JPPS (Jurnal Penelitian Pendidikan Sains)
Homepage : https://journal.unesa.ac.id/index.php/jpps
Email : jpps@unesa.ac.id

p-ISSN : 2089-1776 ; e-ISSN : 2549-1597
JPPS, Vol. 13, No. 1, November 2023 : 54-63

Effectiveness of My Alazka Application Learning Media in Improving Student' Chemistry Learning Outcomes

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DOI: https://doi.org/10.26740/jpps.v13n1.p54-63

Sections Info

Article history:
Submitted: June 18, 2023
Final Revised: June 23, 2023
Accepted: Oct. 31, 2023
Published: Nov. 30, 2023

Keywords:
Learning Media
My Alazka Application
Learning Outcomes.

ABSTRACT

Objective: *This research aims to determine, analyze, and identify the effectiveness of the My Alazka Application learning media on the chemistry learning outcomes of 10th grade pupils.* ***Method:*** *This study used a quantitative method for experimental research. The subject of this study was a 28 Student in 10th grade, in accordance to the pretest-posttest design with a single group. This research uses instruments such as questionnaires that are used once before the investigation, known as the pre-test, and once after the experiment, known as the post-test.* ***Result:*** *Based on the Descriptive N-Gain Score data output, The data indicates the mean N-Gain score among students in 10th grade is 63.3074 or 0.63 which is included in the "moderate". The use of My Alazka can significantly enhance the effectiveness of the learning process in communicating messages and lesson content, also learning outcomes of chemistry subjects for student in 10th grade.* ***Novelty:*** *My Alazka application can be an alternative solution for educators and students during the implementation of the learning processes to improve chemistry learning outcomes for 10th grade student.*

INTRODUCTION

Education provides a pivotal role in the cultivation of high-quality human capital. The coexistence of enhancing the integrity of education and Human Resources is vital. The efficacy of the learning process is indicative of the enhancement of educational caliber (Rakhmetov et al., 2022). Within educational settings, the process of learning is characterized by interactivity, inspiration, enjoyment, and challenges. This approach serves to stimulate active student engagement while also allowing ample room for the cultivation of creativity and independence in alignment with individual talents, interests, and physical and psychological growth. In order to achieve this objective, the utilization of educational resources is necessary To accomplish this goal, it is essential to utilize educational materials (Basri & Khatimah, 2019).

Sappaile (2019) shows that the totality of the facilities or media utilized in the learning process greatly affects the learning outcome. The media employed, messages, and instructional materials must be more diverse to optimize student comprehension and encourage student motivation to learn (Moghavvemi et al., 2017). Due to the variety and multiplicity of pupil learning models, this is intended. For instance, several students in one class tend to comprehend the material through visual media, while others prefer auditory media, and the remaining students have a kinesthetic learning style. For messages to be assimilated by all students, teachers must be able to combine different types of media, specifically visual-based, audio-based, and kinesthetic-based media (Porat et al., 2018).

Learning media refers to tools and materials employed to achieve the goals of the educational process. Learning media serves as a conduit for students and their teachers, facilitating effective interactions between teachers and students (Sidabutar, 2021). With

learning media, it is feasible to motivate students to become more engaged and interactive in the learning process, meaning minimizing the monotony of studying and facilitating their comprehension of the content being presented. The teacher must possess the ability to monitor the progress of science and technology in order to provide impactful educational resources (McGunagle & Zizka, 2020).

The accelerated development of technology has resulted in the creation of learning media applications, one of which is My Alazka, which can be used to create engaging interactive learning media (Rosyidah, 2019). My Alazka is an online and offline learning tool that can be implemented in the classroom at any time (Fitriyanti, 2018). Aside from that, students and instructors can easily access the My Alazka application. Through this application, students can simply obtain different subject matter designs, practice queries, and complete teacher-assigned tasks. Using the Monitoring feature, instructors can also easily provide learning materials, interact through the application, assign homework, and administer online exams. And the subject matter also includes learning objectives, adventure concepts, lesson animations, and e-books that explain learning material through video and audio-visual displays so that they can attract the attention of students; such learning media can increase children's motivation in learning and comprehension of the subject matter in order to boost student academic achievement (Fauziah & Hidayat, 2022).

