Promoting EFL Learners' Linguistic Competence via Videogame Play-Trace Effects: An Empirical Study

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Abstract

The current study is an experimental digital game-based (DGBL) endeavor which tackles potential educational issues beyond the frequent use of games, language learning potentials in particular. It has used a mixed method approach, i.e., quantitative and qualitative. The study aims at exploring the practical effects of videogame play, Trace Effect, on improving the players' linguistic competence. It is hypothesized that (playing videogame cannot create any difference of performance between groups of subject matters for improving English language learning. The study has concluded the followings; overall inferential statistics confirmed that playing videogame can effectively get into the improvement process of teaching English as a foreign language to the university students. On the other hand, playing the videogame, Trace Effects, has formed the solely major cause of improvement and learning in the following domains, creating friendly fascinating atmosphere, upgrading technological skills, increasing motivation towards learning, making use of homework as a form of external extensive activity, forming semi-independent learning, and practicing and virtual reality of the second/foreign language's culture.

Keywords: Linguistic Competence, DGBL, Videogame, Trace Effects.

1. Introduction

Digital game-based learning, DGBL, has turned into a robust field of learning via fun in education and nowadays has dominated the strongest pillars in educational settings worldwide. Including some authorities are Prensky and Gee. Both Prensky (2001) and Gee (2003) unmask the significance of playing video games for language learning issues.

DOI: https://doi.org/10.26750/vol(6).no(1).paper5 http://journal.uor.*edu*.krd/index.php/JUR_ Vol. 6, No.1, June. 2019

Despite the accessibility of numerous modern techniques and means of technology including PC, mobiles, internet, e-learning programs, etc., shortcomings of a variety of miscellaneous forms and obstacles are increasingly get into the way of the process of English language learning to its name and improvement.

The objectives of the study are as follows; firstly, exploring the practical effect of videogame play, Trace Effect, on improving the players' linguistic competence. The research questions are as follows; firstly, what are the significant roles of videogame play for language learning improvements. The study assumes a null hypothesis that playing videogame cannot create any difference of performance between groups of subject matters.

2. Literature Review

2.1 Review of some studies

1. Video Games and English as a Foreign Language Education in Burkina Faso by Niamboue Bado, 2014.

The study's aims were surrounding two main issues, firstly, to gain in-depth insights into high school students' and teachers' perceptions of Trace Effects in improving English as a Foreign Language (EFL) acquisition in Ouagadougou, Burkina Faso, secondly, to seek to understand the pedagogical integration of Trace Effects into the EFL classroom. The study came up with some key points including, the students and teachers considered *Trace Effects* mesmerizing and stirring up tool for learning. Additionally, Trace Effects contributed to improving their EFL listening, speaking, vocabulary and pragmatic skills as well as their motivation to learn the language.

2. The effect of videogames on Iranian EFL learners' vocabulary learning, by Sedigheh Vahdat and Amin Rasti Behbahani, 2013.

The study targets a mutual aim, firstly, it intends to find out the extent to which video games help learners acquire vocabulary over those who acquire vocabulary without using video games, secondly, it does to know whether females acquire vocabulary via video games better, or do males. The study had concluded the following two key points; video-game based learning has a strong effect on acquiring new vocabulary and it revealed that there is a highly positive correlation between gender and learning vocabulary via video games.

DOI: https://doi.org/10.26750/vol(6).no(1).paper5 http://journal.uor.*edu*.krd/index.php/JUR_ Vol. 6, No.1, June. 2019

3. Using Video Game-Based Instruction in an EFL Program: Understanding the Power of Video Games in Education, by Héctor Alejandro Galvis Guerrero, 2011.

This is another attempt done in the field of videogames. It has aimed at obtaining the players' perception about playing certain videogames as Grand Theft Auto San Andreas (GTA SA). Finally, it has been shown that the use of GTA SA in the context of a military academy was considered a better way of teaching English. Conversely, it has been realized that some students believed the use of video games can't create an innovative form for language instruction whatsoever.

4. A Game-based learning system for improving student's learning effectiveness in system analysis course, by Ching-Hsue Cheng and Chung-Ho Su, 2011.

