

Using Games-Based Assessment to Develop English Oral Reading Prosody Skills of Primary Stage Pupils

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استخدام التقييم القائم على الألعاب في تنمية مهارات العروض باللغة الإنجليزية لدى تلاميذ المرحلة الابتدائية

المخلص

هدفت هذه الدراسة إلى التحقق من فعالية التقييم القائم على الألعاب في تطوير مهارات العروض باللغة الإنجليزية لتلاميذ المرحلة الابتدائية. و من أجل تحقيق هذا الهدف قامت الباحثة بتطبيق المنهج شبه التجريبي. أخذت الباحثة عينة الدراسة من مدرسة العدوي الابتدائية حيث تم اختيارهم عشوائيا وتقسيمهم الى مجموعتين مجموعة تجريبية (٢٠) طبق عليها التقييم القائم على الألعاب، ومجموعة ضابطة (٢٠) تم تقييمهم بالطرق العادية، ولقد طبقت الدراسة في الفصل الدراسي الأول للعام الدراسي (٢٠٢١/٢٠٢٢). ومن أجل جمع البيانات تم إعداد استبيان و اختبار قبلي/بعدي لمهارات العروض باللغة الإنجليزية. كما تم استخدام الإحصاء الوصفي واختبار مان ويتني واختبار ويلكوكسون لتحليل هذه البيانات. و قد أثبتت النتائج وجود فروق ذات دلالة إحصائية بين متوسط درجات المجموعتين لصالح المجموعة التجريبية، و بناء على ذلك فلقد اثبتت النتائج فاعلية التقييم القائم على الألعاب في تطوير مهارات العروض باللغة الإنجليزية لتلاميذ المرحلة الابتدائية.

الكلمات المفتاحية: التقييم القائم على الألعاب - مهارات العروض - تلاميذ المرحلة الابتدائية.

ABSTRACT

The purpose of this study was to investigate the effectiveness of games-based assessment in developing English oral reading prosody skills of primary stage pupils. The quasi-experimental design was adopted. The participants were two intact groups from El-Adawy primary school, which were chosen and assigned to an experimental group (20) and a control group (20). The experiment was applied during the first term of the academic year (2021/2022). The English oral reading prosody questionnaire and the English oral reading prosody test were developed and administered for collecting data. Descriptive statistics, Mann-Whitney Test, and Wilcoxon Test were used for data analysis. The results revealed that games-based assessment was effective in developing English oral reading prosody skills of primary stage pupils. The data obtained from the study has been analyzed statistically by SPSS program. Research results revealed significant differences between the post-test mean scores of the experimental and control groups in the oral reading prosody skills in favor of the experimental group.

KEYWORDS: Games-based assessment (GBA), Oral reading prosody (ORF), primary stage pupils

1. Introduction

Reading is an important skill that should be developed by EFL learners. Moreover, the ability to understand and read English with expression is a very important skill in the age of technological advancement for all learners. It is a key to their academic and life success in the global and information-driven society. Thousands of students learn to read English in our schools every year, yet prosodic reading continues to be a challenge for many elementary stage pupils.

Prosodic reading is widely considered to be one of the hallmarks of the achievement of reading fluency. When a pupil reads prosodically, his/her reading is like speech with appropriate phrasing, pause structures, stress, rise and fall patterns, and general expressiveness. Several studies have examined the importance and the ways of developing oral reading prosody such as Ebrahim (2020), El Garawany (2010), Helwa (2014), Khudair et al. (2010), Spaul (2015), Suchey (2009), Yildiz et al. (2009), and Zaza (2014), but the assessment of these skills has some shortcomings.

So there is a need to use a good and effective assessment. This research uses the games-based assessment (GBA) as a kind of assessment for learning (AFL) to assess oral reading prosody skills. AFL occurs throughout the learning process. Cambridge Assessment International Education considers GBA to be an approach, integrated into teaching and learning, which creates feedback for students to improve learning (Leadership, 2017).

