NEAR EAST UNIVERSITY

GRADUATE SCHOOL OF EDUCATIONAL SCIENCES

DEPARTMENT OF COMPUTER EDUCATION AND INSTRUCTIONAL TECHNOLOGY

VIEWS AND ACHIEVEMENTS OF ESL STUDENTS REGARDING THE USAGE OF INFOGRAPHICS IN FLIPPED CLASSROOMS

PhD THESIS

MOBINA BEHESHTI

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THESIS APPROVAL

DECLARATION

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last name: Mobina Beheshti

Signature: _____

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DEDICATION

To My extraordinary Family…

ABSTRACT

VIEWS AND ACHIEVEMENTS OF ESL STUDENTS REGARDING THE USAGE OF INFOGRAPHICS IN FLIPPED CLASSROOMS

MOBINE BEHESHTI

PhD Program in Computer Education and Instructional Technology

Supervisor: Assoc. Prof. Dr. Hüseyin BİCEN

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Today, technologies are utilized extensively to support the process of learning according to learner needs. Hence, the advances in technology and ideology have prompted new directions in the second language (L2) instructional practices. This study is carried out in regard to the usage of infographics in a flipped classroom learning environment called "Flipped Classroom Instructional Infographics".

The goal of the research is to assess the views and the achievements of ESL students in learning English language through flipped classroom instructional infographics. The study is designed as a case study and used mixed research method (quantitative and qualitative) in order to obtain the result in a more consistent manner.

The data are gathered from 130 students by means of a questionnaire and conducting a focused-group interview to explore the "students' views of infographics", "students' views of the FCII learning environment" and "students' academic achievements level".

The findings of the study indicate that students' motivations in the experimental group compared to the control group is found to be more triggered by the engaging and comprehensive nature of flipped classroom instructional infographics, thus that they could absorb the concepts easier, memorize the information faster, and become more confident in the educational process.

Moreover, according to the results of the pre-test and post-test, it is revealed that the study has a relatively positive impact on the achievement levels and learning skills of the experimental group compared to the control group.

Consequently, the outcome showed that flipped classroom and infographics are effective instructional approach and can be addressed in recommendations for future research and practice in other educational topics.

Keywords: Digital Literacy, Visual Literacy, Infographics, Flipped Classroom

ÖZET

TERS- YÜZ EDİLMİŞ SINIFLARDA İNFOGRAFİK KULANIMININ İKİNCİ DİLİ İNGİLİZCE OLAN ÖĞRENCİLERİN GÖRÜŞLERİ VE BAŞARILARINA ETKİSİ

MOBINA BEHESHTI

Bilgisayar ve Öğretim Teknolojileri Eğitimi Doktora Programı

Danışman: Doç. Dr. Hüseyin BİCEN

Ekim 2019, 112 sayfa

Günümüzde teknolojiler, öğrenenlerin ihtiyaçlarına göre öğrenme sürecini desteklemek için yaygın olarak kullanılmaktadır. Bu nedenle, teknoloji ve ideolojideki gelişmeler ikinci dilde (L2) öğretim uygulamalarında yeni yönelimlere yol açmıştır. Bu çalışma, ters-yüz edilmiş sınıflarda İnfografik kullanımı ile ilgili olarak yapılmıştır.

Araştırmanın amacı, ESL öğrencilerinin İngilizce'yi öğrenme konusundaki görüşlerini ve başarılarını dönen sınıf ortamında öğretimi infografikler aracılığıyla değerlendirmektir. Çalışma bir vaka çalışması olarak tasarlanmıştır ve sonucu daha tutarlı bir şekilde elde etmek için karma araştırma yöntemi (nicel ve nitel) kullanılmıştır. Veriler, anket aracılığıyla 130 öğrenciden toplanmış olup "öğrencilerin infografik görüşlerini", "öğrencilerin" FCII öğrenme ortamına ilişkin görüşlerini "ve" öğrencilerin akademik başarılarını "incelemek için odaklanmış bir grup görüşmesiyle yapılmıştır.

Araştırmanın bulguları, deney grubundaki öğrencilerin kontrol grubuna göre motivasyonlarının, ters-yüz edilmiş sınıf öğretimi infografiklerinin ilgi çekici ve kapsamlı yapılarıyla daha fazla tetiklendiğini, böylece kavramları daha kolay algılayabildiklerini daha hızlı ezberleyebileceklerini ve eğitim sürecinde daha emin olabileceklerini göstermiştir. Ayrıca, ön test ve son test sonuçlarına göre, çalışmanın deney grubunun başarı düzeyleri ve öğrenme becerileri üzerinde kontrol grubuna göre nispeten olumlu bir etkisi olduğu ortaya çıkmıştır.

Sonuç olarak, ters-yüz edilmiş sınıf ve İnfografiklerin etkili bir öğretim yaklaşımı olduğunu ve gelecekteki araştırma ve uygulama için diğer eğitim konularına ilişkin önerilerde ele alınabileceğini göstermiştir.

Anahtar Kelimeler: Dijital Okuryazarlık, Görsel Okuryazarlık, İnfografik, Ters-Yüz Edilmiş Sınıflar

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CHAPTER I

INTRODUCTION

1.1. Introduction

In the 21st century, academic achievements are significantly dependent on digital literacy and technology utilization. Furthermore, as learners and educators live in an information environment which is surrounded by visuals, instructional materials are no exception (Lowe, 2000). Considering this, valuing the literacy component as well as discovering ways to better train and enhancing students' learning skills should start by educators. The term" visual literacy" basically means the ability to write and read and it is originally conceived by Debes in 1969. The term described by him as "a vision competency group of human beings who are able to develop by observing and combining the experiences simultaneously and so the development of these capabilities is essential for ordinary people. Once developed, they enable a visually educated person to discriminate and expound the visible elements such as symbols, objects and man-made or natural which he sees in his environment" (Debes, 1969). Moreover, visual literacy is defined as a cognitively based set of competencies, contexts and a procedure of creating meanings in a transaction using multimodal elements that comprise written text, visual images, and design components from a variety of viewpoints in order to meet the necessities of specific social contexts (Mitchel, 1984; Bateman, Mandryk, Gutwin, Genest, McDine, & Brooks, 2010).

Besides, as stated by Ng (2012) the outcome of digital literacy is the intersection of cognitive dimension, social-emotional dimension, and the technical dimension. The cognitive dimension comprises the critical handling of digital information once seeking, creating or utilizing as well as choosing the most suitable tools to do so. On the other hand, the social-emotional dimension is a concern with the utilization of learning, socialization and internet communication tools. Furthermore, technical dimension contains skills that make you able to use the information and communication technologies (ICT) successfully in every activity throughout the day, these activities involve application installation or uninstallation and watching videos on a social network like YouTube, Facebook, Twitter and etc (NG, 2012; McCue, 2013; Wilson, & Sipe, 2014; Yildirim, 2016).

Today, teachers need to build up the skill to design so to create an educational environment that gives learners a better opportunity to improve their knowledge, as well as giving them choices. This is also a good approach that allows them to expand and combine visual materials in their teachings. Thus, visual literacy skills have a significant role in the toolbox of digital-age instructors (Bergman & Sam, 2012). Moreover, infinite access to huge piles of information and data through the internet and technology makes visual literacy as important as textual literacy. There is an estimated 65% visual learners in the world based on the statistics are from the Social Science Research Network (McCue, 2013). The visual literacy was firstly invented in 1969 by Debes and the study described the term as "a vision competencies group comprises of human beings, who are able to develop, by observing and combining the experiences simultaneously and so the development of these capabilities is essential to ordinary people". However, since Debes' time, visual literacy has been defined and approached in various ways. In one way, visual literacy is set in concept as a collection of skills, enabling individuals to read, interpret, and compose visual messages in their interactions with others (Debes,1969; Case-Gant, 1973). In another way, a study defined it as the only essential skill for understanding and using pictures as well as providing the ability to think and study through pictures (Hortin, 1980).

Likewise, Krauss (2012) indicated that 70% of human's receptors are in the eyes. As a result, it could be claimed that a huge number of learners are benefiting from a visual learning style since they can learn and remember better and more efficiently through visual learning tools. On the other hand, conducted research is emphasized on the effects of visual tools for the young generations. These tools make learners able to have communication with their peers and educators in order to obtain and share information for future use through their activities in their life (Hattwig et al., 2013). Further, Aisami (2015) revealed that visual literacy is a collection of learning skills, which visually translate and comprehend the targeted subjects.

Scholars, however, provided different definitions for the term "visual literacy" from different aspects. Yet, the similarities in the descriptions are more or less about making meaning from graphical messages, utilizing images in thinking, learning and communications. Additionally, in the era of information, visual literacy is a key element for language learners since it is essential to comprehend the visual culture that is taking

control of the online world and put in practice in English to a large extent (Matrix & Hodson, 2014).

According to Fu's study in China (2009), most of the students at English as a Foreign Language (EFL) institution are categorized as visual learners; hence making visual aids is a great option for teachers to foster their students' learning. Moreover, processing a new language is a rather difficult job, hence making it more visualized simplifies the input as well as makes it interesting and helps facilitate second language learning.

1.2. History of EFL Teaching

Nowadays, numbers of strategies are used in teaching through visual materials. According to the Cambridge Dictionary, EFL is defined as "it is an abbreviation of English as a Foreign Language and it is specified as teaching English for learners whose English is not their main language". Since the 19th century until 1940, grammar-translation was one of the basic instructional methods of teaching English. This method helped students to learn the translation of sentences from the target language into English, find synonym or acronym of keywords, retaining lists of vocabulary, making sentences through vocabulary and tenses and also writing a composition for the target language (Taber, 2015).

Nevertheless, this approach enhanced the learners reading and writing skills, they wouldn't be able to improve their communication skills. Apart from that, teachers did not use visualized materials through this instructional method. Moreover, in the 20th century, the Direct Method was the other feature of Grammar Translation approach which is popular in America and Europe. In this method, the instruction is done based on the target language, grammar is taught with a focus on listening and speaking skills and also learning the useful daily language ("Direct Method," n.d.). However, the emphasis is more on speaking skills and the method mostly used visualized materials to demonstrate the concept of subjects. The concepts of vocabulary are illustrated through real-life pictures or object and pantomime.

Furthermore, another approach is called Audio-Lingual or Army which is used during World war ll. This method rejected the direct method and mostly focused on speaking and listening skills in order to improve communication among people. Learners are required to read dialogues loudly, do it several times in order to drill and practice the

grammar. Besides, the method utilized visual aids in order to teach vocabulary and also dialogues are accompanied through these visuals comprises pictures and drawing to convey the information which is positively affecting their learning skills (Rhalmi, 2009).

The other instructional method is Community Language Learning, which is introduced in the 1970s by Charles Curran. This method is focused more on communication that is basically developed for monolingual conversation classes. The instructors in these classes are able to speak in the target language. Later, this method is inspired by Carl Rogers' humanistic psychology. In this method, audio and visual are utilized and learners provided with a tape recorder in order to record their conversation, afterward make them listen to the tape and assess their language (Bertrand, n.d.).

Another approach from "humanistic approaches" is called suggestopedia, which is made by Georgi Lozanov. In this method, the focus is on the power of learning, and providing positive feedback in order make learners more motivated and receptive, however, suggestopedia is not connected directly to the visual materials, throughout teaching different senses and stimuli are utilized. Moreover, music is used in order to cater to students with a more relaxed learning environment and also motivated them via alert based on the defined conditions to affect their learning positively (Bowen, 2015).

Additionally, Silent method of instruction is used in the 1970s, which is based on the idea that teachers should be silent and encourage learners to speak more. The method catered learners with physical objects, small colored rods to convey the concept of knowledge. Further, learners provided with a sound and color wall chart, 500-word color-ordered word chart, spelling chart as well as wall pictures that illustrate the entire scenes arena. Hence, this approach delivers information through color rods and charts which could be considered as visuals since they make unforgettable images and so provide the process of recall and memorization (Taber, 2015).

Another interesting instructional approach is called Total Physical Response, which is introduced by Doctor Asher. This method simulated the language of parent and child which teacher acted as a parent and showed the action in a word. Thus, learners repeated the same action. The physical way of instruction is an attractive and interesting activity which could be applied for kinesthetic learners since it helps them to remember the phrases

and words conveniently. In addition, this method used visuals containing pictures, slides, charts and other types of objects for a higher level of learners ("Total physical response," n.d.).

Moreover, another method named Natural method is first created by Tracy Terrel in 1970s and later developed by Stephen Krashen. This method has been used and categorized by many teachers talk and made it comprehensible through the utilization of visual materials, actions and also learners are not provided with grammar. In addition, the approach is similar to the Total Physical Response approach; however, no grammar agenda or textbook is used. In contrast, worksheets and images are used as an instructional tool. Moreover, the Natural method provided several and different activities including words explanation through image and match the relevant picture to the given problem, so the method basically highlights the importance of visual materials and illustrate new vocabulary through pictures or games (Thornbury, n.d.).

Besides, another approach as Communicative method is about learning language through real communication. When learners get into real communication, they use their natural strategies for language acquisition, thus this help them to understand learn it. Moreover, the communicative approach utilizes different visual/audio resources, particularly videos, music, games, and role-play ("Communicative Approach", n.d). As a final point, according to the history of English language teaching, neither of these approaches is effective enough and it contains cons. Although, all of them made innovatively in order to facilitate English language teaching.

Additionally, there are many instructional approaches in the past that are used visual resources. For instance, Audio-lingual approach utilized drawing and images, Grammar Translation approach utilized real-life images/objects, Community language education took benefit from tape recorder, Silent Way utilized charts and color rods, as well as both Natural and Total Physical Response methods utilized realis and images.

1.2.1. Visual Learning

Nowadays, there is a rapid development of media and technology and the society is based on the visuals, hence learners are motivated by different types of these media including smartphones, computers, iPads and other mobile devices. Moreover, the fast

growth of digitalized technologies significantly affected the traditional way of learning. In the past, teaching and learning in every subject particularly English language are perceived in a different way (Richards, 2006).

According to the recent research about cognitive psychology and theory of instruction, it is revealed that visual learning is the best method for teaching at any age since it makes learners learn how to think and how to learn ("What is visual thinking," n.d.).

Furthermore, according to psychological knowledge, there is a hypothesis that learners will learn better using visuals than text. Thus, it is very crucial to specify the best criteria for young generations to learn and to be creative. A learning experience is focused on learning, the way that knowledge is conveyed and learners able to comprehend it. Consequently, visuals not only make learning more attractive by providing explanation concepts but also could be used as a creative discovery for learners (Andrasova, 2017).

1.2.2. Visual Thinking

The term visual thinking is a learning style that makes learner able to comprehend and retain the given knowledge more convenient while its linked with images ("What is visual thinking," n.d.). All the logos, images and other graphics are existed around us and dominate visual communication globally in the 21st century (Collias, 2014). Moreover, visual thinking method engages learners to think about the literal through discussion of meaning, symbols, and metaphors (Finley, 2014). Besides, the visual thinking approach is considered as an instructional approach since it enables learners to make new ideas and link the concepts.

1.2.3. Visual Literacy for 21st Century Generations

Due to the affirmative impacts of the internet and advanced technology on learners' learning skills, visual learning developed visual literacy of learners, which is very significant in today's world. According to the Brooks (2014), "visual literacy is a modern and important learning skill, which improves the ability of learners' reading and comprehension of concepts through text, image, and other media types" (p.48).

Furthermore, in cave dwellers time, people used images for communication therefore, it can be defined that the importance of visuals are remarkable since they let humans express their feelings. The visual images are designed based on photos, ideas, dreams, and memories, thus it can be concluded that visual images and imageries are all come from a symbol or picture which demonstrate the cultural values of real life (Mitchell, 1984). Since society is changed by emerging visualized commutation tools in the virtual world and in all the human activities, and the new generations are lack of knowledge about visual literacy skills, hence, they cannot take benefits from academic or daily life (Hattwig et al, 2013).

However, the visual literate learners can take benefits of visual reading and visual thinking if they provided with the training of visual literacy which is substantial for message designer instructors (Hortin, 1980).

Additionally, nowadays the technologies are developed significantly thus the increased challenge in digital literacy requires more visual communication skills (Osterman, 2013). Besides, the enhancement of visual culture of videos, images, photos, and websites become a part of social currency form which can be shared (Walter, 2012; Rainie, 2012; Verma, 2013; Kern, 2013).

John Debes invented visual literacy in 1969. He stated it as “a vision competencies group comprises of human beings, who are able to develop, by observing and combining the experiences simultaneously and so the development of these capabilities is essential to ordinary people” (p. 27). Visual literacy is defined in different ways since Deb’s time. For example in 1973, Case-Gant defined it as a skill group which makes learner enable to compose, understand and read it in their personal relationships. Furthermore, another scholar described it as a skill to think and comprehend the images for study (Hortin. 1980). Besides, visual literacy is explained as “having the ability to read and write the visual information, visual learning, speculating and solving problems in a visual environment” (Gray, 2008). In addition, it is specified as the person’s capability to understand the visualized information and photos thus use them for more efficient communication (Burmark, 2002).

Even though scientists defined visual literacy in different ways, the similarities in the explanations include thinking and learning through illustrations, making it meaningful using visualized messages and use them in communications (Kellner, 2008).

Consequently, visual literacy has a significant effect in the modern world, particularly in the educational aspects. The intensity of learners and teachers to the visualized knowledge and data are growing due to its exclusive characteristics and structures. Moreover, these visualized data are constructed into different forms such as educational posters, animations, videos, concept map, and graphics; hence, it gained the significant attractions of educators and learners, due to its positive impacts on learning skills, memory retention, engagement, motivation, and participation throughout the study.

However, one type of the visualized data that has recently gained popularity in different fields of education is infographics (Akinoglu & Yasar, 2007; Smaldino, et al, 2008; Güler, 2008; Yeh & Cheng, 2010; Castelyn & Mottart, 2012).

1.2.4. Characteristics of Infographics

Studies demonstrate that the modern technologies utilization in the classroom provide learners with opportunities that make them learn more convenient and faster and so increase their engagement and attraction with a learning environment. Although, nowadays the development of technologies made people have instant and easy access to any data or accurate information they need (Güler, 2008).

There are a valuable and effective resource which can solve this issue is called infographics. For the first time, infographic about the steps of sun rotation is designed and illustrated in a book named “Rosa Ursina Sive Sol” by Christopher Schein in 1626. (Figure 1.1).