This one has explored the impacts of the use of videogames in emerging better achievements. Additionally, ARCS model has been implemented to further seek the relationship between paying videogames and language learning stimulation. In brief, the study has gained the following findings after all, learning achievement is not impacted by accommodation and gender, students have achieved better performance than pre-test.

Roughly speaking, all the reviewed studies have hardly ever studied the effectiveness of using DGBL in enhancing or upgrading specific language learning issues. In return for the leftover gaps in terms of langue learning or improvement issues out of the surveyed studies, thus; the present study has made broader attempts to approach assessing or exploring the effectiveness of DGBL in improving communicative competence as linguistic. On the other hand, almost all of the researches failed to bring back the effective role of asynchronous assignment (homework). None of them has triggered or even mentioned the name in the process of language learning and improvement via videogames because sometimes one needs almost a clear atmosphere or a calm condition under which s/he can play, for language learning in particular, regardless of any other skills improvement.

2.2 Theoretical Background

2.2.1 Communicative Competence

According to Brown (2000), Hymes (1967; 1972), for instance, proposed that communicative competence best describes the humans' capability in terms of using languages matching well with the

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social contextual norms, Additionally, for Brown, Hymes was the developer and introducer of the term communicative competence afterwards Chomsky's failure of drawing persuasive distinctions between competence and performance turned out. On the other hand, Chastain (1988) on describing communicative competence, state that it is as one of the characteristics of human's language and has been considered one causing complexity within ones' languages.

Hymes (1970), moreover, describes communicative competence (CC) as the knowledge or the power that somebody has and enables them to effectively use the language in communication. There are four main types of communicative competence in his taxonomy as linguistic, discourse, sociolinguistic, and strategic competence. Then, Hyme's (1972) defines linguistic competence as "the knowledge of grammar and vocabulary. This focus is influenced by the idea that grammar and vocabulary are the basic building blocks of a language." Furthermore, linguistic competence has been introduced as "knowing how to use the grammar, syntax, and vocabulary of a language. Linguistic competence asks: What words do I use? How do I put them into phrases and sentences?"

2.2.2 Digital Game-Based Learning (DGBL)

DGBL has simply been referred to the manipulation of digital games aided by the use of computers for the purpose of teaching and/or learning. One very effective element or tool within DGBL is videogames. Videogames have captured massive attentions of the different scholars with controversial perspectives concerning its notions. Nicolas (2005, p. 2) defines videogame in a very short sentence and very simply as, "a game which we play thanks to an audiovisual apparatus and which can be based on a story". Prensky (2001, p. 146) defines DGBL as "any learning game on a computer or online", which broadly covers many different types of games used in teaching simply as learning games. Moreover, stronger arguments have been made for the powerful command of gaming as a didactic device towards giving rise to better enginemen, augmenting motivation and creating critical thinking on the part of learners during playing. [Gee, 2003; 2004; Koster, 2005; Prensky, 2001]. On the other hand, Gee (2003; 2004) emphasizes the potentials of computer games in the field of language learning by asserting that computer games are capable of emerging effective learning. Likewise, computer games can enable one to shift teaching classes from a way to another, traditional to modern one, for instance. Additionally, Gee (2003) specifically and vehemently reiterates and categorizes the benefits of videogames in teaching and learning process. He has provided several reasons for which videogames should ultimately be incorporated into teaching and learning process.

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One further positive side of videogames will emerge when the players are exposed with many problems during engagement and once they are successful in coping with the problems then it will be quite easier for later coming similar or analogical attempts to overcome or defeat. He still maintains that good games are key factors beyond increasing players' motivations. The more effective motivation, the greater learning outcomes and achievements will bring up. Games are said to be motivation builder, exclusively those that are characterized by good specifications, and enable their players to play as much as they like and thus become an increasingly integral part of every day's attempts towards learning. He also states that good games will effectively work to reduce the psychological and physical distance between the scenes of the game and the players themselves. By reducing the distance, the players feel much like of "being there".

3. Methodology

3.1 Sampling and Group formation

As to the current study, the population has been the English major Second Year EFL students at College of Basic Education, University of Salahaddin-Erbil, 2017-2018 academic year.

