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Click, get, learn 2.0: A digital learning framework grounded in learning styles to foster the advancement of student-centered learning

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Abstract
In the era of Society 5.0, the learning paradigm has significantly shifted from teacher-centered learning toward student-centered learning. The optimization of student-centered learning can be achieved through various approaches; however, one of the potential implementations explored in this study is the use of a digital learning framework. This research aims to examine the effectiveness of a learning style–based framework in daily teaching and learning activities. The study employs a quasi-experimental method with a pre-test and post-test control group design. The population consists of 30 twelfth-grade students from the Research Program at MA Al-Ittihad Poncokusumo in the 2025/2026 academic year, selected using a purposive sampling technique. Learning style categorization was conducted using the VARK Learning Style Inventory questionnaire (5-point Likert scale), followed by learning activities tailored to the identified styles without class separation. Changes in understanding were measured through pre-tests and post-tests, each comprising five questions. The results of the experimental group revealed that the average increase in both comprehension and post-test skill scores was higher than in the pre-test. This finding demonstrates that the application of a digital framework aligned with the learning system can lead to significant improvements in the learning process.

Keywords:
SCL; Framework; Learning Style

A. INTRODUCTION

Education encompasses all aspects that influence the growth, transformation, and condition of every human being. Such transformation refers to the development of learners' potential—knowledge, skills, and attitudes—throughout their lives (Pristiwanti, Badariah, Hidayat, & Dewi, 2022). With the rapid evolution of the modern era, teachers are increasingly required to enhance their competencies to ensure that the learning process aligns with the advancement and dynamics of their students.

Aligned with the emergence of the Society 5.0 era, education has undergone substantial transformation. The instructional process, once dominated by one-way lectures, has shifted toward a learner-focused paradigm, transitioning from Teacher-Centered Learning (TCL) to Student-Centered Learning (SCL), wherein students act as the primary agents in their learning process. According to Salsabila (2024), Student-Centered Learning (SCL) emphasizes teaching methods that cultivate meaningful connections between students' interests and the content they learn in school. Hence, implementing SCL not only encourages learners to take an active role but also motivates educators to tailor their teaching methods to meet students' individual needs.

Although the transition from Teacher-Centered Learning (TCL) to Student-Centered Learning (SCL) has been widely advocated in the era of Society 5.0, there remains a significant gap in understanding how effectively teachers are able to adapt their pedagogical competencies to implement SCL in real classroom settings. Existing literature highlights the importance of SCL

in promoting active learning and aligning instruction with students' interests, yet empirical evidence on teachers' readiness, practical challenges, and the extent to which SCL principles are consistently integrated into daily instructional practices is still limited.

Furthermore, while theoretical discussions emphasize the need for enhanced teacher competency, few studies specifically examine the mismatch between the required competencies for SCL implementation and the actual competencies teachers currently possess, particularly within rapidly evolving educational contexts influenced by digital transformation. As a result, the effectiveness of SCL application and its impact on students' learning engagement and outcomes remains underexplored, creating a clear research gap that warrants further investigation.

In adopting the SCL approach, educators must consider various supporting factors—one of the most essential being learning styles. Learning style refers to an approach that explains how each individual learns, processes, and masters new and complex information through distinct perceptual channels (Kurniati, Fransiska, & Sari, 2019). In essence, learning style represents the unique way each learner comprehends and internalizes information. Understanding individual learning styles enables students to adapt more effectively to instructional methods, thereby maximizing the absorption and retention of knowledge.

In this era of industrial and technological advancement, education has also evolved significantly, particularly in the realm of digital learning. Digitalization is defined as the process of transforming various media forms—printed, audio, or video—into digital formats (Asaniyah, 2017). Consequently, digital education refers to the educational practices influenced by digitalization, which bring about profound changes in instructional media.

Among the many innovations in instructional media is the learning framework. A framework functions as a structural model or system designed to support and organize the development of digital learning (Mediana & Nurhidayat, 2018). Thus, the present study aims to construct a digital learning framework or module that enhances the quality and adaptability of modern education.

