environment can be a solution to the third. Achieving this solution can help in eliminating the stated problems while maintaining high quality of educational game rich in the educational value and also the entertainment [28].

1.6.3. Kinect in the classroom

Kinect stand to be one of the celebrated kinesthetic tool that scraps the use keyboards, mouse and the like, especially in exercise games. Moreover, there is a need to explore its contribution to educational environment. According to Hui-Mei [30] Kinect can improve teachers capabilities, improves classroom interaction, rises the classroom participation and create a room for discussion. Kinect has the ability of creating entertaining interactions that can improve the students learning and motivation. Kinect can also provide opportunity to children for interactive funny stories and games. Nevertheless, upon the Kinect functions that can facilitates interactions in the classroom, it still cannot stand independently, it has to solicit the function of projector, computer, compatible software etcetera, before functioning to the desired. Application of Kinect in a classroom has some limitations, which include; technical – the need of sizeable classroom space, hard to use development tools [16], slow calibration and pedagogy – difficulty adjustment and adaption of kinesthetic pedagogy, and lack of proper knowledge of its effect [30].

Kinect as a tool for teaching – need at least curricular adjustment to meet the requirements of kinesthetic pedagogy. Some of the key attributes can include providing flexibility in teaching – interact with body and avert the use of the like of keyboard or mouse, ability to handle multiple users, versatility, and ability to make students engaged [12, 31].

Kinect as a tool for learning – it characteristics include, the ability to stimulate learners, ability to improve learning process through its multi-sensor and multimedia, and

accessibility to other software to improve the achievement process of the target learning goals [30].

1.6.4. Language Learning Games

Play from its various way provide a crucial segment of children's social and cognitive development. By playing, children can practice some operations cognitively, like classification, conservation and reversibility. Playing activate the beginning of object usage that is why is being considered to be the first kind of symbolization. Playing can also make a clear path to abstract thinking [21]. Game can be used in a language based classroom as a source of fun and expose the student in to creative thinking [7]. Even though, Godwin-Jones [7] reported that games developed for learning language also face some stumbling block that hinder the integration of the games into educational environment, but it is still language learning game stand to be more easier to integrate into curriculum, since its environment is static and can be predicted. Thereby, making it easy for the developers to concentrate on a certain language learning outcome. Some of the games that are developed to assist in language learning include; Ever Quest 2 which is a Massive Multiplayer Online Role-Playing Game (MMORPG). The Ever Quest 2 was used as a pedagogical resource in teaching English as a second language. The aim was to evaluate the effectiveness of using serious games to achieve the desired language learning outcome. The result of the study was positive which indicate the benefit of using serious games to improve language learning skills, especially in the area of vocabulary and speaking [32]. Another example is Tactical Language and Culture Training System (TLCTS), the level of usage of the digital game was examine by Johnson [32, 33]. The result proved a wide acceptance and effective utilization of the application in different area of life especially in the field of military for the purpose of language learning, communication skills and cultural orientation. TLCTS is viewed as a clear example of the application of a serious game in to learning environment. The result shows that users of TLCTS acknowledge its effectiveness in learning different communication skills. SpatialEase is also a language learning game which is designed using some phrases that command the bodily movements using Kinect camera. The scholars implement and compare the effectiveness of SpatialEase with another application called Rosetta Stone, which is also use for language learning without Kinect. The result clearly favored the use of SpatialEase, and that indicated its advantage especially to kinesthetic

learners with added advantage of visual and auditory technique [34]. However, SpatialEase has some limitations these include; the participants are limited and reported to be adult, the entertainment maintenance level and classroom implementation was not reported and the time used for fetching the data was limited.

2. METHODOLOGY

The design of the study choses to apply achievement test using pretest and posttest, and motivational test using the Turkish version of Instructional Material Motivation Survey (IMMS) to be applied before the use of the application and after. One-Sample t-test were employed for testing the hypothesis validity.

2.1. Participants

The project involved 40 volunteer participants, which were chosen from grade 4 and 5 of private college X, aging from 9 to 10 from 19 boys and 21 girls. The project chooses to use examenglish.com in the selection of the participants to assure their similarity of their level of language learning, which proved to be at A1 level using CEFR, (CEFR refer to Common European Framework Reference that is used in describing the learner's language level). Examenglish.com is one of the English test site set to assist and train the candidates that are preparing for international examinations such as IELTS, TOEFL. FEC etcetera [35].

2.2. Data Collection Tools

This section describe the tools used in collecting the data for analysis, which include motivation, achievement and perception of learners.

2.2.1. Motivation

For measuring the learner's motivation ARCS (Attention, Relevance, Confidence, and Satisfaction,) motivational model is used for this purpose to get the level of stimuli that motivates the students to learn John M. Keller designs ARCS motivational model. ARCS model is widely accepted model that portrays the motivation of learners as a dependent of four variables, namely; Attention, Relevance, Confidence, and Satisfaction, which abbreviated by ARCS. Therefore, for a learner to be fully motivated these variables need to be achieved [36, 37, 38]. Instructional Material Motivation Survey (IMMS) is going to be used. IMMS is a survey tool that is designed purposely to measure motivational aspect of

instructional tools and it is proven a dependable tool for survey [39]. IMMS reliability was tested using Chronbach Alpha with four variables Attention, Relevance, Confidence, and Satisfaction as coefficients. The survey contains 36 enquiries wich the student will answer in relation to the instructional tool, using the range of acceptance level from 1-5, with 1 indicate absolute dissatisfaction while 5 indicate extreme satisfaction. Ten from the enquiries are in negative form therefore to measure uniformly a reverse system must be employed for accurate result [40, 41]. However, this IMMS is adopted and modified to fit in into Turkish educational system, in which the items were reduced to the number of 24 with two coefficients of Attention-Relevance and Confidence-Satisfaction. Turkish IMMS reliability was also tested using Chronbach Alpha with 0.79, 0.69 and 0.83 for the two coefficient and the total respectively [42]. Significant positive result was recorded using the adopted Turkish version of IMMS, which was applied on University preparatory class [43].

2.2.2. Achievement

In this phase, for us to find out whether there is improvement in the learner's vocabulary, a Paired Sample T-test is for the task, which will provide the opportunity to measure and compare the learner's prior knowledge and the present.

2.2.3. Learners Perception

The learner's perceptions are the qualitative data, aimed at using Open-Ended Questions to assist the quantitative data from achievement test and motivational test, were administered, which contain four questions answered freely by the participants.

2.3. Application Design

In the process of achieving the research goal, an application was developed in order to be used as a system for the targeted tool on research (Kinect, Xbox 360). The application is named Essential English Vocabulary as it present some needful vocabulary for the targeted research group.