Subject assignment in experimental studies requires randomization, i.e., randomly selecting subjects and assigning them into groups. However, in experimental research design, the idea of picking up sample observation randomly is not always stipulated and clearly discerned from group assignment, i.e., random sampling is totally unlike random assignment in which the latter is a must for experimental research design, process owing to the threat of lacking control over and availability of individual and group differences (Drummond and Murphy-Reyes, 2017).

An online up-to-date version of English Language Proficiency Test as *English Level Test C1/ Cambridge First Certificate* has been utilized with some modifications on the items, i.e., adding, deletion or modifying (*Englishjet*, Anon., 2007; *Test your English*, Anon., 2017). One hundred participants took the test at same time in two groups. Time allowed for this session was (45) minutes. The results were as shown in the following table.

65 sample subjects out of 100 are ready to randomly enroll into groups namely, control and experiment by implementing RCT- random controlled trials, a form of unique evaluation based on haphazard assignment of the intervention and comparison groups (Anne, 2010). Yet, there might be a little more work to ensure the mastery over the distinguishing features of the observations so as to consequently

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lead to the comparability of the subjects amongst themselves (Luann, et al., 2012). Eventually, a selection of 50 individuals randomly assigned, i.e., random sampling. The subject assignment was done through using Mutli-stage sampling, i.e., adopting more than one stage of sampling procedures at a time. The two stages of sampling are simple random sampling and Stratified random sampling in which both belong to probability sampling (Krob, 2012) under experimental study.

3.2 Groups Assignment

In the experimental studies only one group- analogically comparable to the other, receives the treatment, i.e., the cause or intervention of some pre-defined phenomena (Rosenbaum, 2010; Drummond and Murphy-Reyes, 2017). By chance and randomly group B was assigned to be the experiment group. However, group B as a whole didn't exhibit enough desire for playing the game in contrast with group A.

Also, it is much worth considering that although 50 participants, 25 subjects equally distributed over the groups and towards the end of the experiment session (end-line) only 40 subjects actually remained, 20 in each group, for unsuccessfully meeting the requirements and completing the missions of the study. Therefore, 10 of them have been ruled out due to failing to meet the study's regulations.

3.3 Homogeneity of groups

The homogeneity of the groups has been matched and form by the use of Tech Savvy and Bio Survey. Actually, the survey serves like an information checklist rather than a sound survey, though. Face validity [(1)] has been checked and confirmed. Inferring from the sig. value (probability value) representing 0.362, one can clearly interpret that there is no significant difference whatsoever between the groups but rather quite non-significant accounting on the deduced value which is far greater than 0.05 (Thisted, 2010).

3.4 Instrument

The instrument can vary from one sort to another accounting on the design, nature of the research and feasibility (Pandey and Pandey, 2015). It has been usually replicated that by the time of selecting the tool, the details and the rationale beyond implementing such a tool should be straightforward asserted (Creswell, 2009). The instrument used in the study is an achievement test. Meanwhile, there have also

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been two other secondary scales used in the study each for an end as, English Proficiency Test and Technology Savvy Survey.

3.4.1 Test

An achievement test has been implemented. The test itself has fallen into one question with two separate branches. In addition to the test structure, the test is, on the whole, designed to test the students' mastery on the forms and uses of linguistic competence prior to and before the intervention of the independent variable. The overall questions reflect on the contents of the videogame, Trace Effect, that is, the videogame themes and conversational scripts have been converted and adapted into questions. Question one, in its nature, is a multiple choice item question with four closely related options. It breaks into two branches, A and B.

3.5 Piloting

By definition, pilot study has been introduced as a purposive mini-attempt representing the whole case towards turning over several issues of a tool as a research tool for data collection (Pilot and Hungler, 1983, cited in Tichapondwa, ed. 2013).

3.5.1 Validity of the test

Validity has been defined as the extent to which a test measures what it intends to measure (Kimberlin, and Winterstein, 2008). Face validity has been processed to it as to finally determine the validity of the test in appearance (McLeod, 2013). Ten jurors[(2)] contributed to the decision making about the face validity of the tests. Having accurately examined the test contents, they all came up with a positive evaluative report concerning the tests' face validity.

