Empowering Digital Competence: Leveraging Glide for No-Code App Development Assignments Among Computer Club Students at Politeknik Sultan Abdul Halim Mu'adzam Shah (POLIMAS)

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Abstract: In today's digital-driven landscape, the ability to develop user-friendly applications is no longer optional but essential, especially among future professionals in the technical and vocational education and training (TVET) sector. Recognizing this need, the Computer Club at POLIMAS initiated a digital assignment project utilizing Glide—an intuitive no-code platform. This project provided students with the opportunity to translate ideas into functional applications, encouraging critical thinking, design thinking, and digital literacy. This action research explores the implementation of Glide, a no-code application development platform, as a key educational tool in digital assignments for members of the Computer Club at Politeknik Sultan Abdul Halim Mu'adzam Shah (POLIMAS). The initiative aimed to empower students with the ability to design and develop user-friendly applications that address real-world problems, without requiring advanced programming knowledge. The study documents the learning journey, app design process, and evaluation of app effectiveness. Findings reveal that the integration of Glide significantly enhanced students' technological confidence, creativity, and problem-solving skills while offering a low-cost and efficient approach to app development. This project serves as a practical model for cultivating digital innovation among technical and vocational education students.

Keywords: *No code development, Glide, digital competence, TVET*

1.0 INTRODUCTION

In today's rapidly evolving digital landscape, the ability to create software and mobile applications has become an increasingly valuable skill. From businesses automating internal processes to individuals launching their own startups, app development plays a central role in driving innovation and efficiency. However, learning to code using traditional programming languages like JavaScript, Python, or Swift can be intimidating—especially for beginners with limited technical backgrounds. The steep learning curve, combined with the often-complex syntax and logic structures of coding, can discourage many aspiring developers from even getting started.

This is where no-code platforms, such as Glide, are making a significant difference. These tools provide a more accessible entry point into the world of app development by removing the need to write complex code. Instead, users can build fully functional applications through intuitive drag-and-drop interfaces and simple logic configurations. Glide, in particular, stands out for its ability to easily turn Google Sheets data into mobile apps. Its clean design and user-friendly features make it an appealing option for educators, entrepreneurs, and non-technical professionals alike.

For students, especially those in middle school, high school, or early college, no-code platforms offer an exciting opportunity to gain hands-on experience in digital creation. By working on real-world projects without being bogged down by programming syntax, students can focus on higher-level thinking—such as problem-solving, design thinking, and user experience. This approach not only

makes learning more engaging, but it also fosters a sense of accomplishment and ownership over their work.

This study explores the educational impact of integrating a no-code app development project using Glide into a learning environment. Specifically, it examines how such projects influence students' confidence in using technology, their creativity in approaching digital problems, their ability to collaborate effectively in teams, and their overall digital literacy. These four areas—confidence, creativity, collaboration, and digital literacy—are crucial competencies for success in both academic and professional settings in the 21st century.

Initial observations suggest that students who participate in no-code app development projects tend to feel more empowered and capable when working with technology. The accessibility of Glide allows them to bring their ideas to life quickly, which can be a major confidence booster. Creativity flourishes when students can experiment with layouts, features, and functions without worrying about breaking code. Collaboration also improves, as team members can contribute in various ways—whether through design, data organization, or logic building—depending on their strengths. Perhaps most importantly, students develop essential digital skills that are applicable beyond app development, such as critical thinking, information management, and effective use of digital tools.

By integrating no-code platforms like Glide into educational settings, we open the door for more inclusive and engaging technology experiences. This study aims to shed light on how such tools can serve not only as teaching aids but also as catalysts for innovation, confidence, and lifelong learning in the digital age.

2.0 LITERATURE REVIEWS

Prior research emphasizes the importance of digital literacy and the growing need for accessible tools in education. No-code platforms are gaining popularity as they democratize technology by enabling broader participation in app development. Studies have shown that such platforms can improve student engagement, collaboration, and problem-solving skills (Aprilia et al., 2023). However, there is limited research specifically evaluating Glide in a structured educational setting, particularly its impact on students' confidence and skill development.

2.1 Enhanced engagement and participation in learning

Glide, as a no-code platform, offers an intuitive and user-friendly interface that allows students to create mobile applications without prior coding knowledge. This accessibility can lead to increased engagement and participation in learning activities. Research has shown that participatory learning models, facilitated by tools like Glide, can significantly enhance students' involvement in app design and development tasks. For instance, a study on the use of Glide in a participatory learning model revealed that students achieved higher scores on skill assessment forms, indicating the effectiveness of

such approaches in fostering active learning ("Using a Participatory Learning Model to Enhance Mobile App Design and Development Skills with Glide Platform", 2023).