Based on some of the theories, it can be concluded that learning outcomes are the knowledge acquired by an individual through a process that results in modifications to their behavior, perspective, and skills. In this investigation, cognitive learning outcomes were the ones that were measured (Guo et al., 2020). In accordance with the findings of Suryani et al., (2022) research, My Alazka learning media is one approach to address the aforementioned issue, as measured by the average value of student learning outcomes (posttest) for local experiments (82.03) and local controls (75.03). The experimental group's local average value is markedly higher than that of the control group.

My Alazka possesses the capability to direct students' attention during educational tasks, thereby enhancing the effectiveness of message delivery. It facilitates the repetition of information, promotes comprehension of both abstract and concrete concepts, expedites message transmission, and facilitates better retention of information. Additionally, Alazka enables the integration of text, images, audio, music, and visuals into a cohesive entity, thereby facilitating the achievement of learning objectives (Suryani et al., 2022). Thus, it is suspected that My Alazka media has an impact on the chemistry learning outcomes of 10th grade students. The researcher is interested in utilizing My Alazka media in chemistry learning in 10th grade at Al-Azhar Islamic High School Kelapa Gading to determine its efficacy in enhancing student learning outcomes, particularly in chemistry subjects. The purpose of this study was to determine the efficacy of My Alazka learning media in enhancing chemistry learning outcomes for 10th grade pupils at Al-Azhar Islamic High School Kelapa Gading in the academic year 2022/2023.

RESEARCH METHOD

General Background

The research methodology employed in this work is a quantitative approach for experimental investigation. The focus of this investigation was on a singular group, adhering to the one-group pretest-posttest design (Mulyana, 2021). Experimental quantitative research design employs a systematic and rigorous scientific methodology.

This framework facilitates the implementation of methodologies that enable researchers to empirically evaluate a hypothesis and rigorously investigate the cause-and-effect associations among different variables. In an experimental study, a completely randomized design may be utilized, wherein participants are randomly assigned to different groups (Fatayan et al., 2023). Alternatively, the research may utilize the randomized block design, wherein individuals with a shared feature are grouped together. In all situations, treatments are randomly allocated to participants within their respective groups (Hsieh et al., 2014).

Sample / Participants / Group

Sugiyono (2011)defines the research population as the entire research group or object to be investigated. This study's population consisted of 28 10th grade students. Although The sample is a subset extracted from the entirety of the item being investigated and is regarded as a representative of the complete population (Creswell & Clark, 2011). The sampling technique employed in this study is a complete enumeration of the whole population. Total sampling, also known as census sampling, is a sampling technique wherein the total number of samples selected is equivalent to the size of the entire population. The justification for employing total sampling is based on Sugiyono (2015) assertion that when the total population is smaller than 100, the entire population is utilized as the study sample. The sample size for this study consisted of 28 individuals.

Instrument and Procedures

The data acquisition technique employs the learning achievement test technique. Prior to treatment, all research samples were given a pretest of learning outcomes in the form of multiple-choice questions that had been validated using bivariate Pearson correlations and reliability tests with Guttman split-half coefficient facilitated by version 16 of the SPSS application. A pretest refers to an evaluative measure that is delivered to participants in a research project before to the implementation of any sort of intervention or therapy (Rosyida et al., 2016). After the sample is given treatment by learning using the My Alazka application in chemistry subjects, then the sample is given a post-test of learning outcomes. A posttest refers to an evaluative tool that is delivered to individuals participating in a study after to their receipt of therapy. In a pretest-posttest study design, it is imperative to give identical assessment measures to participants both before and after the treatment intervention (Juita & Widiyarto, 2019). This approach is crucial for discerning if any observed changes can be confidently attributed to the therapy itself.

Data Analysis

The data obtained from the pretest and posttest was further processed and evaluated. The descriptive data analysis yields a table presenting the distribution of maximum, minimum, mean, and standard deviation values (Tamrin et al., 2018). Following that, the Normalized Gain (N-Gain) exam is carried out to evaluate the efficacy of My Alazka learning media on the chemistry learning outcomes of students from Al-Azhar Islamic High School in Kelapa Gading, North Jakarta. Before the data were analyzed, a preliminary analysis test was conducted, which included a Shapiro-Wilk normality test. Utilizing the SPSS application, the data were analyzed.