3.5.2 Item analysis, difficulty and discrimination indices

The analysis that has been made was due to the items of the test. It has been applied to check and determine on such issues in association with the difficulty index and discrimination power of the whole items individually. Each term from the analysis stands for a significant value in pilot studies in which the former probes into the appropriateness of the item in terms of how difficult, moderate or easy an item is supposed to be answered by the majority of the test-takers, whereas the latter corresponds bitterly to the ability of differentiation of the scores between those of more capable students who will

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do well on the test and those of less capable who won't (Ebel and Frisbie, 1991). And thus acting on what provided above and the calculation summary, 13 items have been modified or changed on the last test whereas 14 have been totally deleted.

3.5.3 Reliability

Having any subject matter under investigation requires correct interpretation of consistent measurement and result analogy. Simply elucidating, a test or a tool is proved to be reliable when it consistently will get dependable accurate results during a measuring process throughout a study (Pandey and Pandey, 2015).

3.5.4 The Test

Using Cronbach's alpha, in SPSS program, for finding internal consistency reliability, the alpha coefficient for the whole test items turned out to be (**0.902**). Thus, depending on the obtained value, the reliability of the test supports a level of almost high internal consistency across the items. As it has been claimed that the closer to (**1**), the higher the internal consistency- reliability (Stephanie, 2017).

3.6 Data collection procedures

Both English proficiency test and survey were administered on same day, Oct. 10th, 2017. The entire process lasted for twelve weeks, almost three months, ranging from November 26th, to the late of February, 18th, including both tests within in the academic year 2017-2018. The experiment met every week, two-hour class. The two-hour class was distributed into one to one-hour class over Sunday and Thursday, one at the start of the week and the other at the end.

3.7 Planning, Management, and Delivery of the Course (3)

The overall linguistic made-syllabus includes seven chapters, corresponding to the contents of the game chapter, embedded into in PPT- PowerPoint presentations. So that the experimental attempt can go smoothly and efficiently, the experiment and control groups were split into two other sub groups.

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Control group was taught in the traditional way, i.e., sage on the stage, conversely, teaching the experiment group had taken different form completely dissimilar to the one of control group. The videogame was present in two forms; software online program and hard copy, on DVD.

Each chapter of the videogame, seven chapters overall, was covered in one-week class teaching except for chapters namely, 5,6 and 7 for which two successive weeks were allocated. As it was the case with the experiment group, subjects were always in position to play the chapters of the game at the weekend, i.e., during off days. The purpose beyond playing at home was to grant them enough time and freedom to review the game contents asynchronously. Once in the class for the following week- first hour, the whole chapter was reviewed for them by showing the played chapter as DVD.

3.8. Test administration (4)

As there are two different phases of any experimental study as starting and ending point, the tests of two fold versions have been applied twice, one at the very beginning of the attempt and the other at the end of it.

During the test administration, everything was duly disciplined and well organized. No cellphone is allowed nor is speaking with each other

3.10 The videogame – Trace Effects

Trace Effects is the name of a videogame released by Ministry of State/ Bureau of Educational and Cultural Affairs/ USA for the first time in 2014. The ultimate end of designing the videogame is to enable and effectively develop the learners' potentials and capacity in the use of second or foreign language learning through videogame play (United States Department of State, 2012). The videogame is, by definition, a 3-D software program that is available through two mutual bases as DVD and an online resource. By the same token, the videogame has been serving globally as one of the key effective tools in the area of ELL. The rules and etiquettes of the videogame are very simple and straightforward, i.e., easily accessible and put in use.

4. Statistical, Data Analyses and Their Interpretation

There are confidently several statistical software programs available worldwide in the field of mathematics generally and statistics in particular. SAS, Stata and SPSS are some common types of them (Bruin, J. 2006). The t statistics analysis is found out due to the p-value, also known as significant

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value, ranging from 0.01 to 0.05. Thus, p-value can tell the extent to which changes happened to the results of a research was whether all by chance or purposeful (Main and Ogaz, 2016; Stephanie, 2018a).