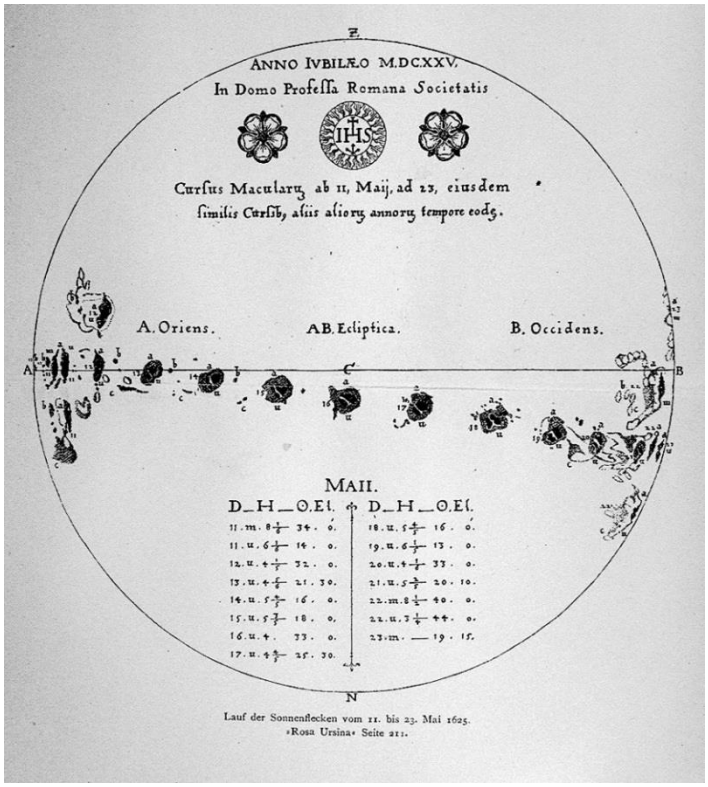

Figure 1. 1 The steps of sun rotation (Sylvester,1878)

Moreover, Peter Sullivan introduced the word “infographic” in 1970-1990s in the newspaper of Sunday Times. He aimed to encourage people to utilize more visualized information like infographics. Likewise, the “graph” demonstrated in the magazine of Nature scientific by James Joseph Sylvester in 1878. The graph illustrated the link between bonds of the chemical and properties of mathematics.

Nonetheless, infographics are not new, and it has been used almost for centuries everywhere, in every subject such as business, new, social media websites and etc; in the form of maps or other illustrations (Marcel, 2014). Likewise, it can also be used in education for learners and teachers in order to deliver information. It has been confirmed that infographics can be utilized to teach non-expert audiences to make decisions depending on their needs (Naparin & Binti Saad, 2017). Furthermore, infographics attract the learners to the visualized way of displaying data including colors and images. It can transfer information about a specific subject more effectively and faster in order to convey information and support conceptual understanding (Oetting, 2015; Smiciklas, 2012).

Although, the criteria is based on the quality of the design considering the Knowledge conversion, choosing the right colors, and tell the story (Ru & Ming, 2014).

There are different types of infographics which can be extensively divided into two types including static graphics and motion graphics. The static graphics contain static description and media that could be printed or distributed and motion graphic shows recorded videos including graphic, data and information designing using motions. However, this model of infographics needs more innovation to show the subject in an attractive and effective way, which by the time is the most commonly used (Shaltout, 2015).

1.3. Infographics in Education

Infographics are a type of educational material which define and demonstrate the complicated subject in a compressed style. Therefore, this helps educators to provide different learning activities such as introduction of lectures and abstraction of the unit which may motivate learners to have more interaction and study the course more (Vanichvasin, 2013).

Alternatively, today learners are beyond the reading of information in order to interpret and comprehend the subject, thus, they can use infographics for better connection with their lesson. The author of a book regarding infographics defined it as a tool which strengthens the understanding level of information, hence enhancing sharing information in diverse digital channels (Smiciklas, 2012).

Moreover, another scholar specified infographics as a communication tool which can be utilized in a course to provide students with discussions, share their ideas with their peers online through social media or in the class time (MacQuarrie, 2012). Besides, studies showed that visual communication tools improve the engagement, collaboration and learners comprehension level considerably (Smiciklas, 2012).

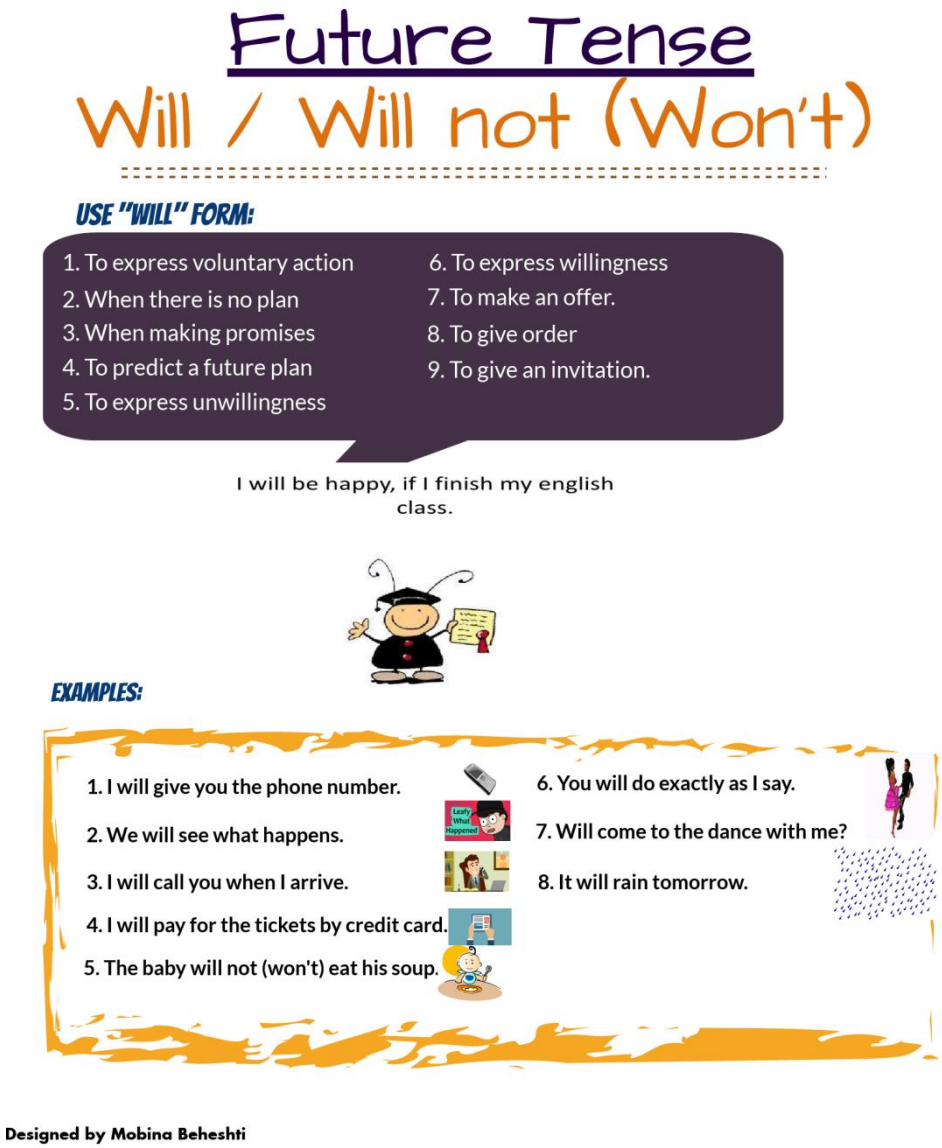

Figure 1.2 Sample instructional infographic

As you can see in Figure 1.2, the graphical means and textual information are used to demonstrate the process of instructional information with the circular pattern (Holsanova, Holmberg, and Holmqvist, 2009).

1.3.1. Characteristics of Flipped Classroom

The flipped classroom or inverted learning approach is an educational strategy, which part or entire instructional materials is delivered online through graphics, audio, e-

books and etc. and the class time is devoted to engaging students in hands-on and collaborative activities (Bishop & Verleger 2013, Županec et al., 2018). However, this method of study is mainly in higher education levels and with undergraduate and post-graduate students and professional levels (Mok, 2014).

The flipped model is an educational strategy which substitutes the traditional lesson-in-class practice for an assignment model with learning activities assigned to be done out of class. Further, flipped classroom or pre-learning teaching approach is becoming more popular due to providing active learning methods in a class where learners engage with meaningful activities and think in order to solve the given problems, so the core elements of the method are learners' activities and engagements throughout instructional process (Prince 2004, p.223).

These days, the majority of the students studying in a flipped classroom method are those in post-secondary level comprising undergraduate, graduate, and professional levels (Mok, 2014). Furthermore, Lage & Platt (2000) are the first scholars who applied the flipped approach in the Economic course. Their study discussed that students benefited from the course better through this method compared to the traditional approach. They enjoyed the hands-on way of learning and the collaborative activities and described it as an interesting and convenient. In a study, which conducted the flipped-classroom method in a calculus course at the University of Michigan, described that instructors helped learners by giving them exercises and asking them to cooperate with their peers to discuss and present their answers. As a result, the research outcome showed that the grades of students in the flipped-classroom have improved doubled compared with the grades of students in the traditional classroom (Aronson et al., 2013).

Furthermore, Kaner and Fiedler (2005) implemented a flipped method in a course of software testing. The course materials provided in an online form and the class time designed for other activities such as presentation, problem-solving and group discussion.

In other research, Day and Foley (2006) applied a flipped classroom method in human and computer interaction course, which is divided into two parts comparing traditional teaching and flipped classroom-teaching approach. They implemented small

scale in a quasi-experimental scheme. As a result, students in the flipped classroom approach section studied and learned better than the traditional method section.

Apart from the studies above, Nat (2015) conducted a study toward using flipped-classroom in the Information Systems (IS) department. The main target of his study is to facilitate engagement in an interactive learning environment as well as engagement for learners. The findings of the research displayed that providing learners with various online materials through flipped-classroom instructional approach had a significant effect on their interaction and engagement.

However, flipped-classroom instructional method could also be utilized in various educational purposes including English language education since it enhances learners' autonomy, motivation by gaining access to materials online, and also providing a flexible learning environment. For instance, a study examined the MOOC-based college English flipped classroom in order to enhance the learners' independent learning ability, communication, and cooperation through the individualized learning environment. The result of the study demonstrated that implementing this educational approach is feasible to be adopted and effectively enhance learners' interaction, communication skills as well as enthusiasm (Feng, 2017).

Furthermore, Zhang & Zhang (2018) carried out a research about how effective English language could be learned through a flipped classroom educational approach for college students in China. The outcome of the study showed that this method could be used as an effective instructional approach in terms of making progress in learning English by catering a rich learning environment and educational resources, as well as the flexibility of time and space.

1.4. Research Problems

Traditional instructional systems are too slow in order to integrate technology for improving learning and teaching in the classroom. This makes students disengage, because they find the content not challenging enough and overwhelming. Since pedagogy is a highly sensitive concern which has been rarely discussed or considered as a top priority, instructional materials and teaching methodology are very critical in terms of improving quality of education for students and their satisfaction overall.

Although learners are grown up together as an integrated society with the emergence of the internet, online services, and social media, there is a long lasting 'disconnect' between teaching methodologies and students with diverse learning styles. Furthermore, new generation of students are no longer the folks our educational system is designed to teach and on the other hand, these students are provided with the similar method of instruction which is last unchanged.

In the current system of education it can be seen that in many educational organizations, teachers are not having adequate time, knowledge or willingness to integrate technology in order to facilitate spaces for students' engagement inside and outside of the class.

According to the reviewed literature of infographics and flipped classroom instructional approach in English education, it is obvious that both methods could be promising tools to help learners in order to learn English better, comprehend the subject more conveniently, and retrieve information from memory faster and so be able to interact with others appropriately. As a result, the proposed study develops a learning solution named as Flipped Classroom Instructional Infographics (FCII) in order to make progress to learning English by providing features such as:

- Fostering learner's autonomy and independence
- Getting to learn the importance, helpfulness, and practicality of infographics
- Providing convenient access to the system through mobile and internet
- Bring more flexibility to learning conditions and styles
- Save class time for better and more practical learning opportunities and practices,
- Provide students with a more fun and exciting environment in order to enhance their motivation for learning
- Obtain help from instructor and peers inside and outside of the class

1.5. Aim of the Study

The purpose of the study is to assess the view and achievements of ESL students in regard to the use of infographics in a flipped classroom learning environment called Flipped classroom instructional infographics (FCII).

1.6. Research Questions

In order to reach the goals above, the questions below are addressed:

I. What are the views of students towards using infographics?
II. What are the views of students in regard to using flipped classroom instructional infographics?
    i. What are the views of students about using flipped classroom instructional infographics according to gender?
    ii. What are the views of students about using flipped classroom instructional infographics according to age?
III. To what extent do flipped classroom instructional infographics affect the students' achievements in the English language course?
IV. What are the students' views about the difference between flipped classroom instructional infographics and the traditional classroom approach?

1.7. Significance of the Study

Today, educators put more efforts to enhance the students' experiences by proving a learning environment which integrated by technology and visuals (International Society for Technology in Education, 2012). Furthermore, the instruction influence the time period the teachers have in the class to effectively engage with the students on a more individualized, personal level that potentially makes the learning process more accessible, especially to the struggling students.

According to recent studies, visuals such as infographics are multimodal and can be used in different ways as interactive teaching tools or can be linked to other teaching approaches such as distance learning, project-based learning, blended learning, or flipped-based learning (Dyjur, 2016).

Moreover, based on the literature review of the flipped classroom approach, it is clear that this method is an applicable instructional approach that helps students learn the course better, comprehend the subject more conveniently, and interact with others appropriately.

Consequently, there are limited studies on how infographics can be integrated with different educational methods, outlining how it can enhance the students' knowledge particularly in English language acquisition. Hence, this study considers students' views about this newly developed learning solution as Flipped Classroom Instructional Infographics (FCII) for making progress to their learning skills by providing features such as: fostering learner's autonomy and independence; Getting to learn the importance, helpfulness, and practicality of infographics; Convenient accessibility to system through

mobile and internet; Bring more flexibility to learning conditions and styles; Save class time for better and more practical learning opportunities and practices; Provide students with a more fun and exciting environment in order to enhance their motivation for learning; Obtaining help from instructor and their peers inside and outside of the class.

1.8 Limitations

The current study is limited to new undergraduate students who registered in the English preparatory school, pre-intermediate class level, spring semester 2017-2018, Eastern Mediterranean University, Cyprus.

1.9. Definitions of Key Terms

- **Infographics:** The infographic is a name which is an integration of two words including information and graphic. It illustrates the visualized data, knowledge or words fast and clearly (Newsom and Haynes, 2004).
- **Flipped Classroom:** The flipped classroom educational approach provide learners with an environment where the lecture time will be held to outside of the class, and the class time will be devoted to do activities comprises doing assignment, homework, and solving problems, under the supervision of the teacher with their peers or individualy (Bergman and Sams, 2007).

Chapter II

LITERATURE REVIEW

2.1. Introduction

Today, teachers need to build up the skill to design an instructional environment which provides learners with a better opportunity to enhance their knowledge, and different alternatives. This is a good approach to expand and combine visual materials in their teachings. The visual literacy skills have a significant role in the toolbox of digital-age instructors (Bergman & Sam, 2012). Moreover, infinite access to huge piles of information and data through the internet and technology makes visual literacy as important as textual literacy. There is an estimated 65% visual learners in the world based on the statistics are from the Social Science Research Network (McCue, 2013). The visual literacy is firstly invented in 1969 by Debes and the study described the term as "a vision competencies group comprises of human beings, who are able to develop, by observing and combining the experiences simultaneously and so the development of these capabilities is essential to ordinary people".

However, since Debes' time, visual literacy is explained and approached in various ways. In one way, visual literacy is set in concept as a collection of skills, enabling individuals to read, interpret, and compose visual messages in their interactions with others (Debes, 1969; Case-Gant, 1973). In another way, a study defined it as the only essential skill for understanding and using pictures as well as providing the ability to think and study through pictures (Hortin, 1980). Likewise, Krauss (2012) indicated that 70% of human's receptors are in the eyes. As a result, it could be claimed that a huge number of learners are benefiting from a visual learning style since they can learn and remember better and more efficiently through visual learning tools.

On the other hand, conducted research is emphasized on the effects of visual tools for the young generations. These tools make learners able to have communication with their peers and educators in order to obtain and share information for future use through their activities in their life (Hattwig et al., 2013).

Further, Aisami (2015) revealed that visual literacy is a collection of learning skills, which visually translate and comprehend the targeted subjects. Scholars, however,

provided different definitions for the term “visual literacy” from different aspects. Yet, the similarities in the descriptions are more or less about making meaning from visualized information, and utilizing images in thinking, learning, and communications. Additionally, in the era of information, visual literacy is a key element for language learners since it is essential to comprehend the visual culture that is taking control of the online world and put in practice in English to a large extent (Matrix & Hodson 2014). Moreover, these visualized data are constructed into different forms such as educational posters, animations, videos, concept map, and graphics; hence, it gained the significant attractions of educators and learners, due to its positive impacts on learning skills, memory retention, engagement, motivation, and participation throughout the study. However, one type of the visualized data that has recently gained popularity in different fields of education is infographics (Akinoglu & Yasar, 2007; Smaldino, Lowther & Russell, 2008; Güler, 2008; Yeh & Cheng, 2010; Castelyn & Mottart, 2012).

2.2. Characteristics of Infographics

The infographic is a name which is an integration of two words including information and graphic, which illustrate the visualized data, knowledge or words fast and clearly (Newsom and Haynes, 2004; Heer et al, 2010). In order to design an infographic, the steps of information gathering design and data visualization should be taken. Afterward, the infographic is ready to be shared with the public through social networks comprises Twitter, Facebook, Instagram, Pinterest, Google +, Re-edit and etc and hence it introduced to everyone and becomes popular as static graphical image or a simple interface of a web in social media, and covers any number of subjects. (Ru and Ming, 2014).

According to Islamoglu et al. (2015), infographics are a promising tool since they improve the comprehension of information, concepts, ideas, and enhance learners’ ability to develop their ideas in an organized way. Hence, infographics contribute to better skills of critical thinking and finally boosts learners’ memory retention and easy recall of information. In addition, infographics are defined as an educational source that interprets the subject into a unique and attractive story form, containing an introduction, key content and conclusion sections (Krum, 2013; Bradshaw & Porter, 2017).

Moreover, Fowler (2015) described infographics as a visual representation or a poster, which contains visual information on a specific topic. Thus, they are believed to have promising results when incorporated in different educational settings and so enhance students' experience in learning. The following information explains different types of infographics (Fowler, 2015):

Flowchart: In this model, the learner can decide on the branch.