2.3.1. Requirement Gathering

The vocabulary that featured on the game were extracted from Oxford dictionary picture wordlist [44] and sieved using talkenglish.com top 1500 nouns [45] to achieve the word daily usage frequency. Online Cambridge dictionary was used to get the CEFR (Common European Framework Reference) level of the vocabulary [46].

2.3.2. System Design

Essential English Vocabulary Game (EEV) development include at least 200 vocabularies. EEV is developed using Unity game engine. The game is picture oriented, displaying multiple word options for the player to choose the picture in question. It has 1 main window (Fig.3.2) and 3 child windows (Figure 3.3). The game can play on Xbox 360 console with hand gesture using Kinect camera.

2.3.3. Unified Modelling Language (UML) Use Case

Use case diagrams are set of diagrams which are used to define system behavior using one or more actors (can be an organization, an external system or a person) interacting with the system [48].

2.3.3.1. Use Case Diagram for the EEV

Figure 2.1 portrayed how the EEV interact with the user, in which the user is referred to as player while the application referred to as EEV.

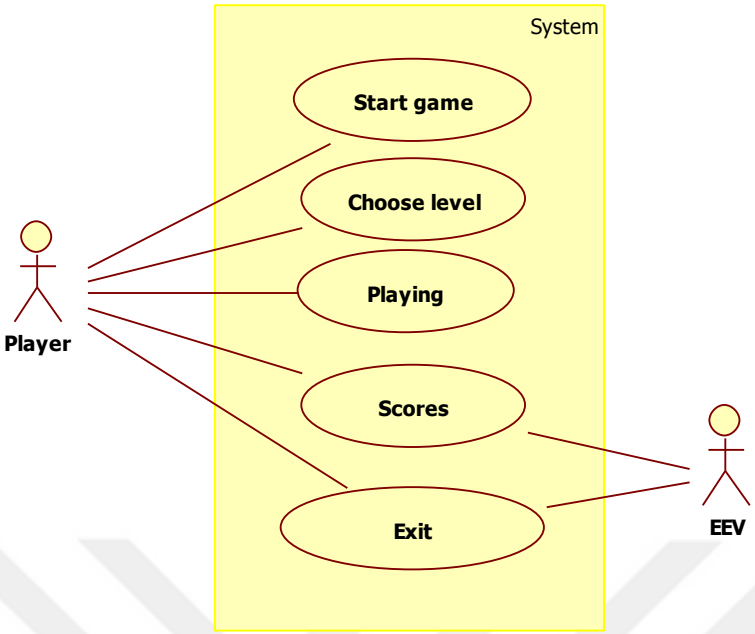

Figure 2.1. EEV Use Case Diagram

Figure 2.1 and Table 2.1 describe the interactions between the user and the system (EEV).

Table 2.1. Use Case Description

Name	Essential English Vocabulary (EEV)
User	Player, System (EEV)
Description	The player starts the game, choose the level, play and exit The system provide the score and exit

2.3.4. User Interface Design

User interface design is a technique employed for the development of an interface in a computerized devices software with emphasis on the appearance and or pattern. The designers target is to provide simplest and delighting usable interface for the users [47]. EEV contain only 4 windows one parent window which interface the link of the 3 child windows that allow the participants to interact. Shown in Figure 2.2 and 2.3.

Parent Window

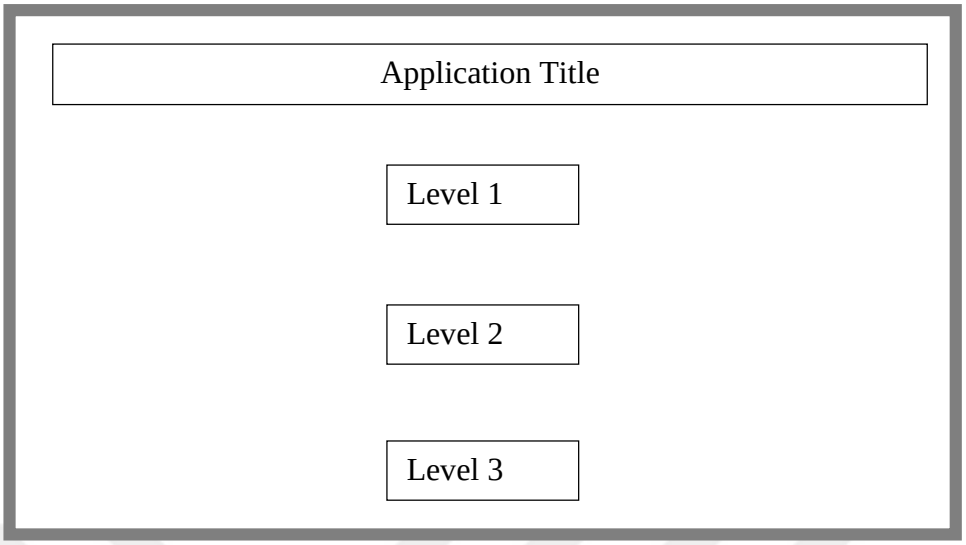

Figure 2.2 EEV Parent Window

Child Window

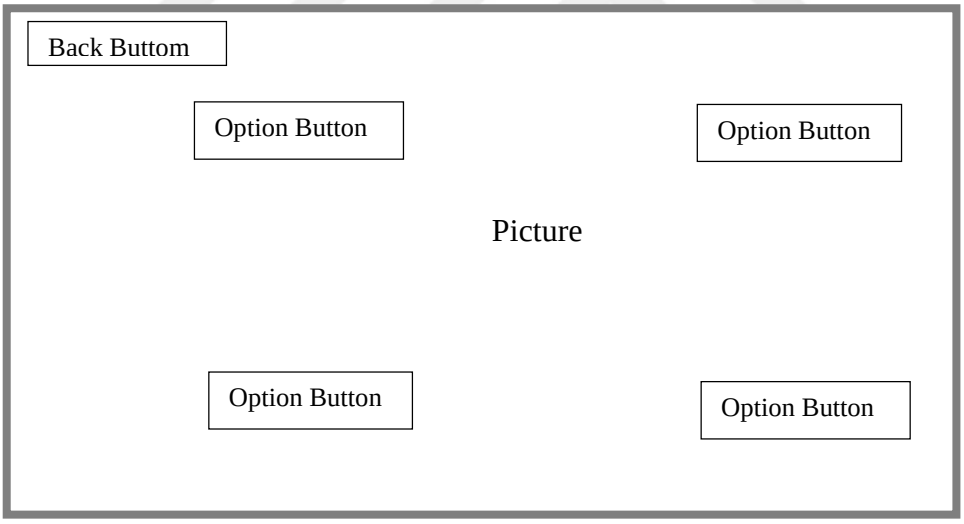

Figure 2.3 EEV Child Window

Figure 2.4 is the main window which links the play to the child windows. This gives the player the option to choose from the appropriate level of his/her like or the level stopped from the previous play.