The growing phenomenon of digital education produces various impacts; therefore, this research seeks to contribute to the optimization of digital learning by integrating learning style–based frameworks that yield measurable and positive outcomes in educational contexts. Meileni, Satriadi, Oktapriadi, and Apriyanty (2021) define digital learning as a comprehensive educational strategy that integrates technology into pedagogical practices to enhance instructional effectiveness and learner engagement. Within this context, the framework plays a crucial role as a medium for implementing digital learning processes.

According to Suprayogi and Eahmanesa (2019), a framework comprises interrelated program components that collectively serve as a foundational tool for application development. When applied to digital education, frameworks are recognized for their capacity to improve accessibility, flexibility, and interactivity in teaching and learning activities.

Furthermore, learning style diversity reflects the various ways students engage in learning (Yuwanita, Dewi, & Wicaksono, 2020). Understanding these styles—visual, auditory, reading/writing, and kinesthetic—is crucial for educators, as learning styles significantly affect instructional quality and student outcomes. As noted by Silitonga and Magdalena (2020), teachers can utilize learning style insights to design more effective instructional models that support students in achieving higher academic performance.

In the SCL model, the teacher's role shifts from that of a traditional instructor to a facilitator, guiding learners toward autonomy and discovery (Muliarta, 2018). The learner-centered approach allows students greater freedom in determining how they achieve learning objectives, selecting study methods that suit their preferences, and engaging with materials that align with their interests, learning styles, and readiness levels (Salsabila, 2024).

Optimization in learning refers to the effort to enhance both the quality of instructional delivery and students' comprehension (Fakhriyana & Riayah, 2021). In the context of digital learning frameworks, optimization involves refining the framework to ensure its maximum adaptability to user needs. This optimization process also requires thoughtful modification

aligned with user experience (UX) and user interface (UI) design principles to ensure usability and engagement.

This study draws upon several relevant works. For example, Brigitta (2020) in *"The Effectiveness of Using Framework-Based E-Learning Media on Students' Cognitive Learning Outcomes"* demonstrated that students who engaged with framework-based e-learning achieved higher mastery scores than those in control groups. The experimental group's average post-test score was 89.45, compared to 74.42 in the control group, with learning completeness rates of 91.66% and 62.85%, respectively, and N-gain averages of 0.87 (high) versus 0.67 (moderate) (Dewi & Sumarni, 2020). However, this study focused solely on framework-based learning without incorporating learning styles.

Similarly, Jean (2023), in *"The Influence of Learning Styles on Students' Learning Outcomes,"* found that learning styles play a vital role in optimizing student comprehension. The study reported improvements from the first to the second learning cycle: visual learners increased from 65% to 80%, auditory learners from 58.4% to 70%, and kinesthetic learners from 68.5% to 85.5%. Although the research highlighted the importance of learning styles, its instructional model remains less relevant to the current educational context.

Moreover, Tami (2023) in her thesis, *"The Effect of Auditory Learning Style–Based Framework on Students' Critical Thinking Skills in Sound Wave Topics,"* concluded that the integration of frameworks tailored to learning styles significantly enhanced student performance. The results revealed an N-gain of 0.12 (low) for the control group and 0.63 (moderate) for the experimental group, indicating a meaningful improvement. Conducted with 60 students from SMAN 32 Jakarta, the study employed a quasi-experimental design and utilized the Mann-Whitney U Test. However, it was limited to the auditory learning style.

Despite previous studies demonstrating the positive effects of framework-based learning (Brigitta, 2020) and the significant role of learning styles in improving student outcomes (Jean, 2023; Tami, 2023), a clear research gap remains in understanding how an integrated instructional approach that simultaneously combines framework-based learning with multiple learning styles can enhance students' overall learning outcomes in contemporary educational contexts. Existing research tends to isolate either the use of frameworks or the influence of specific learning styles, with limited attention to how these elements interact holistically within modern, student-centered learning environments. Additionally, prior studies often focus on single learning styles or outdated instructional models, leaving a gap in exploring more comprehensive, adaptable, and contextually relevant learning designs that address diverse learner needs in the evolving landscape of 21st-century education**.** Therefore, the present study entitled "Click, Get, Learn 2.0: A Digital Learning Framework Grounded in Learning Styles to Foster the Advancement of Student-Centered Learning," seeks to fill these research gaps by integrating learning style theory with digital frameworks to enhance the effectiveness and personalization of student-centered education.

