



## Testing Goes Mobile – Web 2.0 Formative Assessment Tools

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### Abstract

*Formative assessment is not a new concept but it has been made much easier and accessible by technology. By means of formative assessment, educators can collect information on students' understanding, learning needs and progress in a subject. Formative assessment contributes to learning by providing the teacher with feedback on how successful the teaching method is and how well the students understand a particular topic. The aim of this study is to investigate and assess the pedagogical impact of some Web 2.0 assessment tools, namely Kahoot! and Quizizz. This study compares two web-based assessment tools to a traditional non-gamified student response system and the usage of paper forms for formative assessment.*

*Keywords: formative assessment, Kahoot!, Quizizz, online tools*

### 1. Introduction

It is believed that assessment is of key importance to the learning experience and influences the way students approach their learning [1]. Assessment revises how and what students wish to study, as well as how much time they devote to different tasks and learning resources. It cannot be denied that students' interaction with the assessment process has an impact on their future learning experience and the development of their learning approach [2]. Assessment also plays a key role in improving and strengthening learner motivation. It allows learners to reflect on their learning, define misconceptions and assess their rate of progress [3]. Students devote their efforts towards any material or abilities they think will be assessed. Various forms of assessment encourage different categories of learning, for instance, summative and formative assessment. This paper focuses on formative assessment.

The purpose of this study is to examine whether online assessment tools increase students' motivation, engagement and learning. Two online assessment tools chosen for this study are Kahoot! and Quizizz. Kahoot! is a game based response system played by the class in real time. Teachers design their own multiple-choice questions adapted to the level of knowledge and skills of their students. Questions are projected on the screen. Students answer the questions with their smart phones, tablets or laptops. Kahoot! is a user-friendly online application which contains basic game elements, namely, points, a leader board, immediate feedback and a reward.

Quizizz is an alternative to Kahoot! and constitutes a great online tool which helps students check their knowledge and progress in learning. In Quizizz, the question order is randomized for each student. With Quizizz, teachers can also assign homework to give students additional practice. Each question ought to be multiple choice with two or four possible answers. Both Kahoot! and Quizizz are free, user-friendly online formative assessment tools which help teachers assess students' language as well as their curriculum knowledge.

### 2. What is formative assessment?

Gikandi et al. define formative assessment as "the iterative processes of establishing what, how much and how well students are learning in relation to the learning goals and expected outcomes in order to inform tailored formative feedback and support further learning" [4]. Smith claims that formative assessments "continually assess students' learning progress providing feedback to students and instructors that determines the course of subsequent teaching and learning activities" [5]. Researchers believe that formative assessment increases proficiency and focus in planning, reduces student nervousness, promotes understanding of the course content, and gives students a sense of development [6]. It is asserted that formative assessment gives teacher a greater level of autonomy and constitutes an effective means of teaching a wide variety of students in both online or face-to-face environments.

Combination of formative assessment with technological tools has given rise to online formative assessment. According to Pachler et al., formative e-assessment is "the use of ICT to support the iterative process of gathering and analysing information about student learning by teachers as well as

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learners' [7]. Pachler et al. explain that both educators and learners may benefit from the use of formative e-assessment in the classroom settings. Proper implementation of online formative assessment has the potential to promote and maintain meaningful interactions among learners and educators as well as foster the development of effective learning communities [8].

Abovementioned guidelines were used to design the online formative assessment tasks in this paper. Gikandi's principles helped design authentic and valuable assessment activities which enhanced students' engagement. A detailed summary of the main findings and results of the whole study will be provided in the next section of this paper.

### 3. Online formative assessment tools – the study

#### 3.1 Research approach

The present study is based on the Goal, Question, Metrics (GQM) research approach developed and promoted by Victor Basili in 1992. According to this approach, a researcher defines a goal for an object (Conceptual Level). Then, a set of research questions is being asked (Operational Level), and finally, a set of metrics is described to answer the defined research questions in a measurable way (Quantitative Level) [9]. When it comes to this study, the metrics chosen to provide answers to the research questions are a mixture of quantitative and qualitative data.

