International Journal of Research Publication and Reviews

Development of the "Tesiapo" Application to Enhance Students' Civic Competence at SMA Negeri 1 Dulupi

Lisnawaty Nasaru, Zulaecha Ngiu, Candra Cuga

Pascasarjana, Universitas Negeri Gorontalo, Indonesia
DOI : https://doi.org/10.55248/gengpi.6.0325.1110

ABSTRACT

Civic competence is a critical component of education, fostering students' ability to actively engage in democratic processes and social responsibility. However, traditional civic education often lacks interactive and real-time assessment mechanisms, limiting its effectiveness in promoting active participation. This study aims to develop and evaluate Tesiapo, a digital application designed to enhance civic competence through a structured, point-based reward system. By integrating gamification and digital assessment tools, the application seeks to improve students' civic responsibility, participation, and engagement within the school environment. Using a Research and Development (R&D) approach with the 4-D model (Define, Design, Develop, Disseminate), the study conducted needs analysis, application development, expert validation, and pilot testing at SMA Negeri 1 Dulupi. Mixed-methods data collection, including surveys, interviews, observations, and pre-test/post-test assessments, was used to evaluate the application's impact on students' civic engagement. Results indicate a significant increase in students' civic awareness, participation in school governance, and adherence to civic responsibilities. The point-based reward system effectively motivated students, while teachers reported reduced administrative burdens and improved real-time behavior tracking. These findings suggest that gamification-based digital tools can effectively bridge the gap between civic education theory and practice, promoting intrinsic motivation for responsible citizenship. The study contributes to digital civic education discourse, emphasizing the importance of structured digital assessment systems. Future research should explore the long-term sustainability of digital reward systems, the role of parental involvement, and the potential for expanding Tesiapo into broader character education domains.

Keywords : *Civic competence, digital education, gamification, student engagement, reward system, civic responsibility, educational technology*.

Introduction

Education plays a fundamental role in shaping individuals and societies. It is a crucial tool for nurturing civic values, fostering responsible citizenship, and promoting democratic engagement. The increasing emphasis on citizenship education aims to equip students with knowledge, skills, and dispositions that enable them to participate actively in civic life. In modern educational frameworks, civic competence is recognized as a multidimensional construct encompassing civic knowledge, civic skills, and civic engagement (Branson, 2022). The development of these competencies ensures that students not only understand their rights and responsibilities as citizens but also actively contribute to their communities. The integration of civic competence into school curricula aligns with global efforts to strengthen democratic values, social responsibility, and political participation (Rafzan et al., 2020).

Technological advancements have significantly influenced educational practices, including the ways civic education is delivered. The emergence of digital learning tools has reshaped conventional methods of teaching and assessing civic competence. Digital platforms offer innovative ways to engage students in learning experiences that are interactive, participatory, and reflective of real-world civic responsibilities (Liantoni et al., 2018). The concept of digital citizenship has gained prominence, emphasizing the responsible and ethical use of technology in civic engagement (Nurhikmah et al., 2023). Scholars argue that digital tools can enhance students' understanding of civic concepts and foster active participation in school and community affairs (Kaumba et al., 2020). However, despite the proliferation of technology-driven educational tools, there remains a gap in the integration of structured digital platforms for assessing and enhancing civic competence in secondary education.

One of the key challenges in fostering civic competence among students is the lack of structured mechanisms to monitor and reinforce civic behaviors. Traditional methods of civic education often rely on theoretical instruction and are limited in their ability to track students' engagement in civic activities (Mudmainna et al., 2024). Schools struggle to provide meaningful assessments of students' civic participation, responsibility, and engagement beyond classroom discussions. Moreover, existing disciplinary measures often focus on punitive approaches rather than fostering intrinsic motivation for civic responsibility (Alfauzi & Muthali'in, 2023). The absence of a systematic and transparent evaluation framework has led to inconsistencies in how civic competence is cultivated among students.

In response to these challenges, various digital platforms have been developed to support character education and civic learning. Digital gamification methods, interactive civic education modules, and online discussion forums have been explored as potential solutions (Rejeki & Pagasan, 2019). Some educational institutions have implemented digital reward systems to incentivize positive behavior, yet these approaches often lack comprehensive integration with formal civic education curricula. The general approach to digital civic education has primarily focused on content delivery rather than real-time assessment and feedback mechanisms (Habibi & Zabardast, 2020). Consequently, there is a growing need for an integrated digital solution that not only educates students about civic responsibility but also tracks and evaluates their engagement in civic activities.

Several studies have examined the impact of technology on civic education. Azhara et al. (2023) highlight that digital applications play a vital role in reinforcing students' understanding of civic values by providing instant feedback and structured learning pathways. Research by Winarni et al. (2020) suggests that digital assessment tools can enhance students' awareness of their civic responsibilities by offering transparent evaluation criteria. Similarly, Utami (2021) underscores the importance of structured digital systems in encouraging student participation in school governance and extracurricular civic initiatives. These findings indicate that technology-driven assessment models can significantly contribute to the development of civic competence among students.

Despite these advancements, existing digital solutions often lack a structured framework tailored to high school students' civic engagement needs. Studies on digital character assessment have primarily focused on higher education settings or corporate training programs (Ireland et al., 2017). There is limited research on how digital assessment tools can be effectively applied in secondary schools to promote civic engagement and responsibility. Additionally, while gamification and point-based reward systems have been explored in various educational domains, their application in assessing civic competence remains underdeveloped (Zaen et al., 2021). The need for a digital system that not only rewards civic engagement but also serves as a formative assessment tool remains largely unmet.

To address this gap, this study explores the development of the Tesiapo (Tata Tertib Sistem Aplikasi Poin) application, a digital platform designed to assess and enhance students' civic competence. Tesiapo integrates a point-based evaluation system that records students' participation in civic activities, adherence to school regulations, and overall civic responsibility. Unlike conventional disciplinary systems, Tesiapo emphasizes reinforcement over punishment by awarding points for positive civic behaviors while documenting areas for improvement. The application is structured to provide real-time feedback, allowing students to track their civic engagement progress while enabling teachers to monitor and guide their development.

This study employs a Research and Development (R&D) approach using the 4-D model (Define, Design, Develop, Disseminate) to ensure a systematic and iterative development process. By incorporating expert validation and user feedback, the study aims to assess the effectiveness, usability, and impact of Tesiapo on students' civic competence. The novelty of this research lies in its integration of a digital reward system within civic education, offering a structured and transparent assessment mechanism that aligns with contemporary pedagogical needs. The findings of this study are expected to contribute to the broader discourse on digital civic education by providing an evidence-based model that can be adapted and implemented in secondary schools to foster responsible and engaged citizens.

Methodology

This study employs a Research and Development (R&D) approach using the 4-D model (Define, Design, Develop, and Disseminate) to develop and evaluate the effectiveness of the Tesiapo application in enhancing students' civic competence. The 4-D model, introduced by Thiagarajan et al. (1974), provides a structured framework for systematic educational material development and validation. This research approach is well-suited for educational innovations, ensuring that the developed product undergoes iterative refinement based on expert validation and user feedback (Romadlona et al., 2021).

The study was conducted at SMA Negeri 1 Dulupi, Boalemo Regency, Gorontalo Province, Indonesia. The selection of this institution was based on its demographic representation of secondary school students, as well as its readiness to integrate digital tools into the learning process. The participants included teachers and students, who were selected through a purposive sampling technique to ensure that the respondents had relevant experience with civic education and digital learning tools (Suparman, 2022).

The research followed the four phases of the 4-D model, which facilitated a systematic approach to the development and implementation of the Tesiapo application:

1. Define Phase

The define phase involved a needs analysis to identify the gaps in civic competence education at SMA Negeri 1 Dulupi. Data were gathered through interviews, surveys, and direct observations involving students, teachers, and school administrators. The analysis focused on:

• Students' understanding of civic competence, including civic responsibility, participation, and engagement.

• Existing disciplinary mechanisms and their effectiveness in fostering civic competence.

• Teachers' perspectives on integrating digital tools into civic education.

The findings from this phase highlighted the need for a structured digital assessment tool that provides real-time feedback and encourages students to actively engage in civic activities.

2. Design Phase

Based on the needs analysis, the design phase focused on developing the initial prototype of the Tesiapo application. This stage involved:

• Conceptualizing the application structure, including the user interface (UI), database system, and point-based reward system.

• Defining the assessment criteria, where students would earn points for participation in school and community-based civic activities.

• Developing content and features, such as dashboards for tracking civic engagement, notifications for upcoming civic tasks, and reports for teachers to monitor students' progress.

The prototype design was developed following universal usability principles to ensure accessibility for students with varying levels of digital literacy (Habibi & Zabardast, 2020).

3. Develop Phase

The develop phase involved the technical implementation and expert validation of the Tesiapo application. This included:

• Coding and software development, ensuring seamless functionality on both mobile and desktop platforms.

