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Perceptions of Prospective Social Studies Teachers on the Effectiveness of Google Classroom in Enhancing Pedagogical Content Understanding and Teaching Readiness at Junior High Schools (SMP)

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Abstract

This study aims to analyze the perceptions of pre-service Social Studies (IPS) teachers regarding the effectiveness of using Google Classroom in improving pedagogical content knowledge and teaching readiness at the junior high school (SMP) level. The research employed a mixed-methods approach with a convergent parallel design. The participants consisted of 30 students from STKIP Harapan Bima. Quantitative data were collected through a perception questionnaire, a pedagogical understanding test, and a teaching readiness observation sheet, while qualitative data were obtained through in-depth interviews and field notes.The findings revealed a significant improvement in students' pedagogical content understanding (mean pretest = 62.4; posttest = 79.6; $p < 0.05$) with an N-Gain score of 0.45 (moderate category) and an effect size of 2.15 (very strong effect). Students' perceptions of Google Classroom effectiveness were generally high (mean = 4.19 out of 5), particularly in the dimensions of accessibility (87%) and usefulness for learning (86%). Qualitative analysis indicated that students experienced ease in accessing materials, increased collaboration, and greater efficiency in managing assignments. The main obstacles—limited internet connectivity and digital device availability—were mitigated through adaptive learning strategies.The integration of quantitative and qualitative data demonstrates that Google Classroom is effective as a pedagogical learning medium that fosters digital literacy, self-regulated learning, and professional readiness among pre-service Social Studies teachers.

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1. INTRODUCTION

The era of the Industrial Revolution 4.0 and the disruption of digital technology have shifted the global education paradigm toward a model integrated with digital technology. Learning processes are no longer limited to physical classrooms and face-to-face interactions but have expanded into virtual spaces without constraints of time and place. In this context, information and communication technology (ICT) has become the backbone of innovation in education delivery. Higher education institutions, as organizations responsible for preparing future educators, are required not only to adopt technology but also to make it an integral part of the pedagogical experience. This demand became even more urgent during emergency situations, such as the COVID-19 pandemic, which forced a rapid transition from conventional learning to online learning. Circular Letter No. 3 of 2020 on the Prevention of Coronavirus Disease (COVID-19) in Educational Units exemplifies an external policy that accelerated the adoption of online learning, making platforms like Google Classroom not merely an alternative but a primary necessity.

The use of digital learning media such as Google Classroom has become one of the most popular innovations, especially in the era of online learning that has expanded since the COVID-19

pandemic (Sabran & Sabara, 2014). Google Classroom facilitates interactive communication between teachers and students, task management, material delivery, and learning evaluation efficiently and flexibly (Isnaniah, 2021). In the context of teacher education, particularly for prospective Social Studies (IPS) teachers at the junior high school level, the use of Google Classroom is not only a learning tool but also a medium that can enhance pedagogical content understanding and teaching readiness.

Google Classroom serves as an accessible, lightweight Learning Management System (LMS) that integrates with other Google ecosystem tools. As a web-based e-learning platform, Google Classroom facilitates a structured and systematic teaching and learning process. The platform enables lecturers and students to connect digitally, distribute materials, collect assignments, provide feedback, and conduct assessments within a fully digitized learning cycle. Previous studies, such as those by Iftakhar (2016) and Al-Maroof & Al-Emran (2018), confirmed positive acceptance of Google Classroom due to its ease of use and perceived usefulness. More broadly, the presence of Google Classroom aligns with the vision of blended learning, which combines the advantages of face-to-face and online learning to create a more flexible and personalized learning experience.

Prospective Social Studies teachers are required to master not only social content but also pedagogical competencies, which are fundamental in facilitating effective learning (Anggraeni et al., 2020). Pedagogical competencies include the ability to plan, implement, and assess learning effectively. Meanwhile, teaching readiness of prospective teachers is influenced by their experience and understanding of the learning technologies used. Understanding students' perceptions of the effectiveness of Google Classroom is crucial as it can affect their learning motivation and readiness to face real-world teaching situations.