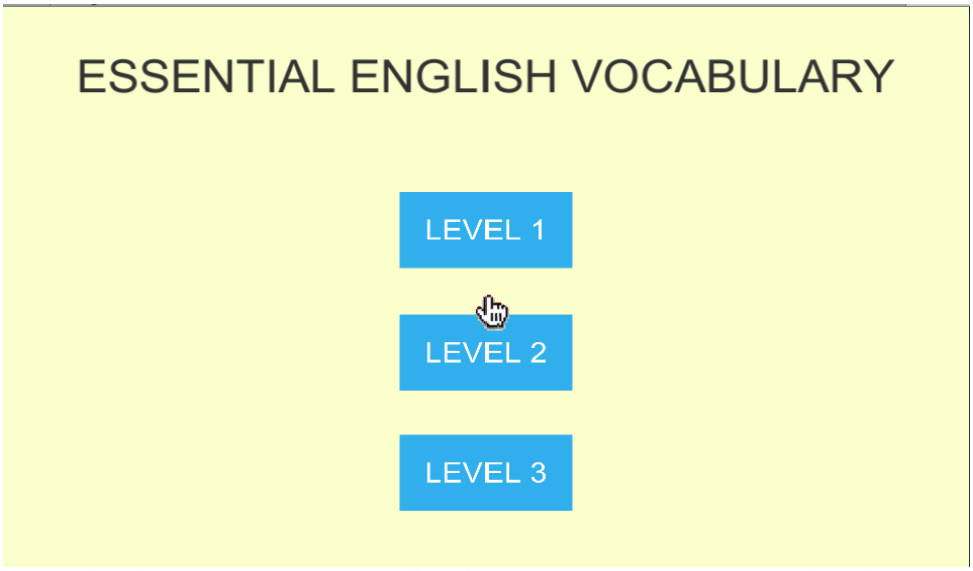

Figure 2.4 EEV Developed Parent Window

Figure 2.4 display one of the child windows that allow the player to play the picture words and rewards the player with score according to his/her ability.

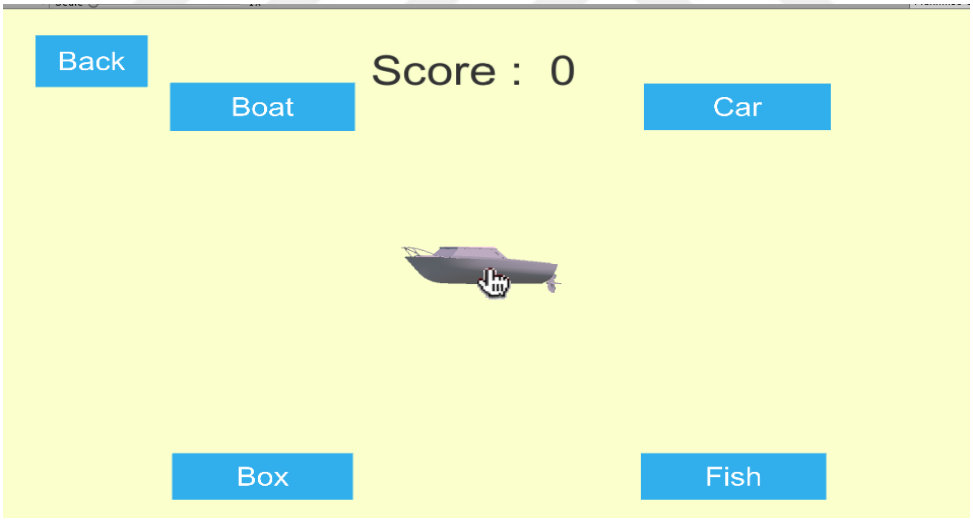

Figure 2.5 EEV Developed Child Window

2.4. Data Analysis

To satisfy the research questions three independent variables were employed, these include Motivation; which utilizes the John Keller's ARCS Motivational model and chooses the Turkish version of Instructional Material Motivation Survey (IMMS). Achievement; a pre-test and post-test 1-group design were chosen and independent sample T-test were taken.

And Perception of the learners; where Open-ended questions were administered to get free and fair thoughts of the participants.

For assuring if the data set is normally distributed Skewness and Kurtosis values were examined and found that the data is normally distributed. Then the parametric tests were used for the tests. To compare whether there is a significant difference between pre-tests and post-tests, Paired Sample t-Tests were used.

3. FINDINGS

Three hypotheses were set for the findings. The first was, Is there any significant difference in the participant's achievement between the pre-test and the post-test? The second was, is there any significant difference in the participant's motivation between the pre-test and the post-test? And the third was, how are the participant's perceptions towards the implementation?

3.1. Achievement

As can be seen in Table 3.1 of the pre-test and post-test of the achievement test shows a difference of 6 and 10 from the minimum and maximum respectively.

Table 3.1 Achievement Pre-test and Post-test Variation

Achievement Pre and Posttest Variation						
	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Pre-Test	40	3,00	27,00	13,2000	5,10003	26,010
Post-Test	40	9,00	37,00	20,9500	7,89336	62,305
Valid N (listwise)	40					

As the result indicated in the Table 3.2 the statistic of the skewness and kurtosis shows a normal distribution of the achievement scores. Having the post-test result of the skewness statistic as 0.486 and the kurtosis -0.812 which are all not far from zero portray the probability of positive impact. However, having the result within the range of -0.8944 and +0.8944 for the skewness, and -1.7888 and +1.7888 for the kurtosis [48] indicated that the result is within the expected range of fluctuations.

Table 3.2 Achievement Test Skewness and Kurtosis

Achievement Test Skewness and Kurtosis				
	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Pre-Test	0,237	0,374	0,215	0,733
Post-Test	0,486	0,374	-0,812	0,733
Valid N (listwise)	40			

Table 3.3 shows a significant difference between pre-test and post-test with Mean = 13.20 and 20.95 and Std deviation = 5.10 and 7.89 respectively.

Table 3.3 Achievement Test Paired Samples Statistics

Achievement Test Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-Test	13,2000	40	5,10003	0,80638
	Post-Test	20,9500	40	7,89336	1,24805

The result in the Table 3.4 indicated a high degree of ascending correlation with 0.760 coefficient The result indicated a relation between the two variables is associated with how higher pre-test determine how higher the post-test would be.

Table 3.4 Achievement Test Paired Samples Correlations

Achievement Test Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Pre-Test & Post-Test	40	0,760	0,000

A paired sample t-test was conducted to compare the achievement of the participants before (Pre-test) and after (Post-test) of the application implementation. Shown in Table 3.5.

