

**Research Analysis and Critique: Investigating the effectiveness of iPad based language
learning in the UAE context by Tsoghik Grigoryan**

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Purpose, Research Questions & Hypotheses

The purpose of this study conducted by Tsoghik Grigoryan was to, “explore the results of using mobile technology educationally by looking into learner practices and attitudes towards using iPads in language learning, as well as looking into student’s language achievement as developed by the paperless classroom,” (Grigoryan, 2020). The study focused on both student achievement as well as attitudes and motivation towards language learning when there was a use of iPads as a learning tool in the classroom setting.

Tosoghik Grigoryan had 4 major research questions that she was looking to answer through this mixed-methods study. They were:

1. Is there a relationship between classes taught through iPads and beginner level Emirati student’s language achievement?
2. What are the beginner level Emirati students’ attitudes towards iPad implementation as a language-learning tool in terms of learner satisfaction, motivation, perceived tool usefulness and learning effectiveness?
3. Is there a relationship between beginner level Emirati student’s attitudes towards iPad implementation as a means of language learning and their language achievement?
4. What are the emerging themes of the teacher’s reflective journals in the evaluation of their lessons and diagnosis of problems in relation to teaching beginner level Emirati students a second language using iPads?

These 4 research questions were further broken down into 15 research hypotheses:

1. Perceived self-efficacy has positive predictive value for perceived satisfaction towards iPads as language learning tools.
2. Perceived self-efficacy has positive predictive value for perceived usefulness towards iPads as language learning tools.
3. Perceived self-regulation has positive predictive value for perceived satisfaction towards iPads as language learning tools.

4. Perceived self-regulation has positive predictive value for perceived usefulness towards iPads as language learning tools.
5. Interactive learning environments have positive predictive value for perceived satisfaction towards iPads as language learning tools.
6. Interactive learning environments have positive predictive value for perceived usefulness towards iPads as language learning tools.
7. Perceived ease of use has positive predictive value for perceived satisfaction towards iPads as language learning tools.
8. Perceived ease of use has positive predictive value for perceived usefulness towards iPads as language learning tools.
9. iPad based tasks have positive predictive value for perceived satisfaction towards iPads as language learning tools.
10. iPad based tasks have positive predictive value for perceived usefulness towards iPads as language learning tools.
11. Perceived satisfaction has positive predictive value for learner motivation towards iPads as language learning tools.
12. Perceived usefulness has positive predictive value for learner motivation towards iPads as language learning tools.
13. Perceived satisfaction has positive predictive value for the effectiveness of iPads as learning tools.
14. Perceived usefulness has positive predictive value for the effectiveness of iPads as learning tools.
15. Learner motivation has positive predictive value for the effectiveness of iPads as learning tools.

Background & Gap in Research

The most significant prior work conducted in relation to this study comes from Gitsky & Robby in 2014. They studied high school graduates in an academic preparation program who were given iPads to assist in facilitating language learning alongside teacher instruction. The results showed high student engagement and better exam results. The most compelling idea related to this research looks at the difference between teacher-centered versus student-centered learning

experiences. This study viewed teachers and learners as collaborators in learning which aligns closely with the constructivist perspective of education. Though Grigoryan described that much research has been done in the field of language learning through the paperless classroom, the gap that this study attempted to fill was looking at the iPad as being the mediating tool between student and teacher as collaborators. Students had the opportunity to use a variety of apps and websites to further their language learning with less direct teacher help. Grigoryan centered her research on an Activity Theory approach. The main concept of this approach is that “individual actions occur in relation to three factors: the available tools, the community and the labour distribution in that community,” (Grigoryan, 2020, p.5). Grigoryan was seeking to find out what results this approach had on language learners.

Design, Methods & Variables

Grigoryan chose a mixed-methods study approach that used test and survey results as quantitative data and reflective journal entries as qualitative data. This was a true experimental design as it involved the incorporation of both random assignment of participants to groups and the intervention of those groups either using an iPad for language learning purposes or not using an iPad. This distinction (iPads used to aid language learning or no iPads used to aid language learning) was classed as the independent variable, while the dependent variable was the language achievement of participants on progress tests and posttests, motivation and attitude of participants. Furthermore, Grigoryan chose to use a Solomon four-group design. As described by Sawilowsky et al. (1994), the Solomon four-group design is “a randomized experimental design consisting of two treatment versus two control groups,” (p. 362). Of those groups, one treatment and one control receive a pretest and a posttest, while the other treatment and control groups receive only a posttest. Sawilowsky et al. (1994) go on to say, “it provides a defensible response to most rival hypotheses seeking to account for the outcome of the study, which is referred to as internal validity,” (p. 363-364). The study attempts to “repeat” the results of the first phase by conducting a second phase and analyzing those results alongside the results of the first phase. This study can be put into the category of problem-based research as it involves solving the practical problem of improving educational experiences for language learners and is more oriented towards application than theory.

Sampling

Participants in this study included 80 female students, aged 17-25, studying English at the largest governmental higher learning institution in the United Arab Emirates. All participants were at an A1 (beginner) level of English proficiency based on the Common European Framework for Reference. These 80 participants were then randomly assigned to four groups with groups having 20 participants each. Groups were then randomly assigned to be either control or intervention and either pretest & posttest or posttest only. In the first phase of this study, all participants received 80 periods of language instruction that followed an identical “work plan,” (Grigoryan, 2020, p. 10). Groups would study the same concepts and units during the same periods. However, Grigoryan did not give detail as to the teaching experience or teaching approach of the 4 teachers assigned to each of the groups. This could lead one to believe an alternative hypothesis could have to do with the instructional approach contributing positively to the results of language achievement, motivation and attitude.