RESULTS AND DISCUSSION

Results

Using the My Alazka application, chemistry learning activities at Kelapa Gading Al-Azhar Islamic High School, Kelapa Gading, North Jakarta, for the 2022/2023 academic year already apply learning media. This application is very simple to use, and the teacher only uses it to prepare lessons. Both instructors and students have accounts. In addition, students can promptly access the material that will be taught and the assignments that will be assigned. At least the My Alazka application can serve as an alternative learning solution, allowing students to complete assignments and participate in learning from anywhere while still being monitored by teachers and parents (Kurniawan, 2019).

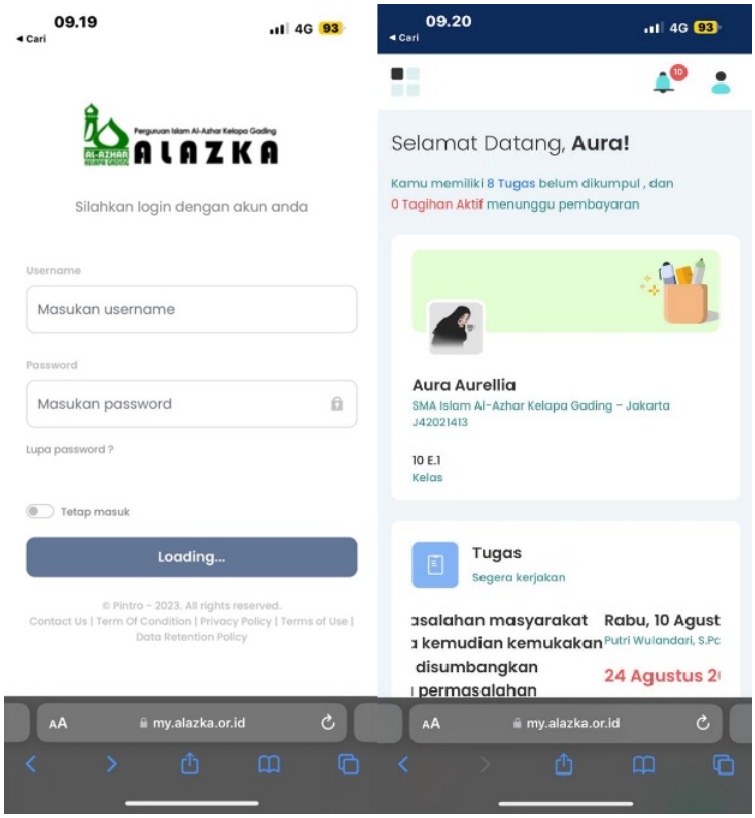

Figure 1. Login View, and Home View.

Figure 1 shows the front view of the My Alazka application (my.alazka.or.id) for students at Al-Azhar Kelapa Gading Islamic High School, North Jakarta. To enter the account, you must enter a username and password. After that, entering the Username and Password, a greeting will appear from the owner of the account along with any classes and assignments that have not been completed along with the submission deadline.