4.1 T-Statistics of the test between the groups

The critical value (5) came out 1.68 relying on the *df* value, degrees of freedom = 38. Degree of freedom is calculated by subtracting 2 from the research's whole sample size, n-2= *df*, 40-2=38. The critical value serves as setting clear-cut limits before which retaining area can be formed and any form of t value must be lying in a retaining region, i.e., keeping the null hypothesis of any research under investigation as it is. Moreover, its role will still be vital when any recorded t value is to be compared with it on the t statistics graph.

T value of the test has been calculated as - 5.36. As it is obviously shown on the graph, t value is situated right after, critical value, since the numerical is smaller than - 1.68. The shaded area is a sign of the value of t test of the researchers' hypotheses testing in which it locates in the rejection area. It can be reported that the research's null hypothesis as number one should be completely rejected since there is a statistically significant difference between the performances of both groups as control and experiment in which the latter recorded greater achievements by large.

Moreover, there could be a strong alibi to have to state to the interest of playing videogame whether as a fun or an educational motivating tool. The videogame with its effective role could after all make considerable difference concluded findings out of the hypothesis testing process.
As the paired sample correlation table depicts, there demonstrates a fairly positive relationship amongst the overall items of the paired sample test based on the inferred calculations representing (0.519) since the reference points of *R* correlation, i.e., Person Correlation, can tell. The strength of the relationship can be described as follows, weak (± .00 to <.30), moderate (± .30 to .50), and strong (> ± .50) (Gravetter & Wallnau, 2012).

The whole claim has been maintained being corroborated by the Sig. value calculating (0.00) which is eventually a value that is smaller than p. value (0.05). The reference alpha value set at 0.05 indicates that only 5% of the whole result is probably occurring due to chance, any value smaller than this could be considered statistically significant result (Thisted, 2010; Thompson, 1997).

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Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1 pre - post	-11.55000	13.61362	2.15250	-15.90385	-7.19615	-5.366	39	.000

The statistical inferences show optimum results to the question's interest as sig. value of the group row in the table of tests of between –subjects effects have asserted. Thus, since the value came out as (0.001) which is consequently smaller than the reference p value, it can be argued for the presence of substantial statistical differences between the groups.

Linguistically talking, playing the videogame by the students in experiment group has massively contributed to emerging change in their linguistic behavior according to the results brought out earlier through the statistical analysis. One more additional effective cause of playing videogames is likely to do with the form of the presenting the grammar in the videogame

As concerned with vocabulary, learning vocabulary could be reinforced or even learned via technology and in a videogame play in particular. Overall inferential statistics can enable one to interpret and address the so far disclosed findings that playing videogame can effectively get into the improvement process of teaching English as a foreign language to the university students. Its role has massively contributed to the creation of a great change in behavioristic traits of the experiment group.

5. Concluding remarks

Overall inferential statistics confirmed that playing videogame can effectively get into the improvement process of teaching English as a foreign language to the university students. As a matter of fact, the role of playing videogame played a key revolving role in promoting educational interest on the part of the players, whereas, those who didn't play had not witnessed such a big difference in their learning scope. The study has concluded the followings; overall inferential statistics confirmed that playing videogame can effectively get into the improvement process of teaching English as a foreign language to the university students. On the other hand, playing the videogame, Trace Effects, has formed the solely major cause of improvement and learning in the following domains, creating friendly fascinating atmosphere, upgrading technological skills, increasing motivation towards learning,

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making use of homework as a form of external extensive activity, forming semi-independent learning, and practicing and virtual reality of the second/foreign language's culture.