GBA refers to the application of principles of game design to measure human performance when people are striving to perform at their best. (1) Focused learning is often a welcome, mastery-based byproduct of GBA. (2) It is not a video game. (3) It means that the assessment itself must be engaging and voluntary to capture peak performance and is probably the greatest (and most appealing) design challenge to GBA (Heinzen, 2014). It promises that we can use data from in-game actions to make inferences about players' knowledge, skills, and attributes, allowing us to make use of

information in the ocean of data produced by daily digital interactions with software (DiCerbo et al., 2012; cited in DiCerbo, 2014, p.26).

Due to the previous reasons, the researcher was motivated to develop fifth-grade primary school pupils' oral reading fluency skills using GBA.

2. Review of Literature

Oral reading prosody

Oral reading fluency (ORF) is defined as the ability to read expressively and meaningfully, as well as it is the ability to read connected text quickly, accurately, and with expression without noticeable cognitive effort that is associated with decoding the words on the page. It involves a long incremental process, and text comprehension is the expected outcome (Grabe, 2009, p.72; Padak et al., 2008, p.3; Rasplica et al., 2013). Based upon the previous definition an operational definition for the present study could be adopted, ORF is the ability of primary stage pupils to turn letters and sounds into words without difficulty, while taking into account prosody, and accuracy during reading at an appropriate rate as measured by ORF test. It is the ability to simultaneously process written texts accurately, automatically, with appropriate prosody and comprehension (Rasinski et al., 2011, p.76).

Prosody is a major component of ORF. Fluent readers are expected to read with expression, modulate pitch and place proper emphasis on salient words (Patel et al., 2011). Prosody is a linguistic term that accounts for the rhythmic and tonal aspects of speech (Hudson et al., 2005). It is a linguistic term to describe the rhythmic and tonal aspects of speech (Torgesen et al., 2006, p. 4). Also it is the music of language (Simpson et al., 2008). It is the rise and falls of pitch, rhythm, and stress the pausing, lengthening, and elision surrounding specific words and phrases that are found in the pull of linguistic communication (Hirschberg, 2002). The students who read fluently sound as if they are talking; their reading is smooth, paced, and pleasant to listen to (Ruskey, 2011, p.7). By listening to the pupil's oral reading, the teacher can gain valuable insights into strategies for determining the degree of mastery of the student.

Several studies have examined how to develop the skills of oral reading prosody, but the assessment of oral reading prosody has some shortcomings. Oral reading prosody assessment provides information that will guide teachers and improve pupils' outcomes (Hosp et al, 2007). As the

curriculum was developed to promote the development of skills and capabilities rather than just learning material, it was necessary to change the assessment methods. Oral reading prosody should be assessed on a regular basis largely because fluency is considered an essential characteristic of a proficient reader (National Reading Panel, 2000).

The best way of assessing students' oral reading prosody is observing students while reading and paying close attention to all the details. So, many researchers and teachers design a lot of holistic and analytic rubrics to assess reading skills. In addition, the teacher should be aware of the following aspects: 'word-reading accuracy, rate, and prosody (Hudson et al., 2005, p.705). Fluency contains more than just accuracy and speed. Reading fluently should be in meaningful phrases with an appropriate expression that reflects the meaning of the passage. Successful Assessment for Learning results in improved learners' progress continually. The principal characteristic of Assessment for Learning is effective feedback provided by teachers to learners on their progress. The value of the feedback depends on two factors: 1- the quality of the feedback. 2-how learners receive and ultimately use it (Jones, 2005).

Many the studies and reports (e.g. Khotimah, 2017; Yang, 2006; Perumanathan, 2014; Fathi et al., 2017) reviewed concentrate on at least one of the same four aspects that are understood as characteristic of assessment for learning: Questioning, feedback, peer and self-assessment and the formative assessment (Flórez et al., 2013). 'Feedback' has a positive effect on learner achievement, particularly if it involves feedback from learners to the teacher about their own learning (Hattie, 2009). "The wide variety of information that teachers collect about students' learning processes provides the basis for determining what they need to do next to help students improve students' performance. It provides the basis for providing descriptive feedback for students and making decisions about (groupings, instructional strategies, and resources) (Earl et al., 2006, p.29). Also, it helps learners focus on the aim of their learning. This can help them understand what constitutes 'excellence', take responsibility for their learning, and plan how they might move forward. This study uses games-based assessment as kind of assessment for learning to assess the skills of "oral reading fluency" among primary school pupils.