• Expert validation, where the prototype was reviewed by educational technology experts, civic education specialists, and IT professionals.

• Small-scale testing, conducted with a selected group of students and teachers to identify potential usability issues.

Feedback from this stage led to several refinements, including improved navigation, clarity of assessment criteria, and technical reliability.

4. Disseminate Phase

The disseminate phase involved pilot testing of the application in actual classroom settings. This phase aimed to evaluate:

• User experience, through surveys and focus group discussions with students and teachers.

• Effectiveness in enhancing civic competence, assessed through pre-test and post-test comparisons.

• Teacher adaptability, examining how educators incorporated the application into their civic education curriculum.

The results from this phase provided insights into the application's overall impact and areas for future improvement.

The study utilized a mixed-methods approach, combining both qualitative and quantitative data collection techniques.

1. Surveys and Questionnaires:

• Administered to students and teachers to assess their perceptions of civic competence before and after using Tesiapo.

• Measured levels of civic participation, engagement, and responsibility using a Likert scale.

2. Interviews and Focus Group Discussions (FGDs):

• Conducted with teachers, school administrators, and selected students to gather in-depth insights into the application's usability and impact.

3. Observation:

• Direct observations were conducted during classroom activities and extracurricular civic engagements to assess students' behavioral changes.

4. Pre-Test and Post-Test Assessments:

• Students were evaluated before and after the implementation of the application to measure changes in their civic competence.

The collected data were analyzed using both quantitative and qualitative methods.

1. Quantitative Analysis:

• Descriptive statistics were used to analyze survey responses, providing insights into students' perceptions of civic competence.

• Comparative statistical tests (e.g., paired t-tests) were conducted to determine the significance of improvements in civic engagement scores before and after using the Tesiapo application (Liantoni et al., 2018).

2. Qualitative Analysis:

• Thematic analysis was applied to interview and FGD transcripts to identify key themes related to teachers' and students' experiences with the application.

• Content analysis was used for classroom observations, examining how students' participation in civic activities evolved over time (Rejeki & Pagasan, 2019).

To ensure the validity and reliability of the study, the following strategies were implemented:

• Triangulation: Multiple data sources (surveys, interviews, observations) were used to cross-validate findings (Winarni et al., 2020).

• Expert Validation: Educational experts reviewed the application for content accuracy and alignment with civic education objectives.

• Pilot Testing: Conducted to refine the application's usability and ensure technical stability before full-scale implementation.

The study adhered to ethical research guidelines, ensuring:

• Informed consent from all participants, including students, teachers, and school administrators.

• Confidentiality and anonymity in data collection and reporting.

• Voluntary participation, allowing respondents to withdraw at any stage without repercussions.

While this study provides valuable insights into the role of digital tools in fostering civic competence, certain limitations must be acknowledged:

• The study was conducted in a single school setting, which may limit generalizability to other educational institutions.

• The duration of implementation was relatively short, restricting long-term impact assessment.

• The study focused primarily on teacher and student perceptions, with limited exploration of parental involvement in students' civic development.

Results and Discussion

This section presents the findings of the study, structured according to the phases of the 4-D model (Define, Design, Develop, and Disseminate) used in the development of the Tesiapo application. The discussion contextualizes the results within relevant literature, providing insights into how the application enhances civic competence among students.

The initial phase of the study focused on assessing students' civic competence at SMA Negeri 1 Dulupi. The findings revealed that while 55% of students demonstrated an understanding of the importance of civic participation, a significant 45% still required further improvement. This suggests that a large proportion of students lacked adequate civic awareness, a challenge that has been previously noted in civic education research (Rejeki & Pagasan, 2019). Additionally, teacher interviews and observational data indicated persistent issues with students' adherence to school regulations, particularly in terms of punctuality, participation in school assemblies, and compliance with institutional rules. Educators noted that existing disciplinary measures often relied on punitive approaches rather than fostering intrinsic civic responsibility, which aligns with the findings of Alfauzi & Muthali'in (2023) that traditional discipline models fail to instill long-term civic values.

Given the increasing reliance of students on digital platforms for learning, there was a strong need for an integrated digital assessment system that could provide real-time feedback and motivation for civic engagement. The study identified that a point-based digital tracking system could serve as a structured mechanism to enhance transparency and encourage active participation. This aligns with global trends in educational technology, where gamification has been recognized as an effective approach to fostering engagement and behavior change (Nurhikmah et al., 2023).