Table 3.5 Achievement Test Paired Samples Test

	Paired differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Pretest - Posttest	-7,75000	5,20724	0,82334	-9,41536	-6,08464	-9,413	39	0,000

The result shows that there is a significant increase of score after the implementation Kinect Xbox 360 in the class (M = 20.95, SD = 7.89) than before the implementation (M = 13.20, SD = 5.10); t(39) = -9.41, p = .000.

3.2. Motivation

This is where John Keller's ARCS Motivational model, the Turkish version of Instructional Material Motivation Survey (IMMS) was used to find out how the participant are motivated with the instructional tool.

As can be seen in Table 3.6 of the pre-IMMS and post-IMMS of the motivation test shows a significance difference from the maximum statistic with 0.15. this shows that there exists a motivation from the instructional material.

Table 3.6 Motivation Pre and Post-IMMS Variation

Motivation Pre and Post-IMMS Variation						
	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Pre-IMMS	40	2,45	4,82	3,9975	0,58895	0,347
Post-IMMS	40	2,45	4,97	4,1537	0,63031	0,397
Valid N (listwise)	40					

The finding in Table 3.7 shows that the statistic of the skewness and kurtosis indicated a normal distribution of the motivation scores. Having the post-IMMS result of the skewness statistic as -0.836 and the kurtosis 0.263 which are all not far from zero portray the probability of positive impact. However, having the result within the range of -0.8944 and +0.8944 for the skewness, and -1.7888 and +1.7888 for the kurtosis [48] indicated that the result is within the expected range of fluctuations.

Table 3.7 Pre and Post-IMMS Skewness and Kurtosis

Pre and Post-IMMS Skewness and Kurtosis				
	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Std. Error
Pre-IMMS	-0,669	0,374	-0,058	0,733
Post-IMMS	-0,836	0,374	0,263	0,733
Valid N (listwise)	40			

Table 3.8 shows a significant difference between pre-IMMS and post-IMMS with Mean = 3.9975 and 4.1537 and Std deviation = 0.58895 and 0.63031 respectively.

Table 3.8. Motivation Paired Samples Statistics

Motivation Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre-IMMS	3,9975	40	0,58895	0,09312
	Post-IMMS	4,1537	40	0,63031	0,09966

The result in the Table 3.9 above indicated a high degree of ascending correlation with 0.820 coefficient. The result indicated a relation between the two variables is associated with how higher pre-IMMS determine how higher the Post-IMMS would be.

Table 3.9. Motivation Paired Samples Correlations

Motivation Paired Samples Correlations				
		N	Correlation	Sig.
Pair 1	Pre-IMMS & Post-IMMS	40	0,820	0,000

The result in Table 3.10 shows that there is a significant increase of motivation after the implementation Kinect Xbox 360 in the class (M = 4.1537, SD = 0.63031) than before the implementation (M = 3.9975, SD = .58895); t(39) = -2.690, p = 0.010.

Table 3.10. Motivation Test Paired Samples Test

	Paired differences							
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Pair 1 Pre-IMMS – Post-IMMS	-0,15624	0,36740	0,05809	-0,27374	-0,03874	-2,690	39	0,010

3.3. Gender Difference

This finding from the Table 3.11 shows the gender difference with respect to the use of the application Female participant and Male participants. The result indicated that there is not much gap between the male and female participants in the achievement and motivational score, and that portray a fair play that included all the genders.

Table 3.11 Gender Group Statistics

Gender Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
Pre-Test	F	19	13,6316	4,78668	1,09814
	M	21	12,8095	5,45545	1,19048
Post-Test	F	19	22,8947	8,81851	2,02310
	M	21	19,1905	6,68296	1,45834
Pre-IMMS	F	19	4,1842	0,51754	0,11873
	M	21	3,8286	0,61012	0,13314
Post-IMMS	F	19	4,3970	0,53790	0,12340
	M	21	3,9336	0,63814	0,13925

3.4. Perceptions of the Learners

In this phase qualitative data were used to support the quantitative an Open-ended question were administered to get free and fair thoughts of the participants.

The first question is: "What do you think about the application?"

The finding of Figure 3.1 below indicated clear positive thoughts of the participants with a large percentage of 92.50. This shows that the instructional material can be utilized in the class to happily engage the students which will in turn yield a positive learning outcome. Most of the participant's comments include *"Very beautiful, I think it's beautiful, it was good, it's very good, it's really awesome, I liked it so much, it was very beautiful and it's very swanky. I wish it was mine, we learn new words while having fun. It was a nice application, it was beautiful. It excites me, etc."*

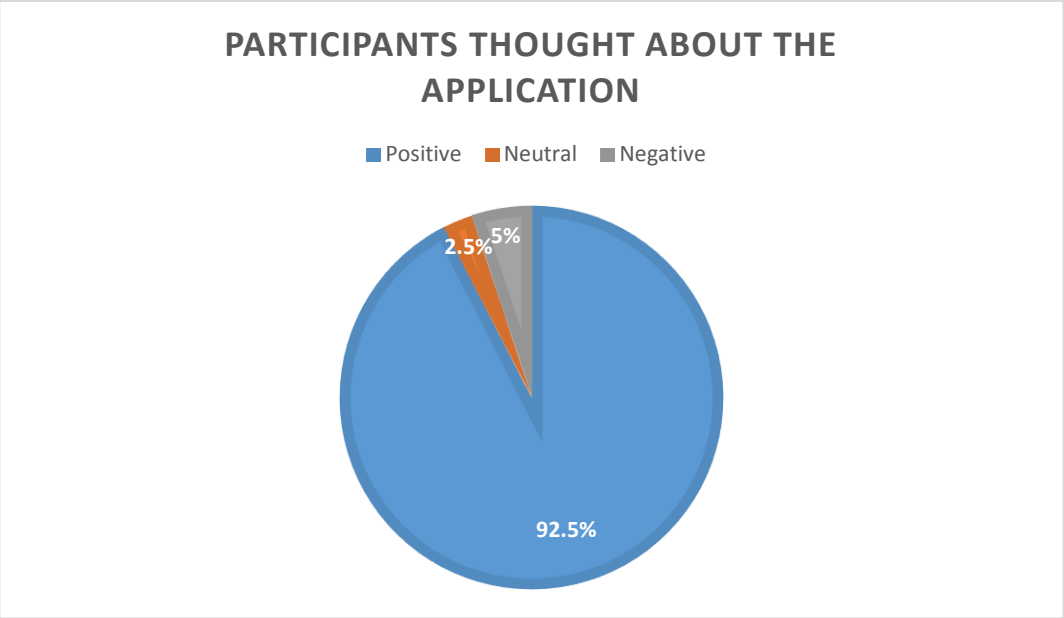

Figure 3.1 Participants Thought About the Application

The second question is: "What do you like about the application?"