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پوختە

لیکۆلینەوەکە هەولێکە کە تیایدا تاقی کردنەوە لەسەر ڕۆلی تەکنەلۆجیا – یارییە ئەلیکترۆنیەکان دەکات بە مەبەستی فیربون و باشتری کردنی ئاستی فیربون بە تایبەت لە بواری زانیاری زمانەوانی – ریزمان و وشە ومانا. تویژینەوەکە تایبەتمەندی چەندیەتی و چۆنیەتی هەیە کە مەبەستیەتی بری ئەو گۆرانکاریانە پیشان بدات و بکۆلیتەوە کە بە هۆی یاریەکەوەTrace Effects ، دینە ئاراوە. مەبەستی باسەکە لیکۆلینەوە لە کاریگەری ڕاستەقینەی ڤیدیۆ گەیمەکە Trace Effects ، لەمەر باشتر کردن و پیشخستنی زانیاری زمانەوانی یاریکەران. باسەکە بەم خالانەی خوارەوە گەشت، یارییە ئەلیکترۆنیەکان ڕۆلێکی کاریگەر و بەرچاویان هەیە لە کردەی بەرەو پیش بردن و پیشخستن و فراوانکردنی زانیارییە زمانەوانییەکان لە لایەن فیرخوازانەوە لە ئاستیکی بالادا. هەروەها هاتووە کە یارییە ئەلیکترۆنییەکە ، Trace Effects هۆی سەرەکی هینانە کایەوەی گۆرانکاییە لە ئەدای فیرخوازان لە گروپی تاقی کردنەوەکە بەبەراورد بە گروپی شیوازە ئاساییەکە. گۆرانکارییەکان لەم بورارنەی خوارەوە بەدی دەکرین، بنیات نانی کەشیکی ئارم بۆ خویندن، بەدەست هینانی زانیاری ئای تی، سود بینین لە ڕاهینانە دەرەکییەکان وەک ئەرکی ماڵەوە، دروست بوونی فیربوونی نیمچە خودی لەلایەن یاریکەرانەوە، ئاویتە بوون بە ژینگەی شیوە ڕاستەقینە و کەلتوری زمانی مەبەست بۆ فیربوون.

ملخص

هذه الدراسة عبارة عن محاولة تجريبية تعتمد على الألعاب الرقمية (DGBL) والتي تعالج قضايا تعليمية محتملة تتجاوز الاستخدام المتكرر للألعاب وإمكانيات تعلم اللغة بشكل أفضل. البحث يعتمد على الجانب الكمي والنوعي من اجل الوصول الى نتائج محققة في النتيجة. تهدف الدراسة إلى اكتشاف التأثيرات العملية للعبة من الألعاب الفيديو وهو لعبة (Trace Effect)، على تحسين الكفاءة اللغوية للاعبين. خلصت الدراسة إلى ما يأتي: أكدت الإحصائيات الاستقصائية الشاملة أن لعب لعبة الفيديو يمكن أن تدخل بشكل فعال في عملية تحسين تدريس اللغة الإنجليزية كلغة أجنبية لطلاب الجامعة. من ناحية أخرى، إن تشغيل لعبة Trace Effects، يكون السبب الرئيس الوحيد للتحسين والتعلم في المجالات التالية ، وخلق جو رائع للاعبين، ورفع مستوى مهاراتهم التكنولوجية ، وزيادة الدافع نحو التعلم ، والاستفادة من الواجبات المنزلية كشكل من أشكال النشاطات الواسعة، وتشكيل تعلم شبه مستقل ، وممارسة الواقع الافتراضي للثقافة اللغة الثانية/ الأجنبية.

