

Gamifying formative assessment to improve speaking accuracy and motivation in EFL learners

Gamificando la evaluación formativa para mejorar la precisión del habla y la motivación en estudiantes de inglés como lengua extranjera

<https://doi.org/10.5281/zenodo.4420301>

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Fecha de recepción: 02 / 09 / 2020

Fecha de aceptación: 28 / 12 / 2020

ABSTRACT

Education First (2019) reported that there has been a consistent very low English proficiency in Ecuadorian learners, whose score was 46.57 out of 100. Similarly, some findings done in Ecuador have evidenced the necessity to contribute to the speaking skill area. Therefore, this article focused on the analysis of the effects of a gamified formative assessment process through *Factile* on learners' skills in speaking accuracy and to increase their motivation to communicate in L2. The study reports the findings of action research. It used two groups, the control group and experimental group, whose data are compared through the use of quantitative instruments. The pre-post tests and pre-post surveys were

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used to answer two research questions: 1. To what extent does Formative assessment through the use of Factile improve learners' speaking accuracy skills? 2. Does students' motivation toward speaking English increase due to the implementation of the innovation? Findings support previous studies. First, it revealed that applying a gamified formative assessment process through Factile improved learners' speaking accuracy. The effect size was large, Cohen $d = 1,11844$. Second, it proved that the implementation of the innovation engaged learners and increase their motivation to use L2 in speaking. However, it is recommended to conduct more studies to contribute to the development of speaking skills, as well as regarding the use of Factile to facilitate formative assessment. The results of the present study have implications to conduct subsequent research in the same field of study.

Keywords: *factile, formative assessment, gamification, motivation, speaking accuracy.*

RESUMEN

Education First (2019) informó que ha habido un dominio del inglés muy bajo constante en estudiantes ecuatorianos, cuyo puntaje fue 46.57. Similarmente, hallazgos en Ecuador evidenciaron la necesidad de contribuir en el área de la habilidad oral. Por lo tanto, este artículo analizó los efectos de un proceso de evaluación formativa gamificada usando *Factile*, en las habilidades de los alumnos para hablar con precisión y aumentar su motivación para comunicarse en L2. A través de la investigación-acción se aplicaron instrumentos cuantitativos. Se utilizaron dos grupos, el grupo de control y experimental, cuyos datos se comparan mediante el uso de las pre y post pruebas y las pre y post encuestas. Estas responden dos preguntas de investigación: 1. ¿En qué medida la evaluación formativa a través del uso de Factile mejora las habilidades de precisión del habla de los alumnos? 2. ¿Aumenta la motivación de los estudiantes para hablar inglés debido a la implementación de la innovación? Primero, se reveló que la aplicación de un proceso de evaluación formativa gamificada a través de Factile mejoró la precisión del habla de los alumnos. El tamaño del efecto fue grande, Cohen $d = 1,11844$. Segundo, se demostró que la implementación de la innovación motivo a los estudiantes a hablar en inglés. Sin embargo, se recomienda realizar más estudios para contribuir al desarrollo de la habilidad oral y sobre el uso de Factile para facilitar la evaluación formativa. Los resultados

del estudio tienen implicaciones para realizar investigaciones posteriores en el mismo campo de estudio.

Palabras clave: *evaluación formativa, factile, gamificación, motivación, precisión oral.*

INTRODUCTION

The key to a country's success is Education (UNESCO, 2014). Therefore, the importance for students to develop Global competences in today's intertwined world is remarkable. One of the 21st-century skills to success is communication. English is so much more than a language since it can connect the world. However, Ecuador's English proficiency score was 46.57 out of 100 (Education First, 2019). It placed Ecuador in position 81 of 100 countries around the world. From a Latin American perspective, Ecuador is the 19th of 19. This result is easy to understand since weak primary public education combined with a poor exposure to English language and educational reforms in the past years provoked learners from Latin-American to have a poor performance in English (Education First, 2011). Additionally, after a study Education First conducted in Ecuador, there was no evidence of progress in English from one year to another, even though English is mandatory (Education First, 2019).