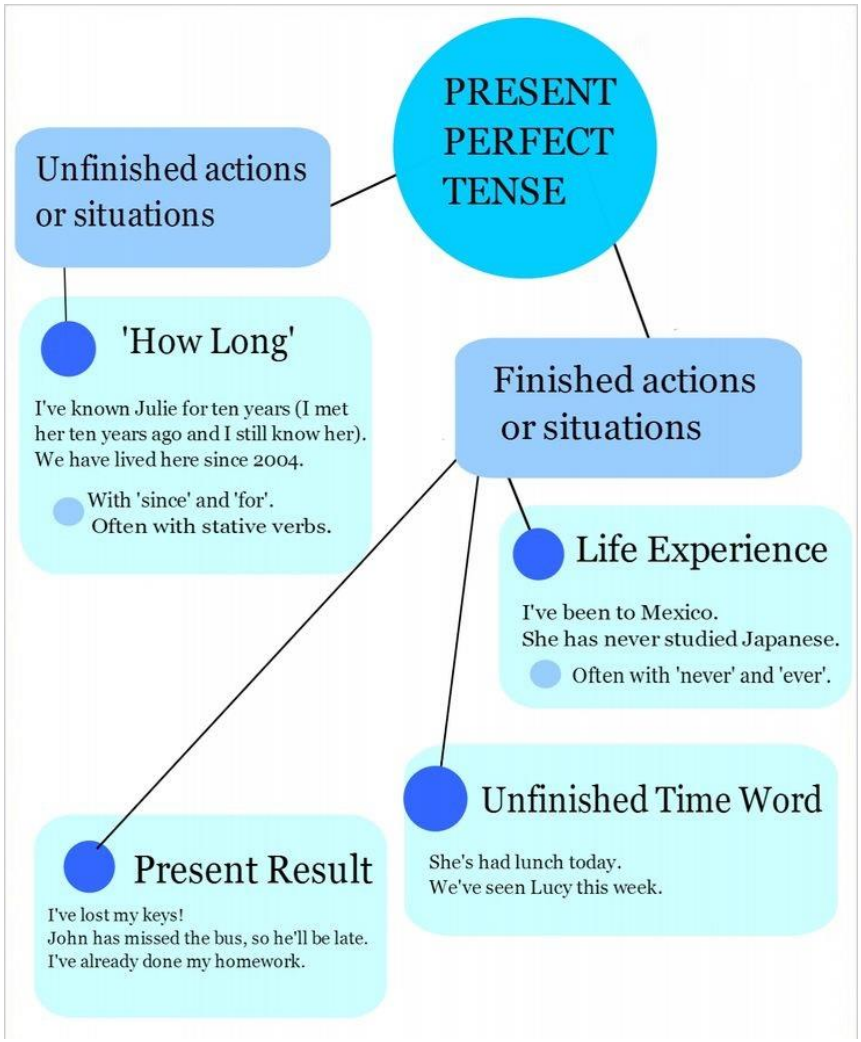

Figure 2. 1 Sample flowchart infographics

Timeline: This method is used in order to illustrate chronological data.

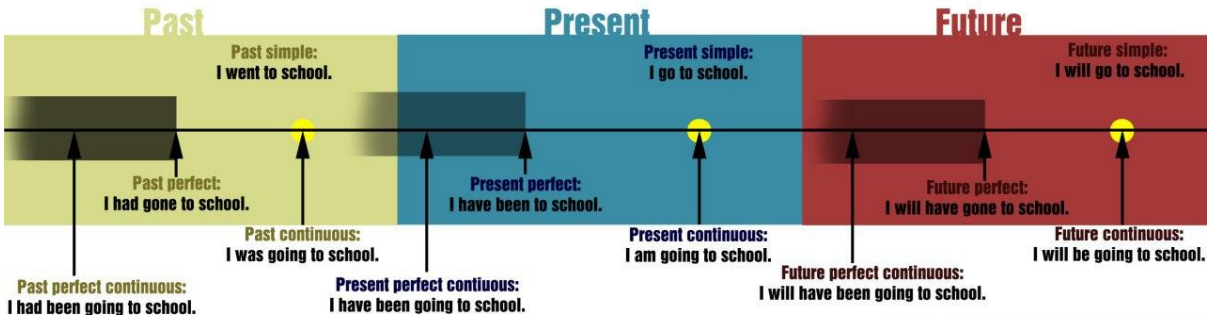

Figure 2. 2 Sample of timeline infographic (Retrieved from englishlessonbrighton.co.uk)

Process: The steps or stages that should be followed in order to get/make something that contains bullet points or numbers.

Narrative: This type comprises various contents that demonstrate a story rather than visual content only.

Combination: This method is used in order to comprise two or more categories of infographics.

Image-based: This method is used in order to utilize a graphics or image along with text to assist defines something.

Video-based: This type of infographic is a combination of animated images, graphical text, which contain a voice over it in order to make the video more comprehendible, memorable and to highlight the main points more clear.

Game-based: Since learning through the game is an effective method of learning, game-based infographics are also could help learners to understand the subjects, particularly complex ones in a fun way. This game could be crossword game, game board, puzzle and etc.

Comparison: This method is used in order to compare two or more object/subject

Figure 2. 3 Sample image-based infographics

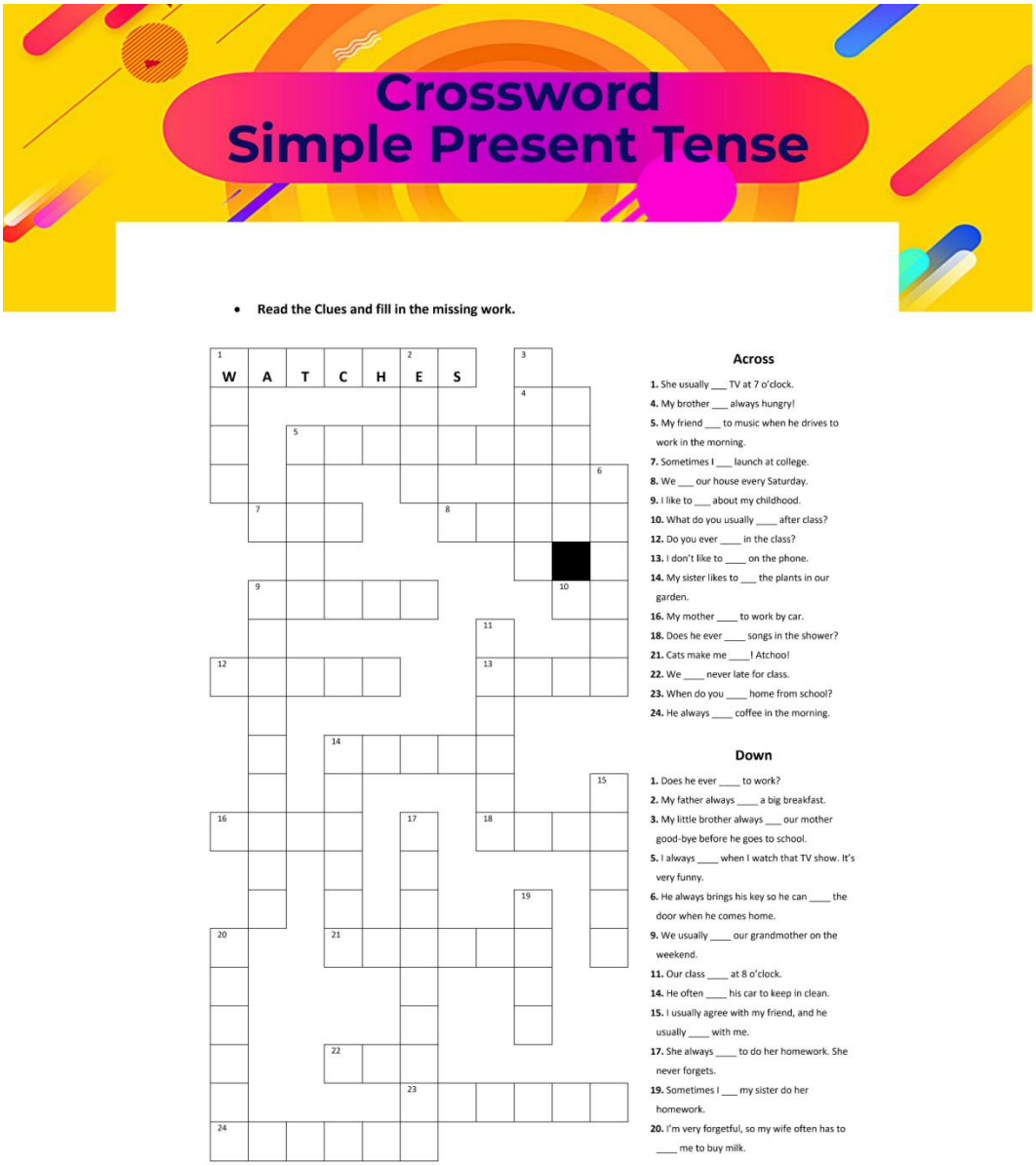

Figure 2. 4 Example of crossword game infographics

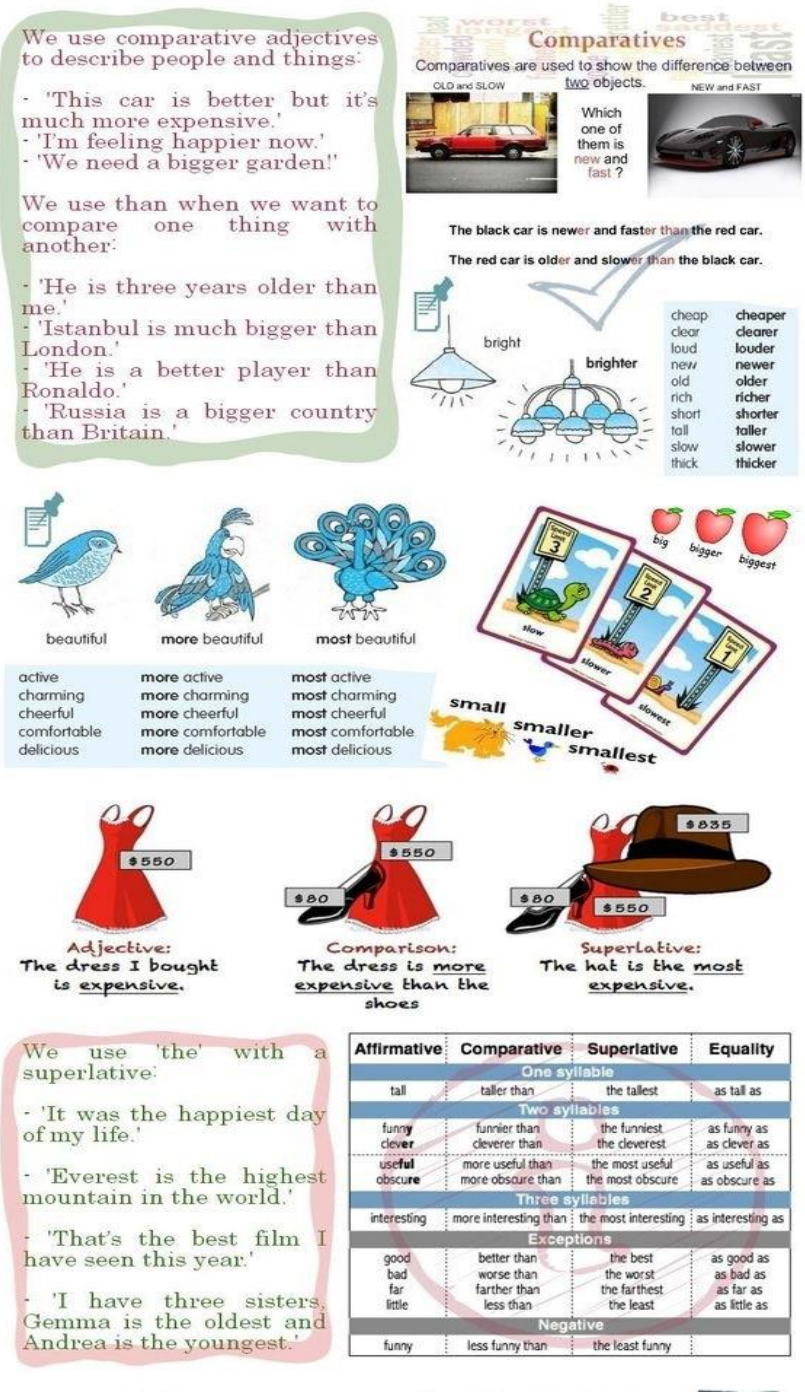

Figure 2.5 Example of comparison infographics

Further, the purpose of the infographic comprises three parts including public speaking to encourage, and inform people gaining the attraction of people; therefore, they can understand the necessity of infographic (Krum, 2013).

At this stage, one of the critical questions could be: would it be feasible to use infographics in all sorts of subjects? The answer would definitely be positive. According to the Lamb and Johnson, an infographic is an effective tool which visualizes a story and its process in order to define the complex information in a shortest and clear way, thus any subject could be designed through infographics (Lamb & Johnson, 2014).

Besides, infographics are proved as a promising tool in education which is not only used in education but also in other sources like newspapers since it explained the subject in a shortest and clear way. Likewise, infographics have some pros including improving the comprehension of information, enhancing the learners' ability to understand the complex subjects easily, information recall and retention (The Institute for the Advancement of Research in Education, 2003).

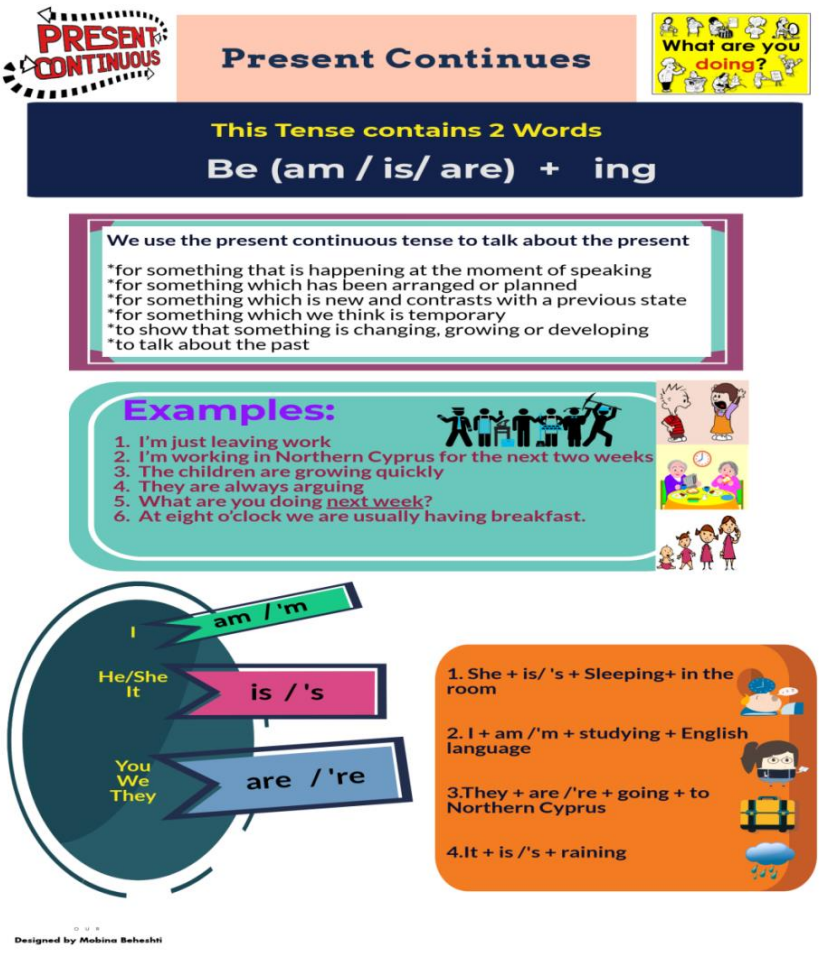

Figure 2. 6 Sample pedagogical infographics for the English language

It is very significant to recognize what type of technology, what method of instruction and for what purpose to use, in order to be more effective for learners. According to the latest researches, Bloom's taxonomy features aims to select an assistive educational approach by utilization of visualized technology (Abcouwer and Smit, 2012). Moreover, infographics could be utilized in various educational purposes since it provides comprehensive information in any field by showing the relationship among different concepts, transferring event or process, present the content of the subject and summarize the learned subjects (Holsanova, et al., 2009; Meeusah & Tangkijviwat, 2013).

Furthermore, Schulten (2012) stated that infographics could save students time to study and memorize uncountable pages of data in science or history books. Likewise, Vanichvasin (2013) carried out a study about the effects of using infographics as a practical communication tool for business undergraduate students. The study concluded that infographics had a positive influence on students' learning quality since they could easily improve learners' memory retention and comprehension.

Additionally, Davidson (2014) conducted research about creating an infographics project for a chemistry course. The goal of the study is to engage learners to learn to present their work for their peers in the class and make them learn research method comprise searching for credible sources, filtering information, sorting data, interpretation of findings and the right choice on evidence to offer for supporting the explanation. As a result, the projects pushed learners to work on their digital literacy since they needed to exercise their creativity in designing their own work and thorough consideration of their design elements, which made them use the right combination of data and art and helped them to communicate their points (Davidson, 2014).

Further, Matrix and Hodson (2014) investigated research toward using infographics as a tool of instruction in the online college classroom. They stated the advantages of this approach is to learn and teach and the challenges, which could possibly arise throughout the process of instruction and learning. Moreover, they implemented two case studies, in two different institutions, both at communication department, and applied online and blended form of instructions. As a consequent, the result analysis demonstrated how

graphical research assignment can be incorporated into coursework and how this can encourage and engage learners' visual digital literacies positively.

Besides, another study is examined to present the usefulness of infographics for mathematics and climate course. This research explained how to form and design infographics for undergraduate level of mathematics and climate course. According to the obtained result, students found infographics as a useful method not only in mathematics and climate but also in other natural science such as physics, geography, biology, chemistry and theoretical computer courses (Usenyuk et al, 2015).

In addition, an investigation is carried out in Malaysia in order to teach a science course for undergraduate students. This study required pre-service teachers to create infographics related to the target subjects individually and afterward examined the learners' views through qualitative research approach. The result of the research showed that pre-service educators had positive perspectives on using infographics and engaging technology into education. Likewise, the learners' views displayed that infographics enhanced their engagement to learn better through technology (Fadzil, 2018).

Moreover, some scientists carried out research in order to explain the usefulness of infographics as a visualization method in instruction. The study conducted by an undergraduate program of Knowledge Management & Organization (third year) and Business Information Systems (second year). The learners required to create and design an infographic for their assignment. For the duration of the class, information concerning infographics and application software are provided to students. Subsequently, the student's design is evaluated by expert teachers. However, the expected outcome is not acquired. Learners deliberately did not utilize the model so could not receive the different outcome as an effective method. Furthermore, the researchers stated that based on their assumption if the method could be applied elsewhere it would get the steep change and effectiveness (Abcouwer and Smit, 2012).

Furthermore, another study shows the usefulness of using infographics for mathematics and climate course. The study explained how to form and design an infographic for undergraduate level of mathematics and climate course. Hence, the visualization of mathematics formula, climate changes can be illustrated by infographics

through the integration of information and images. The outcome of the research presented that students found infographics as a useful instrument not only in mathematics and climate but also in other natural sciences such as biology, chemistry, geography, physics, and theoretical computer courses (Usenyuk et al, 2015).