Based on this needs analysis, the Tesiapo application was designed to integrate a point-based evaluation system that rewards students for positive civic behavior while documenting areas requiring improvement. The application was structured with three core components: a front-end user interface, a back-end management system for educators, and a database for real-time tracking of student activities. This design was validated by experts in civic education, digital learning, and information technology to ensure alignment with educational objectives, usability, and technical functionality. Previous studies have emphasized the importance of interactive digital platforms in civic education, suggesting that gamification elements, such as point accumulation, can significantly improve student motivation (Habibi & Zabardast, 2020). The validation process led to minor refinements in the application's interface, reporting features, and accessibility options to ensure user-friendliness for both students and educators.

Following the development phase, the Tesiapo application was piloted in actual classroom settings to evaluate its effectiveness. Student surveys and focus group discussions conducted after the implementation revealed a positive reception to the application. Specifically, 73% of students reported increased motivation to engage in civic activities due to the point-based reward system, while 68% found the application useful in helping them understand their responsibilities as citizens. Additionally, 81% of students preferred digital assessment methods over traditional paper-based disciplinary records. These findings align with Romadlona et al. (2021), who argue that digital assessment tools empower students by providing immediate feedback and a sense of ownership over their civic engagement progress.

Teachers also expressed a high level of satisfaction with the application, particularly in its ability to streamline the monitoring of student behavior. Educators noted that the digital tracking system reduced administrative burdens, as it provided an efficient and transparent means of assessing students' civic engagement. Furthermore, the application facilitated data-driven decision-making, allowing educators to intervene early in cases where students demonstrated low levels of civic participation. This supports the findings of Zaen et al. (2021), who suggest that digital monitoring systems enhance accountability and foster proactive behavior management in educational settings.

A key indicator of the application's effectiveness was the comparative analysis of students' civic competence before and after implementation. The results showed a 17% increase in students' awareness of civic responsibilities, alongside a 21% improvement in student participation in school and community activities. Moreover, there was a 15% reduction in rule violations, particularly regarding punctuality and adherence to school policies.

These outcomes validate the application's potential to enhance civic engagement, supporting previous research on the role of digital interventions in promoting positive behavioral change (Cabral et al., 2024).

The study's findings confirm that digital interventions, particularly gamification-based platforms like Tesiapo, can effectively enhance civic competence. The research contributes to ongoing discussions on digital civic education, emphasizing the need for structured digital reward systems to shift the focus from punitive disciplinary measures to positive reinforcement. Traditional civic education often lacks real-time feedback mechanisms, which limits its effectiveness in encouraging students to internalize civic values and actively participate in their communities. The Tesiapo application addresses these gaps by offering a transparent, interactive, and motivating assessment model, allowing students to monitor their civic engagement progress in real-time. This aligns with contemporary research highlighting that students respond more positively to interactive, technology-based learning environments (Liantoni et al., 2018).

Furthermore, the study's findings suggest that schools should consider integrating digital assessment tools into their civic education curricula. The scalability and adaptability of the Tesiapo application indicate its potential for broader implementation in various educational institutions. However, the research also highlights several challenges that require further exploration, including the sustainability of digital reward systems over extended periods, the role of parental involvement in reinforcing civic behaviors outside of school, and the potential for expanding the application to other areas of character education, such as ethical decision-making and leadership development.

Conclusion

This study developed and evaluated the Tesiapo application, a digital civic competence assessment tool designed to enhance students' civic responsibility, participation, and engagement. The findings indicate that a structured, technology-based reward system significantly improves students' motivation, awareness, and active involvement in civic activities. Post-implementation analysis revealed a notable increase in civic competence scores, with improvements in punctuality, rule adherence, and participation in school and community programs. Teachers also reported reduced administrative burdens and improved real-time monitoring of student behavior through the digital tracking system.

The study contributes to the growing body of research on digital civic education, demonstrating that gamification-based learning models can foster civic engagement more effectively than traditional disciplinary approaches. By providing real-time feedback and transparent assessment mechanisms, Tesiapo bridges the gap between theoretical civic education and real-world application. These findings underscore the importance of integrating digital interventions into civic education curricula.

Future research should explore the long-term sustainability of digital reward systems, the role of parental involvement, and the application's adaptability for broader character education domains. This study underscores the potential of technology-driven civic education models to cultivate responsible, engaged citizens in the digital era.

