



The role of infographics in improving the literacy of F2 phase students in Quiz.Zep-based AKM training with deep learning analysis

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Abstract

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The Minimum Competency Assessment is designed to measure students' literacy and numeracy skills through text-based and visual questions. One form of presentation that demands high analytical skills is infographics because they combine text, numbers, and graphic elements in discourse paragraphs. For Phase F2 students, understanding infographics remains a challenge, so learning media that can adapt them to processing visual data is needed. This article aims to analyze the role of infographics in improving the literacy of Phase F2 students in AKM exercises based on Quiz.zep from a perspective. Deep Learning which emphasizes Mindful, Meaningful, and Joyful Learning. The method used was descriptive qualitative with observation, interviews, literature study, and documentation techniques. The study was conducted at SMA Negeri 1 Turi in grade XII (F2.1 and F2.2) with a total of 71 students. Data were analyzed through the stages of reduction, categorization, interpretation, and drawing conclusions. The results showed that the use of infographics through Quiz.zep improved students' visual literacy and numeracy, with an average score of 81.8 in grade F2.1 and 80 in grade F2.2. In addition, students were better able to interpret visual data, although they still faced difficulties in connecting complex text and graphics. Implementation of Deep Learning demonstrates more conscious student involvement (mindful), relevant (meaningful), and fun (joyful). Thus, the role of infographics and Quiz.zep effectively supports increased literacy while creating critical, reflective, and interactive learning experiences.

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INTRODUCTION

Language learning consistently emphasizes the roles of four skills: listening, reading, speaking, and writing. Likewise, efforts to understand the context of literacy, which has six basic literacy patterns: language literacy, numeracy literacy, science literacy, digital literacy, financial literacy, and cultural and civic literacy (Sani, 2021: 1-2). Language literacy is the

foundation of understanding that leads to reading and writing. Furthermore, numeracy literacy is the knowledge to interpret various symbols and graphics. These two areas of literacy encompass the knowledge and skills to read, write, search and browse, process, and understand information within the scope of text analysis. The analysis is intended to achieve the goal of uncovering ideas.

The Minimum Competency Assessment (AKM) is an assessment of the fundamental competencies required for students to develop their capacity and participate positively in logical-systematic thinking, reasoning, and competently processing information (Pusmendik, 2020: 3-4). This assessment is designed to measure students' language literacy and numeracy skills. Students are required not only to understand the material but are also directed to learn to critique and analyze various forms of discourse paragraphs. Discourse paragraphs are part of a complex discourse that expresses thoughts and ideas in texts, for example, infographics.

Infographics present comprehensive information using both visual and verbal elements, conveying information through visual communication in the form of images, graphics, and text. Using infographics makes data presentations appear more concise, clear, and engaging. However, this type of data presentation also requires adequate literacy skills.

In today's educational environment, learning with infographics can be found in the F2 phase or grade 12 of high school (SMA/SMK/MA) or equivalent. Understanding infographics poses a challenge for some students, as they are generally accustomed to processing narrative text rather than complex, pure data presented visually. This situation demonstrates the need for familiarization through infographic-based training media to improve student literacy.

A potential alternative to current learning is learning that encourages active and enjoyable student engagement. One of the learning media currently booming among educators is digital media, such as interactive quizzes. To support the achievement of AKM practice in the context of this infographic, a quiz platform called Zep Quiz or Quiz.zep is being utilized. Quiz.zep helps teachers present adaptive infographic questions for playful learning. The use of these interactive quizzes provides an opportunity to increase student learning motivation and familiarize them with AKM question patterns that require textual and visual analysis.

In writing this article, a formulation emerged that became the focus of the study: how can infographics support the literacy of F2 phase students (equivalent to grades XI-XII) through Quiz.zep-based AKM exercises? How can deep learning analysis be used to measure the effectiveness of students' understanding of infographic questions?

Through a descriptive qualitative approach, this article explains the purpose of infographics in improving the literacy of F2 students at SMA Negeri 1 Turi during AKM exercises and links their relevance to the use of Quiz.zep as a Deep Learning learning tool. Thus, the results of the discussion can provide a theoretical overview and provide useful references.

Infographics are a form of data visualization that conveys information in a concise, visual design. Through infographics, students learn to recognize and process available information. Infographics explain lengthy data in concise but clear language. The use of engaging visual elements certainly stimulates readers' interest in literacy.

The graphic layout and colors create a more visually appealing discourse display because infographics simplify complex data presentations. Furthermore, the flow of the infographic's presentation resembles a comic strip. This certainly makes it easier for readers to understand the presented data and information. Infographics emerge as a relevant learning medium for achieving language literacy competency, as they allow for a less boring presentation of textual information.

The Minimum Competency Assessment components cover two areas: reading literacy within the context of informational and fictional texts, and numeracy literacy, which focuses more on calculating numerical data. Infographic questions provide facts, data, and information to develop objective, scientific knowledge.