Speaking is one of the four language skills learners need to develop to communicate effectively. Mahbub-ul-Alam and Khan (2014) stated that “speaking indisputably performs an enormous function in communication” (p. 135). Education First evaluated a sample of 100,000 Ecuadorian students of different ages, including university ones. They were evaluated in all the skills. The vast majority performed at the A1 or pre-A1 level in English according to the Common European Framework of Reference for Languages (Education First, 2019). In other words, they are just able to understand and use familiar everyday expressions. (Council of Europe, 2016). Likewise, according to Sevy-Biloon and Chroman (2019), University EFL students in Ecuador have a poor performance in oral communication. The authors informed that a preliminary test reported that most of the learners obtained an A1.1 level of English. They also argued that the lack of daily connections, outside of the classroom has provoked the preliminary results. Similarly, in a study conducted by Moreira and Bazurto (2017), there is a necessity to enhance Ecuadorian students’ conversational skills using communicative approach-based activities.

Previously, assessments have been considered in terms of summative assessments with the purpose to assign grades and evaluate the progress (Şad & Ozer, 2019; Mitten, T. Jacobbe & E. Jacobbe, 2017). They were generally perceived as something overwhelming by students. Traditionally, the design was individual task-oriented and done in such a way that led up to the expose of mistakes. The lack of previous preparation or opportunity for the students to be acquainted with the learning topic triggered a reluctance to participate, poor confidence, and bad results. However, more and more, teachers are acknowledged of the important role of Formative assessment (Mitten, T. Jacobbe & E. Jacobbe, 2017). According to Brown, Irving, Peterson, and Hirschfield, “Formative assessment is a powerful tool that enables students to improve and get better outcomes since they receive feedback. It also enables teachers to keep track of the progress and struggles of the students throughout the course” (p.97). Also, innovative assessment systems are based on e-learning, mobile learning, flipped learning, among others (Şad & Ozer, 2019). They have emerged to ease the process, create a nice and competitive learning atmosphere, and provide timely feedback (Klop-fe, Osterweil & Salen, 2009).

Varannai, Sasvári and Urbanovics (2017) stated, “The use of gamification in higher education has increased considerably over the past decades” (p.1). Fisher, Beedle and Rouse (2014) define gamification as the process of adding elements of games and gaming to contexts that are not normally associate with games. Therefore, computer games and simulations as learning tools have the potential to improve students’ performance and interests in academic domains (Barab et al., 2007, as cited in Song & Sparks, 2019, p. 2). However, a gamified formative assessment is more than games for learning. Its design incorporates game elements, such as competition, immediate feedback, progress indicators, social connection, player control, among others. These elements offer useful information to the teachers to identify the gaps and collect reliable and valid evidence of learners’ knowledge, skills, and progress (Mislevy et al., 2009). Moreover, well-designed gamified formative assessment tools not just engage students in completing challenging and competition-involved tasks but also provide beneficial effects in learning and teaching (Song & Sparks, 2019). One of the most useful game-based learning platforms is Factice. Factice informed, “It is a free learning platform that lets teachers create engaging Jeopardy-style quiz games for the remote or in-person classroom” (para. 1). This game format

enables one to assess students' prior knowledge as well as review the learned topics before quizzes or exams (Rotter, 2004).

Nevertheless, gamification and technology have not been commonly used in English classes in Ecuador. This learning technique is in the process of development and implementation in education and work environments (Ponce, 2017). The present study applied a preliminary survey to 20 students of the Technical University of Babahoyo about their experience in gamified assessments as well as in using "Factile." This survey confirmed the previous studies. Students were not familiar with the use of gamification, only four students have participated in a gamified learning-environment in English classes, and just one of them used "Factile" in other contexts.

Similarly, the study applied pre-speaking tests to measure the students' skills in this area. The result was a mean of 37 out of 100. It proved learners' poor performance. Also, a preliminary survey about students' motivation toward speaking in L2 reported that 19 of them felt reluctant to speak in English.