Games-based assessment (GBA)

GBA is defined as the use of games and data obtained during play to arrive at conclusions for the development of the level of primary school students in the skills of oral fluency in English. It is the use of video game elements in non-gaming systems to improve user experience (Deterding et al., 2011, p. 2425). It also refers to a new form of psychometric tests that measures personality traits and cognitive abilities through a game-like interface (Charlie, 2017). It is the application of principles of game design to measure human performance when people are striving to perform at their best. (1) GBA focuses on learning is often a mastery-based by-product of GBA. (2) It is not a video game. (3) It means that the assessment itself must be engaging and voluntary to capture peak performance and is probably the greatest (and most appealing) design challenge to GBA (Heinzen, 2014).

GBA can allow adaptation and provide feedback to optimize learning or information about the players. Furthermore, it can provide students with the information they play, or at the end of the challenge. The information might be about the player's actions and their results in the game or their learning objectives (Mislevy et al., 2016). Game-based assessment promises that the teacher can use data from in-game actions to make inferences about players' knowledge, skills, and attributes, allowing us to make use of information in the ocean of data produced by daily digital interactions with software (DiCerbo et al., 2012; cited in DiCerbo, 2014, 26). GBA provides an exemplar of how technology is being used to extend thinking about what constitutes an assessment and its mode of delivery. Also, it has the potential to exemplify a dynamic assessment that documents pupils' ability and their readiness to engage at increasingly complex levels (Popp et al., 2016).

Literature and many studies showed the success of games to encourage and motivate students during the class (Groff et al, 2010; Iacovides et al., 2011; Pastore, et al., 2010; Ritzko et al., 2006). Some studies used GBA to improve language skills (e.g Zakaria et al., 2020) the study used an online game application, Kahoot, as the primary tool for students' assessment in an academic writing course, the results found that game-based assessment is highly engaging. A major advantage of games-based assessment is the amount of rich information they can generate from the participants while engaged in the game environment. The process data (processes by which

students reach their answers) derived through such assessments consider richer than traditional data as they can describe the type, order, and quantity of interactions with a task (Bennett et al., 2003; Greiff et al., 2012).

Games are ideal vehicles for formative assessment. When teachers know where pupils are having difficulty, they can intervene and provide more focused attention to problem areas. If a particular lesson or instructional method isn't working for a pupil, teachers can present it differently, adjust the difficulty of a task, or provide more practice opportunities. Conversely, if teachers find out that a pupil has mastered a concept, they can offer new or more advanced challenges. Using this adaptive strategy improves children's achievement (Craig et al., 2016). Previous studies focused on using games as formative assessment instruments (Bochennek et al, 2007; Klassen et al, 2003). Educators have long recognized the ability of games, particularly immersive and narrative-based games, to capture the attention and imagination of students. Games as assessment tools are attractive for several reasons:

1. These games are engaging and motivating (DiCerbo, 2014, cited in Wise, 2003).
2. The vast majority of students play digital games (Lenhart et al., 2008). Teachers can use their playing in gathering information and data.
3. Games and assessment share a similar process loop of activity presentation, activity completion, evidence identification, evidence accumulation, and presentation of the next activity (DiCerbo, 2014, cited in Behrens, Frezzo et al., 2006). Formative assessments embedded within a video game can enable us to more accurately provide feedback and change gameplay to maximize learning according to the ability level of the player (Ventura et al., 2013).
4. Authors posit that online games represent an educational breakthrough that could transform how people learn in and outside the classroom (Barab et al., 2007; Shaffer, 2006).
5. Feedback plays a particularly important role in highly self-regulated game-based learning environments because it facilitates the development of mental models and schemata, thus improving expertise and expert performance (Ifenthaler, 2010).

6. The utilization of games as an assessment method enables the opportunity to exploit their promising effect on reducing anxiety (Isbister et al., 2012). There are previous works that have paid attention to the effects of educational games on students' anxiety (e.g. Hung et al., 2014; Smits et al., 2011).

According to DiCerbo (2015), there are some limitations for game-based assessments as follows:

1- Good games are systems, and it takes time to learn the system. In many cases, asking a multiple choice question is much quicker. Games are generally good at going deep with a narrow range of content.

2- It is difficult for them to cover a broad range of content. Another challenge in using games for assessment is it can be humdrum and hard to complete for these patients who have difficulties with attention and focus (Majumdar et al., 2013).

3- Unfortunately, many schools are still restricted in their access to state-of-the-art technology including, software, hardware, internet access, and bandwidth. This gap is more profound in rural areas and locations where students are not functioning in a technology-rich environment. Schools are likely to become equipped with better technology in the coming years as the need for teaching 21st-century skills is realized. As new technologies and standards continue to evolve, and with improving educational needs and opportunities requirement to explore to extend such undertakings is likely to expand and unfold in the coming decades.

According to the previous studies of game-based assessment, games should have these characteristics:

1- Games build on sound assessment principles.

2- Games assess oral reading fluency skills.

3- Games provide an environment for authentic and relevant assessment.

4- Games are available for all students.

5- The assessment process takes place through different and attractive scenarios.

6- The assessment process is based on overcoming different challenges.

7- The assessment experience is positive and interesting.

3. Methodology

3.1 Participants of the study

The sample of the study included (40) pupils in the fifth- grade from El-Adawy primary school where the researcher works as a senior teacher of the English language. Two intact classes were chosen from the same school to be equivalent in the social, cultural, economic, and academic levels. The researcher assigned them into an experimental and a control group. They were equivalent in their general achievement following the statistical treatment of their results in grade four. In addition, the researcher used a timed pre-test to check the equivalence of oral reading prosody skills between the two groups. Then she used the Mann-Whitney test to check the statistical equivalence and calculate “Z” values to ensure the equivalence of the two groups in the pre-test. Table (1) shows the results of this procedure.

Table 1

The results of the Mann-Whitney test for the pre-test of the experimental and control groups in the oral reading prosody skills test

Skill	Group	Number of participation	Mean ranks	Sum of ranks	"z" value	significance
Prosody	Experimental	20	23.3	466	-1.6	not significant
	Control	20	17.7	354		
	total	40	—	—		
	Control	20	18.05	361		
	total	40	—	—		

The previous table shows that the values of “Z” are not statistically significant, which indicates that there is no difference between the mean ranks of the experimental and control groups in the pre-test of English oral reading prosody skills. The total score indicates the equivalence of the experimental and control groups in the pre-test of English oral reading prosody skills.

3.2 Hypotheses of the research

1. There is a statistically significant difference between the mean ranks of the experimental and control groups in the post oral reading prosody skills test in favor of the experimental group.
2. There is a statistically significant difference between the mean ranks of the pre and post-test of the experimental group in oral reading prosody skills in favor of post-test.

3.3 Instruments of the Study

To achieve the aims of the study, the researcher used two instruments:

1. The oral reading prosody skills questionnaire was constructed to choose the most important skills for fifth- grade pupils.
2. Oral reading prosody skills pre-posttest and a rubric for scoring it.

Oral reading prosody skills questionnaire

This questionnaire aimed at measuring the degree of importance of the oral reading prosody skills of the fifth grade; and then used it to design the test.

Validity of the Questionnaire

The questionnaire contains some oral reading prosody skills as follows:

1. Place vocal emphasis on appropriate words.
2. Read smoothly, with appropriate phrasing.
3. Use stress patterns—the pausing, lengthening, and elision surrounding specific words and phrases appropriately.
4. Change the voice to show the feeling of the author in the text.

To test the validity of the questionnaire, the researcher administered this instrument to a group of specialists to be refereed, including professors of teaching methodology, supervisors of English language, and highly qualified and long experienced teachers considering their valuable notes.

Scoring: The degree of importance is determined on the basis of 3 marks. The first level (very important) is given 3 marks, the second level (important) is given 2 marks, and the third level (slightly important) is given 1 mark. Respondents were asked to rate each item of the reading prosody skills as follows:

Table 2

Analysis of the jury evaluation

skills	Slightly important	important	Very important
1. Place vocal emphasis on appropriate words.	%5,88	%35,29	%58,8
2. Use stress patterns—the pausing, lengthening, and elision surrounding specific words and phrases appropriately.	%0	%29,4	%70,58
3. Change the voice to show the feeling of the author in the text.	%5,88	%41,17	%52,9
4. Use appropriate intonation when reading questions and statements.	%0	%23,5	%76,47

The final version was designed after doing the modifications. Once the panel of juries agreed that the questionnaire was a valid instrument, the researcher applied it.

Pre-post oral reading prosody Test

The researcher prepared a timed pre-post test to measure the students' oral reading prosody skills. The test aimed at measuring the effectiveness of using games-based assessment on developing fifth graders' English oral reading prosody skills at Port Said schools. Two reading texts were used in the test. The first reading text was selected from a storybook for children; the story was entitled "Snow White and the Seven Dwarfs" (a narrative text). The text includes 121 words. The second reading text was selected from the sixth grade book time for English. It was entitled "Ice cream in America" (an expository text). It includes 102 words. Pupils did not study these texts, and they did not have prior knowledge or feedback about them. The concentration was on the most important oral reading skills according to the relative weight results of the questionnaire. The same test was administered after the ten weeks of intervention. Results of the pre/post-test were recorded, statistically analyzed, and compared.

The instructions were given to participants by their teacher. The test was administered to a random sample of (40) pupils in February (2021); in El-Adawy primary School (not included in the main sample). The results were recorded and statistically analyzed to measure their validity and reliability. The items of the test were modified in light of the statistical results. The clarity of the test was checked. The misleading items were also modified.

Validity of the test

To determine the validity of the test, it was submitted to the jury committee in the field of Curriculum and Instruction (EFL); and supervisors of the English language in Port-Said directorate. The jury members agreed that the test was valid.

The researcher also administered the test on an exploratory sample of primary school students (n=40), corrected it, monitored their grades and arranged them in ascending order, and took 27% (of the high scores) of the total number of the pilot sample, which included (11) male and female pupils representing the highest quadrant, and 27% (of the low scores) of the total number of members of the pilot sample, which amounted to (11) male

and female pupils representing the lowest quartile formula. Using the Mann-Whitney test to compare between the upper and lower quartile formula, the results were that the value of "Z" is statistically significant at the 0.01 level. That indicates that there is a statistically significant difference between the mean rank of the upper and lower quartile formula in the test of English oral reading prosody skills. So the test can distinguish between high and low level of oral reading prosody skills in English. That is, the test has an appropriate degree of validity.

Reliability of the test

The researcher calculated the reliability of the test using the Test-Retest reliability on the experimental sample (n=20) with an interval of two weeks, and the value of the correlation coefficient between the first and second application is statistically significant at the 0.01 level, which indicates that the test is characterized by an appropriate degree of stability.

Among the previous validity and reliability measures, the test became a two-text test to measure oral reading prosody skills in English for grade five primary pupils. The total score of the test was 4 marks.

The scoring rubric of the oral reading prosody test

To evaluate the pupils' level of oral reading prosody skills before and after the treatment, the researcher developed a scoring rubric for the two texts. It is four-dimensional scales (level 1, level 2, level 3, and level 4). The jury members agreed that the rubric was valid.

3.4 Games-based assessment treatment

The following part is devoted to describing the procedures of designing the suggested treatment for developing the oral reading prosody skills of primary school pupils.