Social Studies teachers bear the significant responsibility of shaping students who are not only cognitively intelligent but also possess character, social values, and awareness as good citizens. To achieve this, a Social Studies teacher must not only master the subject matter (history, geography, economics, sociology) but also possess deep pedagogical knowledge (pedagogical content knowledge/PCK). This pedagogical understanding includes the ability to design contextual learning strategies, select appropriate media, conduct authentic assessments, and manage inclusive and democratic classrooms. Teaching readiness, as the ultimate outcome of teacher education, is a state in which prospective teachers feel confident, competent, and mentally prepared to face real classroom dynamics. This readiness results from the internalization of theoretical knowledge and practical experience gained during coursework.

Although Google Classroom has been widely adopted, its effectiveness in supporting specific pedagogical objectives, particularly in the education of prospective Social Studies teachers, still requires deeper examination. Research by Hasmiati et al. (2022) Previous research revealed that students' perceptions of using Google Classroom are not always positive; some are negative. These findings indicate a gap between the potential of technology and actual learning needs. Several specific issues identified in various studies include: Limited Pedagogical Interaction: Some students feel that the platform does not support deep and meaningful interactions, which are crucial for discussing complex pedagogical concepts. Difficulty Understanding Concepts: Triadi (2022) found that although the overall effectiveness of Google Classroom is high, some students struggle to understand the material due to limited direct explanations and instant feedback. Feedback Gaps: Quick and constructive feedback is key in learning. However, some students report difficulties receiving feedback on assignments submitted through Google Classroom. Psychological Readiness Challenges: Negative perceptions, influenced by internal and external factors, can affect motivation and, ultimately, teaching readiness. Factors such as knowledge, experience, and individual assumptions make responses to the platform highly varied.

Although Google Classroom has been widely adopted, its effectiveness in supporting specific pedagogical objectives—particularly in the education of prospective Social Studies (IPS) teachers—still requires deeper investigation. Research by Hasmiati et al. (2022) revealed that students' perceptions of Google Classroom usage are not always positive; some are negative. This indicates a gap between the potential of the technology and actual learning needs. Several specific problems

identified include: limited pedagogical interaction, difficulty understanding concepts, feedback gaps, and psychological readiness challenges, with responses varying due to individual knowledge, experience, and assumptions.

Some previous studies provide a general overview of Google Classroom's effectiveness. Research by Defri Triadi (2022) concluded that there is a significant effect of Google Classroom's effectiveness on students' satisfaction in entrepreneurship courses. Similarly, other studies reported positive results regarding students' perceptions of ease of use and usefulness of Google Classroom on learning effectiveness. However, these studies tend to focus more on aspects of satisfaction, general cognitive learning outcomes, or technical effectiveness. Few studies specifically investigate how this platform contributes to strengthening pedagogical content understanding—such as the ability to design lesson plans, select appropriate learning models for IPS materials, or conduct affective assessments—and how it influences their psychological teaching readiness and competence. Studies on learning interest, such as those conducted at SMP Negeri 1 Kuok, although in a different context, indicate that e-learning can influence affective aspects of learners, which are components of teaching readiness.

Previous research shows that Google Classroom is quite effective in supporting Social Studies learning at junior high schools, where aspects of lesson management, communication, and learning activities positively impact learning outcomes (Isnaniah, 2021). However, challenges remain, such as limited direct communication and less-than-optimal online discussion. Teacher readiness in mastering Google Classroom also becomes a key factor in the successful use of this medium (Charity, 2021). Additionally, prospective teachers who are accustomed to using Google Classroom in the learning process tend to have a better understanding of pedagogical competencies because they can directly experience how this medium supports interactive and multitasking learning in a digital environment (Hasmiati et al., 2022). Teaching readiness in junior high schools also improves along with the ability to integrate learning technology into their future professional practice (Yossi, 2022).