References

Adri, J., Refdinal, R., Ambiyar, A., & Abdullah, A. S. (2022). Critical Thinking Skills in Performance-Based Assessment: Instrument Development and Validation. *Journal of Technical Education and Training, 14*(1). https://doi.org/10.30880/jtet.2022.14.01.008

Afif, N. (2019). Pengajaran dan Pembelajaran di Era Digital. *IQ (Ilmu Al-Qur'an): Jurnal Pendidikan Islam, 2*(01), 117–129. https://doi.org/10.37542/iq.v2i01.28

Aini Indriasih. (2023). Digital Comic Development to Improve Life Skills in Early Children. *Buana Pendidikan Jurnal Fakultas Keguruan Dan Ilmu Pendidikan, 19*(1). https://doi.org/10.36456/bp.vol19.no1.a6589

Alfauzi, R. D., & Muthali'in, A. (2023). Analysis of Extracurricular Adolescent Red Cross Implementation Supporting Factors for Strengthening Student Civic Responsibility. *Jurnal Pendidikan, 12*(2), 2023. https://doi.org/10.24239/pdg.Vol11.Iss1.xxx

Azhara, A. R., Wahdah Aufa, F., Febriyani, F., Aeni, A. N., Studi, P., Guru, P., & Dasar, S. (2023). Pengembangan Aplikasi Web TAKWAI sebagai Media Edukasi tentang Etika Penggunaan Produk Teknologi bagi Peserta didik SD. *Jurnal Pendidikan Tambusai, 7*(1), 4494–4502. https://doi.org/10.31004/JPTAM.V7I1.5944

Cabral, Ó., Orduna, P., & Moreira, R. (2024). A participant observation methodology to analyze social functions, gender, class, and gastronomic practices in food-centric organizations: From the Gastronomic Societies in San Sebastián to the world. *International Journal of Gastronomy and Food Science, 35*, 100845. https://doi.org/10.1016/J.IJGFS.2023.100845

Mudmainna, J., Ismail, M., Sawaludin, S., & Sumardi, L. (2024). Pengertian Civic Responsibility dalam Kegiatan Ekstrakurikuler Palang Merah Remaja pada Peserta didik di MTs. Negeri 3 Mataram. *Jurnal Ilmiah Profesi Pendidikan, 9*(1), 471–480. https://doi.org/10.29303/jipp.v9i1.2046

Nurhikmah, A., Madianti, H. P., Azzahra, P. A., & Marini, A. (2023). Pengembangan Media Pembelajaran melalui Game Educandy untuk Meningkatkan Karakter Belajar Peserta Didik di Sekolah Dasar. *Jurnal Pendidikan Dasar dan Sosial Humaniora, 2*(3), 439–448. https://doi.org/10.53625/JPDSH.V2I3.4472

Purnasari, P. D., & Sadewo, Y. D. (2020). Pemanfaatan Teknologi dalam Pembelajaran sebagai Upaya Peningkatan Kompetensi Pedagogik. *Publikasi Pendidikan, 10*(3), 189. https://doi.org/10.26858/publikan.v10i3.15275

Rafzan, L., Lazzavietamsi, F. A., & Ito, A. I. (2020). Civic Competence Pembelajaran Pendidikan Kewarganegaraan di SMA Negeri 2 Sungai Penuh. *Jurnal Rontal Keilmuan PKn, 6*(2).

Rafzan, R., Budimansyah, D., Rahmat, R., Fitriasari, S., Arzam, A., & Sulman, F. (2022). Civic Engagement and Higher Education Develop Student in Civic Education Through Based Project Citizen Model Learning. *International Conference on Education and Training* (ICEAT), 3-11-2021. https://doi.org/10.4108/eai.3-11-2021.2314834

Utami, P. S. (2021). Sistem Poin dalam Meningkatkan Karakter Disiplin dan Kemandirian Peserta Didik Era Generasi Z. *Joyful Learning Journal, 10*(2), 66–73. https://doi.org/10.15294/jlj.v10i2.39938

Winarni, E. W., Hambali, D., & Purwandari, E. P. (2020). Analysis of Language and Scientific Literacy Skills for 4th Grade Elementary School Students through Discovery Learning and ICT Media. *International Journal of Instruction, 13*(2). https://doi.org/10.29333/iji.2020.13215a

Zaen, M. T. A., Janiah, B. D., & Fadli, S. (2021). Penerapan Metode SMART dalam Sistem Pendukung Keputusan Pemberian Sanksi Pelanggaran Tata Tertib Peserta Didik (Studi Kasus: SMK Negeri 1 Pujut). *Jurnal Manajemen Informatika dan Sistem Informasi, 4*(1). https://doi.org/10.36595/misi.v4i1.220