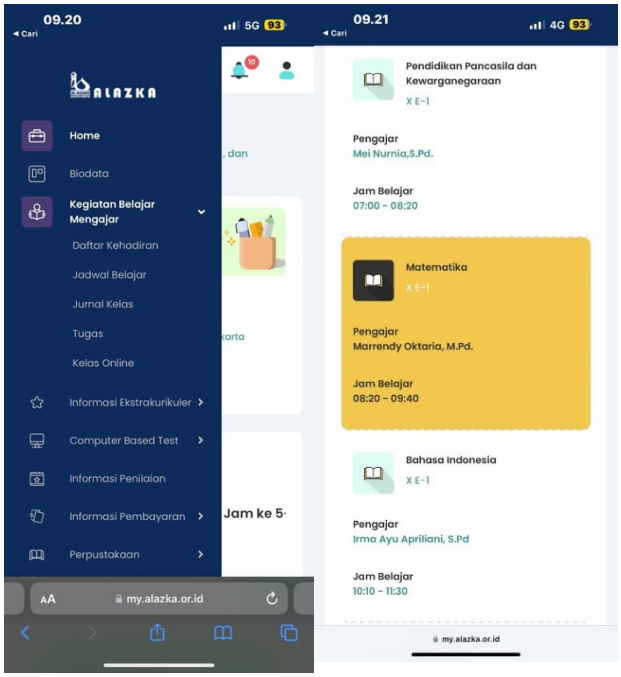

Figure 2. Menu View and Learning Menu.

In Figure 2 is the menu display of the My Alazka application. And there are several sub menus from the Teaching and Learning Activity Menu, namely attendance lists, study schedules, class journals, assignments, and online classes. Then there is also a display of the X E-1 class schedule, namely there are several subjects. At 07.00 - 08.20 is the PPKN lesson schedule with a teacher, then at 08.20 -09.40 is the Mathematics lesson schedule with a teacher and the last one at 10.10 - 11.30 is the Indonesian language lesson schedule with a teacher.

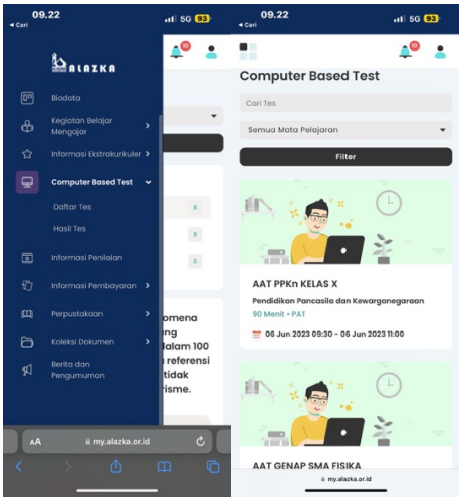

Figure 3. Computer Based Test Menu and Sub Menu 'Daftar Les' .

In Figure 3, the display of the My Alazka application from the Computer Based Test menu has several sub menus, namely the list of tests and test results. Then there is also a display of the list of tests from various subjects. If seen from Figure 6, there is a PAT (Year End Assessment) test schedule for PPKN subjects on June 6, 2023, at 09.30 – 11.00 (90 minutes) and after the PPKN subject is Physics. The interaction between students and teachers in learning can be seen in the form of giving assignments to students in various

lessons. It can also be seen in Figures 3 and 5 in the My Alazka application that there are several other features in the form of biodata for both teachers and students, teaching and learning activities in the form of attendance lists, study schedules, class journals, assignments, online classes. Then there is extracurricular information, computer-based tests including a list of tests and test results, then assessment information and payment information. And there are digital/online libraries, document collections and finally news and announcements. (Multazimah et al., 2017)

Moreover, the learning results obtained from the My Alazka application are subjected to analysis utilizing descriptive statistical methods, based on the pretest and posttest data. Descriptive statistical analysis is to provide a comprehensive depiction of the study data acquired, encompassing many aspects such as data quantity, maximum and lowest values, mean value, standard deviation, and other relevant measures. The data presented above is the outcome of a descriptive statistical analysis conducted using the SPSS software tool.

Table 1. Descriptive Statistics

	N	Min	Max	Mean	Std. Dev
Pre-Test	28	25	85	50.71	18.445
Post-Test	28	65	100	82.68	8.331
valid N (listwise)	28				

According to the Descriptive Statistics data output provided in Table 1, it is evident that the average value of the pre-test results is 50.71, but the average value of the post-test findings is 82.68. This conclusion suggests that the average value of the posttest results is greater than the average value of the pretest results. In addition, the data obtained from the pre-test and post-test of the learning achievement exam were further analyzed for normalcy using the Shapiro-Wilk test.

Table 2. Descriptives N-Gain Score.