Appendix: Notes

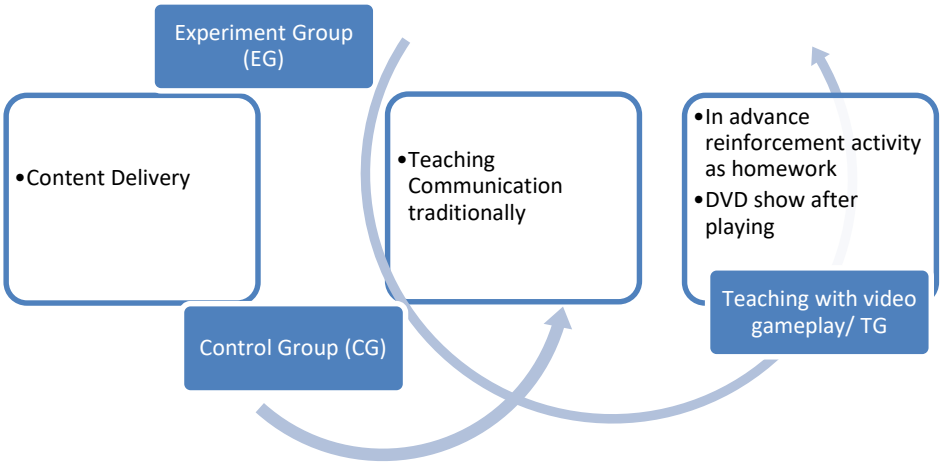
(1) **Jurors' biography**

No.	Name	Academic Rank	Degree	University	Country
1.	Fatima Rasheed	Professor	PhD	Salahaddin	Iraq
2.	Saman Ebadi	Associate professor	PhD	Allameh Tabataie University	Iran
3.	Ali Mahmood Jukil	Assistant professor	PhD	Salahaddin	Iran
4.	Nian Ghafoor	Assistant professor	PhD	Halabja	Iraq
5.	Kavee Shakir	Assistant professor	PhD	Salahaddin	Iraq

(2) **Jurors' biography**

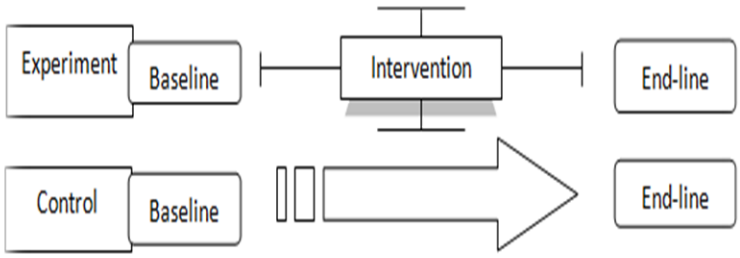
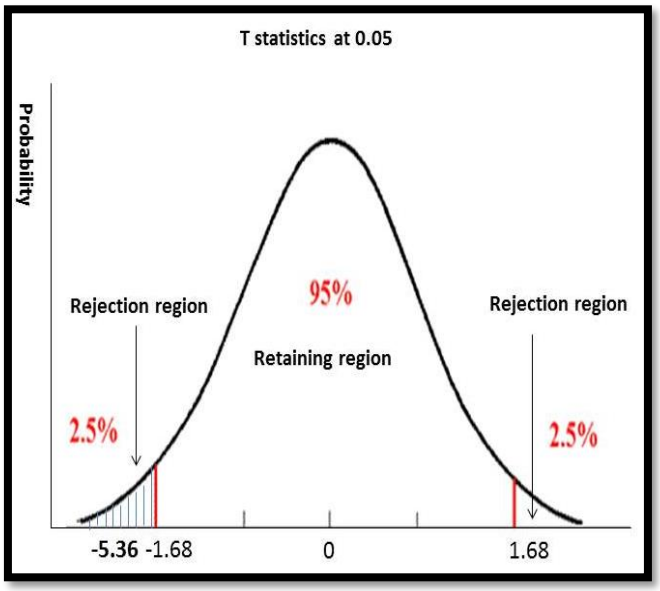
No.	Name	Academic Rank	Degree	University	Country
1.	Anis Behnam Naoum	Professor	PhD	Al-Hamdaniya	Iraq
2.	Hayo Reinders	Professor	PhD	Anaheim	The United States
3.	Saman Ebadi	Associate professor	PhD	Allameh Tabataie University	Iran
4.	Ali Mahmood Jukil	Assistant professor	PhD	Salahaddin	Iraq
5.	Ayad hameed	Assistant professor	PhD	Diyala	Iraq
6.	Kawa Abdulkareem Rasul	Assistant professor	PhD	Erbil polytechnic	Iraq
7.	Salam Nawkhosh Bakir	Assistant professor	MA	Salahaddin	Iraq
8.	Niamboue Bado	Instructional Designer	PhD	Florida A&M	The United States
9.	Salam Hakeem	Instructor	PhD	Salahaddin	Iraq
10.	Nian Kamil	Instructor	PhD	Halbja	Iraq

(3) Lesson delivery



DOI: https://doi.org/10.26750/vol(6).no(1).paper5 http://journal.uor.edu.krd/index.php/JUR_ Vol. 6, No.1, June. 2019

(4) Test administration



(5) Critical value