B. METHODS

In conducting this study, the research method serves as a scientific procedure for obtaining data with specific objectives and purposes (Ramdhan, 2021). To ensure a clear research direction and the validity of the collected data, this study employs a quantitative research method as its principal approach. Quantitative research is characterized by its systematic, planned, and structured nature, clearly defined from the initial stages through the development of the research design (Syahroni, 2022).

The present study is grounded in a quantitative conceptual framework using a quasi-experimental approach, adopting the pre-test and post-test control group design using google form. A quasi-experiment involves at least two groups—an experimental group and a control group (Arib, Rahayu, Sidorj, & Afgani, 2024). The choice of this method is based on its notable advantages, particularly its flexibility in real-world settings, allowing researchers to examine causal relationships in more natural environments (Anastasia & Rindayani, 2025).

The population of this study comprises all students of Grade XII Research Program at

MA Al-Ittihad Poncokusumo during the 2025/2026 academic year, with a total of 30 students. The sample was selected using a purposive sampling technique, wherein participants were chosen based on specific criteria and considerations determined by the researcher.

Data collection was conducted through the distribution of a learning style questionnaire to students, using the VARK Learning Style Inventory instrument developed by Fleming (2001). The questionnaire employed a five-point Likert scale (1 = strongly disagree to 5 = strongly agree) with the purpose of categorizing each participant according to their respective learning styles.

Subsequently, participants completed a set of five practice questions in English language, which served as the subject of investigation. After obtaining the pre-test results, the researcher implemented instructional activities tailored to each student's learning style, without dividing them into separate classes or groups.

Finally, a post-test was administered, consisting of five questions aligned with the previously taught material. The post-test results were then analyzed to determine the effectiveness of learning style–based instruction in enhancing students' learning outcomes within the digital learning framework and its analyzed by the web itself.

C. RESULT & DISCUSSION

Designing a Digital Solution for Learning Style Assessment

The design and development of a learning style test framework based on a digital form were carried out as an initial solution to assist educators in understanding each learner's individual learning style. This framework aims to serve as a bridge between students' learning preferences and the most effective instructional models tailored to each individual. The development process utilizes a form-based framework integrated with the Typeform platform, which is accessible for free through both mobile and desktop browsers.

Platform Selection

The choice of Typeform as the platform was based on several advantages that align with the objectives of this research. These advantages include: A modern and intuitive user interface (UI) that enhances user experience; A single-question-per-page layout, which promotes focus and engagement; A logic jump feature, allowing automatic grouping and calculation of results; Cross-device accessibility without requiring software installation; Integration capabilities with various external applications; Customizable branding options to suit user identity; and A wide range of free-to-access features without subscription requirements.

Given these advantages, the use of Typeform for developing a learning style assessment framework is considered an efficient and practical solution for both educators and learners.

Developing the Learning Style Questionnaire

In the process of constructing the questionnaire, the questions were designed to be simple, clear, and aligned with students' tendencies, enabling ease of understanding and accurate reflection of individual learning preferences. For example, the questions were formulated in a way that guides respondents naturally toward identifying their dominant learning style while maintaining engagement throughout the assessment. For instance:

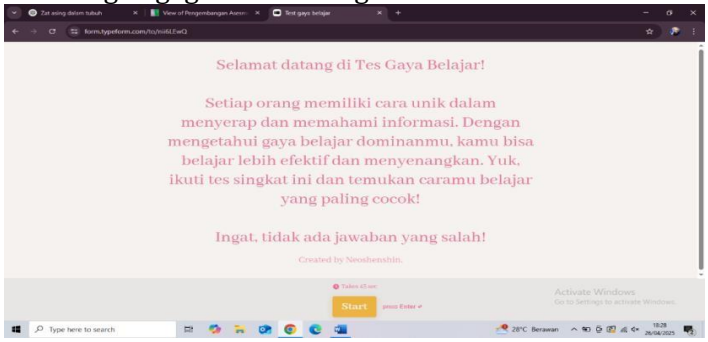

Figure 1. Framework Main View

On the main interface of the framework, there is a **"Start"** command that initiates the learning style assessment.