N-Gain_Percent		Statistic	Std. Error
Mean		63.3074	2.30036
95% Confidence	Lower Bound	57.2997	
Interval for Mean	Upper Bound	69.3151	
5% Trimmed Mean		63.1609	
Median		65.6863	
Variance		240.048	
Std. Deviation		1.54935E1	
Minimum		33.33	
Maximum		100.00	
Range		66.67	

According to the results obtained from the Test of Normality, the significant values (Sig.) for the pre-test data of students' chemical learning outcomes and the post-test data of student learning outcomes are 0.108 and 0.583, respectively. Based on the provided data, it is evident that the learning outcomes of 10^{th} grade students exhibit a normal

distribution. This conclusion is drawn from the fact that both the pretest and posttest data yielded Shapiro-Wilk test results greater than 0.05, indicating that the normality assumptions have been satisfied for the research data pertaining to the learning outcomes of 10th grade students at Al-Azhar Kelapa Gading Islamic High School in North Jakarta. The study conducted the Normalized Gain (N-Gain) test to assess the effectiveness of My Alazka learning media on the chemistry learning outcomes of 10th grade students at Al-Azhar Islamic High School Kelapa Gading, located in North Jakarta. The subsequent information presents descriptive statistics on the outcomes of the Normalized Gain test conducted utilizing the SPSS software application.

Table 3. N-Gain Score Category

N-Gain Score	Category
$g > 0,7$	High
$0,3 \leq g \leq 0,7$	Moderate
$g < 0,7$	Low

Table 2 exhibits the aforementioned information. According to the data output of the Descriptive N-Gain Score, it is evident that the mean N-Gain score for students in 10th grade at Al-Azhar Islamic High School Kelapa Gading, located in North Jakarta, is 63.3074 or 0.63. This score falls within the "moderate" category, as the normalized gain score falls within the range of $0.3 \leq g \leq 0.7$.

Discussion

Based on the findings with 10th grade's teachers at Al-Azhar Islamic High School Kelapa Gading, North Jakarta, various learning methods, including lecture methods, practicum methods, and even discussion methods, as well as markers, white boards, books, and internet-downloaded macromedia flash, have been implemented. However, it is not uncommon for students to require remediation because they have not mastered the KKM even though the teacher has utilized the most effective learning strategies and media. The results of interviews with students conducted in different locations than the teacher indicated that chemistry lessons were frightening and difficult, and that they were also presented in the final hours of the day, making students occasionally tired. This suggests that chemistry is perceived as a subject that makes some students less motivated to attend to the chemical material presented, resulting in a lack of comprehension of some of the material presented. This leads students to the conclusion that chemistry is a challenging subject. Clearly, this has a negative impact on student learning outcomes (Futra et al., 2021).

According to Sukiman et al., (2012), Learning media can be utilized to transmit signals from communicators to receivers in order to provoke students' cognition, emotions, anxieties, curiosities, and motivation towards attaining overarching educational goals (Arifin, 2019). Learning media have the ability to elicit new needs and interests, boost motivation, and enhance learning activities. They may also impact students' learning psychology. In contemporary times, the progress of scientific and technological endeavors serves as a catalyst for the reimagining and reconfiguration of educational technology within the realm of learning. According to Ismail & Hassan (2023), the information and communication technology (ICT)'s integration has revolutionized traditional learning methods, leading to the emergence of media-based learning. This

kind of learning encompasses many technological platforms such as computers and the internet, ultimately giving rise to e-learning (Kohlweiss et al., 2020).

Every individual aspires to live a life of quality, which can be attained through education. because education is a means of producing high-quality human resources (Junanto & Afriani, 2016). The law establishes the significance of education for humans. This is consistent with Law No. 20 of 2003, education is defined as a purposeful and organized effort to establish a conducive atmosphere for learning and facilitate a process through which pupils actively cultivate their abilities. Education will teach humans to develop their potential so that they are able to confront the challenges posed by the advancement of science and technology and to surmount the difficulties of daily life. In the current 5.0 revolution era, technology is of great interest, particularly considering the development of an era in which humans are increasingly interested in using gadgets, browsing the internet, and even spending time in front of laptops (Sonia, 2020). Referring to this phenomenon, education observers are presently contending to develop new technologically based learning media.