Learning approaches that utilize Google Classroom also play a role in increasing the self-directed learning of students and prospective teachers while maintaining learning quality in distance learning situations. The flexibility of time and place provided by Google Classroom allows the learning process to be more effective and efficient (Sabran & Sabara, 2014). Therefore, the perceptions of prospective Social Studies teachers regarding the effectiveness of Google Classroom as a learning medium deserve further investigation to maximize digital transformation in education

Based on the description above, the main research problem can be formulated as follows: How do prospective Social Studies teachers perceive the effectiveness of Google Classroom in enhancing pedagogical content understanding and teaching readiness in junior high schools? This study is designed to answer this main question with the objectives of: Identifying prospective Social Studies teachers' perceptions of the ease of use and usefulness of Google Classroom in the learning process. Analyzing the impact of using Google Classroom on students' understanding of pedagogical content. Assessing the contribution of Google Classroom usage to improving teaching readiness of prospective Social Studies teachers. Identifying obstacles and challenges in utilizing Google Classroom to support pedagogical learning outcomes.

2. MATERIALS AND METHODS

This study uses a mixed methods approach with a convergent parallel design. The quantitative approach is employed to measure the level of effectiveness and pedagogical content understanding through questionnaires and tests, while the qualitative approach is used to explore students' perceptions, learning experiences, and challenges in using Google Classroom during lectures and teaching practice at partner schools (junior high schools). The study was conducted at STKIP Harapan Bima during the even semester of the 2024/2025 academic year. The research involved 30 students as subjects, consisting of 15 males and 15 females. Purposive sampling was used to select the participants.

Research Variables

This study has two main variables, as shown in Table 1:

Table 1. Research Variables

Variable Type	Variable Name	Description
Independent Variable (X)	Effectiveness of Google Classroom Usage	The level of ease, interactivity, accessibility, and usefulness of Google Classroom features in supporting learning and teaching practice.
Dependent Variable (Y1)	Pedagogical Content Understanding	The level of students' ability to understand learning materials, pedagogical strategies, and Social Studies (IPS) teaching approaches at junior high schools.
Dependent Variable (Y2)	Teaching Readiness	The cognitive, affective, and psychomotor readiness of students in implementing learning, including planning, execution, and evaluation of learning activities.

Research Instruments

The study used four **main** instruments:

a. Google Classroom Effectiveness Perception Questionnaire (APEGC).

The questionnaire consists of 25 statements using a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Measured indicators include: ease of access and navigation (user-friendliness), interactive features (assignments, comments, uploading videos/materials), communication and fedback, and usefulness for learning and teaching practice. Content validity was assessed through expert judgment by two lecturers specializing in educational technology and Social Studies education. Reliability testing using Cronbach's Alpha yielded a value of 0.91, indicating very high reliability.

b. Pedagogical Content Understanding Test (TPKP)

This test measures students' understanding of pedagogical concepts in Social Studies teaching at junior high schools, comprising 20 multiple-choice questions and 5 essay questions.

c. Teaching Readiness Observation Sheet

Observation sheets were used during microteaching simulations and teaching practice at junior high schools. Assessed aspects include: lesson planning (preparedness of lesson plans, media, objectives), implementation (communication, classroom management, use of digital media), and evaluation (reflection, feedback, assessment). Observers included two supervising lecturers and one mentor teacher. Inter-rater reliability was 0.84, indicating high consistency in assessment.

d. Interviews and Field Notes

Interviews were conducted with 10 purposively selected students and 2 supervising lecturers. Questions focused on perceptions, learning experiences, challenges, and benefits of using Google Classroom in Social Studies learning.

Research Procedure

The research was conducted in five main stages, as summarized in Table 2:

Table 2. Research Procedure

Stage	Activities	Duration (Weeks)
1. Preparation	Preparing the proposal, validating instruments, and pilot testing the questionnaire and test.	2
2. Quantitative Data Collection	Administering pretests and distributing perception questionnaires to all respondents.	2
3. Qualitative Data Collection	Conducting in-depth interviews, microteaching observations, and documentation of learning activities.	3
4. Data Analysis	Descriptive and inferential statistical analysis (quantitative) and data reduction, display, and verification (qualitative).	3

Stage	Activities	Duration (Weeks)
5. Triangulation and Reporting	Integrating quantitative and qualitative results, preparing the report, and drawing final conclusions.	2

The total research duration is estimated at 12 weeks (three months).