The AKM questions are structured in an infographic format to focus on informational text content. This is used to measure literacy, presented through contextual stimuli, in the process of understanding, using, evaluating, and reflecting on a problem (Sani, 2021: 13).

In the context of infographic-based questions, they generally combine narrative text with visuals and charts. This process trains upper-secondary students to critically analyze information. Students attempt to discern the implied meaning of the visual data presented in the questions.

Whether a learning process is effective or not is largely determined by the educator's understanding of the characteristics of their students. Understanding student characteristics significantly determines the learning outcomes to be achieved, the activities to be undertaken, and the appropriate assessments for students. Therefore, student characteristics should be a key focus and foundation for educators in carrying out all learning activities. Student characteristics include: ethnicity, culture, social status, interests, cognitive development, initial abilities, learning styles, motivation, emotional development, social development, and motor development.

Reading interest is a person's desire to read. Someone with a strong interest in reading is likely to have the willingness to devote free time to reading. Specifically, the characteristics of F2 students serve as a benchmark for the success of infographics in Indonesian language learning. Students who are willing to make time to read undoubtedly influence their comprehension patterns.

The F2 phase is equivalent to high school/vocational school, and is at the formal operational cognitive stage, where students are critical, logical, and able to speculate about hypotheses. In practice, students at this stage generally still experience difficulties. Their understanding tends to be limited in terms of interpreting implied messages. Willingness to learn and literacy skills are key factors in determining students' success in answering practice questions in the Minimum Competency Assessment.

The role of learning media is as a medium for communication or the delivery of learning materials. Media is designed to be engaging and interactive. Students' reactions to a common topic will likely be tepid. However, when presented with a game, it can be more engaging.

In today's digital age, students are highly familiar with technology. Integrating technology-based educational games can be an effective strategy for increasing student motivation, compared to relying solely on conventional learning. Learning media that incorporates interactive gameplay creates a fun learning experience. One promising medium is Zep Quiz or Quiz.zep.

Zep Quiz is an interactive learning platform designed to increase student engagement and motivation in the learning process. Therefore, this medium serves as an alternative tool for presenting AKM questions with visual infographics. Students are encouraged to solve the questions while also familiarizing themselves with the learning experience of processing visual information data through technology.

The application of Deep Learning analysis in this article is an added value in achieving a Mindful, Meaningful, and Joyful learning process. Deep Learning encourages students to cognitively understand information and connect concepts to real-life situations, while also developing critical and creative thinking skills.

Mindful directs students' awareness to recognize and understand the learning context of infographic material. Then, *meaningful* emphasizes the relevance of infographic presentations to factual data that may be relevant to students' daily lives. In the context of infographic-based AKM exercises, *meaningful* helps students not only read data but also relate it to the realities of using graphics in text.

Lastly, *Joyful* is presenting a pleasant learning experience through student interaction with Quiz.zep learning media with elements of games, challenges, and collaboration.

METHOD

This article uses a descriptive qualitative approach because it aims to describe in depth the role of infographics in improving the literacy of F2 phase students through Quiz.zep-based Minimum Competency Assessment (AKM) exercises with deep learning analysis.

Observations were conducted during the learning process using Quiz.zep as a training medium. Researchers entered the classroom directly and observed the interactions between teachers and students using infographic-based questions. In addition to direct classroom observations, researchers also conducted a literature review by searching for data from textbooks, journals, scientific articles, and previous research relevant to literacy, infographics, digital-based learning, and the application of deep learning in educational analytics.

This research was conducted at SMA Negeri 1 Turi, precisely in the F2 phase in classes F2.1 and F2.2, which are 12 MIPA 1 and 12 MIPA 2, with a total of 35 students in the F2.1 phase and 36 in the F2.2 phase. The selection of this class was based on the class taught by the student's mentor teacher, and the class was the subject taught by the author, as well as being the class that was used as the object of observation since the beginning of learning activities using infographic-based questions.

Data collection was conducted using several techniques, namely observation, interviews, literature review, and documentation. Direct observations were conducted to observe students' activities and responses while working on infographic-based AKM exercises through Quiz.zep. Interviews were conducted with students to delve deeper into their experiences, difficulties, and the benefits of using infographics in understanding the questions. A literature review was conducted to strengthen the research's theoretical framework by searching books, journals, scientific articles, and previous research. Documentation was used to collect data on students' work on the Quiz.zep platform, which was then further analyzed using a deep learning model as a tool to identify answer patterns and support qualitative findings.

The data obtained were analyzed descriptively and qualitatively through four main stages. First, data reduction by sorting the data to maintain focus on the main issue, namely, the effectiveness of using infographics in improving student literacy. Second, data categorization by grouping the results of observations, interviews, and documentation based on certain themes such as student responses, level of understanding, and error patterns in answering questions. Third, data understanding and interpretation by connecting it to literacy theory, as well as digital and visual-based learning concepts. Fourth, conclusions were drawn to compile an overview of the role of infographics in improving student literacy in phase F2, where deep learning analysis served to strengthen the findings to provide a more comprehensive description.