According to Mardika (2020), learning media is used as a tool to facilitate and assist teachers in communicating various materials and subject matter, as well as to streamline and facilitate students' comprehension of the materials and subject matter. With the availability of teaching and learning media, students can learn quickly and enjoyably follow their lessons. The teacher's function in the learning process is therefore that of a learning processor. In accordance with Budiariawan (2019), the teacher must be able to converse and communicate in order to fulfill this role, which includes serving as a conduit of information, so that he can carry out his functions and responsibilities effectively. As much as feasible, instructors use learning media to facilitate the process of delivering lesson information to students (Wati, 2021). Teachers can conduct a more interactive learning process with students using media. This demonstrates that the appropriate learning media can engage students and facilitate their comprehension of course material.

Different education specialists provide the following definitions of learning: According to (Chin Wei et al., 2012), learning is the process by which an individual obtains a change in behavior as a consequence of his own experience interacting with his environment. In addition, according to Erickson & Sammons-Lohse (2021), learning outcomes consist of skills, knowledge, comprehension, and attitudes. As for learning outcomes, according to Walker (2012), learning outcomes are the result of an assessment of the abilities possessed by students after engaging in learning experiences or participating in the learning process on materials in the cognitive domain, which include six components: knowledge or memory, comprehension, application, analysis, synthesis, and evaluation.

Pretest results for 10th grade students in chemistry lessons indicate a mean value of 50.71, whereas posttest results indicate a mean value of 82.68. In chemistry classes, 10th grade students demonstrate significant differences in their learning outcomes. In addition, it is evident from the N-Gain Score, which has an mean value of 0.63 and is classified as medium. Therefore, it may be inferred that employing My Alazka can augment the academic achievements in chemistry among 10th grade students.

In accordance with what Cigdem & Yildirim (2014) stated, In addition to stimulating students' enthusiasm and interest in the process of learning, educational media may also serve as a valuable tool for improving students' comprehension abilities. Furthermore,

these media can effectively provide information in a captivating and trustworthy manner, hence enabling the interpretation of data and condensing complex material.

Therefore, the utilization of instructional media at the initial stage of teaching would greatly augment the efficacy of the educational process in conveying messages and instructional material during that period.

According to Mills et al., (2019), Utilizing technology-based learning material can enhance student learning motivation and render education more captivating, intriguing, and pleasurable. Because students are enthusiastic and motivated to partake in the anywhere-accessible teaching and learning of chemistry subjects, student learning outcomes improve. Not only can students learn the material in class, but also when they return to their respective residences. The My-Alazka application has several advantages, including learning media that can be accessed anytime and anywhere; Android-based chemistry learning media that is presented on smartphones makes students more interested; and this chemistry learning media is equipped with pictures and animations as well as learning videos to facilitate comprehension, so that students become more interested in learning chemistry.

CONCLUSION

Fundamental Finding: Students at the Al-Azhar Islamic High School in Kelapa Gading, North Jakarta, are already using learning media with the My Alazka application in their chemistry classes. This application is very simple to use, and the teacher only uses it to prepare lessons. Both instructors and students have accounts. In addition, students can promptly access the material that will be taught and the assignments that will be assigned. Based on the study and discourse, it can be inferred that the effectiveness of the My Alazka learning medium in facilitating chemistry learning outcomes among tenth-grade students at SMA Islam Al-Azhar Kelapa Gading, North Jakarta, may be characterized as moderate. **Implication:** The use of My Alazka can greatly improve the efficacy of the learning process in communicating information and the content of lessons, also learning outcomes of chemistry subjects for student in 10th grade. Therefore, it can be said that the My Alazka application can be an alternative solution for educators and students in carrying out the learning process to improve chemistry learning outcomes for 10th grade students of Al-Azhar Islamic High School Kelapa Gading, North Jakarta. **Limitation:** This study only compares traditional learning (classroom lectures and exercises) with learning using My Alazka. This study only analyzes the results of these comparisons and does not provide strategies or steps to improve learning outcomes. **Future Research:** For further research on chemistry learning in 10th grade Al-Azhar can use other more interesting learning media, such as virtual reality, chemistry learning games, videos and so on.

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