In this phase (Figure 3.2) the application function was divided into three; kinetic, pedagogy and feedback. The result indicated a high satisfaction with the pedagogical function of the application followed by the kinetic function 48% and 37% respectively. This shows that the Kinect can also play a vital role in a class system of learning environment. Sample of the participant's comments that refer to the kinetic function include; *"Playing with hand, moving with my hands, following my hands on the computer, Controlling the game with my hands, your hand is mouse in a board, the words are not easy and not hard, I like the fact that we can move it without touching it with our hands"*

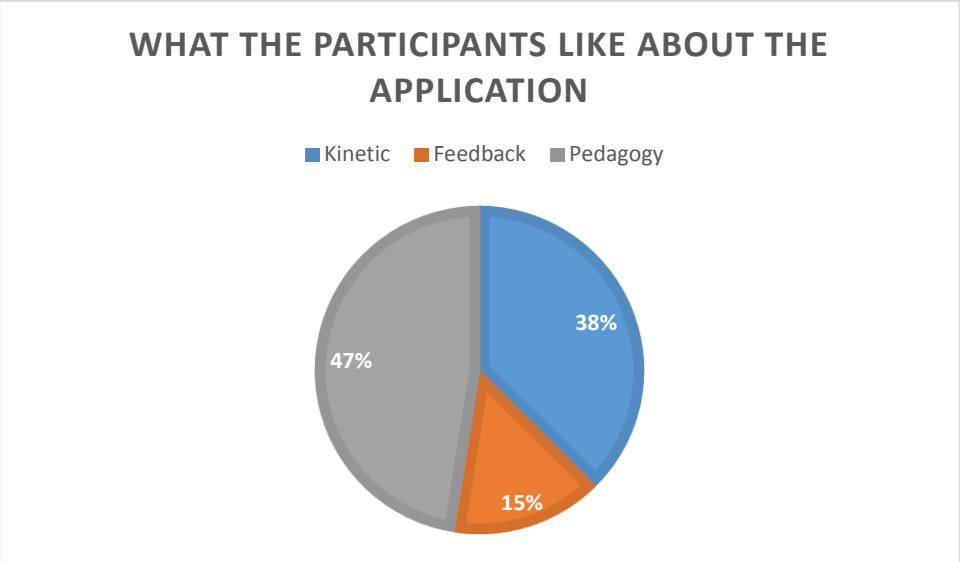

Figure 3.2 What the Participants Like About the Application

The third question is: "What didn't you like about this application?"

In the Fig 3.3 the question is negative and the participant's response was categorized in to three; Design, Camera (Kinect) and Satisfied. The result indicated a high percentage of those with satisfaction and the focus of the research take the least dislike but significant percentage. Some of the participant's comments in relation to the camera (which is the focus of the research) include; *"Not perceiving my hands, it's difficult to control, moving hands was difficult. It didn't perceive, it sometimes didn't perceive our hands, nothing else, it was beautiful but it didn't perceive my hand, it sometimes freezes, etc."* from the comment above, it is clear that the Kinect camera could not accurately capture the hands of the participants.

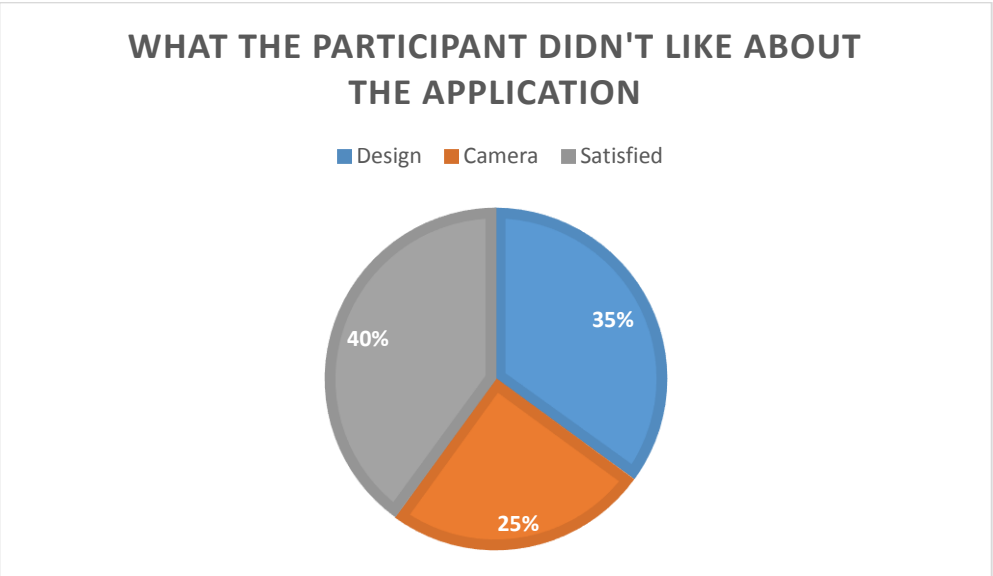

Figure 3.3 What the Participant Didn't Like About the Application

The fourth question is: “What kind of problem did you experience when using the application?”

Figure 3.4 focused on the problems experienced by the participants during the implementation of the application and it categorizes their reaction to the problem into three; technical, design, and satisfied. The major concern here is the technical problem in which the Kinect related problem is being categorized and it appeared to be the highest problem experienced by the participants. Some of the participant’s comments include; *“Not perceiving my hands, I had difficulty using it, not moving, not perceiving my hands, perceiving problem, it sometimes don’t see our hands, it perceive my hand late, etc.”* these are the repeated reported problems, which all relates to the effectiveness on how the camera capture the motion of the participants.