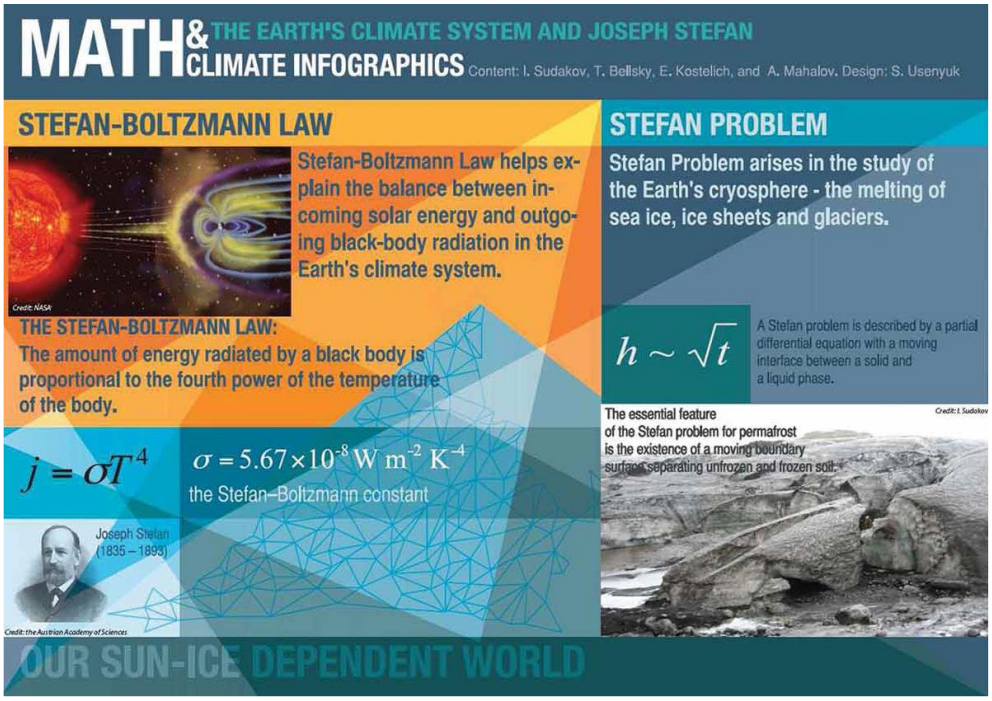

Figure 2. 7 Infographic of Joseph Stefan's contribution to the study of "warm" and "cold" processes in the climate system

Hosni (2016) investigated a study regarding the efficiency of image utilization in English language teaching and its effect on understanding the course content along with recalling the information. This study implemented at the language center of Qaboos University in the foundation program of the English language (FPEL). The research outcome shows that by applying two tests on randomly selected control and experimental groups, use of infographics in classes improves the learners' understanding of what is educated in the class and enhances their capability since the initial weeks this method applied.

Furthermore, other scientists found out that infographics can support and improve the comprehension of reading and writing as well as simplify the complex subjects like history, mathematics, and science while establishing synthesizing skills and critical thinking (Davis & Quinn, 2014).

Additionally, Dur (2014) explained toward the potential development of infographics in instruction, so he concluded that this instrument not only enhances learners' achievements but also develop their life skills, attitudes comprises research, teamwork skills, and systematic thinking. Besides, infographics could be used in another aspect of education containing, hands-on learning, problem-solving, and also improve students' creative thinking and engagement (Davidson, 2014; Meacham, 2015; Islamoglu et al., 2015, p. 35; Karre, 2015). Further studies have admitted the statement of Meacham that infographics could be utilized as the ground for discussion as well as an authentic learnings' culminating experience which makes learners able to understand the subject (Fredrick, 2013; Sudakov, Bellsky, Usenyuk, &Polyakova, 2016).

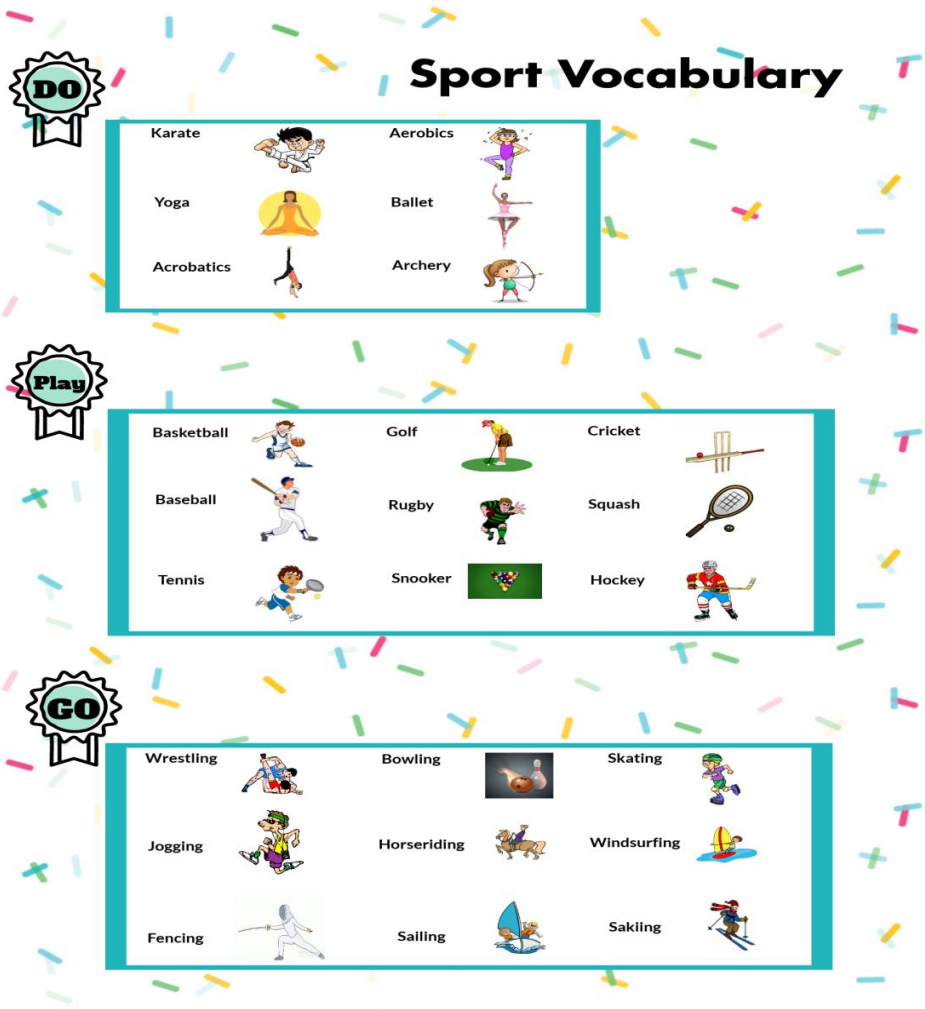

Figure 2.8 Sample vocabulary infographic

2.3. Infographics in English Language Education

In language learning, giving more exposure to learners as many visuals as possible especially in learning vocabulary is a good and practical options teachers have. Generally, learning a language is definitely not an easy task, therefore better effort should put in order to provide input as possible in the form of visual intake that can facilitate learning and make learning more interesting.

According to Davis and Quinn (2014) infographics is an alternative visual tool that can affect students' reading grasp and writing skills while reinforcing critical thinking and synthesizing skills. Further, Cote (2015), incorporating technology into English language educational environments provide a more engaging and dynamic way of learning in order to enhance students' interaction and the utilization of English language in authentic contexts. Furthermore, infographics can be powerful educational material for improving students' learning skills, particularly in reading as well as engaging them in critical analysis through close reading.

Besides, Hosni (2016) investigated a study regarding the efficiency of image utilization in English language teaching and its effect on understanding the course content along with memory retention. The FPEL implemented at the language center of Qaboos University. The research outcome showed that by applying two tests on the randomly selected control group and experimental group, use of infographics in experimental group classes improved the learners' understanding of what is taught in the class and enhanced their capability since the initial weeks of implementation compare to the control group.

Moreover, infographics are used in research in order to teach linguistics to students in Saudi Arabia. The study attempted to evaluate the impacts of infographics on the students' views. The results indicated that the majority of the learners had positive views about using infographics in learning language regardless of their poor familiarity with this source at the beginning of the class (Dahmash et al., 2017). Additionally, another study is carried out in order to find out how the students' performance could be affected by using visual aids and technology for learning grammar and vocabulary, at a grammar school in Prešov, Slovakia. Grammar schools are very common in Slovakia. The study is implemented for 8th-grade students and the result indicated that the visual materials used

in teaching the grammar and vocabulary, had positively influenced the learners' learning skills (Adriana, 2017).

Likewise, there are several infographics available online for ESL teachers to utilize in the classroom. For instance, in the course of English Academic for Purposes (EPA), in order to understand the technical terms and complicated content, students need to use infographics. Thus, there are many Web 2.0 tools available for teachers for designing and creating customized infographics (Hosni, 2016).

As stated by Clark (2014), "Since I don't suggest everyone should drop the idea of a traditional syllabus, nearly any course can benefit from a simplified visual overview that quickly gives students a sense of what will happen during the semester" (para.2). Hence, learners can comprehend the concept of assignments and other contents of the lesson better when information is visualized by using a simple language.

Additionally, a study is conducted in Iran in order to examine the impact of infographics for EFL students in grammar class. The instruction is designed in two different sections, one using infographics and the other through the traditional method of instruction. The result of the study showed that infographics affect learners' knowledge of English grammar in an affirmative way (Neda Rezaei & Sima Sayadian, 2015).

According to the previous study, it could be claimed that infographics have been used as an effective instrument to teach English grammar to students at any level (Al Hosni, 2016; Alotiabi, 2016; Rezaei&Sayadian, 2015; Vanichvasin, 2013).

Another study is carried out by Dahmash et al. (2017) toward using infographics on linguistics and semantics. They aimed to assess the influence of this instrument on learners' views, and also assess the cons and pros of it. The outcome of the study showed that students are positive about the influence of infographics on their learning even though a great number of them are not familiar with it at first. (Dahmash, Al-Hamid and Alrajhi, 2017).

According to the previous studies, it is revealed that infographics are multi-modal and can be used in different ways as interactive teaching tools as well as be linked to other teaching approaches such as distance learning, project-based learning, blended learning etc

(Dyjur, 2016). Besides, there may be very limited studies on how infographics can be used in an instructional approach and optimized way to enhance learning skills, motivation and engagement. The proposed study is designed to utilize infographics into a flipped classroom instructional environment in order to increase learners' engagement, learning skills, motivation as well as foster their autonomy from teachers and course books for the English language classroom.

2.4. Flipped Classroom Characteristics

The flipped classroom, or inverted learning approach, is an educational strategy, in which a part or the entire instructional materials are delivered online through graphics, audio, e-books, etc. In this approach, the class sessions are devoted to make the students engage in hands-on and collaborative activities (Županec et al., 2018). However, this method of study is mainly in higher education levels and with undergraduate and post-graduate students and professional levels (Mok, 2014). Figure 2.9 below demonstrates the basic steps in order to design a flipped classroom method.

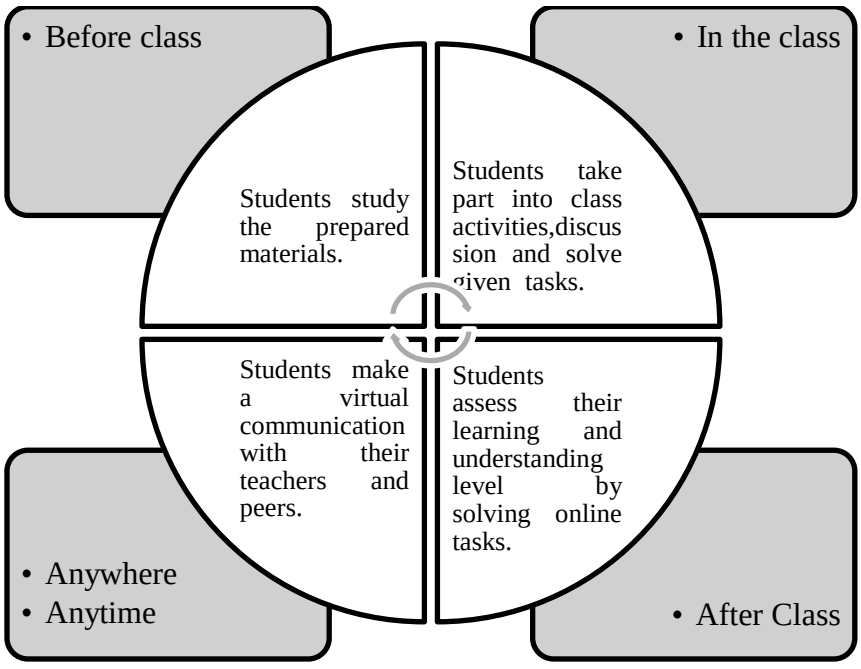

Figure 2. 9 A Flipped Classroom Approach Design

A report has been received from students that they are in favor of the flipped learning environment. It has been observed that graduate students had more positive attitudes regarding peer cooperation in the flipped classroom approach and also they are more confident as they are more likely to take possession of their learning (Strayer, 2012).

Lage & Platt (2000) are the first scholars who applied the flipped approach in the Economic course. Their study discussed that students benefited from the course better through this method compared to the traditional approach. They enjoyed the hands-on way of learning and the collaborative activities and described it as an interesting and convenient. In a study, which conducted the flipped-classroom method in a calculus course at the University of Michigan, the researchers described that the instructors helped learners by giving exercises and asked them to work with their peers to discuss and present their answers. As a result, the research outcome showed that the grades of students in the flipped-classroom have exhibited a double improvement compared with the grades of the students in the traditional classroom (Aronson et al., 2013).

Furthermore, Kaner and Fiedler (2005) implemented the flipped method in a course of software testing. The course materials provided in an online form and the class time designed for other activities such as presentation, problem-solving and group discussion. Besides, the flipped classroom is a student-centered method, which provides learners with better learning opportunities in a more flexible environment, and the teachers' role is changing to an organizer, manager or facilitator. In contrary, the traditional classroom is a teacher-centered model, which the role of the teacher is to deliver the knowledge through direct instruction (Hamdan et al., 2013). As a result, the flipped classroom can provide students with an active learning environment and make them achieve a more active role throughout their education.

Additionally, in theory, this method allows for better management of cognitive load while enhancing motivation, learning autonomy, and learning results (Chao, Chen, & Chuang, 2015; Enfield, 2013; Sergis, Sampson, & Pelliccione, 2018; Clark, Nguyen, & Sweller, 2005).

However, these definitions are incomplete since the flipped classroom is mainly comprehended as delivering their video lectures to support the instruction of the students

before the class time. The key to flipping the classroom successfully is not about using technology to record videos by educational contents, students should be provided with various visualized activities and learning materials. Further, the technology used in the language learning in the class time, lies in software, hardware as well as humanware to plan, design and implement a variety of effective instructional activities, discussion, online assignment (Ruddick, 2012) and quizzes (Zappe et al., 2009) and thus promote more meaningful learning (Rajesh, 2015).

Likewise, the flipped classroom instructional method can be utilized in various educational fields including Business (Cohen and Sander, 2014), Economics (Norman and Wills, 2015), Engineering (Karabulut-Ilgu, Jaramillo Cherrez, & Jahren, 2018), Statistics (Strayer, 2012), Mathematics (Lo, Hew, & Chen, 2017), Health and Sciences (Hew & Lo, 2018), and particularly English language education (Baranovic, 2013; Snowden, 2012; Santikarn and Wichadee, 2018; Basal, 2015; Lyddon, 2015; Mohan, 2018;) , as it enhances learners' autonomy and motivation by allowing them to gain access to materials online and also by providing a flexible learning environment (Lee, 2018; Chang, et al., 2018; Mohan, 2018; Abdelrahman et al., 2017; Guo, 2017; Li et al., 2017; Basal, 2015; Lyddon, 2015; Egbert et al., 2015).

Moreover, Nat (2015) conducted a study toward using flipped-classroom in the Information Systems (IS) department. The main target of the study is to facilitate engagement in an interactive learning environment as well as engagement for learners. The findings of the research demonstrated that providing learners with various online learning materials particularly visualized materials through a flipped-classroom instructional approach had a significant effect on their interaction and engagement.

Besides, a study that examined the MOOC-based college English flipped classroom revealed that implementing this educational approach is feasible and effectively enhance learners' interaction, communication skills, and enthusiasm (Feng, 2017). There are a variety of models for the implementation of the flipped-classroom approach (Tucker, 2012). Accordingly, the research review shows that nowadays, this method of teaching is in a stage of motivation and the students believed that "doing" is more significant than "knowing", so learning is a process of "trial and error" (Frand, 2000).

However, flipped-classroom instructional method could also be utilized in various educational purposes including English language education since it enhances learners' autonomy, motivation by gaining access to materials online, and also providing a flexible learning environment. For instance, a study examined the MOOC-based college English flipped classroom in order to enhance the learners' independent learning ability, communication, and cooperation through the individualized learning environment. The result of the study revealed that implementing this educational approach is feasible to be adopted and effectively enhance learners' interaction, communication skills as well as enthusiasm (Feng, 2017).

Another study is carried out implementing flipped classroom for prospective English teachers in order to assess their views. The study used a qualitative research design for data collection. Through data analysis, the results indicated that pre-service teachers had positive views regarding the flipped classroom instructional method. Moreover, the study considered this method very beneficial according to the content analysis of the answers which included preparation of learners to the advanced level, studying at their own pace, solving the issue about the restrictions of class time, and enhancing the contribution in the classroom (Basal, 2015). In addition, according to the recent studies, flipped classroom instructional approach can help learners' meaningful and active learning through making social skills in interaction and activities in group with the technology integration (Strayer, 2007; Woo & Reeves, 2007).

Consequently, studies prove learning environment which is integrated by social interaction and technology is more effective than traditional learning. Students in the traditional learning environment only have physical interaction; hence their social interactions will enhance with utilization of technology and media in the instructional activities. Moreover, the utilization of technology helps students to have easy interaction both in-class and outside the class (Shen, 2013).

Furthermore, Zhang & Zhang (2018) carried out a research about how effective English language could be learned through the flipped classroom educational approach for college students in China. The outcome of the study showed that this method could be used as an effective instructional approach in terms of making progress in learning English by

catering a rich learning environment and educational resources, as well as the flexibility of time and space.

In general, recent studies showed positive results regarding flipped classroom, including learners are receiving extra attention from their peers and teachers, being more engaged and alert, able to make more cognitive comments, showing deeper processing and understanding of information, developing more level of discussion and group-based skills, and being able to review the educational materials at any time and place and so improve achievement and satisfaction (Wang, Han, & Yang, 2015; Nawi, 2015; Clark, 2015; Harvey, 2014; Millard, 2014; Mok, 2014; Schwakl, 2013; Baranovic, 2013; Bergman & Sams, 2012; Torkelson, 2012; Pierce & Fox, 2012; Kim, Byun, & Lee, 2012; Ruddick, 2012; Foertsch, et al., 2002; Lage, Platt, & Treglia, 2000).

However, in some other studies, the outcome showed that students are struggling with this method and having low satisfaction due to being required independent on their learning, and difficult adjustment to the teaching approach (Strayer, 2007). Besides, it is important to know that flipped classroom re-conceptualizes how class time is spent and also what and how learners study the course outside of the class? Thus, using innovative instructional materials can make a potential change to the structure of the course and affect the learners' expectations and impact their views (Webb, Doman, & Pusey, 2014; Engin, 2014). As a result, this study is conducted to implement the flipped classroom and using infographics in English language education.

Nevertheless, there are some researches for English education (Baranovic, 2013; Snowden, 2012) and the majority of studies applied flipped classroom for higher education level (Baranovic, 2013; Ruddick, 2012; Pierce & Fox, 2012; Zappe, Leicht, Messner, Litzinger Lee, 2009; Strayer, 2007). The huge number of the studies revealed that flipped classroom enhances achievement and satisfaction (Chen, Wang, & Chen, 2014; Clark, 2013; Baranovic, 2013; Ruddick, 2012; Pierce & Fox, 2012; Torkelson, 2012). In contrast, there are some studies which demonstrate that students' satisfaction is lower with flipped classroom (Johnson & Renner, 2012; Strayer, 2007), hence it needs to carry out more research using different instructional materials while implementing flipped classroom approach for students in different areas, particularly for English education.