Data Analysis Techniques

Quantitative data from questionnaires and tests were analyzed using descriptive and inferential statistics, including mean, standard deviation, and percentage. Paired Sample t-tests were conducted to determine significant differences between pretest and posttest scores of pedagogical content understanding. N-Gain scores were calculated to measure learning improvement with categories: low (<0.3), medium (0.3–0.7), and high (>0.7). Effect size (Cohen's d) was used to determine the strength of the impact of Google Classroom on learning improvement.

3. RESULTS AND DISCUSSION

a. Results

This study was conducted at STKIP Harapan Bima during the even semester of the 2024/2025 academic year, involving 30 prospective teacher students (15 males and 15 females). All participants had completed the Social Studies (IPS) Learning Strategy Development course and were involved in teaching practice at partner schools (junior high schools). The learning strategy using Google Classroom was integrated into all stages of the course, from assignment submission, online discussions, to reflection on teaching practice. This study aimed to assess the effectiveness of Google Classroom in enhancing two key aspects: 1) Pedagogical Content Understanding – the students' ability to understand Social Studies teaching concepts at the junior high school level. 2) Teaching Readiness – including the ability to design lesson plans (RPP), implement learning, and conduct evaluations.

A mixed methods approach with a convergent parallel design allowed quantitative and qualitative data to be analyzed simultaneously to produce a comprehensive understanding

1. Quantitative Results

a. Improvement in Pedagogical Content Understanding

The Pedagogical Content Understanding Test (TPKP) was administered before and after the implementation of Google Classroom-based learning.

Table 3. Pretest and Posttest TPKP Results

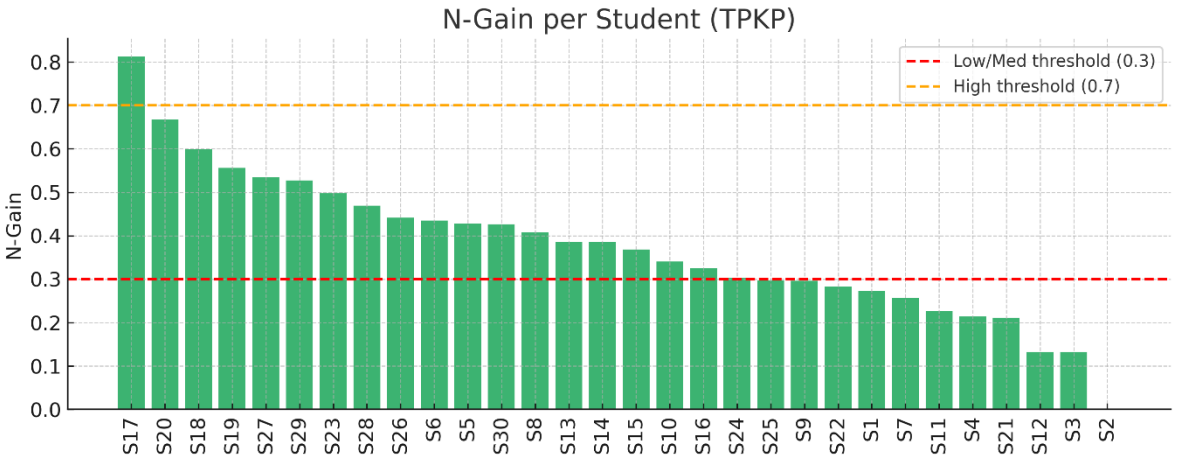
Statistic	Pretest	Posttest	Description
Mean	62.4	79.6	Significant increase
SD	7.8	6.5	Score variation decreased
N-Gain	0.45	–	Medium category
t-test (p-value)	–	0.000 (<0.05)	Significant
Effect Size (Cohen's d)	2.15	–	Very large effect

The paired sample t-test analysis showed a statistically significant increase in posttest scores at $p < 0.05$, with Cohen's $d = 2.15$, indicating a very large effect. The average N-Gain score of 0.45 falls into the medium category, indicating that Google Classroom positively impacted students' understanding of pedagogical concepts.