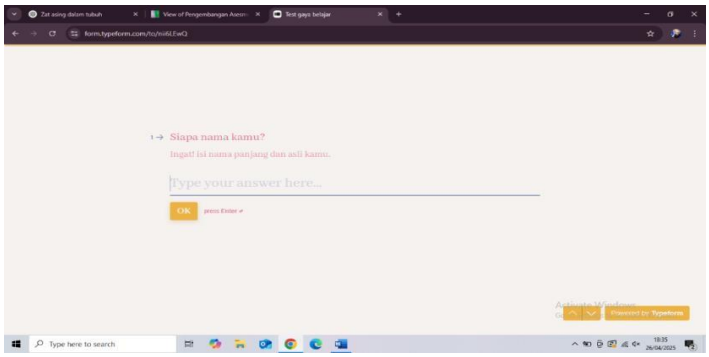

Figure 2. Identity

After that, an identity input screen appears, prompting learners to enter their name. The form may also include optional fields such as class information and other identifying details.

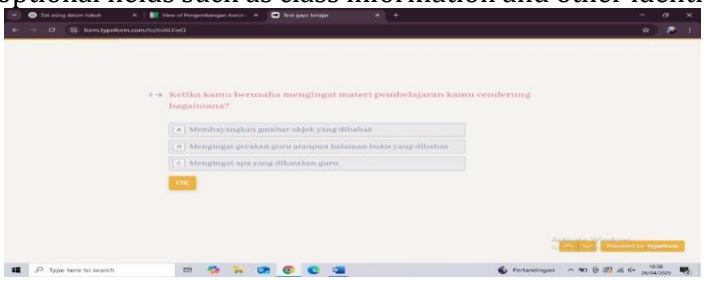

Figure 3. Learning Style Test

In this section, the questionnaire is presented with three answer options, each representing a different learning style. For example, option "A" corresponds to the visual learning style, option "B" represents the auditory learning style, and option "C" indicates the kinesthetic learning style.

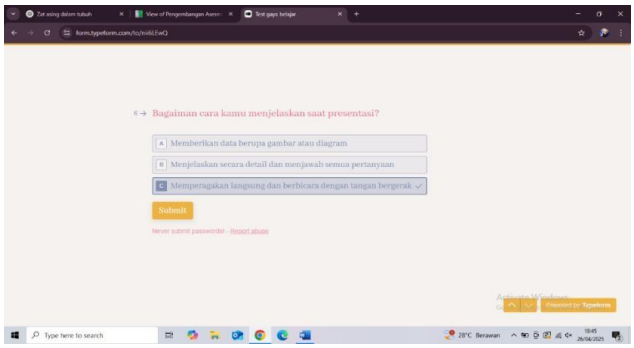

Figure 4. Framework last view

This screen represents the final stage of the learning style assessment. After answering all the questions, learners are prompted to press the "Submit" button to send their responses and obtain the results of their learning style.

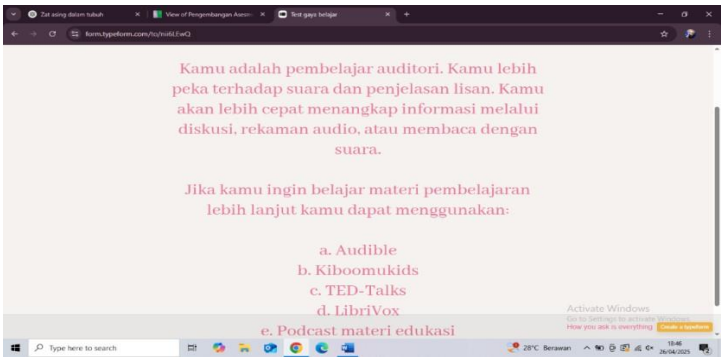

Figure 4. Result

This screen displays the final results of the learning style assessment, showing each learner's identified learning style. Additionally, the interface provides personalized learning platform recommendations that align with the learner's specific learning style.