Chapter III

METHODOLOGY

3.1. Introduction

In this chapter, it is tried to present comprehensive information about the research design, the data tools, the techniques, the samples, the data collection, and the analysis.

3.2. Research Method

The proposed research is a case study, which benefits from a mixed research method including quantitative (questionnaire) and qualitative (focused-group interview) in order to examine the students' views toward FCII instructional approach through learning the English language. Mixed research method is defined as utilization of multiple data collection tools in the study (Sieber, 1973 ; Brewer and Hunter, 1989). Nowadays mixed research methods are used more, particularly in social science studies. This method is considered as the most effective research approach since the elements of qualitative and quantitative approaches combined together in order to make breadth and depth comprehension and conformation (Muijs, 2004; Böke, 2009; Madrigal and McClain, 2012). Accordingly, in this study an explanatory mixed methods which is developed by Creswell (2008) is used to minimize the weaknesses of the research and make the study results more strong. The Explanatory mixed methods contains two steps, for the first step quantitative data is collected and the second step qualitative data is collected to understand and support the quantitative data analysis result (Creswell & Clark, 2007). Further, the quantitative and qualitative data collection methods are associated with each other and should be accomplished in order and hence create a clear and complete picture of the research area.

3.3. Instructional Design and Implementation Process of Flipped Classroom Instructional Infographics

The implementation process of the FCII learning environment is founded upon the ADDIE educational design model (Analysis, Design, Development, Implementation, and Evaluation) steps. The reason for preferring the ADDIE model is based on the claims of educational designers that this model is the core of educational design in terms of providing simple comprehension, as well as a systematic and adaptable structure (Morrison

et al., 2010; Gustafson & Branch, 2011). Furthermore, several studies are carried out using the ADDIE model in order to design and implement flipped-classroom instructional classrooms and infographics (Ozdamli & Ozdal, 2018; Lee et al., 2017; Bane, 2014). Figure 3.1 illustrates the process of the ADDIE model design for the FCII learning environment.

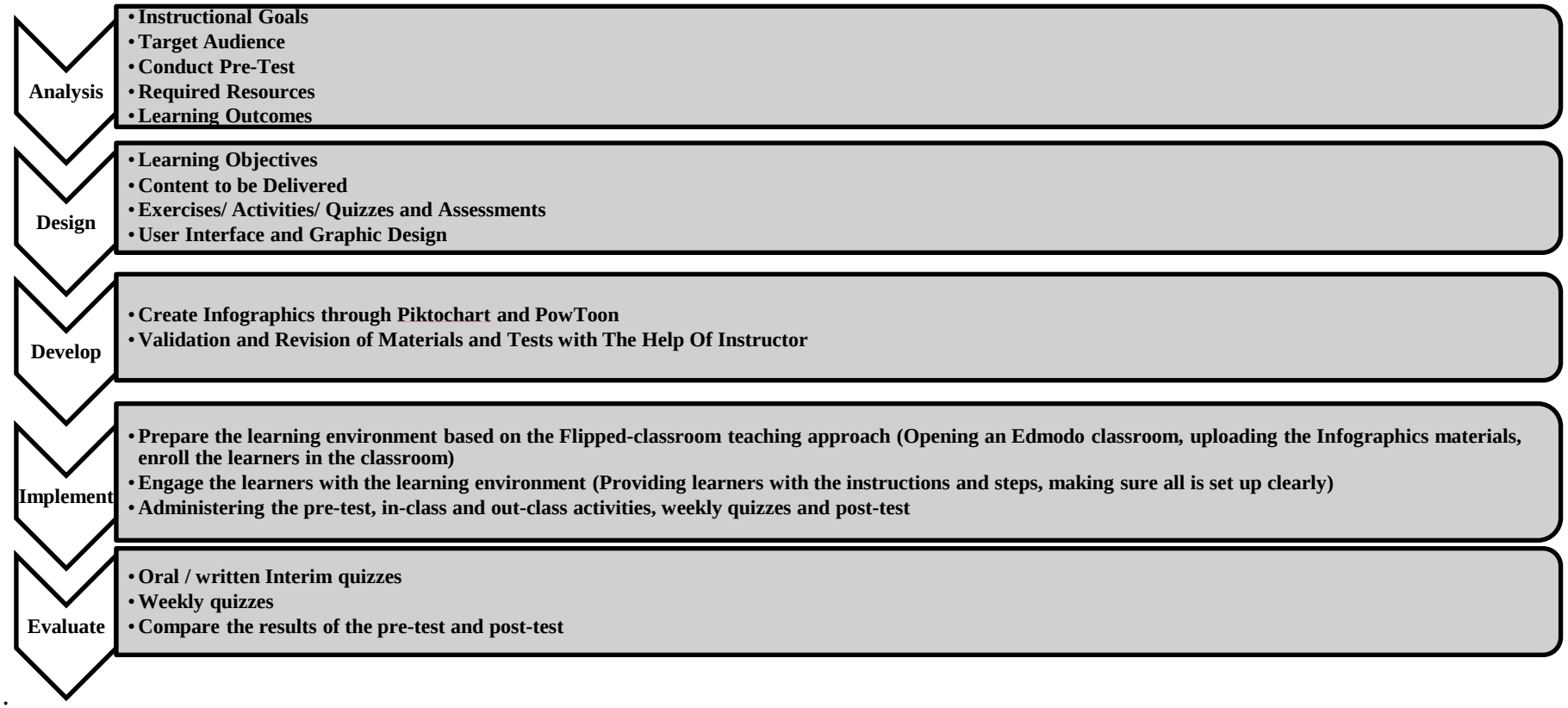

Figure 3. 1 ADDIE model design of FCII

The proposed learning solution, FCII, is implemented in the School of Foreign Language (SFL), for first-year undergraduate students with the pre-intermediate level of English language. By reason of the lack of familiarization of students with topics from the previous semester, using FCII is assumed as a suitable learning method handled by learners as a first-time experience. The participants of the study contained four pre-intermediate level classes, who are divided into the equal class size of two groups of experimental (n=65) and control (n=65) based on their number in the list, odd number (experimental) an even number (control).

In the first stage of this research, a pre-test exam is conducted with both groups to compare their achievements at the end through the post-test exam. Thus, students are required to answer 20 objective Items aligned to the content of their course book. Afterward, learners in the experimental group are required to attend three 45 minutes lessons per week for eight weeks and they are presented with different types of infographics such as image-based infographics, video-based infographics, and game-based infographics. Furthermore, Piktochart and PowToon web-based application software are used by researcher to design a variety of different infographics under the supervision of a teacher.

Additionally, a Learning Management System (LMS) is needed for the implementation of FCII. This research selected Edmodo since it is very user-friendly and similar to the Facebook environment, which means that students can easily familiarize themselves with the system. For instance, they can follow the announcements, submit their assignments and take quizzes online, connect with their peers or teacher, share information or materials, vote in polls and obtain instant feedback and guidance. Figure 3.2 illustrates the environment of Edmodo.

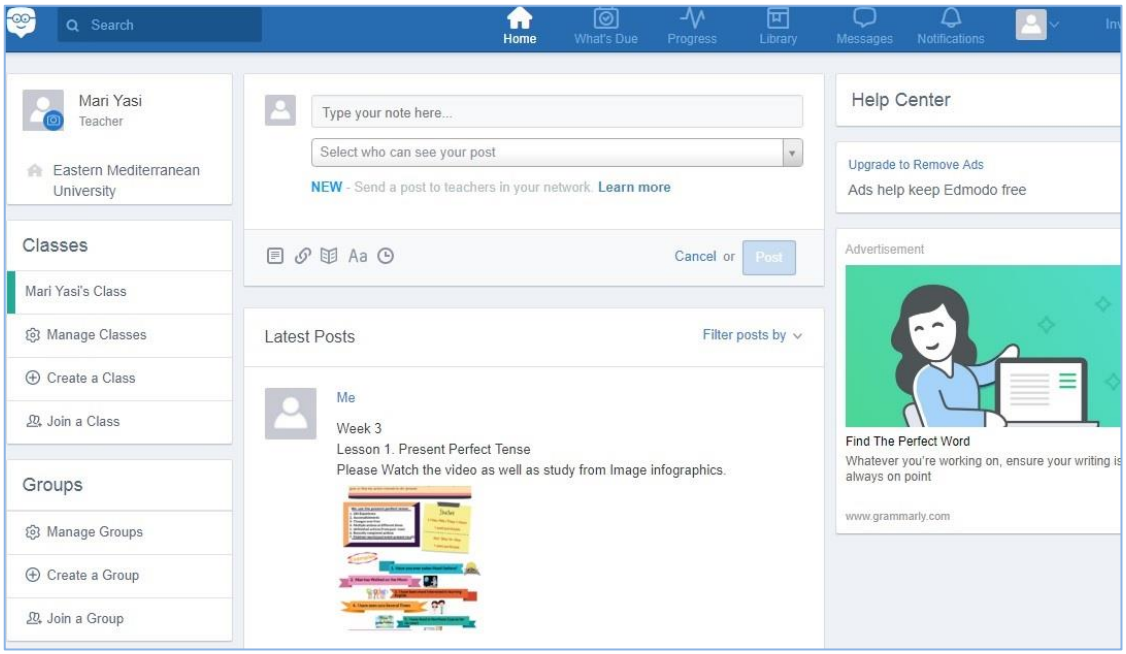

Figure 3. 2 Edmodo learning management system

In the design step, teaching plans and course contents are organized and tailored according to needs analysis. The lesson plans and educational materials including tasks and activities, assignments, discussion topics, and quizzes are uploaded to Edmodo by the instructor. Afterward, learners are granted access to the page and the objectives of the method are explained accordingly.

In the development step, the interim quiz is run after the first week. According to the outcome, necessary revisions are applied to the designs of the infographics as well as how the learning environment of FCII should be improved or re-adjusted. As part of the implementation process, the effectiveness of FCII is considered. Thus, revisions are performed in the actual classroom by training students using activity questions and drawing out peer and group discussions, answering students' queries and resolving any ambiguities they brought into the class or may have raised during activities, providing more authentic and practical situations to use the language taught through infographics, such as game, crossword, puzzles, and game-boards.

For after-class sessions, students have joined the online chat on Edmodo during allocated times to participate in online discussions regarding the subject with their peers

and instructors. Moreover, they are required to take online weekly quizzes as well as submit their assignments through Edmodo. In the evaluation stage, both interim and post-tests are conducted as a final evaluation. Furthermore, throughout the study, student performance is evaluated in and outside of the class through activities, discussions, quizzes, and assignments. Figures 3.3, 3.4, 3.5 and 3.6 show samples of the first week's materials.

However, the main part of the evaluation of FCII comprised pre-test and post-test exams to compare and find students' achievements after course completion. The results of the exam are also shared with the learners to give them a clear understanding of what they had done, how they achieved the results and to help them with self-reflection, which can positively contribute to data collection.

Finally, in the last step of the research, the students took the post-test exam and they are required to answer the questionnaire and focused-group interview Items in order to gather data. The Items in both research methods are aimed at determining "students' views of infographics", "students' views of the FCII learning environment" and "students' academic achievement levels".

Figure 3. 3 Infographics of present simple tense

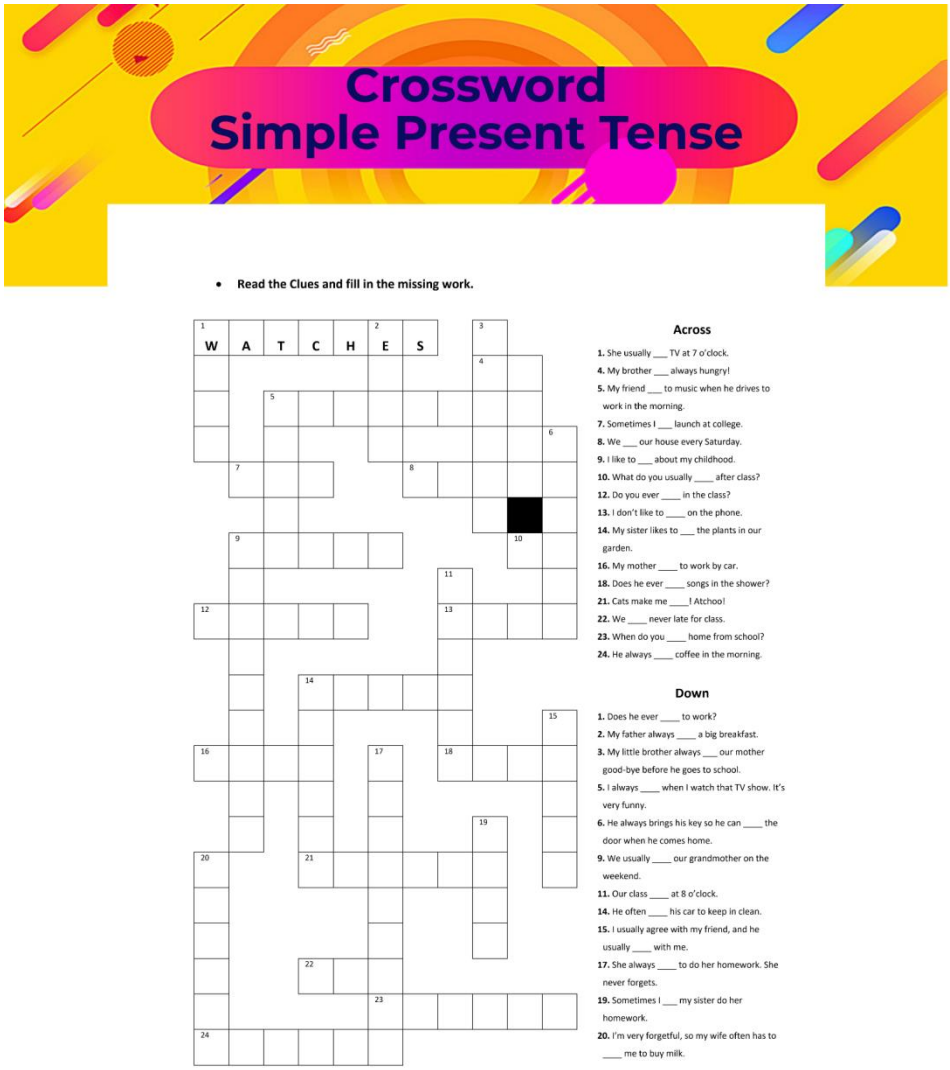

Figure 3. 4 Infographics of present simple tense Crossword

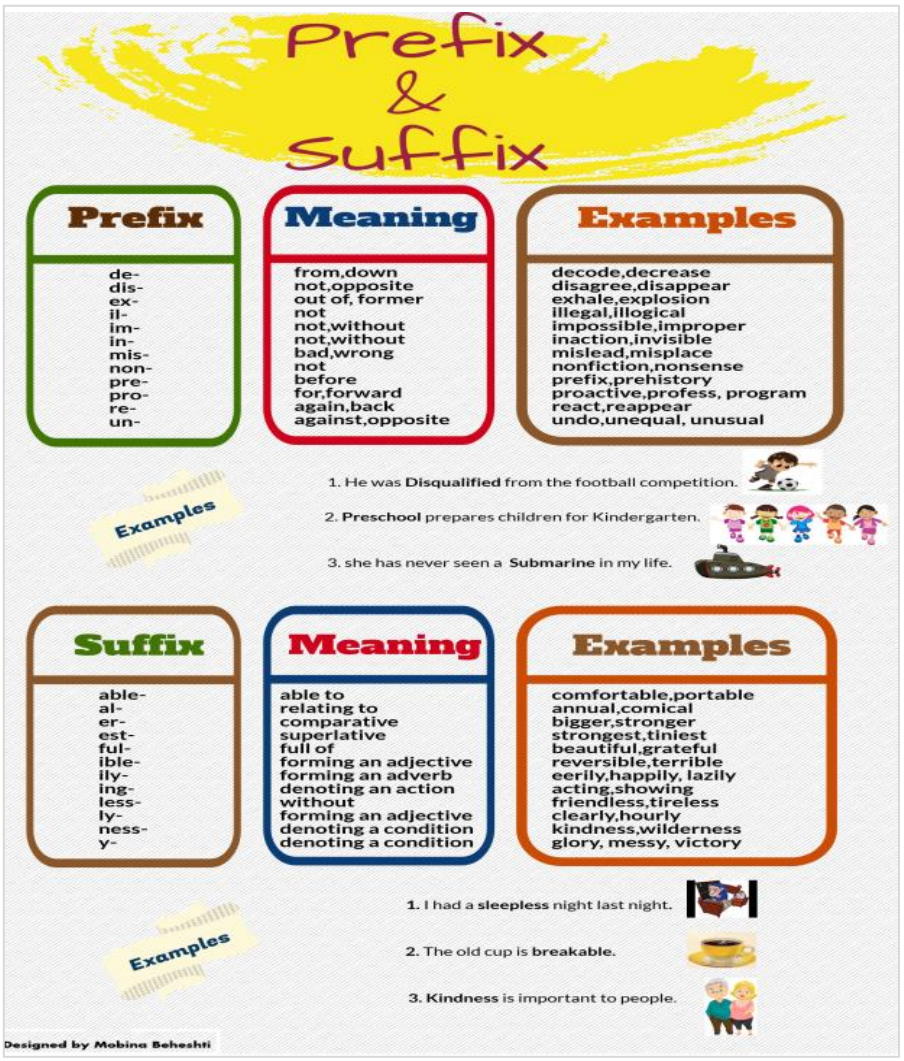

Figure 3. 5 Infographics of prefix and suffix

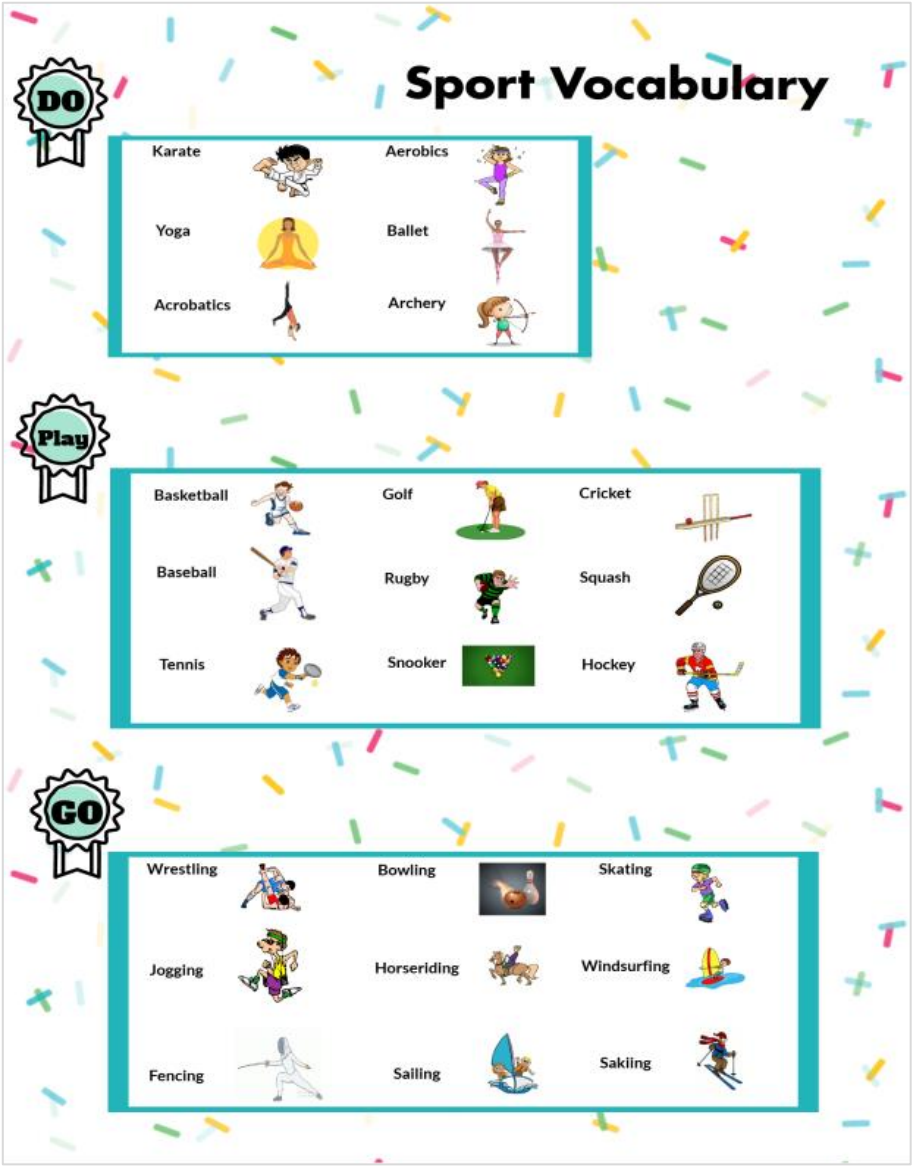

Figure 3. 6 Vocabulary of sport

3.4. Participants

A total number of 130 undergraduate students of the School of Foreign Languages (SFL) at Eastern Mediterranean University in North Cyprus, participated in this research, in fall 2018-2019. All the students had the same level of English knowledge which is pre-intermediate level, however, the researcher of the study divided into equal class size of two groups of experimental (n=65) and control (n=65), based on their number in the list, odd

number (experimental) and even number (control). The demographic information of both groups is illustrated in Table 1.