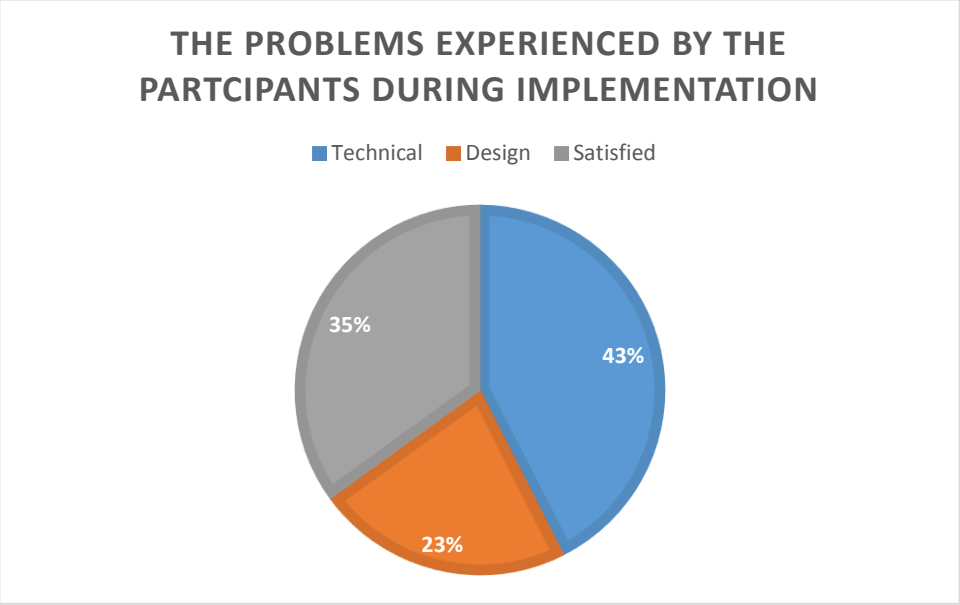

Figure 3.4 The Problems Experienced by The Participants During Implementation

4. DISCUSSIONS

Considering the driving force of the thesis, which is focusing on finding the effectiveness of using Kinect Xbox 360 in maintaining entertainment nature of games in language learning, the results in chapter 3 portray a clear unambiguous outcome of the research question. To start with the achievement result, the whole tables favor the hypothesis, provided a significant positive differences between the pretest and posttest, the skewness and kurtosis shows a normal distribution of the achievement test scores and the result is within the expected range of fluctuations. The correlation coefficient is of high degree of ascending order. Also the paired sample t-test shows that there is a statistical difference between the two means of pretest and posttest. The results proved that Kinect can improve the students learning. This research also added value to the Rosas R. *et al* findings proving that there are lot of authentic proofs which support the positivity of using computer games for instructional purpose, which among the findings include motivation to wards learning [21].

Looking into motivation the results of pre-IMMS and post-IMMS is similar with the results of achievement test which presented a positive outcome as the skewness and kurtosis output a normal distribution of the motivation data and it is within the expected range of fluctuations. The correlation coefficient is of high degree of ascending order. Also the paired sample t-test shows that there is a statistical difference between the two means of pre-IMMS and post-IMMS. The results proved that Kinect can improve the student's motivation. Additionally, for both the achievement and motivation proved that the assumption of Hui-Mei [30], which the stated some Kinect characteristics that can improve the student's learning and motivation. Even though, Hui-Mei could only compare the Kinect with interactive white board but could not provide the statistical data to prove the effectiveness of Kinect in a classroom. Also the implementation of SpatialEase [34] provide appealing distinction between the SpatialEase and Rosetta Stone but failed to implement it in a classroom setting and illustrate relationship between their preferences and that contribute in making their finding impossible to conclude the effectiveness of Kinect in a classroom setting. The Ever Quest 2 was used as a pedagogical resource in teaching English as a second language [32], therefore, Kinect can be used in providing fun needed while the Ever Quest 2 concentrating on the pedagogy.

Moreover, the challenges video games faces in educational environment of having aggressive nature and gender bias [21], this research proven to have a fair balance of the gender, which can be seen from table 3.11 Additionally, the problems preventing the integration of games into learning process where the cost is included [28, 29], with the affordable price of Kinect [12] indicated that the Kinect can be the solution. For the balancing of educational value and entertainment [28], this research findings shows that Kinect Xbox 360 can be utilized to achieve that. Kinect can be the tool to answer the scholar's suggestion of reducing the cost and increasing the educational value.

Moving onto the perception of the participants where open-ended questions were implemented. The result from the first question responses was impressive, it proved the collective likeness of the application by the participants. In the second question, what the participants like the most started to become clear, the Kinect took the second position while the pedagogy used superseded. For the third question large number of the participants amounting to 40% do not have any problem but up to 35% indicated ineffectiveness of the design which is one of the limitations of this thesis. However, with 25% of dislikes from the Kinect stand to be a significant value worth reviewing, which from the review it shows that the percentage was high to that level due to some technical problems recorded by the participants. Looking into the forth question where it focused on finding out the difficulties faced by the participants during implementation which will help in finding short comings of the tools used for the implementation. The findings indicated that technical problems received the highest percentage and that emanate from the Kinect camera which include slow calibration as mentioned by Hui-Mei [30].

5. CONCLUSION

Considering the fact that Kinect has made a tremendous achievement in exercise games but still the language learning environment cannot be left behind. After the development of EEV integrated with Kinect, the application was implemented and through user study, the achievement test, the motivation test (IMMS) and open-ended questions were implemented to provide a quality to the result. This thesis had the aim of exploring whether Kinect Xbox 360 can be used in a classroom setting to maintain the fun status of educational games. In this thesis findings indicated that in as much as the classroom curricula can be adjusted to fit the kinesthetic learning style Kinect can swiftly fit into classroom teaching and learning. Therefore, the findings pave the way to conclude that Kinect Xbox 360 is suitable for implementation in grade 4 and 5 of middle schools. It can support the student's learning process and motivate them while providing necessary fun. These findings are clearly indicating that an educational game that focused more on the pedagogy can be integrated with Kinect Xbox 360 to provide the necessary fun that can be maintained.

5.1. Limitations

The findings of this study is primarily concerned about how Kinect can be integrated with educational games and maintain the fun while game application is maintaining the pedagogical needs. The application design was just a support for the implementation of the main research question. Also control group was not included as the focus was not on the superiority but the effectiveness within its implement ability.

5.2. Recommendations

Future research into maintaining fun in educational games should look in to Intel RealSense depth camera, as Microsoft already announce the stop of Kinect production [49]. Microsoft should also come up with a solution that lead to the closure of Kinect production, and provide more effective camera to take lead in maintaining entertainment in educational games. Furthermore, designers should develop more robust application that capture an

effective pedagogy with proper design of game strategies that can effectively work with Kinect to maintain the fun tempo of the game.

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APPENDIX

Table A.1. Instructional Material Motivation Survey (IMMS)

Öğretim Materyaline İlişkin Motivasyon Ölçeği Maddeleri [44].