Moreover, the ease of use of Glide makes it an ideal tool for educators to design mobile-app-based learning media. This can be particularly beneficial for computer club students at POLIMAS, as it allows them to focus on the creative aspects of app development without being bogged down by complex coding requirements. A study highlighting the use of Glide for designing learning media emphasized its suitability for m-learning, making it an excellent choice for educational settings (Rahmawati et al., 2021).

2.2 Development of practical skills in app development

One of the primary educational benefits of using Glide is the development of practical skills in app development. Students can create functional mobile applications using Glide's drag-and-drop interface, which mimics the process of app development without the need for coding. This hands-on experience can help students gain a deeper understanding of the app development lifecycle, from design to deployment.

A study on the development of e-modules using GlideApps demonstrated the platform's effectiveness in creating educational content. The study found that students responded positively to the e-modules developed using GlideApps, with a high feasibility score of 97.3% (Prasanti & Susanti, 2024). This suggests that Glide can be used to create engaging and effective learning materials that cater to the needs of computer club students at POLIMAS.

Additionally, Glide's ability to integrate with databases like Glide Tables, which resemble Microsoft Excel, allows students to manage data efficiently. This feature can be particularly useful for computer club students who are interested in developing data-driven applications (Farisi et al., 2023).

2.3 Fostering digital literacy and problem-solving skills

The use of Glide in education can also contribute to the development of digital literacy and problem-solving skills among students. A study on the development of web-based learning media using GlideApps found that the platform can improve both digital and scientific literacy. The study revealed that the effectiveness of GlideApps in enhancing digital literacy was moderate, with an average value of 49.15% (Aprilia et al., 2023). While this may not be a perfect solution, it highlights the potential of Glide as a supplementary tool for fostering digital literacy.

Furthermore, the problem-solving skills of students can be enhanced through the process of designing and developing mobile applications using Glide. A study on the use of no-code platforms for teaching low-code and no-code competencies emphasized the importance of reducing learning barriers for non-IT students. By using Glide, computer club students at POLIMAS can gain experience in app

development without the need for extensive coding knowledge, thereby building their problem-solving skills in a more accessible manner (Sońta & Przegalińska, 2024).

2.4 Encouraging collaboration and creativity

Collaboration and creativity are essential skills in app development, and Glide provides an excellent platform for fostering these skills among students. The platform's real-time design and development capabilities allow students to work together on projects, sharing ideas and feedback in a collaborative environment. This can lead to more innovative and creative solutions, as students are able to explore fresh design and development approaches without the constraints of complex coding.

A study on the use of participatory learning models with Glide highlighted the effectiveness of such approaches in enhancing mobile app design and development skills. The study found that the effectiveness index of participatory learning using Glide was 56.68%, indicating its potential as a collaborative learning tool ("Using a Participatory Learning Model to Enhance Mobile App Design and Development Skills with Glide Platform", 2023).

Moreover, the ease of use of Glide can encourage students to experiment with unique features and functionalities, thereby fostering creativity in the app development process. A study on the use of Glide for designing mobile-app-based learning media emphasized the platform's suitability for creating engaging and interactive learning materials, which can inspire students to think outside the box when developing their own applications (Rahmawati et al., 2021).

2.5 Preparing students for the future of work

The use of Glide in education can also prepare students for the future of work, where digital literacy and app development skills are increasingly in demand. A study on the rise of no-code platforms highlighted their potential to plug the digital skills gap, making them an essential tool for upskilling in the digital age (Lamb, 2023). By learning to use Glide, computer club students at POLIMAS can gain a competitive edge in the job market, as they will be equipped with the skills to develop mobile applications without the need for extensive coding knowledge.

Additionally, the integration of Glide into the curriculum can help students develop a deeper understanding of the app development process, from design to deployment. This can be particularly beneficial for students who are interested in pursuing careers in technology and software development. A study on the use of no-code platforms for teaching low-code and no-code competencies emphasized the importance of such tools in preparing students for the future of work (Sońta & Przegalińska, 2024).

3.0 METHODOLOGY

This study adopted the Kemmis and McTaggart action research model, which includes the phases of planning, acting, observing, and reflecting. The cyclical nature of the model supported iterative learning and continuous improvement throughout the project.

3.1 Participants

i. 40 active members of the POLIMAS Computer Club participated.
ii. Participants came from various diploma programs, including mechanical engineering, electrical engineering, and business studies.
iii. The age range of participants was between 18 to 22 years.