Designing Learning Activities Based on Learning Styles

After students complete the learning style assessment, the classroom learning model is adjusted according to the results. However, if grouping students strictly by learning style becomes too complex, educators may integrate multiple learning styles within a single instructional design. For instance, by utilizing a practical framework that incorporates both experiments and visual materials, teachers can complement it with oral and written explanations to address diverse learning preferences.

The implementation of learning style–based instruction can be supported by various interactive learning frameworks designed to align with different learner needs. Among the selected frameworks suitable as instructional modules are Wordwall and Kahoot!.

Platform Selection

The selection of Kahoot! and Wordwall was not merely based on their game-based educational format but rather on several pedagogical advantages they offer. The use of Kahoot! as a learning support tool provides more than just a simple quiz experience—it creates a competitive and engaging learning environment. Its game-based approach helps prevent boredom and increases classroom participation. The team-based features in Kahoot! also allow for collaborative and physically interactive activities within the classroom. Moreover, Kahoot! includes music, visuals, and multimedia options—such as video and audio integration—that enhance the overall learning experience.

Similarly, Wordwall offers several advantages as a learning support tool. It provides a wide variety of activity formats, ranging from *whack-a-mole* games to *flashcards*, which can also be integrated with physical classroom activities. Its flexible modes, which support both printable and digital formats, allow teachers to adapt activities to different learning contexts. The platform's quick-interaction format helps maintain students' focus and engagement.

Based on these advantages, Wordwall and Kahoot! are considered effective platforms for daily classroom implementation, offering engaging, easy-to-use, and non-monotonous learning experiences.

Learning Implementation

The instructional process utilizing Wordwall and Kahoot! can be implemented through the following approach: 1)The educator first delivers the core material to the students 2)The lesson is then reinforced and reviewed through quizzes and interactive games conducted using Kahoot! and Wordwall. To carry out effective review activities within the learning process, educators can follow several step-by-step strategies (which may include question-based reinforcement, collaborative challenges, and immediate feedback through digital tools).

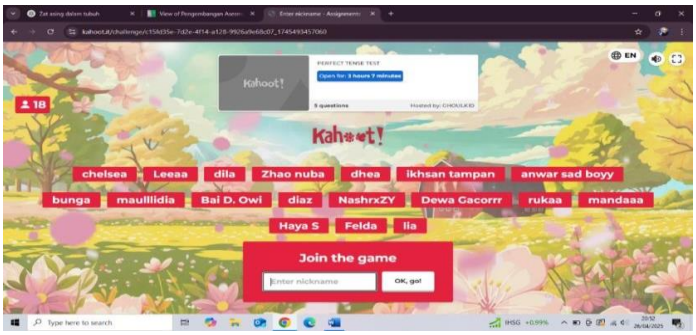

Figure 6. Log in to Kahoot!

First, after the teacher explains the lesson material, students are directed to the Kahoot! quiz page that has been prepared by the instructor. On the login screen, students are required to enter their names in order to participate in the interactive learning game.

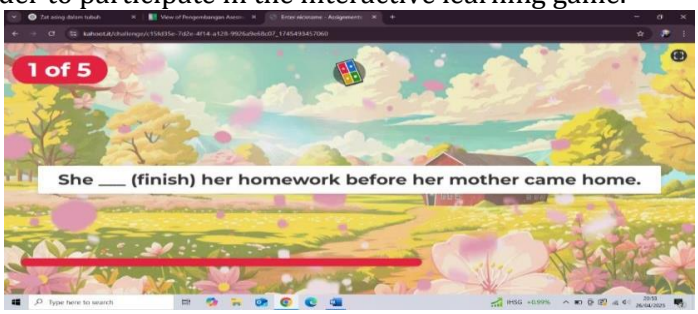

Figure 7. Quiz

After that, students are given a few seconds to read and comprehend the question before being presented with the available answer options.