As it is shown in Table 1, in the experimental group, out of the 65 students 58.5% (n= 38) are females, whereas 41.5% (n=27) are male. Further, in the control group, out of the 65 students, 63.1% (n=41) are females, whereas 36.9% (n=24) of the remaining students are male.

Table 1

Demographic data of the students

		Experimental group		Control Group	
		Frequency	Percent	Frequency	Percent
Gender	Male	27	41.5	24	36.9
	Female	38	58.5	41	63.1
Age	18-20	33	50.8	35	53.8
	21-25	29	44.6	20	30.8
	26 and Above	3	4.6	10	15.4
Faculty	Science	5	7.7	18	27.7
	Engineering	21	32.3	26	40.0
	Art & Humanities	34	52.3	13	20.0
	Medical science	5	7.7	8	12.3
Total		65	100	65	100

Moreover, the students' age range in the study is between 18 to above 26. In the experimental and control groups, in the age range of 18-20, there are 50.8% (n=33) and 53.8% (n=35) participants, in the age range of 21-25 there are 44.6% (n=29) and 30.8% (n=20) participants , and the remaining students, 4.6% (n=3) and 15.4% (n=10) are lies into the age range of 26 and above in the experimental and control groups, respectively.

Furthermore, according to the field of education in the experimental and control groups, it shows that 7.7% (n=5) and 27.7% (n=18) of students are from the faculty of Science 32.3% (n=21) and 40% (n=26) are from faculty of Engineering, 52.3% (n=34) and 20% (n=13) are from the faculty of Art & Humanities, and the remaining students 7.7% (n=5) and 12.3% (n=8) are from Faculty of Medical Sciences in the experimental and control groups respectively.

3.5. Data Collection Tools

The data collection method of this research are questionnaire and a focused-group interview. Further, the queries of both data collection tools are designed by researcher of the study. In order to design a valid queries, a researcher must consider in detail the literature review and information obtained from former studies to draw out data, which should be in conjunction with the research questions (Anderson, 2004). The queries of the data collections tools are designed based on the recent studies questionnaires and interviews which had a high level of internal validity as well as conducting research about flipped-classroom and infographics.

3.6. Questionnaire

The questionnaire of the study contains three parts; while in the first part Items about demographic information (such as gender, age, and faculty) are contained, the second part includes Items, (N=21), about "students' views of infographics" and the third part comprises Items, (N=13), about "students' views of the FCII learning environment" and "students' academic achievements level". Moreover, five-point Likert scale (strongly disagree, disagree, neutral, agree, strongly agree) adopted and used for sections two and three of the questionnaire.

3.7. Focused-Group Interview

The second data collection method conducted in this research is focused-group interview. As stated by Arksey and Knight (1999), interview is a powerful method of helping participants to make clear expression based on their perceptions, feelings and comprehension. The researcher asked five open-ended questions from students to describe their views regarding infographics, flipped classroom instructional infographics approach and their achievement levels. The students are divided into different groups of 5, and asked to express their views in their own way which helped them to speak without any limitations, hence this give a high credibility to the researcher. Moreover, the collected data in focused-group interview aimed to strength the validity of the obtained result from the questionnaire.

3.8. Validity and Reliability

In order to make sure that the developed Items in the questionnaire and focused-group interview are related to the research topic, 15 experts in the field of educational sciences are consulted regarding the scope and validation, and also the instructors of the English language course considered the correctness of English language used. Consequently, to finalize the form of the survey, some Items are revised and few Items are deleted, according to the received opinions.

According to Gray (2009), when considering the validity of interviews, they should evaluate what they are intended to evaluate and nothing further. Thus the contents of the queries should be focused on the target of the study. Additionally, considering reliability is the greatest importance that an instrument should measure. It is necessary that interviews be systematized, and the exact queries must be asked in the same order from every participants. The queries of the focused-group interview are mainly focused to answer the research questions of this study.

Further, to evaluate the reliability and validity of the questionnaire, a pilot study is conducted. According to Cohen (2008), the aim of the pilot study is to increase validity and reliability and the practical application of the questionnaire. Further, Walliman (2008) stated that the best approach of pilot study is to examine the questionnaire with people who have relative expertise in the field, to predict any problem or confusion source. The current study conducted a pilot study for the design and completion of the queries. The questionnaire is distributed to 173 students which selected randomly at the SFL as a pre-test group to answer the queries, leading to some Items being revised or eliminated, by which the validity and reliability of the research's data collection tools are determined. The study is focused on receiving accurate results regarding verification; therefore the size of the pre-test group is five times greater than the number of designed Items. Moreover, to measure the scale of reliability, the collected quantitative data are analyzed through Cronbach's alpha. Table 2 shows the reliability results.

Table 2

Reliability Statistics

	Cronbach's Alpha	N of Items
Infographics	.83	21
FCII	.81	13
Total	.89	34

According to Gliem & Gliem (2003), a scale has an acceptable internal consistency when the Cronbach's alphas value is greater than .70. Thus, as illustrated by Table 2, the result of the Cronbach's alpha for students' views of infographics and FCII are .83 and .81 respectively. In Addition, the outcome of the Cronbach's alpha for all the Items is .89, which shows a satisfactory level of reliability for this research.

Table 3

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy			.670
students' views of infographics	Bartlett's Test of Sphericity	Approx. Chi-Square	1724.228
		df	210
		Sig.	.000
Kaiser-Meyer-Olkin Measure of Sampling Adequacy			.699
students' views of flipped classroom instructional infographics	Bartlett's Test of Sphericity	Approx. Chi-Square	303.416
		df	78
		Sig.	.000

Besides, as illustrated in Table 3, the outcome of exploratory and confirmatory factor analysis displayed as .67 for "students' views of infographics" and .68 for "students' views of flipped classroom instructional infographics", which are greater than .5, hence according to the result (.670), the assessment is valid for this study.

3.9. Data Analysis

The quantitative data are analyzed in SPSS 20 and certain values are computed for analysis. This study calculated the descriptive analysis (mean, frequencies, standard deviation) in order to evaluate students' views regarding infographics and FCII.

Moreover, inferential statistical analysis of independent t-test is computed to specify significant differences between male and female views. Furthermore, the Paired sample t-test is conducted to compare the pre-test and post-test exam results of both control group and experimental group and thus find the students' academic achievement levels. Additionally, One-way ANOVA analysis of variance is used for comparing the significant difference of students' views in using the FCII instructional environment according to their age groups (teenagers - adults). Moreover, the collected data in focused-group interview aimed to strength the validity and support the obtained result from the questionnaire.

Chapter IV

FINDINGS AND DISCUSSION

This chapter examined students' views of Flipped Classroom Instructional Infographics (FCII). The outcomes of the quantitative and qualitative Items are illustrated in this chapter in the themes comprises: instructional infographics, flipped classroom instructional infographics and difference between FCII and traditional method of instruction.

4.1. Students' Views of Using Infographics in Education

This section determines the assessment of students' views about studying through infographics. Table 4 identifies the mean of the relevant data and the standard deviation.

Table 4

Students' Views about Learning through Infographics

ITEMS	SD	D	N	A	SA	Mean	Std.Deviation
Item 1	0	3.1	4.1	61.5	30.8	4.12	.65
Item 2	0	0	20	46.2	33.8	4.11	.72
Item 3	0	1.5	21.5	58.5	18.5	3.94	.67
Item 4	0	4.6	43.1	36.9	15.4	3.62	.76
Item 5	3.1	3.1	10.8	56.9	26.9	3.99	.84
Item 6	0	1.5	23.1	49.2	26.2	4.02	.72
Item 7	0	6.2	23.1	40	30.8	3.94	.87
Item 8	0	3.1	13.8	44.6	38.5	4.11	.80
Item 9	0	0	13.8	66.2	20	4.05	.58
Item 10	0	7.7	27.7	40	24.6	3.87	.88
Item 11	0	3.1	24.6	63.1	9.2	3.80	.61
Item 12	0	3.1	36.9	46.2	13.8	3.72	.73
Item 13	0	4.6	30.8	41.5	23.1	3.88	.84
Item 14	0	4.6	23.1	49.2	23.1	3.88	.75
Item 15	0	4.6	33.8	40	21.5	3.78	.81
Item 16	0	1.5	21.5	50.8	26.2	4.02	.75
Item 17	0	0	20	60	20	3.98	.63
Item 18	0	3.1	10.8	63.1	23.1	4.04	.70
Item 19	0	0	18.5	49.2	32.3	4.15	.69
Item 20	0	0	26.2	52.3	21.5	3.96	.66
Item 21	0	3.1	21.5	55.4	20	3.91	.70
Total Average						3.95	.73

As can be seen from Table 6, a great number of students (M=3.95) are quite positive about using infographics in education, since it made easy and gradual progress and

improved their English language knowledge, and the means are high for the entire Items. Furthermore, the overall result represents the effectiveness of educational infographics as a concept simplifying technique. It can be considered as an interesting method that can attract the students' attention much easier and faster. Also, it accents the significance of visual style in education, particularly in English language courses. In addition, the infographic effects on absorbing concentration and attention of students. Besides, the outcome in this study is consistent with studies carried out by Coleman (2010), Hafeth (2013) and Sudakov et al. (2014).

According to the analysis results of Items 1 and 2, a large number of students (M=4.12 and M=4.11) agreed with utilizing infographics in learning English as they create an illustrative structure that motivates them to learn easier and more effectively. Some of the students' quotes regarding related Items are:

> *"I like studying via infographics because they make learning more interesting. Everything is in one picture frame. Indeed, it helps us to remember the words in the shortest time and with less effort."*

> *"Infographics help us to study more conveniently and they are also easily understood, particularly the concepts of complex subjects."*

> *"Understanding and learning English subjects such as grammar and vocabulary via infographics is much easier than studying through traditional materials, which lack visuals."*

As a result, it is evident that providing students with "image", "video" and "game" infographics make learning more "motivating", "attractive" and "easy to study and understand". Furthermore, students help their teammates by addressing the position of an Item in the infographics by explaining the subject using visual Items, which make their activities more effective and more exciting.

Besides, inconsistent with the current study, Shaltout (2015) also indicated that studying through infographics develops knowledge in the minds of learners and makes

them able to study the subject easily and investigating data efficiently. However, another scholar carried out research regarding infographics to find learners' views. There are 64 participants who reported that infographics simplified their education, improved their analysis skills, illustrated concepts' relationships clearly, and thus made their instruction more exciting and effective (Yildirim, 2016).

Moreover, the result of Item 8 and Item 9 showed the students' views of using infographics make them remember the concept more easily and faster. As the mean result, (M=4.11),(M=4.05), a great number of students agreed that using visual literacy increases their skills in memorization, whereas only few numbers are neutral to this Item.

> *"I think the good thing about infographics is that they are actually graphical. I can remember pictures better than letters or numbers. I still find it difficult sometimes to remember the words, but I am sure that the pictures help a lot for remembering them."*

> *"From my point of view, learning through educational infographics is easier and faster. For learning through a lecture such as Pdf or PowerPoint slide, at least we must read until the end and so may understand the subject or not. Infographics by providing visual information make it more convenient and faster to understand the concept. I usually find them easier to follow than pdf texts."*

> *"Infographics are fun and quick. They help me learn a lot of stuff in a short time and in one picture. I find them more efficient than long texts. Books are boring. Pictures are fun."*

> *"I think infographics are good. Reading them is quick. But still, I need practice in remembering and using them."*

As a matter of fact, students looked motivated since they liked to have more infographics in the class and as part of their learning materials. Most of them found infographics quick to read and easy to understand, the two features that can be interpreted

as efficient. Thus, based on the result, using infographics help the learners to remember the contents particularly when students followed by game-like quizzes, which challenged their ability to remember the Items from their visual memory. If they could not remember the word, the picture would be loaded on the whiteboard with the first letter of the word. It is observed that almost every time the picture is there, so the students would recall the Item faster and conveniently. The visual content involved in the recalling of the Item is an effective factor. In addition, the outcome of Item 18, (M=4.04)) indicates that the majority of the participants agreed that they enjoyed learning through educational infographics, however small numbers are neutral and disagreed to this Item. Students' quote regarding this Item is:

> *"I learned enough and I think I do study more. The materials are quite useful and the lecturer is available too. As a student, I needed to take care of my studying and so it is my first experience. However at first, it seems to be difficult, I think it is a good one."*

> *"To me learning English is fun. Infographics just made it more fun. I liked them but I think without them I can still practice and learn."*

> *"It is really fun and exciting. Looking at pictures is interesting. Colors bring a happy mood."*

> *"Working with pictures is a different experience of learning and it is a good one, I really enjoyed while studying."*

According to the statement above, the fun activities and games after their self-study of the infographics, it shows that they mostly enjoyed having the infographics as part of their study materials. Further, most of the students are having fun while being observed in the classroom working with infographics. The idea of taking contents out of the textbook in the form of plain text and mix them with colors and shapes and timelines and pictures gave them a new experience in effective learning. Furthermore, Item 19 proves that a

significant number of students (M=4.15) are affirmative towards infographics and agree that they are strong tools for learning since they present information scientifically and in order. The students' views about the associated Item in the interviews are:

> *"The materials are quite useful and the interesting part of it is that most of the time, there is no need to do a search to obtain further information since information is explained in a well-organized way. "*
>
> *"All types of infographics are perfect, for instance, timeline infographics help us to understand grammar and tenses better and easier. Video infographics help us to learn the concept along with the correct pronunciation better.*
>
> *"To me, studying through infographics is easy and simple and the visuals help us remember the difference easier. Still, we need to do in-class activities and practices to understand them deeply."*

As a result, students enjoy learning English through infographics as it helps them to remember more conveniently. In addition, their views indicated that technology-integrated infographics not only motivate them to study English texts in a more engaging and comprehensible way, but they also improve the educational experience by learning the skill through digital materials. Furthermore, in accord with the result of this Item, Zinonyev (2010), indicated that the visualized information that uses in infographics facilitates analysis of data and thus makes learners able to recall the data given in the content easier. In addition, Shaltout (2015) revealed that studying through infographics in many subjects makes learning much faster, particularly, for those students with no prior knowledge about the subject.

Moreover, research conducted by Pisarenko and Bondarev's (2016), showed that 80% of the participants had positive views about the utilization of infographics throughout the process of education, and they also responded that infographics helped them in the comprehension of complicated information through demonstration of relationships between words and graphics in a brief way. As a result, studying through infographics could be considered as an alternative learning solution to engage and assist students to understand English texts more easily since they included graphics and words to show complicated information clearly and quickly (Davidson, 2014).

Consequently, the students' views indicated that technology-integrated educational infographics not only motivates them to study the English texts in a more engaging way and comprehend the English in an easier way, but also it made a better educational experience by allowing them to exercise their learning skills through games and quizzes using online learning system.

4.2. Students' Views toward Flipped Classroom Instructional Infographics

This section demonstrates the evaluation of students' views of the FCII approach. Table 5 illustrates the standard deviation and the mean of the relevant data.

Table 5

Students' views regarding flipped classroom instructional infographics learning approach

ITEMS	Mean	Std.Deviation
1. Learning English through FCII method is more engaging than the traditional learning approach.	3.56	.80
2. I am more motivated to learn English by FCII method.	3.53	.78
3. The FCII takes less class time to practice English.	3.79	.71
4. I prefer traditional teacher-led educational materials to online materials including infographics in an online format.	2.40	.54
5. I spent less time working on the infographics to practice English compared to traditional methods of learning.	3.82	.63
6. FCII has improved my learning style for practicing English.	3.60	.77
7. More institutions or language schools should use the FCII approach for learning English particularly vocabulary.	3.87	.71
8. Short infographics videos in FCII are more effective than traditional face-to-face lectures.	3.71	.84
9. My experience in this English course has better improved my learning habits than the traditional classroom approach.	3.68	.78
10. For the past few weeks in the class, I communicated a lot with my peers about FCII and what we learned.	3.68	.91
11. The availability of course materials, communication and assessment tools helped me to improve my English skills.	3.92	.70
12. The vocabulary project I have worked on this course can teach me to deal with real-life applications and information handling.	3.65	.93
13. I think learning English through FCII is easier.	3.96	.65

Table 5 above demonstrates the analysis' result of students' views regarding FCII learning environment. According to the outcome of Item 3, (M=3.79), the majority of students agree that learning through the FCII approach requires less study time as the

subjects are defined by visuals. The quotations below show some of the students' comments regarding the related Item:

> *"FCII method of learning enables us to discuss with our teacher directly online, at a specified time, while studying the subject; therefore, we can follow the tasks and solve the questions faster."*
>
> *"I like the learning environment of FCII; it is a good method to have as a part of the class since we learn complicated subjects quicker."*

Obviously, in the beginning, introducing FCII method is a bit challenging; some students preferred to do everything in class and have their time for themselves rather than spend it on lessons and virtual classrooms at home. On the other side, there are huge numbers of students who are very willing to use Edmodo online learning system and technology in order to interact with their teacher and peers outside the classroom. The analysis of Item 7 indicates that most of the students (M=3.87) support the idea of using FCII in other institutions or subjects. The students' quotes are:

> *"However, at first, this method is hard to get used to, a good thing about it is that you can follow the class at home and have more chance to study the provided materials. Accordingly, in class, we can have more time for discussion, activity, and practice as we had already studied at home and are ready. Therefore, I definitely recommend using this method in other language schools and even other subjects."*
>
> *"I think if someone is not able to learn a subject in the class with the teacher, then they would not have the chance to learn outside the class without a teacher either. It is a good experience for us to rely more on the provided materials to learn. Thus, I think it would be a great idea if other teachers give this chance to their students and provide the FCII learning environment for them."*
>
> *"I didn't have a problem with this method, and I really enjoyed it, Also, I think this method can be useful for other subjects like mathematics, which contains hard subjects and takes time to learn."*

As mentioned, introducing the method is a bit of a challenge because students could not get the idea of why they had to use the computer and the Internet for accessing the infographics and why they could not just have them printed out. Hence, there is a discussion about how technology makes learning flexible and is a means to digitalize the materials and use less paper and ink to be more environment-friendly. The concept needed time to sink in and they slowly started to get the point of it all. Eventually, everything is clear and they accepted it.