Detailed improvements were highest in the following indicators:

- Selecting contextual Social Studies learning strategies (N-Gain = 0.58)
- Understanding differences between scientific and social inquiry approaches (N-Gain = 0.52)
- Analyzing learning objectives and competency standards (N-Gain = 0.47)

Figure 1. N-Gain TPKP



The indicator with relatively lower improvement was the ability to design project-based authentic assessments (N-Gain = 0.33), as some students were still accustomed to traditional test-based evaluation methods.

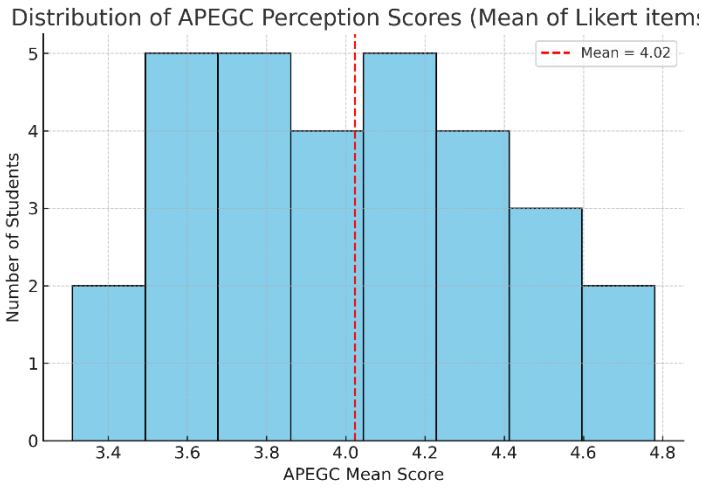
b. Effectiveness of Google Classroom (APEGC)

The Google Classroom Effectiveness Perception Questionnaire (APEGC) consists of four main dimensions: ease of access, interactivity, communication and feedback, and usefulness for learning.

Table 4. Average APEGC Scores by Dimension (Scale 1–5)

Dimension	Mean	Category	Satisfaction (%)
Ease of access and navigation	4.35	Very high	87%
Interactive features	4.10	High	82%
Communication and feedback	4.05	High	81%
Usefulness for learning	4.28	Very high	86%
Overall average	4.19	High–Very High	84%

Firure 2. Perception



The majority of students rated Google Classroom as easily accessible (87%), with interactive features such as assignment submission, commenting, and grading feedback significantly supporting online learning. Students also noted that Google Classroom facilitated two-way communication between lecturers and students and helped them manage time and review uploaded materials.

c. Teaching Readiness Observation

Observation sheets were used during microteaching and teaching practice at partner junior high schools. Three main aspects were observed: Planning, Implementation, and Evaluation.

Table 5. Teaching Readiness Observation Scores (Scale 1–5)

Aspect	Mean	Category
Planning	4.25	Very Good
Implementation	4.10	Good
Evaluation	3.85	Good
Overall average	4.07	Good–Very Good

The most prominent aspect was lesson planning, where students showed significant improvement in preparing digital lesson plans, including the use of interactive media from Google Classroom. In contrast, learning evaluation still required improvement, as some students were not yet fully capable of designing in-depth reflections and formative assessments.

d. Correlation Between Effectiveness and Teaching Readiness

Correlation analysis showed a strong positive relationship between students' perceptions of Google Classroom's effectiveness and teaching readiness ($r = 0.73$, $p < 0.01$). This indicates that the higher students' perceptions of the ease of use and benefits of Google Classroom, the better their readiness to design and implement learning.

2. Qualitative Results

In-depth interviews with 10 students and two supervising lecturers revealed several main themes:

a. Ease of Use and Accessibility

Students perceived Google Classroom as highly helpful in managing assignments, learning materials, and communication. They could access course materials anywhere, even while at partner schools. One student stated: *"Google Classroom makes me more disciplined because all assignments have automatic deadlines. I can also read lecturers' comments directly."*

b. Interactivity and Collaboration

Although Google Classroom is not as interactive as video conferencing applications like Zoom, students felt that features such as comments and discussion threads facilitated reflective discussions. Some students used the microteaching video upload feature as a form of learning reflection, which then received direct feedback from lecturers and peers.

c. Technical Challenges

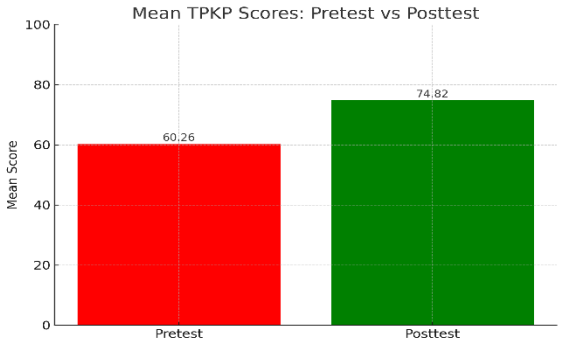
Some students still faced issues such as weak internet signals and limited phone storage. However, they overcame these challenges by sharing devices and scheduling staggered assignment submissions.

d. Impact on Teaching Readiness

Students stated that learning through Google Classroom improved their self-directed learning and pedagogical digital literacy, such as searching for references, creating digital media, and evaluating learning using online forms.

3. Data Visualization Results

Bar Chart 3. Average Pretest and Posttest Scores



The chart shows an increase in the average TPKP score from 62.4 to 79.6, a 27.5% improvement.

b. Discussion

1. Effectiveness of Google Classroom in Improving Pedagogical Understanding

The results indicate that using Google Classroom significantly improved the pedagogical understanding of rospective Social Studies teachers. The effect size of 2.15 demonstrates a very strong impact, consistent with Adarkwah (2021), who found that LMS-based online learning platforms can enhance material retention and students' reflective thinking. In the context of Social Studies learning, this improvement is attributed to the integration of digital materials and contextual discussions via online forums, which encourage students to think critically about current social events. In other words, Google Classroom functions not only as an administrative tool for assignments but also as a space for collaborative knowledge construction.

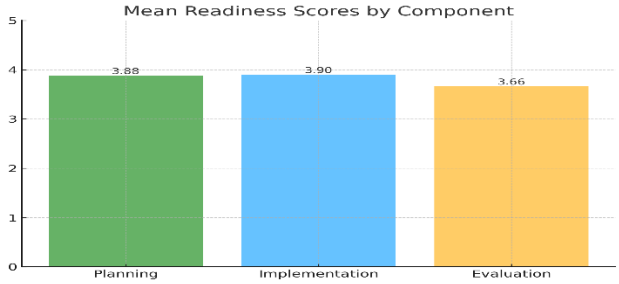
2. Teaching Readiness and Digital Pedagogical Transformation

Improvements in teaching readiness indicate that students became more prepared in three areas:

1. Digital Planning – ability to prepare lesson plans (RPP) with integrated online media.
2. Interactive Implementation – use of online resources and visual tools in explaining IPS material.
3. Reflective Evaluation – using Google Forms for formative assessment.

These results support the Technological Pedagogical Content Knowledge (TPACK) theory by Mishra & Koehler (2006), which states that 21st-century teachers need to integrate technology, pedagogy, and content synergistically. Students in this study demonstrated the ability to develop such synergy.

Diagram 4. Average Component Scores



3. Supporting Factors and Challenges

The successful implementation of Google Classroom was influenced by three main factors:

- Internet access and availability of devices
- Lecturer competence in providing digital feedback
- Students' motivation for self-directed learning

The main obstacles were technical issues, such as unstable signals and limited digital devices in some areas, which were also reported by Utami et al. (2022) in a similar study at regional universities.