Many findings support the importance of formative assessment in speaking. (Alahmid, Alrahaili & Alshraideh, 2019; Gan & Leung, 2019). In addition, a study conducted in Japan showed that formative assessment facilitated students to get a higher language proficiency improvement in comparison to those who were just involved in summative processes (Ross, 2005). Similarly, many researchers stated that feedback is essential to not just improve the students' learning, but also to motivate them during the process if it is timely and accurate (Akter, 2010; Hattie & Timperley, 2007). Not less importantly, some authors defended the crucial implementation of peer and self-assessment when learners are actively engaged in the learning process and have received rater training (Li, Xiong, Hunter, Guo & Tywoniw, 2019; Black, 2015)

Also, previous studies supported the fact that the students' willingness to communicate through speaking and an engaging classroom environment are related. Also, that a learning system to develop speaking skill has to be adopted in such a way, educators organize the class to make the speaking environment student-friendly (Qutob, 2018; Bergil, 2016; Peng, 2015; Mahbub-ul-Alam & Khan, 2014).

Therefore, the necessity to present students a gamified formative assessment process emerged, being aware that the classroom is not well tech-equipped and that it is necessary

to create an engaging atmosphere. The present research aims at analyzing the effects of a gamified formative assessment process through Factile platform to improve learners' skills in speaking accuracy and to boost their motivation to communicate in L2.

To this end, the following questions were addressed:

- To what extent does Formative assessment through the use of Factile improve learners' speaking accuracy skills?
- Does students' motivation toward speaking English increase due to the implementation of the innovation?

METHODOLOGY

The present study's methodology applied was Action Research. It used quantitative instruments such as pre and post-tests and surveys. The purpose of the application of the study was to get an improvement in students' speaking accuracy. Action research bases on the action, evaluation, and critical analysis of the research.

Participants

Data was gathered from two groups, the control group and the intervention group, with 20 students each. The participants were at a2 level of English, according to the Common European Framework of languages. They attended English classes at CENID language center of the Technical University of Babahoyo, located in Los Rios province. The schedule of the intervention group was on Monday, Wednesday, and Friday from 7h30am to 9h30am whereas the control group attended classes on Monday, Wednesday, and Friday from 9h30 to 11h30. The sample was taken by convenience since the groups of students were assigned to the researcher's charge.

Both groups shared similar demographics characteristics. First, the study applied a demographic survey that contained 10 components, but just two of them were analyzed, their English level background and technology skills knowledge. Additionally, the MM online proficiency test and using an adaptation of the speaking performance rubric for A2 students by Cambridge to check their speaking skills. The results placed learners of both groups at A2 according to CEFR. Three surveys were applied to both groups. A pre-survey

regarding their experience with formative assessment, gamification and Factile tool, and about learners’ perception of the speaking skill.

Table 1. Demographic information – English level background and technology skills

Intervention group				Control group			
English background	Freq.	Technology knowledge	Freq.	English background	Freq.	Technology knowledge	Freq.
mandatory school time	14	Beginner	0	mandatory school time	16	Beginner	0
In mandatory school time & academies	4	Basic	4	In mandatory school time & academies	4	Basic	2
In mandatory school time & on my own.	2	Intermediate	11	In mandatory school time & on my own.	0	Intermediate	12
		Advanced	5			Advanced	6
	20		20		20		20

Source. This research’s authors.

Table 1 shows that both groups have similar demographic characteristics in the English level background and their knowledge of technology. Regarding the first one, most learners just studied English as a mandatory subject in school and high school. Regarding the second one, most students considered themselves as ones that have an intermediate level in the use of technology.

Ethical considerations

After the approval of the director of the CENID language center of the Technical University of Babahoyo the study could be applied. Moreover, the following step was to inform the participants of the purpose of the research and to highlight that confidentiality and anonymity were considered as protection for them. Fortunately, none of them showed reluctance to participate.

Instruments

The study relied on the use of quantitative instruments to address the research questions. They were surveys and pre-posttests.

To respond to the first question: *To what extent does Formative assessment through the use of Facile improve learners' speaking accuracy?* Pre and posttest were used. The tests were divided into three parts. The first part was an open question about one aspect of the learner's life. The second one was the interactive part, which was done in pairs. Learners had to interact talking about a situation that was displayed through a picture. The third part was an image description. Learners had to describe a photo that was aligned to a question they had to answer. To test the three parts, the study used an adaptation of the speaking rubric by Cambridge for A2 students and the one that was normally used in Cened. Since the focus of the study was accuracy. The rubric contemplated grammar, vocabulary, and pronunciation. Moreover, this test model was normally used in CENID. Also, to prove the validity and the reliability of the instruments, five teachers were asked to check the test content, construct, and assessment criteria. Also, they used it with students with similar demographic characteristics.