3.2 Tools and Platform

i. **Glide**: A no-code platform that converts Google Sheets into fully functional web and mobile applications.
ii. **Google Sheets**: Used as the database for Glide applications.
iii. **Canva**: Used by some teams for app interface design mock-ups.

3.3 Data Collection Methods

i. Pre- and post-project surveys to assess changes in digital confidence and interest.
ii. Weekly observation notes by facilitators.
iii. Facilitators evaluations during final presentations.
iv. Focus group discussions at the end of the project.

3.3 Procedure

Planning: A series of workshops and mentoring sessions were planned. Training materials, sample Glide apps, and introductory videos were shared prior to the first meeting.

Action: Students were grouped into teams of 3–4 and tasked with identifying real-world problems that could be addressed through simple apps. Teams then designed, developed, and refined their apps using Glide, with weekly check-ins.

Observation: Facilitators observed team dynamics, challenges faced, creative solutions, and the level of engagement throughout the eight-week project.

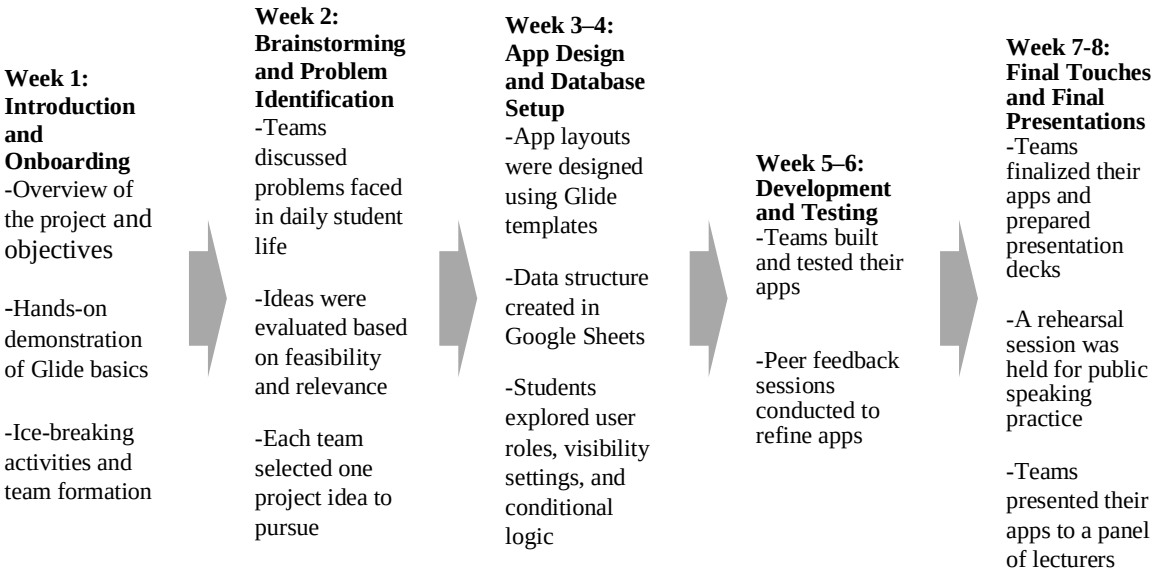
Reflection: At the end of the project, students reflected on their learning journey and the skills acquired. Data was collected and analyzed to evaluate the effectiveness of the initiative.

4.0 DATA ANALYSIS AND FINDINGS

Participants: The study involved 40 students from various departments at Politeknik Sultan Abdul Halim Mu'adzam Shah (POLIMAS), participating in a semester-long Glide app development project.

4.1 Implementation

The initiative was implemented over 8 weeks, integrated within the curricular activities of the Computer Club. Weekly sessions were held on campus. The structure was as follows:



***Flow Chart 1**: Methodology Step*

4.2 Instrument used

Instruments that had been used wes a two-part survey (pre- and post-project):

- Pre-Survey: Captured demographics, prior experience, and self-assessed confidence.
- Post-Survey: Measured perceived improvement and reflections on learning outcomes.

Survey Sections:

- Section A: Demographics and Background
- Section B: Confidence and Skill Assessment (Likert scale)
- Section C: Open-Ended Expectations and Reflections

Procedure: Students completed the pre-survey before beginning the Glide project. Table 1 shows the item for section B, confident and skill assessment. After completing their app development tasks, the same students filled out the post-survey. Both quantitative and qualitative data were analyzed.

Table 1: tem for section B Confidence and skill Assessment

No.	Statement
1	I understand how apps work behind the scenes.
2	I can work well in a team to complete a project.
3	I can think creatively to solve a problem.
4	I am comfortable presenting my ideas in front of others.
5	I believe I can develop an app even if I don’t know how to code.