4. Implications for Prospective Social Studies Teachers

Google Classroom helps students develop 21st-century skills, such as digital literacy, self-regulated learning, and reflective practice. This directly impacts their readiness to face an increasingly digitalized educational work environment. Lecturers can use these findings as a basis to strengthen project-based blended learning designs, where Google Classroom serves as a platform for reflection and evaluation of students' work.

5. Qualitative Findings for Contextual Depth

Interview data show that students' positive perceptions of Google Classroom are not solely due to technical ease, but also because of a richer social and academic experience. Students felt they had a safe space to discuss without pressure and the opportunity to improve assignments based on lecturer feedback.

This phenomenon indicates a paradigm shift in learning—from an individual activity to a collaborative activity within a digital community.

6. Integration of Quantitative and Qualitative Data

The convergent parallel design allowed researchers to observe that quantitative results (score improvements and perception scores) aligned with qualitative data (students' experiences). Integrating these two data sources strengthens the validity of the conclusion that Google Classroom effectively enhances pedagogical understanding and teaching readiness for prospective Social Studies teachers.

In this section, the research results are explained comprehensively. Results can be presented in figures, charts, tables, etc., to facilitate understanding. Suggested steps include: a. Present tables, charts, or curves from the research or literature review. b. Explain the tables, charts, or curves comprehensively, focusing on those integrated into the research focus. c. Refer to relevant theories, research findings, or reputable national/international scholarly articles.

4. CONCLUSION

The results of this study indicate that Google Classroom is effective in improving pedagogical content understanding and teaching readiness among prospective Social Studies teachers. Quantitatively, there was a significant increase in pedagogical understanding test scores, with an N-Gain of 0.45 (medium category) and an effect size of 2.15 (very strong effect). This means that using Google Classroom not only helps students better understand Social Studies teaching concepts but also strengthens their ability to design, implement, and evaluate lessons at partner schools.

Qualitatively, students perceived the platform as highly helpful for managing digital learning, communicating with lecturers, and organizing learning materials systematically. Students also developed reflective skills through comment features, microteaching video uploads, and online feedback. This demonstrates that Google Classroom functions not merely as an administrative tool but as a learning ecosystem that promotes collaboration and pedagogical digital literacy. Furthermore, a strong positive correlation was found between perceptions of Google Classroom's effectiveness and teaching readiness ($r = 0.73$; $p < 0.01$). In other words, the more positive students' perceptions of Google Classroom, the higher their readiness to plan and implement lessons. These findings support the Technological Pedagogical Content Knowledge (TPACK) theory, which emphasizes that the synergy of technology, pedagogy, and content is key to 21st-century teacher competence.

Overall, this study suggests that integrating Google Classroom into teacher education curricula can be an effective strategy for developing professional competencies among prospective teachers to navigate the digital education ecosystem of the Industry 4.0 era.

5. RECOMMENDATIONS

1. For Higher Education Institutions: Teacher education institutions, such as STKIP Harapan Bima, should make Google Classroom a mandatory platform in pedagogical courses. Enhancing

pedagogical digital literacy can be achieved through workshops, LMS-based lesson design training, and integration with blended learning models.

2. For Lecturers and Curriculum Developers: Lecturers are encouraged to maximize reflective features of Google Classroom, such as rubrics, comment threads, and peer review, to make student learning more interactive and collaborative. Curriculum development should aim to integrate digital technology into every stage of prospective teachers' learning.
3. For Prospective Social Studies Teachers: Students should enhance their self-regulated learning skills and digital literacy to fully utilize the benefits of Google Classroom. This digital learning experience can serve as practical preparation for teaching in schools that implement online or blended learning systems.
4. For Future Researchers: It is recommended to conduct further research with a larger, cross-institutional sample and to compare the effectiveness of Google Classroom with other platforms such as Moodle or Microsoft Teams. Longitudinal studies are also needed to evaluate the long-term impact on teachers' professional readiness in the field.

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