A survey was used to address the second research question: *Does students' motivation increase due to the implementation of the innovation?* To prove it, the study applied a pre and post-survey about the motivation and perception of their learners toward speaking in L2. The pre and post surveys were composed of eight check components and two open questions. They were piloted with a group of a2 learners before the use in the study. Regarding the control group, the Cronbach's Alpha of the pre-survey was 0.904 whereas it was 0.902 in the post-survey. Regarding the intervention group, the values were 0.96 and 0.904 correspondently.

Data Analysis

To what extent does Formative assessment through the use of Facile improve learners' speaking accuracy?

To address this research question, the grades of the pre and posttests were tabulated in excel and imported to SPSS 20 to obtain the descriptive statistics. The process was done for both groups. Next, Cohen D was applied by calculating the mean difference between the two groups to get the effect size.

Does students' motivation increase due to the implementation of the innovation?

The study applied a pre and post-survey about the learners' perception of their motivation to speak English. The results of the scales were obtained by frequencies.

RESULTS

This section contemplates the quantitative result of the study aligned with the research questions.

RQ1. To what extent does Formative assessment through the use of Factile improve learners' speaking accuracy?

To answer this research question, the results of the pre and posts tests were used to obtain Cohen's d. The findings are as shown below.

Table 2. Speaking accuracy pre and posttest – intervention group

	N	Min	Max	Mean	Std. Deviation	Mean Difference	P-value	Cohen's d
PRE-TEST	20	35	75	53.75	11,4564			
POST TEST	20	50	85	65.25	8.9553	-11.50	0,000	1.11844
Valid (listwise)	N 20							

Source. This research's authors.

As it is shown in table 2, the effect size is large $d= 1,11844$ (Kelley & Preacher, 2012). Also, it was statistically significant, $p <.05$. It indicates that students' speaking accuracy improved after the application of a gamified formative assessment process through Factile. The same process was done with the control group. Table 3 shows the results of the effect size of the pre and posttests.

Table 3. Speaking accuracy pre and posttest – control group

	N	Min	Max	Mean	Std. Deviation	Mean Difference	P-value	Cohen's d
PRE-TEST	20	30	70	42.25	10,5724			
POSTTEST	20	30	70	48.00	9.9207	-5.75	0,000	0.560881
Valid (listwise)	N 20							

Source. This research's authors.

Table 3 reports that there is a medium effect size $d=0,560881$ (Kelley & Preacher, 2012). P-value shows that the difference between means was significant. It didn't happen by chance since $p <.05$.

RQ2. Does students' motivation increase due to the implementation of the innovation?

To answer the second research question, the responses of the pre and post surveys were considered and examined. Next, table 4 shows the findings.

Table 4. Learners' perception of their motivation to speak English – Intervention group

Scales		Motivation to speak L2		Motivation to speak L2	
		Pre-Survey		Post Survey	
		Freq.	Valid Percent	Freq.	Valid Percent
Valid	Intrinsic motivation	4	20	5	25
	Extrinsic motivation	2	10	10	50
	Task value	2	10	4	20
	Performance self-efficiency	-	-	-	-
	Control of learning beliefs	-	-	-	-
	Anxiety	12	60	1	5
	Total	20	100,0	20	100,0

Source. This research's authors.

As it is shown in table 4, learners' motivation improved considerably as a result of the intervention. First, in the pre-survey, most learners felt anxiety to speak using L2. On the contrary, in the post-tests, most students (10) felt an extrinsic motivation since they were involved in a gamified process and in a competitive atmosphere.

On the other hand, an analysis of the students' perception of their motivation to speak English in the control group reported a different scenario.

Table 5. Learners' perception of their motivation to speak English – Control group

Scales		Motivation to speak L2		Motivation to speak L2 -	
		Pre-Survey		Post Survey	
		Frequency	Valid Percent	Frequency	Valid Percent
Valid	Intrinsic motivation	3	15	5	25
	Extrinsic motivation	3	15	4	20
	Task value	-	-	-	-
	Performance self-efficiency	-	-	-	-
	Control of learning beliefs	1	5	1	5
	Anxiety	13	65	10	50
	Total	20	100,0	20	100,0

Source. This research's authors.