Furthermore, the study of Hung (2015) is compatible with this Item, she illustrated that learning through flipped classroom is more effective than a non-flipped classroom in English Language education as students are provided with the materials before the class time and accordingly, in the class time, they have more time for activity and discussion. In the same manner, other scholars noticed that flipping pedagogy is so impressive, this is worth the remarkable investment of the faculty time and effort compared to the non-flipped classroom. Apart from this, learning through infographics which are used as an alternative educational material for this study, engages and facilitates students to comprehend the English language texts easier as they contained words along with graphics in order to display complex information quickly and clearly (Davidson, 2014).

Moreover, the analysis of students' views in Item 11 shows that they (M=3.92) think the availability and flexible accessibility make studying more convenient since they can learn at their own pace, anytime, anywhere and are able to review the materials as much as they need. In this regard, some of their views are:

> *"Everything is accessible while using this method such as educational materials, the teacher, and our peers via Edmodo. Our teacher also sends us further materials if we need. There are many things out there that help us to learn better."*
>
> *"I feel safe and relaxed while studying and answering the given assignments since I can review the materials without any limitation and at any time and any place."*
>
> *"I can look at the page and use it for learning and chatting with friends and the teacher when I have a question or something to share."*

Consistent with Item11, Nouri (2016) reported in his study that students generally appreciated the flipped classroom instructional approach which is applied to last year course of research method. Learners indicated that they had more opportunities to study at their own pace, had more control for their learning and the mobility and flexibility the method provided through video lectures made their learning process less stressful and more engaging.

According to Item 13, although some students disagree that learning through FCII makes their educational experience easier, a remarkable number (M=3.96) agree that this is, in fact, the case. Their quotes about this Item are:

> *"It is a good experience to study before and then share it with your friends as well as group members in the class. We share our ideas about the topic and try to learn from each other, which is very helpful."*

> *"We do many activities with each other in the class which makes learning faster, particularly for complicated subjects. I really enjoy it when we are trying to learn a language together through this method."*

> *"In the class, the teacher divides us into groups to play the game, which creates a sense of competition while learning and also have participation with each other. This can indeed affect our memory retention."*

According to the results, the majority of students like FCII as a new experience of engaging in learning activities. Furthermore, almost all the students confirmed that FCII is a useful method since it enhanced their motivation, made concepts easier to understand, and fast to learn and remember. As far as the study concerns, the students are satisfied with the learning environment in terms of self-learning. Moreover, in some researches like the current study, the limited number of students did not find flipped classroom method motivating and preferred to study through traditional classroom approach and materials due to the lack of in-place lecture (Skamp, Doyle, Evans, Tomas, 2019). However, Carini, Kuh, & Klein, 2006, stated that traditional learning tends to produce a low level of

engagement for learners, and also according to Nguyen activities, traditional learning classes mostly focus on the textbooks and lecture discussions; thus this makes learners be disengaged in their educational activities. As a result, learners who are disengaged in the study will show negative response such as restless, disruptive behavior and boredom (Freeman et al., 2014).

As far as the study considered, the students are happy experiencing the whole learning solution, feeling more in charge of learning and having part of the teaching for themselves. As a matter of fact, some of them found it hard and challenging since they had different personalities and characteristics. However, most of them are excited about technology which can give them so much more than just wasted hours and useless hobbies.

4.2.1. Gender Differences in Students' Views about Studying through Flipped Classroom Instructional Infographics

This part of the research observes if the students' views about education through Flipped Classroom Instructional Infographics (FCII) differs significantly between female and male respondents; independent sample t-test is conducted. The independent sample t-test is a parametric test, which is used to compare the means of two independent groups and indicate the statistical evidence regarding the means of the associated population when there is a considerable difference. Table 6 below demonstrates the result of students' views of FCII queries depending on gender.

Table 6

Students' views toward flipped classroom instructional infographics, depending on the gender

ITEMS		Gender	N	Mean	Std. Deviation	df	t	p
1.	Learning English vocabulary through FCII method is more engaging than traditional	Female	38	3.63	.81	63	1.127	.26
		Male	27	3.41	.74			
2.	I am more motivated to learn English vocabulary by FCII method	Female	38	3.66	.78	63	2.046	.04
		Male	27	3.26	.76			
3.	The FCII takes less class time to practice English vocabulary which is good	Female	38	3.74	.60	63	.236	.81
		Male	27	3.78	.80			
4.	I prefer a traditional teacher-led lesson than online materials and infographics on an online platform	Female	38	3.47	.64	63	1.910	.06
		Male	27	3.15	.71			
5.	I spent less time working on the infographics to practice vocabulary compared to traditional methods of vocabulary learning	Female	38	3.89	.64	63	1.155	.25
		Male	27	3.70	.66			
6.	The FCII has improved my learning style for vocabulary	Female	38	3.71	.61	63	2.099	.04
		Male	27	3.37	.68			
7.	More institutions or language schools should use the FCII approach for learning English and particularly vocabulary	Female	38	4.13	.62	63	3.164	.00
		Male	27	3.59	.74			
8.	Short videos in FCII are more effective than traditional face to face lectures	Female	38	3.79	.87	63	1.100	.27
		Male	27	3.56	.80			
9.	My experience in this section of English course has better improved my learning habits than the traditional classroom approach	Female	38	3.84	.88	63	1.990	.04
		Male	27	3.44	.64			
10.	For the past week in the class, I communicated a lot with my peers about FCII and what we learned	Female	38	3.84	.85	63	2.371	.02
		Male	27	3.30	.99			
11.	The availability of course materials, communication and assessment tools helped me to improve my vocabulary skill	Female	38	4.00	.69	63	1.031	.30
		Male	27	3.81	.73			
12.	The vocabulary project I have worked on this course can teach me to deal with real-life applications and information handling	Female	38	3.76	.63	63	2.320	.02
		Male	27	3.41	.57			
13.	I think learning vocab through FCII is easier than grammar	Female	38	4.00	.73	63	.217	.82
		Male	27	3.96	.58			

According to Table 6, the outcome analysis shows that in Item 2, there is a considerable difference among students' views, as t (128) =3.06, p= .00<0.05. The views are formed upon FCII that makes them more motivated to carry out the study. Therefore, the outcome illustrates that female students (M=3.71) are more motivated to learn English through FCII than male students, (M=3.30). Students' quotes regarding FCII approach:

> *"However, there is a lot of work and coordination to be done; I must say I have obtained a good experience. I think I will not forget the contents I learned via this method as I used to do."*

> *"In my opinion, this method could be used in other subjects since it provides the necessary information for study and most of the time it doesn't make us study further information from any other sources to understand the subject."*

> *"Learning through FCII method is interesting but sometimes I needed instant feedback like direct feedback we receive in the class, particularly while I is studying and couldn't recognize my problem."*

In general, female students have more excitement and motivation over almost everything compared to male students. They are more open to change and new ways of learning and some of them believed it is a good support system but not for learning alone. Further, regarding students' views, it can be said that the FCII method of teaching masters students' skills by making them have collaboration in a group, providing a more flexible model of learning environment. In addition, if students needed any help while studying at their own pace, they are able to ask online from their teachers or peers.

Moreover, Item 4 indicates the students' views of FCII have improved their learning style for vocabulary. According to the t-test analysis result, $t(128) = 3.01$, $p=.003<0.05$, it shows that there is a difference between female and male views. Hence, based on the students' views mean scores, it is indicated that female students, ($M=3.75$), are more satisfied with this approach of instruction since it provides a more convenient style for learning vocabulary in English course than male students ($M=3.40$).

> *"I liked learning words with infographics but I didn't like the grammar infographics. I think for grammar, I definitely need my teacher. I can't learn it alone. It makes me confused".*

During the observation, almost everyone handled the method pretty well. For the majority of the students, it is perfectly fine to study the materials at home independently as

far as they are easy, not confusing and not complex. It gave them the confidence that they could manage to teach themselves and that they do not need a teacher by their side for all times.

In addition, Item 5 shows the result of students' views toward using FCII approach in other educational organizations such as institutes, universities, and colleges. The result analysis is, t (128) = 4.64, p= .00 which is below 0.05; however, there is a slight difference among female students' views (M=4.11) and male students' views (M=3.56), almost all of the students are positive toward this Item.

> *"I found it interesting, hard at times, but generally good. I think it is fine for other people at other levels of education to have this experience."*

> *"If the lessons are easy and the teacher gives us enough explanation, I guess every classroom can use this method. However, I think young students cannot. They should have a teacher. Studying alone at home is good for adults I think. So, I think it is good for universities, but not good for schools."*

The majority of the students are positive about this method being useful for colleges, universities, and thought that adult students have to, at some point, learn to teach themselves and be more dependent on themselves rather than classes, teachers and textbooks. They discussed that in the era of internet and mobile technologies, this method can save a lot of time as well as giving access to so many resources for learning and studying.

As it can be seen in the Item 7 analysis result, there is a remarkable distinction between male and female views, as t (128) =4.33 and p= 0.00<0.05. As a result, most of the female students, (M=3.97), agreed completely that using FCII have made them more engaged and so had more communication with their peers about what they learned, while less male students, (M=3.32), agreed to this question.

> *"We discussed what we learned at home and tried to help each other remember the words and phrases. It is a good practice."*

> *"I liked the chatting on Edmodo page, kept me busy on the page for a couple of hours. Some students did not say anything but some others are there to help, support, and discuss. It is fun."*

> *"I enjoyed the online discussions and chats more that class. We laughed a lot. In addition, the next day in class, we laughed at our chats. I think I made good friends."*

There are activities in class in which students had to discuss what they had learned at home from infographics and how they tried to teach themselves. They had a lot of fun and joyful moments sharing their experiences, which contributed to their peer communication and even though it is not all about English words, it kept them in the talking circle and made them interact.

Moreover, Item 8 shows the students' views regarding practices they have worked on this course in the FCII approach made progress to their learning skills to deal with real-life applications and information handling. As the outcome shows, there is a great difference between male and female views, as $t(128) = 3.50$, $p = .00 < 0.05$, the majority of female students, ($M=3.81$) are agreed that if teachers use infographics as an educational material in the class they will be pushed more to study rather than male students ($M=3.46$).

> *"I am not sure how, but it taught me about so many resources for learning that is out there and I didn't know about."*

> *"Now I know that I can find many things to learn and I am happy that I can help my kids better with their lessons if I find good online materials."*

> *"There are a lot of useful materials online. Many people use them for teaching and learning. It can be about everything. So, internet resources are a good bank of information."*

The reason why female students had a higher rate of agreement could come down to a very simple reason and that is how men and women use the internet resources differently. Among the students observed, females are more interested in educational videos (how-to) on many other different topics like cooking, hairdressing, handicrafts, house designing, etc. whereas most male students spent most of their time playing games and looking at fancy car pictures. This is observed through a class session when students are required to open their social media accounts and share their interests with their peers.

Subsequently, the students' views according to their gender are one of the vital factors regarding the usefulness of a learning environment (Wehrwein, Lujan & DiCarlo, 2007; Huang, Hood & Yoo, 2013; Yau & Cheng, 2012). According to the result of the current study, it can be claimed that the FCII learning solution had more positive impact on the views of female students than male students. In general, female students have more enthusiasm and motivation over almost everything compared to male students.

Further, they are more open to change and new ways of learning and in this study they believed that FCII learning environment masters their skills by making them have collaboration in a group, providing a more flexible model of the learning environment, thus making progress in their learning habit, learning styles and skills. Further, Thompson in his study found out that males are less interested to enroll in the online classroom compared to females. However, another study is conducted by Ugwoke, Edeh, and Ezemma (2018), concerning the effects of the flipped classroom in an accounting course. The outcome showed that female students gained less achievements than male students. Hence, the author interpreted that gender has a considerable impact on the students' achievement for account course using a flipped classroom.

4.2.2. Age Differences in Students' Views about Flipped Classroom Instructional Infographics Approach

To compare the students' views of Flipped Classroom Instructional Infographics (FCII) the one-way ANOVA test applied in different age groups.

Table 7

Descriptive Statistics of students' views of FCII takes less class time to practice and learn

Age	N	Mean	Std. Deviation
18-20	33	4.00	.58
21-25	29	3.55	.68
over 26	3	4.03	.00
Total	65	3.82	.65

Table 8 below shows the students' views level depending on the age:

Table 8

Students' views regarding FCII takes less class time to practice and learn English

Variance Source	Sum of Squares	df	Mean Square	F	P	Significant Difference
Between Groups	3.643	2	1.821			18-20/21-25
Within Groups	24.142	62	.389	4.677	.013	Over26/18-20
Total	27.785	64				Over26-21-25

As can be seen from Table 7 and 8 above, to examine the effect of age on learning through FCII approach the one-way ANOVA test is applied. According to the outcome, there is a significant difference, where $p<.05$ and [$F(2,62)=4.67$, $p=.013$]. Moreover, through a LSD test, the post hoc comparison shows the mean score for the age group over 26 (M=4.03, SD=.00), the age group 21-25, (M=3.55, SD=.686), and the age group 18-20, (M=4.00, SD=.58). As a result, students of age group over 26 compared to other age groups shows more agreement on using FCII than traditional approach due to saving more time for study. Therefore, it could be stated that there exists a meaningful correspondence between age and students' views. The quotes of some students are:

> *"Since a few of us are working out of school and don't have so much time to study, this method is really suitable according to our situation. However, studying and learning in class would be good too."*

"This method boosts our self-confidence because when we go to the class and see that we have already learned everything beforehand, we are able to do the tasks and assignments in the given time faster."

According to the students' views, it is obvious that older students deal with the method more smoothly than younger students, since they are more focused and responsible due to their age. On top of that, it needs time and consistent effort to get the younger students to understand the idea and philosophy behind this method as well as its benefits.

In contrast, a study investigated by Mori et al.in 2016, made a comparison regarding the effects of flipped classroom instructional approach between the first year and second-year students on learning of Kanji characters. The study showed that flipped classroom positively affected their learning speed. The first-year students who are younger learned quicker than the second-year students as they are more interested and motivated to use technology. Furthermore, the result is justified according to the primary challenges the learners confront with the comprehension of the new script.

Table 9

Descriptive Statistics of students' views of the availability of course materials, communication, and assessment tools helped them to improve their vocabulary and grammar skills

Age	N	Mean	Std. Deviation
18-20	33	4.09	.63
21-25	29	3.69	.76
over 26	3	4.33	.57
Total	65	3.92	.71

Table 10 below shows the students' views level depending on the age:

Table 10

Students' views regarding the availability of course materials, communication, and assessment tools helped them to improve their vocabulary and grammar skills

Variance Source	Sum of Squares	df	Mean Square	F	P	Significant Difference
Between Groups	3.015	2	1.507	3.157	.04	18-20/21-25 Over26/21-25
Within Groups	29.601	62	.477			
Total	32.615	129				

Tables 9 and 10 above show which groups differed from each other. The output of ANOVA analysis shows that there exists a statistically meaningful difference ([F (2, 62) = 3.15, p=.04] and p<.05). Thus, the students' age plays counts as an important factor in their views of the availability of course materials, communication, and assessment tools and the ways they can be utilized. Furthermore, according to the Post hoc comparison done by the LSD test and the results of the mean score, the age group over 26 (M= 4.33, SD=0.57) agreed more than other age groups regarding the features of FCII. Some of the students' quotes regarding related Item are:

> *"In my opinion, all the materials and online practices are very beneficial since they are reachable at all times and in any place. Particularly online practices, which are quite practical after studying the subject."*

> *"The best thing is that everything is provided online. This means that we do not need to carry any stuff to school for studying. Instead, we just log into the web page and everything is available for studying, doing revision and practicing unlimitedly."*

> *"We like the tests that are created as infographics. To us, the tests are more focused on challenging our memory retention skills and understanding the concepts."*

As a general idea, all the students agreed that the FCII method provides every necessary service with constant access. Nevertheless, when it comes to the age, on one hand, the younger students found it easier to adapt to new teaching approaches since they have already adopted technology in their lives; on the other hand, the older students found

it more convenient to define responsibilities. According to the results obtained here, self-discipline and a developed sense of responsibility are generally more important factors for consistent learning through flipped approach, thus older students relate more to the FCII. In this sense, younger students require more encouragement and motivation from the teacher.

Furthermore, a study conducted on the impact of the flipped classroom on teaching grammar content through instructional readings and media. The outcome analysis showed that flipped classroom method helped older students more to automatize explicit knowledge, and utilization of instructional readings and videos assisted them to grasp the content and develop a deeper understanding of the complicated contents compare to younger students (Moranski and Kim, 2016).

4.3. The effect of the FCII learning environment on the students' achievements in English language

Tables 11 and 12 illustrate the results of the pre-test and post-test in the experimental group, who are provided with the FCII method of instruction, and the control group, who studied through traditional method of instruction.

Table 11

Comparison result of experimental group on pre-test and post-test

		N	Mean	Std.Deviation	df	t	p
Pair 1	pretest	65	6.85	2.86	64	7.56	.001
	posttest	65	10.75	2.77			

According to Table 11, there is a significant difference in the students' progress after 8 weeks, ($t= 7.56$, $p<.05$), showing that FCII had a positive influence (from $M=6.85$ to $M=10.75$) on the students' achievements in the end of the implementation. Nonetheless, this shows that those students who have experienced the FCII, feel more responsible towards their own learning. This means that they are not only expected to develop rote knowledge to be successful but also critical thinking skills. Hence, this method of advanced preparation makes students more successful throughout their studies.

Table 12

The comparison result of the control group on pre-test and post-test

		N	Mean	Std.Deviation	df	t	p
Pair 1	pretest	65	6.82	2.52	64	.470	.640
	posttest	65	7.25	2.55			

In contrast, in Table 11, according to the result analysis of students' pre-test and post-test in control group who followed by the traditional method of instruction in the school, there is no significant difference in students' result in the end of the course period. Moreover, it is shown that while (M=7.02) resulted for the pre-test, (M=7.25) is gained for the post-test and (p=.640>.05). Therefore, there is no specific progress in students' knowledge of English.

As a consequence, the outcome of the achievements of the current study is in accord with the result of the previous studies which indicated that using infographics affect student' achievements positively. (Davis & Quinn, 2014; Ekachai, & Freberg, 2014; Saurbier, 2014; Fowler, 2015; Rezaei and Sayadian, 2015; Dur, 2014; Karre, 2015; Islamoglu et al., 2015; Gallicano, Gareau, Keegan, & Wang, 2015; Young &Ruediger, 2016; Al Hosni, 2016; Alotiabi, 2016; Yildirim, 2016).

Nevertheless, the result of this study is inconsistent with the outcome of the studies that showed no remarkable difference between learners who used infographics and learners who used mere text (Lyra et al., 2016; Çifçi, 2016). Moreover, the result of the achievements of the research is not in accord with Johnson and Renner (2012) and Mason et al. (2013), as they stated that there is no remarkable difference in learners' achievement in both control and experimental groups. Further, Mason et al. (2013) reported that there is no difference in the perceptions between control and experimental groups. Besides, the result of the majority of previous studies about infographics is different from the current study due to having passive viewers rather than active participants in an active learning environment of a flipped classroom. The active learning environment facilitates students with instant feedback and summarizes and presents important information throughout a coherent and organized educational source of visuals which enhance students' achievements (Gallicano et al., 2014; O'Flaherty and Phillips, 2015).

4.4. Students' Views Regarding Flipped Classroom Instructional Infographics Learning Approach vs. Traditional Learning Approach

As it can be seen in Table 4, Item 1 shows that more than half of the students expressed the opinion that education through FCII is more engaging than the traditional learning classroom, (M=3.56), whereas almost one-third are moderately satisfied and only a limited number preferred to study through the traditional method. Furthermore, Item 4 illustrates the outcome analysis, (M=2.40), of students' views of preferring traditional materials to online materials including infographics and the majority of students, did not prefer to study with traditional materials and favored educational infographics. The students' quotes about these Items are:

> *"We did not have any problems with this method of learning. Instead, we really enjoyed it. It is a novel approach and most of us are interested in new things, particularly when integrated with technology."*

> *"It is great to study in such a learning environment since our teacher taught and explained after uploading everything on Edmodo for studying and practicing. Moreover, we did not need to write a lot in the class as our teacher uploaded all the materials online."*

> *"I prefer to learn inside the classroom with my teacher since I cannot learn things alone. However, technology and online materials are good for support."*

According to the students' views, this is mainly about how learners react to an old instructional approach or whether they are open and confident to try new things. Moreover, trying new things usually requires more effort, practice, and persistence and if an individual does not possess such qualities, any type of change would be a challenge. It is also a matter of preferences, and accordingly, more students liked it and enjoyed the process, whereas some found it challenging.

Besides, in some studies that carried out by Alias and Hafir (2009) and Rassiah et al. (2011), they indicated that due to the lack of facilities, educational development skills, and poor network, traditional learning approach still needs to be used; however, learners need changes in the educational environment and materials. Moreover, as recent studies

demonstrated, learners who are exposed to study through infographics obtained a different result with studying through traditional materials (Gallicano, Ekachai, & Freberg, 2014; Gareau, Keegan, & Wang, 2015; Al Hosni, 2016; Rezaei and Sayadian, 2015; Islamoglu et al., 2015; Karre, 2015; Yildirim, 2016; Young &Ruediger, 2016). Further, the majority of studies showed that not only students but also faculty are positively affected by flipped classroom approach since it increased the enrollment rate than a traditional classroom, enhance the self-confidence of students and also decrease the burden on faculty long-term (Moranski and Kim, 2016; Edeh, & Ezemma, 2018; Nouri, 2016; Freeman et al., 2014).

In addition, Item 5 measure the students' views about learning through FCII approach is different from the traditional approach. The analysis result indicates the students' opinions about studying and learning in FCII takes less time to practice the English language than the traditional teacher-led approach. As a consequence, according to the mean values, (M=3.82), a great number of students are satisfied that they spent less time to study in FCII due to comprising visualized information for the course contents. A few of students' opinions about this Item are listed below:

> *"Of course it is different. It is more challenging, I need to spend more time and do more practice. I feel like I am teaching myself. It's a good experience, but sometimes a bit difficult."*

> *"I just want to learn more because I need IELTS. So, it doesn't matter how. Only with a teacher in class, I think I learn faster. But this is also helpful."*

> *"I prefer my teacher to teach me, explain to me and check me all the time."*

As a result, not all students experience or feel the same. Some of them really enjoyed it whereas some complained that they want to learn from the teacher inside the class and only do homework outside. It is mainly to do with personal preferences and character choices.

Moreover, Item 8 shows the students' views of infographics videos in FCII are more effective than traditional face-to-face lectures. The outcome demonstrates that a large part of students agreed that studying through online infographic videos are more effective in term of improving their learning skills compare to traditional face-to-face lectures. Students' ideas regarding this Item are:

> *"I think videos are better for study since they can be re-watched and revised so we can get to process information better and quicker."*
>
> *"In my opinion, watching the video, particularly infographics video is more interesting and can affect our learning. Also, visualized information in the video can be retained in our mind for a longer time."*
>
> *"I would say in general both videos and lectures can create good memory retention due to catering students with stimuli. However, in the video, concepts should be explained well."*

There is a more balanced weight of ideas on whether to watch videos or listen to the teacher. Generally, a combination of both in the class is the most attractive way for most of the students. The good thing they mentioned about the videos is that they could watch them repeatedly. Further, in opposition to the current result, Ramlogan, Raman, and Sweet (2014) and Wilson and Sipe (2014) indicated that traditional face-to-face lectures are more effective than learning through visuals such as video. Nevertheless, the outcome of the study of Long et al. (2014) illustrated that learners' views about studying through video for pre-class material rank the maximum mark since it enhanced the student's motivation and comprehension of learning context.

Likewise, the outcome of Item 9 indicates that a majority of students perceived that the experience in this English course is more effective at improving their learning habits than the traditional classroom approach. Some of the students' quotes are listed below:

> *"I generally like the internet and spending time on it. So, through FCII learning approach, I learned how to use technology and the internet in an efficient way of studying and learning the language."*

> *"I really like this method of learning and I think it has changed my learning habits in a good way. Particularly, when the teacher devoted the class time to activities and having a discussion over the topic, thus improved our knowledge more"*

As far as the study concerns, students expressed satisfaction with the new way of studying and having partial responsibility for the learning themselves. In fact, although some of them found it hard and challenging, the majority agreed that technology and the internet can be used in a more efficient and affirmative manner. However, studies of Snowden (2012), Renner (2012), and Ramlogan et al. (2014) showed that traditional method of instruction is still needed to be adopted due to the fact which all the topics cannot be learned in the flipped classroom learning environment through visualized data since it may make the learning environment more challenging.

Chapter V

CONCLUSION AND RECOMMENDATION

5.1. Introduction

This chapter intends to demonstrate the overall result and conclusion of the study as well as recommendation for future studies.

5.2. Conclusion

According to the reviewed literature of both infographics and flipped classroom instructional approaches, it is evident that these approaches could be promising tools due to having outstanding features when integrated into different educational environments. Besides, incorporating technology into any learning environment along with a visualized information is a more engaging and dynamic way to enhance students' motivation for study, thus this study is designed to utilize infographics into an active learning environment of flipped-classroom with the purpose of better management of cognitive load, increasing motivation and autonomy in learning, and enhancing learning achievements. The main aim of the study is to assess the attitudes and achievements of ESL students in regard to the use of infographics in a flipped classroom learning environment called Flipped classroom instructional infographics (FCII).

This is a case study research which is designed based on the ADDIE model. The data of the research are collected through quantitative and qualitative research approaches where the queries of both data collection tools included "students' views of infographics", "students' views of FCII learning environment" and "students' academic achievements level". A total of 130 undergraduate students participated in this research who are divided into experimental and control groups.

According to the result of students' views regarding infographics, a great number of them (M=3.95) are quite positive about using infographics in education, since it made studying easier and effects on absorbing concentration and attention. Consequently, students looked motivated and they liked to have more of infographics in the class and as part of their learning materials. Further, most of them found infographics quick to read and easy to understand and remember, the features that can be interpreted as efficient. In

addition, the result demonstrated that learning English through infographics outside of the class is more convenient compare to other educational material types as it helped them to learn the complicated information easier, faster and remember more conveniently.

On the other hand, the majority of students liked the FCII approach as a new experience of studying the English language in an active learning environment. The result analysis showed that majority of students confirmed that FCII is a useful learning method since it enhanced their motivation, mental abilities, memory retention, and critical competence, and provide unlimited access to the instructional materials and flexible learning style. Although, in the beginning, introducing FCII method is a bit challenging; some students preferred to do everything in class and have their time for themselves rather than spend it on lessons and virtual classroom at home. On the other side, there are huge numbers of students who are very willing to use Edmodo online learning system and technology in order to interact with their teacher and peers outside the classroom.

Additionally, according to the t-Test result, female students compared to the male students are positively impacted more by FCII. The reason why female students had a higher rate of agreement could come down to a very simple reason and that is how men and women use the internet resources differently. Female believed that the this method helps them to master their learning habits and skills through making collaboration in the class and providing a more flexible learning style. In general, female students have more excitement and motivation over almost everything compared to male students. Besides, they are more open to change and new ways of learning and some of them believed it is a good support system but not for learning alone. Further, during the observation, almost everyone handled the method pretty well. However, for majority of female students, it is perfectly fine to study the materials at home independently as far as they are easy, not confusing and not complex. It gave them the confidence that they could manage to teach themselves and that they do not need a teacher by their side for all times.

Besides, according to the ANOVA result, older students dealt with the FCII method more smoothly than younger students, since they are more focused and responsible due to their age. According to the result, self-discipline and a developed sense of responsibility are generally more important factors for consistent learning through flipped approaches,

thus older students relate more to the FCII. In this sense, younger students require more encouragement and motivation from the teacher.

Additionally, the outcome of the students' achievement shows that there exists a remarkable gap between the results of the pre-test and the post-test exams of the experimental group and the control group. FCII had a positive influence on the students' learning at the end of the implementation. Further, students who have experienced the FCII preferred using this method not only in the English language education but also in other subjects and courses rather than traditional learning approach. Consequently, recent studies proved that traditional learning environment is less effective than social interaction in technology-based learning environments.

5.3. Recommendation

In general, the outcome of the study revealed that technology integrated learning environment have positive impacts on students' learning, and also graphic design of information is an important factor in developing their ability to comprehend the language more effectively.

However, the research is only limited to the pre-intermediate English language level of SFL students at Eastern Mediterranean University. Thus, the results may not generalize to other populations in other academic levels, genders as well as other universities. As a result, the research could be implemented in different universities and academic levels, and in different subjects and courses. Further, the study can examine the impacts of FCII on certain variables such as teamwork skills and values, self-confidence, information retention, and higher-order thinking skills.

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APPENDICES

Appendix A: Ethical Approval Form

Doğu Akdeniz Üniversitesi
"Uluslararası Kariyer İçin"

Eastern Mediterranean University
"For Your International Career"

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Etik Kurulu / Ethics Committee

Reference No: ETK00-2017-0149 10.05.2017

RE: Mobina Beheshti
School of Computing and Technology

To Whom It May Concern,

As part of the 2016-2017 Spring Semester, pertaining to questionnaires EMU's Scientific Research and Publication Ethics Committee has granted Ms. Mobina Beheshti, from the School, of Computing and Technology, to pursue with her survey entitled ***Flipped-Based Educational Infographics: Case Study of Higher Education***. This decision has been taken by the majority of votes. (Meeting number 2017/42-03)

Regards,

EASTERN MEDITERRANEAN UNIVERSITY ETHICS COMMITTEE ETİK KURULU 1979 Gazimagosa-North Cyprus

Assoc. Prof. Dr. Şükrü Tüzmen
Director of Ethics Commitee

ŞT/sky.

Appendix B: Questionnaire

This questionnaire is used for a research and aimed at investigating students' views toward Flipped Classroom Instructional Infographics (FCII) in education. Furthermore, this research represents the usage of visual design of information and data as a learning tool. Thanks for your support and participation

Section 1

Demographic information:

1. Gender:
○ Male
○ Female
2. Age
○ 18-20
○ 21-25
○ Over 26
3. Faculty
○ Science
○ Engineering
○ Art & Humanities
○ Medical Science

Section 2

Students' views regarding infographics	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Infographics can show the subject in an effective story form.					
2. I believe infographics motivate students to learn more.					
3. I enjoy following social media pages that share Infographics.					
4. I like sharing infographics on my social media pages.					
5. Students are more pushed towards learning if the teacher uses infographics as part of the materials.					
6. I am convinced that infographics are a more efficient way of learning.					
7. I prefer studying English through infographics than reading and learning from normal text.					
8. I feel that I learn faster with the help of infographics.					
9. I believe infographics are easier to remember because the concept is presented in pictures.					
10. I believe infographics are a good way for motivating students of all ages.					
11. I believe infographics are a good resource for improving student's knowledge.					
12. I think infographics can involve learners and their					

imagination.					
13. I believe infographics are good tools for learning grammar.					
14. I believe students can learn difficult concepts more easily via infographics.					
15. I believe infographics are good tools for improving learners' communicative skills.					
16. I believe infographics are a quicker way to learn vocabulary compared to traditional learning methods.					
17. I think through visual literacy, it takes less effort to learn with infographics than traditional learning.					
18. I believe that Infographics make learning fun.					
19. Infographics are a great tool for learning because they present information in scientific order and style.					
20. Infographics utilize creative visual design and technology effectively.					
21. I believe infographics are helpful for more practice in learning English					

Section 3

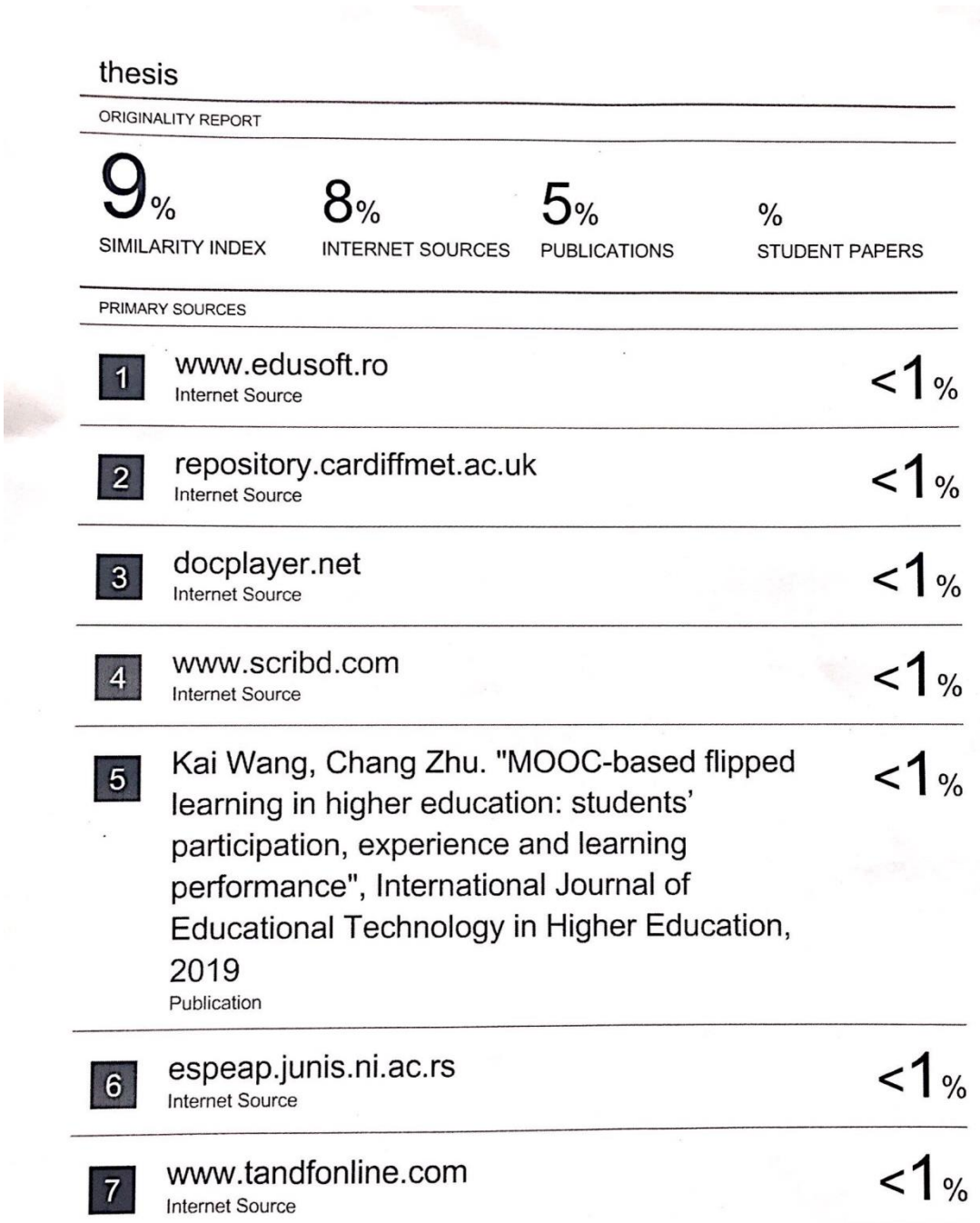
Students' views regarding flipped classroom instructional infographics approach	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 Learning English through the FCII method is more engaging than the traditional learning approach.					
2 I am more motivated to learn English through the FCII method.					
3 The FCII takes less time to practice English.					
4 I prefer traditional teacher-led educational materials than online materials including infographics in an online format.					
5 I spent less time working on the infographics to practice English compared to traditional methods of learning.					
6 FCII has improved my learning style for practicing English.					
7 More institutions or language schools should use the FCII approach for learning English, particularly vocabulary.					
8 Short infographics videos in FCII are more effective than traditional face-to-face lectures.					
9 My experience in this English course has improved my learning habits in comparison to the traditional classroom approach.					
10 For the past few weeks in the class, I communicated a lot with my peers about FCII and what we learned.					
11 The availability of course materials, communication and assessment tools helped me to improve my English skills.					
12 The vocabulary project I have worked on in this course can teach me to deal with real-life applications and information handling.					
13 I think learning English through FCII is easier.					

Appendix C: Focused-Group Interview Questions

1. What is your views toward using infographics as instructional material?
    a. Do you think infographics can make learning easier? Why?
    b. Do you think infographics can make learning faster? Why?
    c. Do you think infographics can help you to learn another subject better and quicker or not? Why?
2. Do you prefer to study through infographics or traditional materials? Why?
3. What is your perception toward Flipped Classroom Instructional Infographics (FCII)?
    a. Do you think the FCII instructional approach make learning easier? Why?
    b. Do you think the FCII instructional approach enhances motivation, engagement, and communication? Why?
    c. Do you think the FCII instructional approach takes less time to learn the subject and practice the problems? Why?
4. Do you think the FCII instructional approach would be useful for other subjects? Why or why not?

5. What are the differences between FCII and traditional instructional approach? Which one do you prefer the most?

Appendix D: Turnitin Originality Report



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5	Kai Wang, Chang Zhu. "MOOC-based flipped learning in higher education: students' participation, experience and learning performance", International Journal of Educational Technology in Higher Education, 2019 Publication	<1%
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