4.2 Result

Demographics Overview

The project involved students aged between 18 to 22 years, a common age range for post-secondary and early tertiary education, particularly in technical and vocational institutions. The gender distribution comprised approximately 15% male and 25% female participants. This demographic information provides insight into the diversity of the group and indicates a higher participation of female students in this digital learning experience. The youthful demographic suggests that the participants belong to a generation generally familiar with mobile technologies and digital applications, though not necessarily proficient in creating or designing them.

Pre-Project Confidence Assessment

Before the commencement of the project, students were assessed on their confidence across three main dimensions: digital tool usage, teamwork, and app development without coding. The results indicated moderate confidence in using digital tools and in collaborating with peers, both averaging 3 out of 5. This level suggests a basic familiarity with digital platforms, likely shaped by academic or personal use of computers, smartphones, and online platforms. However, the average confidence level for developing apps without coding was significantly lower, at only 2 out of 5. This low score highlights a clear area of inexperience and apprehension, underscoring the need for educational interventions that demystify app creation and promote student engagement in tech-based problem-solving.

Post-Project Impact

Following the implementation of the no-code app development project, a marked improvement was observed across all surveyed domains:

Confidence in using digital tools increased from an average of 3 to 4. This positive shift reflects enhanced familiarity, comfort, and proficiency with digital interfaces, likely resulting from regular interaction with the no-code platforms during the project.

Understanding of app design also rose from an average of 3 to 4. This development indicates that students gained a clearer conceptual framework of how applications are structured, including user interface design, logic flow, and content management. Their improved comprehension could be attributed to hands-on experience with intuitive no-code platforms that visually demonstrate backend and frontend linkages.

Belief in their ability to develop apps without coding showed the most significant increase, moving from a low 2 to a high 4. This demonstrates a powerful transformation in mindset. The increase not only points to knowledge acquisition but also to the empowerment of learners who initially doubted their capacity to contribute to digital innovation. The experiential learning process appears to have broken the psychological barrier that equated app development with complex programming skills.

Additionally, students reported growth in teamwork and problem-solving abilities. As these soft skills were not directly rated numerically, their improvement was derived from qualitative feedback and observed behavior. The collaborative nature of the project required students to delegate tasks, communicate effectively, and co-create solutions, thereby naturally enhancing these essential skills.

Qualitative Reflections: Thematic Insights

A deeper understanding of student experiences was obtained through open-ended responses, which revealed several recurring themes:

Valuable Learning: Numerous students expressed appreciation for the opportunity to learn how apps function. They were enthusiastic about creating something tangible and functional, which fostered a sense of achievement. The ability to transform abstract ideas into working prototypes boosted their confidence and interest in digital creation.

Challenges Encountered: While the project was successful, it was not without obstacles. Several students cited technical issues such as login errors, connectivity problems, or unfamiliarity with the no-code interface. Others noted difficulties in team coordination, especially in the early stages when roles were unclear or when group members had different working styles.

Suggestions for Improvement: In their feedback, students requested additional tutorials to help them grasp the platform's features more quickly. Some suggested better project timelines to reduce last-minute stress and improve the quality of outcomes. There was also a desire for more structured guidance in the early phases of app design, particularly regarding layout planning and feature prioritization.

5.0 DISCUSSION AND CONCLUSIONS

The evaluation clearly illustrates that the no-code app development project was an effective pedagogical tool for enhancing students' digital literacy, teamwork, and problem-solving abilities. The significant improvement in their confidence to use digital tools and to develop apps without coding is evidence of the project's success in meeting its educational objectives. Furthermore, the qualitative reflections emphasize the importance of supportive scaffolding, peer collaboration, and structured resources in maximizing the learning experience. These findings may inform future curriculum designs that aim to equip students with essential digital skills through engaging, real-world applications.

The use of Glide for no-code app development among computer club students at POLIMAS offers numerous educational benefits, including enhanced engagement, the development of practical skills, fostering of digital literacy and problem-solving skills, encouragement of collaboration and creativity, and preparation for the future of work. However, there are also challenges and limitations that need to be addressed to ensure the effective use of the platform in educational settings. By carefully considering these factors, educators can harness the full potential of Glide to provide students with a comprehensive and engaging learning experience.