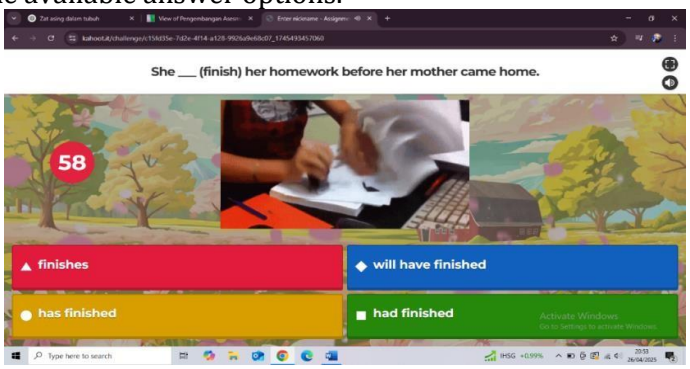

Figure 8. Kahoot Multiple Answer

In this display, students are required to select their answers within a predetermined time limit, which can be adjusted by the teacher according to the students' abilities.

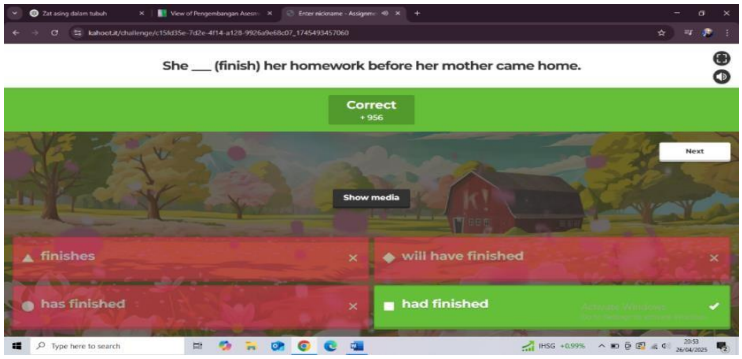

Figure 9. Kahoot Answer View

After the students select their answers, Kahoot! automatically provides feedback indicating which responses are correct or incorrect. This section can be effectively utilized by educators to reiterate and clarify the material, especially for students who selected incorrect answers.

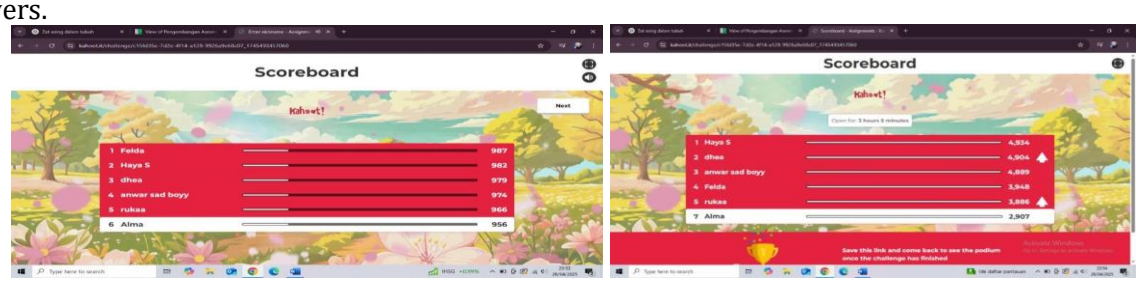

Figure 10. Rank

In this section, students are presented with a scoreboard or temporary leaderboard, which can be accessed after completing each question, allowing them to track their progress and performance throughout the activity. Moreover, this section represents the final stage, where all quiz scores are compiled. Students with the highest scores are placed at the top of the leaderboard. After completing the quiz in Kahoot!, the activity proceeds with a speaking exercise through interactive role-play games on Wordwall, allowing students to practice and enhance their speaking skills in an engaging, collaborative setting.

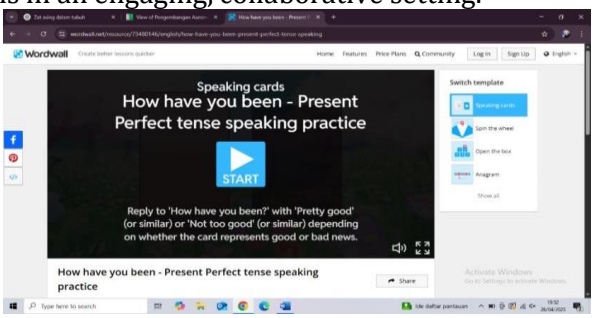

Figure 11. Speaking Practice

In this section, before conducting the practice session, both teachers and students can select the desired activity template, such as “Speaking Cards” or “Anagram,” depending on the learning objectives and the skills to be developed.

Figure 12. Challenge

In this stage, the assigned challenges are displayed, and students can carry out the tasks indicated on their cards. To implement the challenges effectively, teachers may divide students into groups so they can engage in role-playing activities corresponding to the assigned cards.

Analysis of Learning Effectiveness Improvement

During the pre-test and the implementation of the learning framework, data were collected showing that students’ average pre-test score was 56.8, which falls below the

minimum mastery criterion of 75. However, after students completed the learning style assessment, the following data were obtained:

Table 1. Learning Style Test Result

No	Learning Style	Student	Percentage
1.	Visual	7	23,33%
2	Auditory	11	36,67%
3	Kinesthetic	12	40 %

Source: Test Result

After completing the learning style test, students were given several English exercises and learning materials delivered through the teacher and supported by digital learning frameworks such as Wordwall and Kahoot!. Following these instructional activities, the teacher conducted a review session in the form of a quiz or additional exercises.

As a result of this intervention, the post-test scores increased to an average of 85.5, indicating a significant improvement in students' comprehension of the material. The enhancement can be detailed as follows: 1) The average student performance increased by 50.53%; 2) The number of students scoring above 80 rose to 63.33%; 3) Active participation in class also increased during the quiz sessions.

Based on these percentages, it can be concluded that the optimization of digital learning frameworks for educational purposes has proven effective, successful, and feasible to be implemented as an innovative approach for advancing education.

D. CONCLUSION

Based on the research and discussion conducted, it can be concluded that the development of a learning-style-based framework has significantly enhanced students' participation, comprehension, and academic performance. The implementation of a learning system tailored to students' individual learning styles proved to be more effective than conventional methods that do not consider such differences. The effectiveness of the learning process showed a substantial increase, as reflected in the improvement of the students' average scores from 56.8 to 85.5, representing a 50.53% rise. Moreover, students' understanding of the material improved significantly, with 63.33% of them achieving scores above 80 after the implementation of the framework-based learning system supported by educators. The optimization of this framework played an important role in creating a more personalized and engaging learning experience. Importantly, the use of this digital framework did not diminish the essential role of educators, ensuring that supervision, guidance, and learning safety were maintained throughout the process.

Further, the exploration of learning styles is not merely about identifying preferences, but about bridging the gap between potential and achievement. Based on these findings, several recommendations are proposed. For educators, it is advised to adopt learning-style-based approaches to enhance students' engagement and learning outcomes. For students, recognizing their own learning styles can help them select the most suitable study methods and fully optimize digital learning frameworks to unlock their potential. For future researchers, it is suggested that broader studies involving larger and more diverse respondent groups be conducted to enrich and develop more effective educational models. For schools, institutional support is crucial in promoting the integration of learning-style-based media to improve educational quality, particularly in adapting to advancements in educational technology. In conclusion, this study is expected to serve as a reference and foundation for future innovations in learning-style-based methodologies, paving the way for a more effective, interactive, and personalized teaching and learning process.

Furthermore, this gives a successful development and validation of a learning-style-based digital framework that demonstrably enhances student engagement, comprehension, and academic achievement. Unlike previous studies that examined learning styles or framework-

based learning in isolation, this research provides an integrated, empirically tested instructional model that accommodates diverse learner needs while maintaining the pedagogical role of educators. The framework not only improved students' average performance by more than 50% but also increased the proportion of high-achieving learners, illustrating its practical effectiveness in real classroom settings. Moreover, this study contributes a replicable and adaptable model that schools and educators can implement to support personalized learning in line with contemporary educational demands. By offering both theoretical insights and practical solutions, the study advances the field of educational technology and provides a foundation for future innovations in personalized digital learning systems.

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