5. Çok Doğru 4. Doğru 3. Orta Derecede Doğru 2. Biraz Doğru 1. Doğru değil					
1. Bu dersi ilk gördüğümde benim için kolay olacağını düşündüm.	**5**	**4**	**3**	**2**	**1**
2. Bu dersin başında ilgimi çeken ilginç şeyler vardı.	**5**	**4**	**3**	**2**	**1**
3. Bu ders materyalini/aracını (bilgisayar, kitap gibi) tahmin ettiğimden daha kolay anladım.	**5**	**4**	**3**	**2**	**1**
4. Giriş bilgilerini okuduktan/dinledikten sonra, bu dersten neler öğrenmem gerektiğinden emin oldum.	**5**	**4**	**3**	**2**	**1**
5. Bu dersin alıştırmalarını yapmak, bana başarı duygusu kazandırdı.	**5**	**4**	**3**	**2**	**1**
6. Bu dersin içeriğinin önceden öğrendiklerimle nasıl ilişkisi olduğu benim için açık ve netti.	**5**	**4**	**3**	**2**	**1**
7. Ders materyalinde/aracında olması gerektiği kadar bilgi vardı. Önemli olan şeyleri ayırabildim.	**5**	**4**	**3**	**2**	**1**
8. Bu dersteki kullanılan materyal/ders aracı dikkat çekiciydi.	**5**	**4**	**3**	**2**	**1**
9. Bu ders materyalinin/aracının, bazı insanlar için nasıl önemli olabileceğini gösteren resim, hikaye ya da örnekler vardı.	**5**	**4**	**3**	**2**	**1**
10. Bu dersi başarıyla tamamlamak benim için önemliydi.	**5**	**4**	**3**	**2**	**1**
11. Yazıların/seslerin kalitesi, derse dikkatimi vermemi kolaylaştırdı.	**5**	**4**	**3**	**2**	**1**
12. Bu derse çalıştıkça konuları öğreneceğimden emin oldum.	**5**	**4**	**3**	**2**	**1**
13. Bu dersten o kadar keyif aldım ki bu konuyla ilgili daha çok şey öğrenmek istedim.	**5**	**4**	**3**	**2**	**1**
14. Bu materyalde/ders aracında ders anlatımları zevkliydi.	**5**	**4**	**3**	**2**	**1**
15. Bu materyalin/ders aracının içeriği ilgimi çeken konulara göre hazırlanmıştı.	**5**	**4**	**3**	**2**	**1**
16. Bilgilerin ders materyalinde düzenleniş biçimi, dikkatimi vermemi kolaylaştırdı.	**5**	**4**	**3**	**2**	**1**
17. Ders materyalinde, bu dersteki bilgileri insanların nasıl kullandığına dair örnekler ve açıklamalar vardı.	**5**	**4**	**3**	**2**	**1**
18. Bu dersteki alıştırmalar çok kolaydı.	**5**	**4**	**3**	**2**	**1**
19. Bu derste merak uyandıran şeyler vardı.	**5**	**4**	**3**	**2**	**1**
20. Bu dersi çalışmaktan gerçekten zevk aldım.	**5**	**4**	**3**	**2**	**1**
21. Bu derste konu tekrarların sayısı yeterliydi. Hiç sıkılmadım.	**5**	**4**	**3**	**2**	**1**
22. Bu dersteki bilgiler ve bilgilerin veriliş şekli, bu dersin önemli olduğunu düşünmemi sağladı.	**5**	**4**	**3**	**2**	**1**
23. Bu derste tahmin etmediğim ya da şaşırtıcı ve yararlı bilgiler öğrendim.	**5**	**4**	**3**	**2**	**1**
24. Bu dersi bir süre çalıştıktan sonra, bu dersten başarılı olacağıma emin oldum.	**5**	**4**	**3**	**2**	**1**
25. Alıştırmalardan sonraki dönütler (geri bildirimler/yorumlar) çalışmamın karşılığını aldığımı hissetmemi sağladı.	**5**	**4**	**3**	**2**	**1**
26. Okuma parçaları, alıştırmalar, resimler, videolar, sesler gibi çeşitli öğeler derse dikkatimi vermeme yardımcı oldu.	**5**	**4**	**3**	**2**	**1**
27. Ders materyalindeki yazıların şekli benim için uygundu.	**5**	**4**	**3**	**2**	**1**
28. Bu dersin içeriğini, kendi hayatımdaki şeylerle ilişkilendirebildim.	**5**	**4**	**3**	**2**	**1**
29. Bu dersi başarıyla tamamlamak kendimi iyi hissettirdi.	**5**	**4**	**3**	**2**	**1**
30. Bu ders içeriğinin, benim için faydalı olacağına inandım.	**5**	**4**	**3**	**2**	**1**
31. Bu ders materyalinin tüm bölümlerini anladım.	**5**	**4**	**3**	**2**	**1**
32. Ders materyali içeriği iyi hazırlanmıştı. Bu nedenle derste başarılı olacağıma dair güvenim arttı.	**5**	**4**	**3**	**2**	**1**
33. Ders o kadar güzel hazırlanmıştı ki bu dersi işlemek benim için bir zevkti.	**5**	**4**	**3**	**2**	**1**

Essential English Vocabulary Test

Write the names of the pictures in the space below.

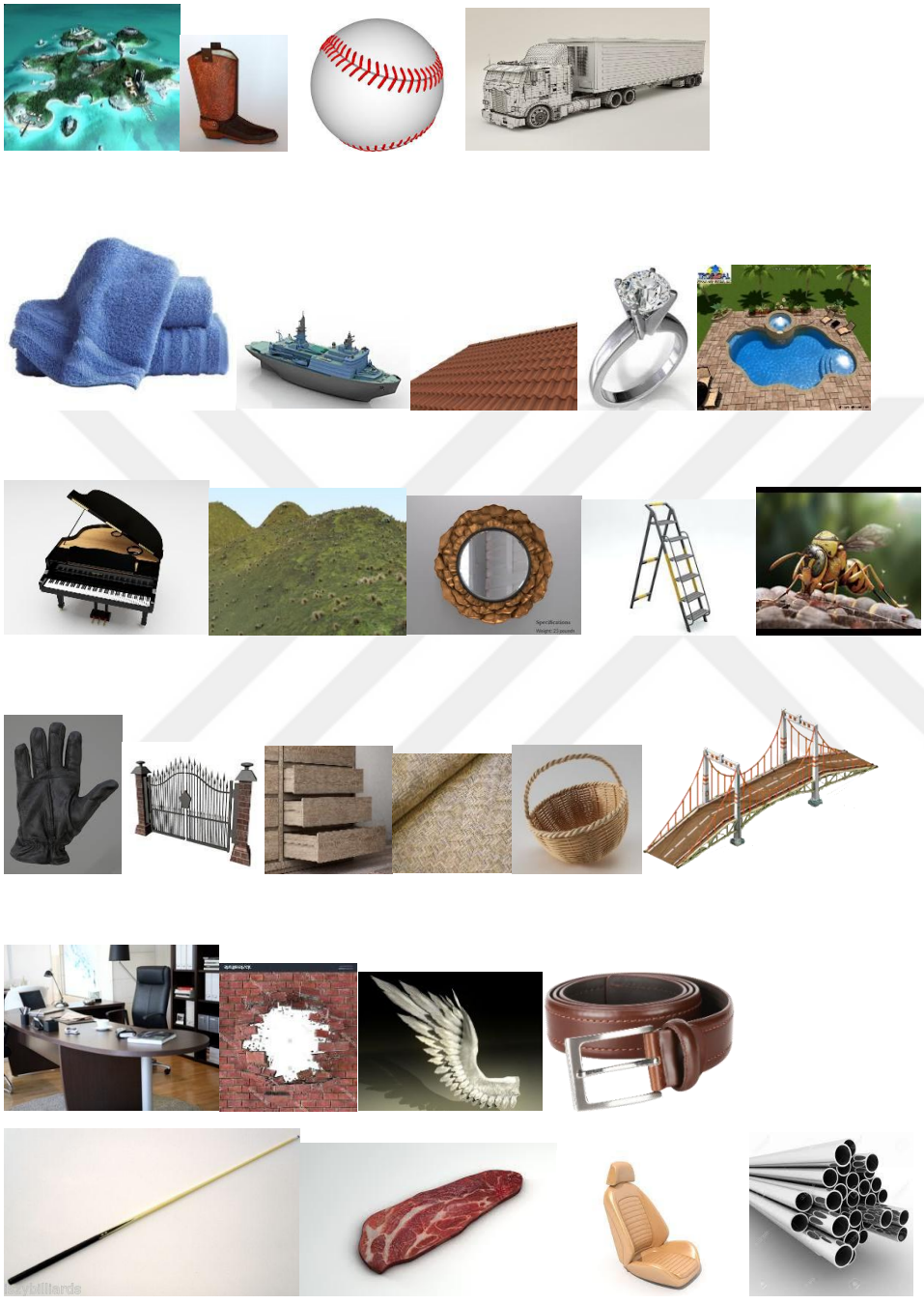

Figure A.1. (Continue)

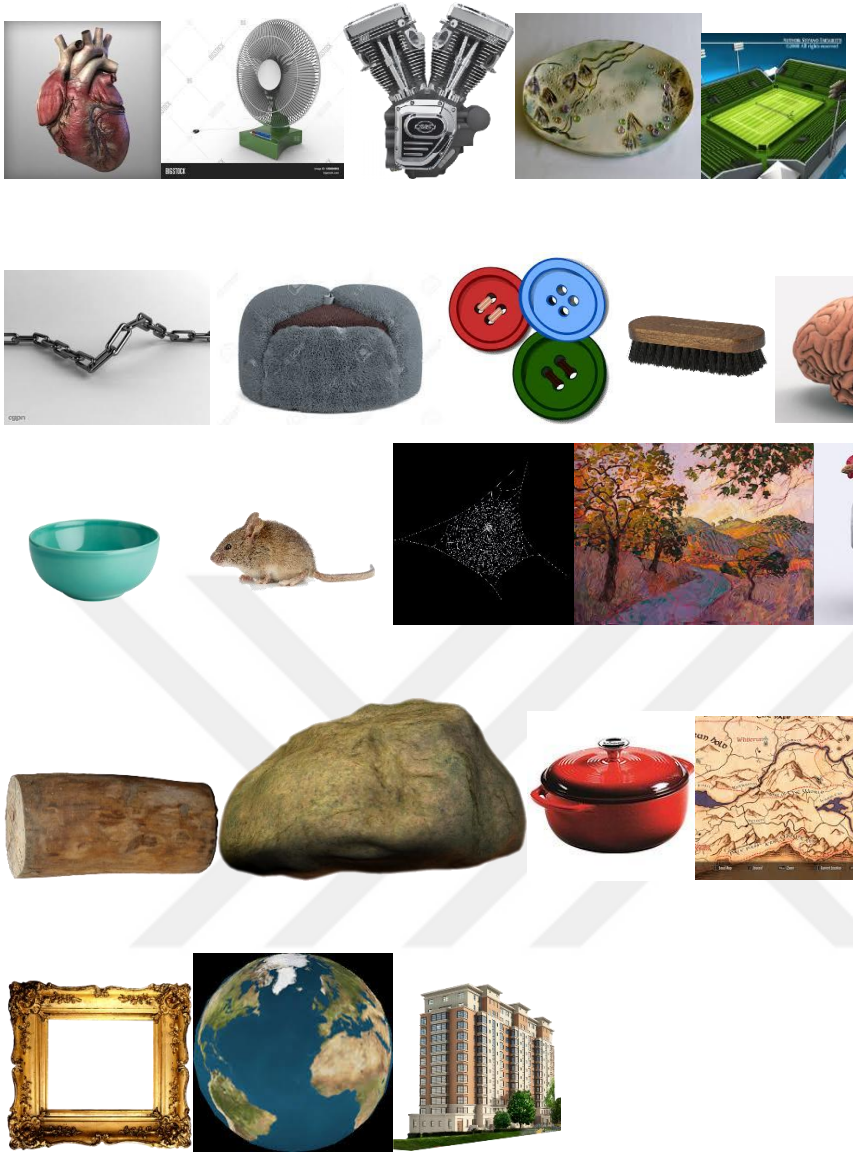

Figure A.1.

Essential English Vocabulary Application Open-Ended Questions

1. Bu uygulama hakkında ne düşünüyorsunuz?

2. Bu uygulamada en çok hoşunuza giden şeyler nelerdi?

3. Bu uygulamada nelerden hoşlanmadınız?

4. Uygulamayı kullanırken ne tür problemler yaşadınız?

CURRICULUM VITAE

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CAREER OBJECTIVES

To find a challenging IT position meeting my competencies, capabilities, skills, education and experience.

KEYS OF SUCCESS:

- Integrity and Ethics
- Leadership
- Teamwork
- Training
- Recognition
- Communication
- Continuous improvement

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Date of Birth:	11th August, 1982
Sex:	Male
Marital Status:	Married
Place of Birth:	Birnin-kudu
Local Government:	Birnin-kudu
State of Origin:	Jigawa
Nationality:	Nigerian
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SCHOOL ATTENDED WITH DATE

2006-2010

Bayero University Kano

- B.Sc Computer Science (Upper Second Class Honor)

2004-2006

Bayero University Kano

- Diploma in Computer Science (Credit)

1994- 2001

Government College Birnin-Kudu

- Senior Secondary School Certificate (WAEC)

1987-1994

Special Primary School Birnin-kudu

- First School Leaving Certificate

CERTIFICATE OBTAINED

- National Youth Service Discharge Certificate
- B.Sc. Computer Science
- Diploma in Computer Science
- WAEC Certificate
- First School Leaving Certificate

ADDITIONAL CERTICATES

- Certificate of Attendance on Free and Open Source Software (FOSS)
- Strategic Management Associate
- Certificate in Conflict Analysis
- Certificate in Interfaith Conflict
- Certificate in Negotiation and Conflict Management

WORKING EXPERIENCE

November 2008 – February 2009

- Informatics Institute Kazaure, Jigawa State.

May 2011 – February 2012

- Zenith Bank International Limited Maiduguri, Borno State

December 2001 – June 2014

- Federal Medical Centre Birnin kudu, Jigawa State

October 2012 – June 2014 (Part-Time Lecturing)

- Collage of Nursing and Midwifery Birnin kudu

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