Reliability, Validity & Control

In terms of reliability, Grigoryan shared that the survey used to seek qualitative data from participants, underwent reliability checks and came out with 0.808 overall reliability rating. A rating of 0.70 is the minimum thus indicating that the instrument was indeed reliable. Grigoryan did not go into further detail on where this rating came from. Most importantly, Grigoryan ensured internal validity by using a two-phase study. In the first phase, which included all four groups, those who used iPads were issued the survey post treatment. In the second phase of the study, the groups who were initially non-iPad groups, received the treatment as well, followed by the same survey. The progress tests as well as posttests were used to measure participants language achievement and Grigoryan indicated which of the grammar concepts and units were measured during each progress test. This study was mostly concerned with both content validity in that it measured achievement of students’ language learning (through progress tests and posttests) and construct validity in that it also measured their motivation and attitude towards language learning (through survey results and reflective journals). Much control was also exercised in the random assignment of groups which allowed “the treatment to be isolated from extraneous influences,” (Suter, 2012, p. 5). Control of carryover effects was also achieved with the counterbalancing that took place through the Solomon four-group design. Only half of the

groups received the pretest while all received the posttest. Lastly, the use of triangulation of the quantitative data (achievement and survey results) and qualitative data (reflective journal entries) allowed for control and validity in this study.

Data Analysis & Results

The data analysis method chosen by Grigoryan was a paired 2-group t-test in which the method of learning (iPad vs. non-iPad) was analyzed to see which produced higher mean achievement scores. At both phases of the experiment, this 2-group t-test was conducted and in both phases the analysis revealed that the paperless classroom was better suited for language learning achievement with statistical significance ($p < 0.001$). Specifically, Pair 6 and Pair 8 of the progress tests, in the first phase were statistically significant ($p < 0.001$). The survey results showed that there was a positive relationship between the attitudes toward iPads being used for language learning purposes and language achievement. The survey results and reflective journal entries both “revealed that the interactive learning environment in both phases showed quite a high level of student motivation and language achievement,” (Grigoryan, 2020, p. 19). The study did not include explicit examples of questions asked in the survey but indicated the survey was delivered in the participants mother tongue (Arabic) and used a Likert scale rating from completely disagree = 1 to completely agree = 7. It focused on “nine-factors: self-regulation, self-efficacy, interactive learning environments, ease of iPad use, iPad based tasks, perceived satisfaction, perceived usefulness, motivation, learning effectiveness,” (Grigoryan, 2020, p.12). The reflective journals also showed that the use of iPads carried more benefits than the more traditional method of using textbooks in the realm of motivation. All 15 of Grigoryan’s research hypotheses were tested and were accepted.

Research Critique

One strength of Grigoryan’s study is the detail in its design. By using the Solomon four-group design, Grigoryan was able to ensure internal validity and gain control of extraneous factors as a participants study habits outside the classroom. In our digital age it is easy to assume that the incorporation of technology into learning will yield results that favor its inclusion. Through thoughtful and careful design, Grigoryan was able to show that there may be value in iPad implementation to increase student achievement, attitude and motivation. Not only that but her

choice of a mixed-methods, true experimental approach allowed the ability to triangulate data results and support all 15 of her hypotheses.

A weakness of this study was that though many significant constructs were investigated, none of them were provided operational definitions within the study. These constructs include learner satisfaction, motivation, tool usefulness and attitude, which are pulled from Grigoryan's second and third research questions. Without these operational definitions we as readers can see that the results to these constructs (in a general sense) indicate that there may be value in including iPads in language-learning settings but are not sure exactly what Grigoryan means by them.

The other weakness of this study was the size of groups. Suter (2012) indicates a rule of thumb for sample sizes to be 30 participants per group. Grigoryan only had 20 in each of her four groups indicating that the generalization of these results beyond the walls of this study could be more difficult. A smaller sample size means less diversity among participants which, as Suter (2012) states, "greatly influences whether a research finding is significant and "fair," (p. 19).

Overall, I found this study to be a good example of mixed-method, true experimental research. It's design and analysis yielded significant results. The gap in research that this study aimed to fill as previously mentioned, was to look at the iPad as a mediating tool between students and teachers as collaborators, placing some of the responsibility of language learning on the students. Grigoryan made a significant contribution to the identified gap in research by showing that iPads may positively effect student achievement, motivation and attitude in the language learning setting.

References

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Reflection on Peer Review

I received some great feedback from both Toby and Elizabeth. Toby indicated that he felt a major weakness of the study was concerned with its validity. This was not the message I was trying to convey so I took some time to review validity and how it was ensured through this study. I was able to revisit this section of my analysis and provide more clarity on how the author provided evidence of validity. Elizabeth had a number of great suggestions. The most valuable one to me was that she asked for more clarification on the details of the experiment such as length of study, method of instruction, etc. I was able to review this section of my analysis and provide additional detail on these topics. I thought both Elizabeth and Toby did a great job at providing feedback that allowed me to reflect on what I had written in an objective and constructive manner.