Through these stages, this research is expected to provide a comprehensive picture of how infographics play a role in improving student literacy, both from cognitive and affective aspects, as well as how student learning patterns can be analyzed using a deep learning approach (*Mindful*, *Meaningful*, and *Joyful Learning*) on the Quiz.zep digital platform.

FINDINGS AND DISCUSSION

Based on the results of observations, documentation, and analysis of Quiz.zep-based quiz data, the average scores obtained were quite high in both experimental classes, namely 81.8 in class F2.1 and 80 in class F2.2. These scores indicate that the majority of students were able to understand the infographic questions given.

This improvement is demonstrated by students' tendency to interpret visual data more quickly than when working on narrative text-based problems. Documentation of the results of their work on Quiz.zep shows that more than 75% of students were able to answer questions requiring simple graphical analysis correctly, while questions combining text and visuals still resulted in several errors, particularly in drawing conclusions.

Interviews revealed that students found infographic-based questions more engaging because they presented information concisely and easily understood. However, some students also expressed difficulty connecting explanatory text with complex visual data.

The results of this study reinforce the theory that infographics play a significant role in improving students' visual and numeracy literacy (Sani, 2021). The average score, which is in the good category (above the Minimum Completion Level (KKM) of 75), indicates that presenting questions in infographic format can help students process information more quickly and accurately.

The comparison of F2.1 (81.8) and F2.2 (80) scores did not show a significant difference, so it can be concluded that the use of infographics through the Quiz.zep platform is effectively applied evenly across different classes. This demonstrates the consistency of learning media in improving students' literacy skills.

From a Deep Learning perspective (Mindful, Meaningful, and Joyful Learning), the use of infographics and Quiz.zep is able to create a more meaningful learning atmosphere.

From a deep learning perspective, the application of infographics and the use of Quiz.zep media have been proven to be able to create a more meaningful learning atmosphere through three main aspects, namely Mindful, Meaningful, and Joyful Learning.

First, the Mindful Learning aspect is evident in students' awareness of the details of the information presented in the infographics. Visual-based questions require students to focus on data structures, such as titles, legends, graph axes, and significant figures, before drawing conclusions. Observations show that students spent more time analyzing infographic-based questions than narrative text questions, but their answers were more accurate. This indicates metacognitive engagement, where students not only answer but also recognize their thinking processes.

Second, the Meaningful Learning aspect is reflected in students' ability to connect visual data with existing knowledge. Infographics, which combine text, numbers, and visual symbols, help students see the connection between abstract concepts and real-world phenomena. Through exercises on Quiz.zep, students don't simply copy information from graphs but rather engage in an elaboration process that involves drawing conclusions, comparing variables, and predicting potential outcomes. This activity makes the learning process more meaningful because the information acquired is not isolated but interconnected and contributes to the formation of new knowledge.

Third, the Joyful Learning aspect is realized through the positive emotional engagement experienced by students. The attractive infographic display, combined with the interactive quiz system on Quiz.zep, makes the learning atmosphere more enjoyable and less monotonous. Interviews with students showed that they were more motivated to work on infographic-based problems because they were considered challenging and easier to understand. This joyful factor encouraged students' persistence and consistency in practicing,

which ultimately resulted in high average scores in both classes, namely 81.8 in F2.1 and 80 in F2.2.

Thus, the synergy between Mindful, Meaningful, and Joyful Learning creates a learning pattern that not only emphasizes cognitive achievement but also strengthens students' affective and motivational aspects. The application of infographics through Quiz.zep has proven relevant to today's learning demands, as it not only trains visual literacy and numeracy but also fosters critical, reflective thinking, and a strong sense of curiosity.

CONCLUSION

Based on the results of research conducted in classes F2.1 and F2.2 of SMA Negeri 1 Turi, it can be concluded that the use of the Quiz.zep-based infographics play a significant role in improving student literacy in the Minimum Competency Assessment (AKM) exercise. The average scores obtained, namely 81.8 in class F2.1 and 80 in class F2.2, indicate a relatively good and consistent achievement in both classes. This confirms that infographics are able to help students understand visual and numerical data more quickly, clearly, and interestingly than solely text-based questions.

From a Deep Learning perspective (Mindful, Meaningful, and Joyful Learning), infographics and Quiz.zep have been shown to create a more meaningful learning environment. The Mindful Learning aspect is evident in students' awareness of the need to be more thorough in reading graphs and explanatory text. The Meaningful Learning aspect is reflected in students' ability to connect visual data with concepts they have mastered to draw appropriate conclusions. Meanwhile, the Joyful Learning aspect is manifested through students' motivation and interest in working on questions, as the visual presentation and interactivity of the quizzes make the learning environment more enjoyable.

Thus, this study confirms that infographic-based learning through Quiz.zep effectively improves students' visual literacy and numeracy skills while encouraging reflective, meaningful, and enjoyable learning. The results are expected to serve as a reference for teachers in developing interactive digital learning strategies relevant to the demands of the AKM and current learning needs.

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