#### 3.2 Research questions

The following research questions were asked to assess and investigate the pedagogical impact of two online formative assessment tools, namely Kahoot! and Quizizz:

- a) How is student's motivation and engagement affected by the use of Kahoot! and Quizizz and paper tests for formative assessment?
- b) Do the students want to continue to use online formative assessment tools in the classroom?

The first research question investigates how students' motivation and engagement change when they use online formative assessment tools or paper-based tests in the classroom. The researcher attempts to examine whether the use of online formative assessment tools constitutes an attractive learning environment and enhances student understanding. When it comes to the second question, the researcher tries to investigate if students want to continue using online assessment tools in the classroom. This study also attempts to examine how frequently students would like to be presented with this form of assessment.

#### 3.3 Design and procedure

For the purposes of this study, learners work with two online applications, namely Kahoot! and Quizizz. In both applications teachers have their accounts where they design tests for students. Teachers can also adapt already existing tests to their own needs or share their own activities with other users. In order to play the game students need to have access to the Internet, a projector and a screen where the test is displayed. Students provide the answer using smartphones, tablets or laptops.

As far as research tools and procedures are concerned, I worked with a group of teenage students during the classes of English in one of the Polish Junior High Schools. The research was carried out with a group of 19 students who were in third grade. They were 15 years old and their level of language was upper-intermediate. Students were preparing for their final examination in English. The research was conducted during the first three months of the school year 2017. A research project was launched to investigate the effects of using two different shortest approaches in the English classroom:

- a) Running a paper-based shortest;
- b) Using two online formative assessment tools, namely Kahoot! and Quizizz.

It can be noticed that Polish students struggle to master English grammar and some grammatical structures pose a problem for them. Abovementioned assessment tools were used to give students practice of some troublesome grammar points ranging from present, past and future tenses, conditionals, passive voice through reported speech, verb patterns and direct/indirect speech.

Pre- and post-tests were used to assess the learning outcome of the grammar lessons, and a questionnaire was carried out to gather data on students' engagement and motivation. Both tests consisted of ten questions, all with four alternative answers.



## 4. Results of pre- and post-testing

This section presents the results of pre- and post-testing. As mentioned above, students took a grammar pre- and post-test to assess the effectiveness of the use of online formative assessment tools in the classroom. The pre- and post-tests assessed the general grammar knowledge assumed to be covered in Junior High School. Table 1 shows the statistics and the results of both tests. The average score on the pre-test was 11 correct responses out of 30 multiple-choice questions (38%). The highest score was 17 correct answers (57%) and the lowest 6 correct responses (20%). The average score (20 correct answers out of 30) on the post-test greatly improved in comparison to the pre-test (see Table 1). The highest score on the post-test was 26 out of 30 (86%), and the lowest 17 out of 30 (57%). It can be concluded the use of online formative assessment tools as a means to foster knowledge enhances student performance and complements class lectures.

	Pre-test results	Post-test results
The average score	11 correct answers out of 30 (38%)	20 out of 30 (67%)
The highest score	17 out of 30 (57%)	26 out of 30 (86%)
The lowest score	6 out of 30 (20%)	17 out of 30 (57%)

Table 1. Pre- and post-test results

### 4.1 Results of the questionnaire

Table 2 presents the statistics and the results of the questionnaire carried out by the end of the experiment. To improve readability, a 3-point Likert Scale was used to show the results (Disagree, Neutral, Agree). The questionnaire consisted of five statements which reflected the research questions.

Statement	Group	Disagree	Neutral	Agree
1. The quiz was boring and not engaging.	Paper	16%	32%	53%
	Kahoot! and Quizizz	63%	11%	26%
2. It was fun to compete against other classmates	Paper	58%	11%	32%
	Kahoot! and Quizizz	11%	11%	79%
3. I am more positive towards topic after doing the quiz	Paper	63%	16%	21%
	Kahoot! and Quizizz	16%	16%	68%
4. I learned something from the quiz	Paper	63%	21%	11%
	Kahoot! and Quizizz	11%	11%	79%
5. I wish this form of testing was used more frequently	Paper	79%	16%	5%
	Kahoot! and Quizizz	11%	11%	79%