5.1 Learning Outcomes

The introduction of Glide Apps provided club members with an accessible and engaging platform for mobile app creation. Key learning outcomes included:

i. Increased Confidence: Participants reported a significant improvement in their confidence regarding app development. Initially hesitant and unfamiliar with the idea of creating apps without coding, students gradually grew more comfortable navigating the platform, experimenting with its features, and taking ownership of their work. This growth in confidence was not only technical but also emotional, as students began to see themselves as capable digital creators.

ii. Improved Collaboration: The collaborative nature of the project helped students enhance their teamwork skills. Working in groups, they learned to delegate tasks effectively, respect each other's strengths, and communicate constructively. Through the process, students practiced real-world collaborative behaviors such as scheduling meetings, resolving conflicts, and collectively deciding on app functionalities. These experiences not only strengthened group dynamics but also prepared them for professional teamwork settings.

iii. Practical Knowledge: Students gained hands-on experience in managing app databases using tools like Google Sheets, which served as the backend for their Glide apps. They learned how to structure data, link it to components, and ensure seamless interaction between the user interface and the data layer. Additionally, they explored the principles of user-centered design, making apps intuitive, accessible, and visually appealing. This combination of technical and design knowledge contributed to a well-rounded understanding of app development.

5.2 Challenges Faced

Despite the user-friendly nature of Glide Apps, participants encountered several challenges that tested their resilience and adaptability:

i. Integration of Complex Features: Students struggled when trying to incorporate advanced functionalities such as multi-step workflows, conditional visibility, and user-specific interactions. These limitations required them to simplify their app ideas or find creative workarounds, fostering problem-solving and iterative thinking.

ii. Data Accuracy and Consistency: Ensuring that data inputs remained consistent and accurate across different screens and users was another major challenge. Students had to pay close attention to field naming, data types, and synchronization issues between Glide and Google Sheets. Debugging these issues provided valuable lessons in data management.

iii. Performance with Large Datasets: Some groups experienced performance lags or design limitations when handling large datasets, especially when using multiple filters or complex calculations. These challenges revealed the scalability constraints of no-code tools and prompted students to think critically about app optimization and user experience.

Nevertheless, these obstacles were instrumental in deepening students' understanding of digital systems. By collaborating to troubleshoot and refine their apps, participants gained resilience, enhanced their technical troubleshooting skills, and built a stronger foundation in digital literacy.

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☑ **Pre-Survey: Student Digital Literacy and Readiness (Before Glide Project)**

Instructions: Please answer the following questions honestly. Your responses will help us understand your starting point and how we can best support your learning journey.

Section A: Demographics

1. Age: _____
2. Gender: ☐ Male ☐ Female
3. Department: _____
4. Have you ever created an app before? ☐ Yes ☐ No
5. Do you have experience using Google Sheets or Excel? ☐ Yes ☐ No

Section B: Confidence and Skills (Rate 1–5)

(1 = Strongly Disagree, 5 = Strongly Agree)

Statement	Rating (1–5)
I feel confident using digital tools and apps.	☐ ☐ ☐ ☐ ☐
I understand how apps work behind the scenes.	☐ ☐ ☐ ☐ ☐
I can work well in a team to complete a project.	☐ ☐ ☐ ☐ ☐
I can think creatively to solve a problem.	☐ ☐ ☐ ☐ ☐
I am comfortable presenting my ideas in front of others.	☐ ☐ ☐ ☐ ☐
I believe I can develop an app even if I don't know how to code.	☐ ☐ ☐ ☐ ☐

Section C: Expectations

1. What do you hope to learn from this project?

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2. What challenges do you expect to face?

☑ **Post-Survey: Reflection on Glide App Development Project (After Completion)**

Instructions: Please answer based on your experience during the project. Your responses will help us evaluate the impact of this project and improve future activities.

Section A: Project Experience (Rate 1–5)

(1 = Strongly Disagree, 5 = Strongly Agree)

Statement	Rating (1–5)
I feel more confident using digital tools than before.	☐ ☐ ☐ ☐ ☐
I understand how apps function and how to design one using Glide.	☐ ☐ ☐ ☐ ☐
I was able to contribute ideas and work effectively with my team.	☐ ☐ ☐ ☐ ☐
I improved my creativity and problem-solving skills through this project.	☐ ☐ ☐ ☐ ☐
I enjoyed using Glide and would recommend it to others.	☐ ☐ ☐ ☐ ☐
I now believe I can develop a useful app without coding knowledge.	☐ ☐ ☐ ☐ ☐

Section B: Learning Impact

1. What was the most valuable thing you learned?

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2. What was the biggest challenge you faced?

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3. How would you rate your overall experience? ☐ Excellent ☐ Good ☐ Average ☐ Poor
4. Suggestions for improvement:
