

# The Effectiveness of Using Quizizz in Improving Students' Collaboration Skills in the Course of Assessment of the Process and Results of Learning Chemistry

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## Article Info

### Article history:

Accepted: 22 November 2025

Publish: 08 December 2025

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### Keywords:

Effectiveness

Quizizz

Collaboration

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## Abstract

*The purpose of this study was to determine the effectiveness of Quizizz in improving student collaboration. A one-group pretest-posttest design was used in this study. In this study, Quizizz was used in classroom learning with a project-based learning model. This study was conducted on 23 students in class R-001 who took the Chemistry Learning Process and Outcome Assessment course in the 2025/2026 academic year. Questionnaires were administered before and after the lectures. The hypothesis test results showed a significance value of 0.000 or less than 0.05. This indicates that the students' collaboration skills in this study increased significantly after using Quizizz.*

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## 1. INTRODUCTION

The field of education has seen tremendous transformation as a result of the quick advancement of information and communication technologies. Technological advances have led to significant changes and developments in various aspects of life [1]. Technological developments require teachers, students, and parents to be able to adapt in order to improve the quality of learning [2]. The paradigm shift to student-centered learning requires lecturers to be able to create an interactive, collaborative, and technology-based learning environment. In the digital age, technology is crucial to raising the standard of education since it may make learning more effective, adaptable, and engaging [3]. One of the main challenges in education is developing 21st-century skills, especially collaboration skills. 21st-century skills are very important to have because they can improve the ability to solve problems and summarize information received [4]. Collaboration skills enable students to work together in groups, exchange ideas, respect differences of opinion, and achieve common goals. As preparation for facing the era of 21st-century globalization, collaboration skills are essential for working together in groups and working professionally [5].

Based on field observations, it appears that many students still experience difficulties in collaborating effectively, such as a lack of active participation, domination by certain group members, or a lack of constructive communication in group learning activities. To overcome this, innovation is needed in learning strategies that can encourage active interaction and cooperation among students. One alternative that can be used is the use of gamification technology in the learning process. The use of technology can encourage the emergence of various interesting and new learning methods and models for teachers [6]. Gamification uses elements and techniques from various fields,

such as games that can improve understanding of the material, learning motivation, and collaboration [7]. One popular and easy-to-use gamification platform is Quizizz.

Quizizz is an application that allows educators to create interactive quizzes that can be played individually or in groups during learning activities [8]. Quizizz is a narrative and flexible educational game application, making learning more lively and enjoyable [9]. The Quizizz application has many interesting features, so that the practice questions created can be tailored to the abilities and learning progress of students [10]. Based on this description, this study will apply the Quizizz application to improve students' collaboration skills.

## 2. RESEARCH METHODS

This study used a one-group pretest-posttest design. In this study, the Quizizz application was implemented in classes that used the project-based learning model. This study was conducted on 23 students in class R-001 who took the Chemistry Learning Process and Outcome Assessment course in the 2025/2026 academic year. The instrument used was a questionnaire that was filled out before and after the lecture.

## 3. RESULTS AND DISCUSSION

### 3.1. Research Results

This study involved 23 students who took the Chemistry Learning Process and Outcome Assessment course in class R-001. Collaboration skills were measured through pretest and posttest. Descriptive results are shown in Table 1.

**Table 1.** Results of the Pretest and Posttest of Student Collaboration Skills

Statistics	Pretest	Posttest
Average	69.30	80.70
Minimum	78	88
Maximum	60	72

After the data on student collaboration skills was obtained, a normality test was conducted. The results of the normality test are presented in Table 2.

**Table 2.** Normality test results

Data	Significance
Pretest	0.215
Posttest	0.098

The normality test results presented in Table 2 show that both the pretest and posttest obtained significance values greater than 0.05, so that the hypothesis test could be performed using a parametric test with a paired sample t-test. The hypothesis test results show a significance value of 0.000.

### 3.2. Discussion

Students' collaboration skills significantly improved after Quizizz was implemented, according to the paired sample t-test results, which were less than 0.05. This is in line with [11], which states that students' motivation, critical thinking abilities, collaboration, and engagement are all improved by using the Quizizz app. Using the Quizizz app can enhance the interactivity and significance of educational sessions [12]. The increase in collaboration through the use of the Quizizz application in learning is in line with the principle of gamification, which can encourage

students to communicate, discuss, and solve problems in groups. The use of the Quizizz application in learning can make the learning process active and enjoyable [13]. Student-centered learning is learning that prioritizes the development of students' creativity, abilities, personalities, and learning needs [14].

Lectures that utilize the Quizizz application can provide a more interactive and participatory experience. Through direct involvement in educational games, students are no longer passive recipients of information but become active participants involved in group decision-making. This is in line with the results of research by [15] that the integration of game elements in learning can strengthen interactions between students, thereby increasing active participation and analytical skills.

The increase in collaboration in lecture activities conducted in this study was not only an increase in technical cooperation in completing tasks, but also an increase in mutual respect, empathy, and trust among group members. Overall, in this study, the use of gamification-based technology such as the Quizizz application can be an innovative learning strategy to develop 21st-century skills, particularly collaboration skills.

#### 4. CONCLUSIONS

The findings of the hypothesis test indicate a significance value of 0.000. Students' collaboration skills significantly improved after Quizizz was implemented, according to the paired sample t-test result, which is less than 0.05.

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