Table 2. Results of the questionnaire

As far as the first statement is concerned, more than half of students agreed that the paper quiz was not engaging and dull. Majority of students (63%) felt that online formative assessment tools were engaging. Only 26% of students thought Kahoot! and Quizizz did not engage them in the lesson. When it comes to the second statement, the vast majority of students (79%) agreed that it was fun and motivating to play the grammar games with the use of Kahoot! and Quizizz. Only 32% of students found the paper quiz motivating to do. The great majority of students (63%) claimed that they were not positive towards the topic after doing the paper quiz. Almost the same percentage of students agreed that Kahoot! and Quizizz involved them in the lesson. Small percentage of students (11%) stated that they learned something from doing the paper quiz. 79% of students deepened their understanding of English grammar by playing Kahoot! and Quizizz. When it comes the fifth statement, only 5% of students would like to do the paper quiz more frequently. Three quarters of students wished to use online assessment tools more frequently.

### 4.2 Conclusion

On the basis of data collected, it can be noticed that students significantly improved their knowledge of grammar. Although the grammar content might have been tough, the students seemed to be more

willing to master it through the use of online tools. Students' positive opinion of Kahoot! and Quizizz as effective learning tools suggests that, from time to time, the teacher ought to leave traditional ways of testing grammar, such as paper quizzes, and direct his attention towards the use of online assessment tools. Tiny minority of students were negative towards Kahoot! and Quizizz. It can be assumed that they felt discouraged to participate in the game as they did not master the basics of Kahoot! and Quizizz well. In order to avoid student's disappointment and disengagement, the teacher may encourage peer teaching. To be precise, the teacher may enable students to practise Kahoot! or Quizizz in pairs prior to testing.

The student feedback questionnaire clearly outlines that learners would like to use Kahoot! or Quizizz in class in the future. One may wonder if the reason is the lack of attractive teaching method, the need for strong stimuli or the desire to get an immediate feedback on how well they have performed on the test. It cannot be denied that online tools provide students with interactive learning environments that appeal to various learning styles. Students may deepen their knowledge through the use of audio or visual applications. The study results show that the students understand grammar content better when online assessment tools are used. All in all, the use of online tools can add motivation to classroom activities as well as spark students' interest in the material being taught.

## References

- [1] Rust, C., O'Donovan, B. & Price, M. "A social constructivist assessment process model: how the research literature shows us this could be best practice", *Assessment & Evaluation in Higher Education*, 30:3, 2005, pp. 231-240
- [2] Struyven, K., Dochy F. & Janssens, S. "Students' perception about evaluation and assessment in higher education: a review", *Assessment & Evaluation in Higher Education*, 30:4, 2005, pp. 325-341
- [3] Orsmond, P., Merry, S. & Reiling, K. "Biology students' utilization of tutors' formative feedback: a qualitative interview study", *Assessment & Evaluation in Higher Education*, 30:4, 2005, pp.369-386
- [4] Gikandi, J.W., Morrow, D, & Davis N.E. "Online formative assessment in higher education: A review of literature", *Computers & Education*, 2011, pp. 2333-2351
- [5] Smith, G. "How does student performance on formative assessments relate to learning assessed by exams?" *Journal of College Science Teaching*, 2007, 36 (7), pp. 28-34
- [6] Stiggins, R., & DuFour, R. "Maximizing the power of formative assessments", *Phi Delta Kappan* 90 (9), 2009, pp. 640-644
- [7] Pachler, N., Daly, C., Mor, Y., & Mellar, H. "Formative e-assessment: Practitioner cases", *Computers & Education*, 2010, pp. 54: 715–721
- [8] Sorensen, E. K., & Takle, E. S. "Investigating knowledge building dialogues in networked communities of practice. A collaborative learning endeavor across cultures", *Interactive Educational Multimedia*, 2005, (10), pp. 50-60
- [9] Basili, V. R. "Software modeling and measurement: the Goal/Question/Metric paradigm", *University of Maryland for Advanced Computer Studies*, 1992

Table 1. Pre- and post-test results

Table 2. Results of the questionnaire

<<https://kahoot.it/#/>> available on August 17, 2017

<<https://quizizz.com/>> available on August 17, 2017