Table 5 displays a poor improvement in learners' motivation to speak English. Most of them (10) still felt anxiety at the end of the program. Although there was an increase in the number of students that improve their intrinsic motivation, there was still low. It evidences the significance of the application of formative assessment processes combined with game elements to engage students to take ownership of their learning development.

DISCUSSION

Recent findings have evidenced that formative assessment contributes to the enhancement of learners' performance in speaking accuracy (Alahmid, Alrahaili & Alshraideh, 2019; Gan & Leung, 2019; Sezen-Barrie & Gregory, 2017). The four stages of the process, clarify, elicit, interpret, and act generate opportunities to learners to improve and provide teacher's information to redesign or adapt changes that enable learners to achieve the learning goals (Smarter Balance, 2020). Speaking accuracy focuses on grammar, vocabulary, and pronunciation. Therefore, the instrument that the study used was a rubric to grade the pre and post-tests. It was aligned to test the accuracy components. As demonstrated in table 2, after an ongoing process of a gamified formative assessment, learners could practice and enhance their speaking skills in "accuracy. Table 2 showed that the innovation has generated a large effect size of $d= 1,11844$ (Kelley & Preacher, 2012), whereas, in table 3, it is shown that the control group obtained a medium effect size $d=0,560881$. The results evidence this process, which included times for elicit and gets evidence of knowledge, interpretation of the evidence, peer and self- assessment, feedback, reteaching, and use of new strategies have played an important role in learners' speaking accuracy.

Moreover, data obtained from the survey confirmed that learners' motivation increased as a result of the application of a gamified formative assessment process. Embedding game elements, such as competition, immediate feedback, progress indicators, social connection, player control, among others, help the learners to increase their extrinsic motivation (Song & Sparks, 2019; Barab et al., 2007, as cited in Song & Sparks, 2019, p. 2). Table 4 displayed that most students (10) were highly motivated by external factors since the atmosphere of the activities was competitive and involved rewards and praises. Five of them were intrinsic motivated because they enjoyed the activities and looked forward to

challenges to learn new things. These findings coincide with other researchers, in which participants' motivation increased and consequently their learning result (Song & Sparks, 2019; Mahbub-ul-Alam & Khan, 2014; Mislevy et al., 2009). On the contrary, as it is shown in table 5, learners who didn't experience a gamified formative assessment process hardly improved their motivation. Ten of them still felt anxiety at the moment to speak English.

CONCLUSIONS

Speaking is one of the skills to communicate and the most difficult to develop (Mahbub-ul-Alam and Khan, 2014). Previous studies have recognized the need to improve English speaking skills in Ecuador (Education First, 2019; Sevy-Biloon & Chroman, 2019; Moreira & Bazurto, 2017). In addition, a concern of how to present speaking activities in such a way, learners feel motivated to speak and engaged to the lessons emerged. To address these issues, the study focused on the application of a gamified formative assessment process to improve university students' speaking accuracy. Furthermore, the second contribution of this study would be to prove that well-design gamified processes are not just essential to generate potential benefits to the learning and teaching process, but also to increase students' motivation.

The findings of this study confirmed what previous studies have researched regarding the usefulness and effectiveness of this process incorporating game elements. Also, it has been proved that being aware of the sub-skills of speaking accuracy and how a rubric work to self and peer assess have contributed to the ongoing enhancement process. It has demonstrated that practicing in grammar, develops vocabulary size and depth, and being aware of the words' pronunciation, can be factors to help to communicate more effectively. The findings showed a large Cohen $d= 1,11844$.

Moreover, being aware that the common settings of English classes in Ecuador show students reluctant to participate, especially in a spoken way, it might be said that the study has contributed to the English language area. It contributes to offering a gamified process in which learners become engaged and motivated to accept learning challenges in Speaking. Nevertheless, although there was little literature regarding the use of Factice, as a tool to

facilitate formative assessment, the results of this study might be used as an indicator of the effectiveness of it to use it for future studies and class application.

Finally, after having conducted the present study, some recommendations emerged. First, it is highly recommended to use a larger sample for future studies which would lead to smaller margins of error. Also, since English is the most complex skill of the four used to communicate, it is essential to consider more time for the intervention group.

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