Aim of the treatment

Based on the review of literature and related studies, the main aim of the treatment was defined. The suggested treatment aimed at developing primary pupils' oral reading prosody skills. The suggested treatment was based on a games-based assessment.

Objectives of the treatment

The previously mentioned aim is extended into the following objectives. By the end of the suggested treatment, the pupils are expected to be able to:

1. place vocal emphasis on appropriate words.
2. use stress patterns—the pausing, lengthening, and elision surrounding specific words and phrases appropriately.
3. change the voice to show the feeling of the author in the text.
4. use appropriate intonation when reading questions and statements.

4. Results and Discussion

To test the validity of the first hypothesis, which states that "There is a statistically significant difference between the mean ranks of the experimental and control groups in the post-test of oral reading prosody skills test in favor of the experimental group". The researcher used the Mann-Whitney test for independent groups by the statistical package for the social sciences known as (SPSS) V.22. Table (3) shows the results of this hypothesis.

Table 3

The results of the Mann-Whitney test in the post-test of the experimental and control groups of oral reading prosody skills test and the total score

Skill	Group	Number of participation	Mean ranks	Sum of ranks	"z" value	significance
Prosody	Experimental	20	27.93	558.5	-4.2	0.01
	Control	20	13.08	261.5		
	total	40	-	-		
	Control	20	12.58	251.5		
	total	40	-	-		

The previous table shows that the value of "Z" is statistically significant at the 0.01 level, which indicates that there is a statistically significant difference between the mean ranks of the experimental and control groups in the post of oral reading prosody skills test in favor of the experimental group.

To test the validity of the second hypothesis, which states that "there is a statistically significant difference between the mean ranks of the pre and post-test of the experimental group in oral reading fluency skills in favor of post-test." The researcher used the Wilcoxon Test for the linked groups, and Table (4) shows the results of this hypothesis:

Table 4

The results of the Wilcoxon test of the experimental group in the pre and post-test of oral reading prosody skills and the total score

skill	ranks	number	Mean ranks	Sum of ranks	"z" value	significance
Prosody	Negative	0	0	0	-2.9	0.01
	Positive	11	6	66		
	Equal	9	–	–		
	Total	20	–	–		
	Positive	20	10.5	210		
	Equal	0	–	–		
	Total	20	–	–		

The previous table shows that the values of “Z” are statistically significant at the 0.01 level, which indicates that there is a statistically significant difference between the mean ranks of the experimental group’s scores in the pre and post-test of oral reading fluency skills in favor of the post-test.

The main purpose of the present study was to investigate the effectiveness of GBA to develop the oral reading prosody skills of primary school pupils. So, the researcher calculated the size of the impact of games-based assessment on developing oral reading prosody skills for the experimental group. Table (5) shows the results of this procedure:

Table 5

The effect of games-based assessment on developing oral reading prosody skills

The independent variable	the dependent variable	experimental group	"z" value	"d" value	Effectiveness

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Games-based assessment	Oral reading prosody skills	Prosody	2.9	0.63	medium
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The previous table shows that the size of the effect of the independent variable (game-based assessment) on the dependent variable (prosody) is medium because the value of (d) is greater than 0.5. This means that a large proportion of the total variance of the dependent variable is due to the effect of the independent variable, which indicates the effect of games-based assessment on developing oral reading prosody skills for primary school pupils.

The effectiveness of the games-based assessment in this study may be due to the various games the researcher prepared for the pupils. Much of educators' effort is often focused on teaching students to decode text, but prosodic reading includes more than just quick and accurate word recognition. That pupils must be able to read with proper expression .

5. Conclusion

The main purpose of the present study was to investigate the effect of using games-based assessment to develop English oral reading prosody skills of primary school stage pupils. The following conclusion can be stated:

- The treatment based on games-based assessment has a great effect on developing fifth-grade primary stage pupils' English oral reading prosody skills.
- There was a statistically significant difference between the mean ranks of the experimental group in each of the pre and post-test administrations in favor of the latter.
- There was a statistically significant difference between the mean ranks of the experimental group and the control group in post-test administration in favor of the former.

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