

Hybrid – Flexible (HyFlex) Learning Preparedness of Pre-Service Teachers in A Private College

Lerma P. Navarro

Osias Educational Foundation

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Email of Corresponding Author: navarrol@slc-sflu.edu.ph; ORCID: [0009-0007-3821-1937](https://orcid.org/0009-0007-3821-1937)

Abstract

This study examined the preparedness of pre-service teachers in implementing HyFlex learning in terms of pedagogical, technological, assessment, and classroom management knowledge and skills, affective or psychological readiness, and the ability to address challenges in flexible learning environments. Anchored on the Community of Inquiry (CoI) Framework, the Technological, Pedagogical, and Content Knowledge (TPACK) Framework, and Self-Efficacy Theory, the study employed a quantitative correlational research design. The respondents consisted of third- and fourth-year pre-service teachers enrolled in field study subjects at Saint Louis College. Total enumeration was utilized, and data were gathered through a researcher-developed 5-point Likert scale questionnaire administered online through Google Forms and QR codes. Frequency counts, percentages, mean ratings, and Pearson-r moment correlation were used to analyze the data. The findings revealed that pre-service teachers were generally Very Prepared to Very Highly Prepared in HyFlex learning. Technological knowledge and classroom management obtained the highest preparedness ratings, while assessment knowledge obtained the lowest among the measured domains. Respondents also demonstrated Very Highly Prepared affective and psychological readiness and were Very Prepared in addressing HyFlex learning challenges. The study further revealed very strong positive and statistically significant relationships among HyFlex knowledge and skills, affective or psychological readiness, and preparedness in addressing HyFlex learning challenges, with the strongest relationship found between knowledge and skills and addressing challenges in HyFlex learning. Based on the findings, a validated HyFlex Sustainability Program (HSP) was developed to strengthen pre-service teachers' competencies in flexible learning environments. The study concluded that pre-service teachers possess high levels of preparedness for HyFlex learning due to their familiarity with digital technologies, access to internet connectivity and devices, and exposure to virtual learning platforms. The study recommends integrating the HyFlex Sustainability Program into teacher education curricula, strengthening technological and assessment training, and investing in HyFlex learning infrastructure and professional development initiatives. The study supports Sustainable Development Goal (SDG) 4 on Quality Education by promoting inclusive, equitable, and flexible learning opportunities. It also aligns with SDG 9 on Industry, Innovation, and Infrastructure and SDG 10 on Reduced Inequalities through the integration of digital technologies and accessible learning modalities. The study contributes to educational and institutional sustainability by strengthening teacher preparedness, promoting digital resilience, and supporting the continuity of quality education during disruptions and emergencies.

Keywords: Affective Readiness, Classroom Management, Hyflex Learning, Pre-Service Teachers, Psychological Readiness, Sustainability, Teacher Education, Technological Knowledge and Skills, TPACK Framework, Flexible Learning Environments

1. Introduction

The evolving educational landscape, shaped by the COVID-19 pandemic and recurring disruptions such as typhoons, earthquakes, and extreme heat, has accelerated the adoption of flexible learning modalities in education. HyFlex learning, which combines face-to-face, synchronous online, and asynchronous instruction, has emerged as an innovative approach that promotes accessibility, inclusivity, and continuity of learning (De Caro-Barek & Stöckert, 2024; Mahinay et al., 2023). In response to national and global educational reforms, teacher education institutions are expected to prepare future educators with the pedagogical, technological, and psychological competencies necessary to implement HyFlex learning effectively. This study examines the preparedness of pre-service teachers in using HyFlex learning, focusing on their knowledge and skills, affective or psychological readiness, and ability to address challenges associated with flexible learning environments.

1.1 Background of the Preparedness of Pre-Service Teachers in HyFlex Learning

Education is essential in achieving the Sustainable Development Goals (SDGs), particularly in promoting equitable and quality learning opportunities. Teachers play a crucial role in shaping productive citizens, and the effectiveness of educational systems depends largely on teacher competence. The disruptions caused by the COVID-19 pandemic and

natural calamities compelled schools to adopt flexible learning approaches such as HyFlex learning (De Caro-Barek & Støckert, 2024). HyFlex learning enables learners to choose among face-to-face, synchronous online, and asynchronous modalities, thereby increasing accessibility and adaptability in education (Mahinay et al., 2023). UNESCO emphasized that sustainability begins with teachers who can address the demands of implementing the SDGs through innovative and flexible educational practices (Adipat & Chotikapanich, 2022). HyFlex learning aligns with SDG 4: Quality Education by supporting inclusive and equitable learning opportunities. It also supports SDG 9: Industry, Innovation, and Infrastructure through the integration of digital infrastructure and educational technologies (Baker et al., 2024; OECD, 2023). Furthermore, it contributes to SDG 10: Reduced Inequalities by accommodating learners affected by geographic, socioeconomic, or health-related barriers (Mitra & Shah, 2024), and SDG 11: Sustainable Cities and Communities by reducing travel and resource consumption through digital learning practices (Chugh, 2026). Globally, higher education institutions are integrating SDGs into educational strategies to develop digitally literate, flexible, and innovative future educators capable of adapting to HyFlex environments (Economic & Social Affairs, 2022). In the Philippines, EDCOM 2 envisions a flexible education system that leverages blended learning and technology to address the current learning crisis (Second Congressional Commission on Education, 2025). HyFlex learning supports these reforms by combining face-to-face and online learning while allowing students to choose their preferred mode of participation (Santandreu Calonge et al., 2023). The Department of Education further strengthened the need for flexible learning through DepEd Order No. 22, Series of 2024, which encourages the use of alternative delivery modes during disasters and emergencies (DO 22, s. 2024). As class disruptions become more frequent, teachers must be prepared to transition effectively between in-person and remote instruction (Sevillano, 2025). In private educational institutions, flexible modalities are also necessary due to health concerns, visa issues, and personal circumstances affecting students' attendance. Fresh graduate teachers, particularly those employed in private schools, are expected to possess 21st-century skills that improve employability and adaptability (Caingcoy, 2021). At Saint Louis College, pre-service teachers are exposed to classroom settings through field study courses; however, initial interviews revealed limited emphasis on HyFlex learning strategies and practice. Existing studies mainly focus on adult learners' readiness for HyFlex learning, while studies examining pre-service teachers' preparedness remain limited. This study therefore investigates the preparedness of pre-service teachers to implement HyFlex learning in both practice teaching and professional settings.

1.2 Themes and Insights on Pre-Service Teachers' Knowledge, Skills, and Readiness in HyFlex Learning

Related literature highlights that HyFlex learning requires strong pedagogical, technological, assessment, and classroom management competencies. HyFlex pedagogy involves designing flexible, multi-modal learning experiences that support synchronous and asynchronous participation while ensuring equity and learner engagement (Dove, 2023; Kurt, 2024). Effective instructional design and communication strategies are essential for maintaining cognitive, social, and teaching presence in HyFlex environments (Columbia Center for Teaching and Learning, 2021; Razali & Tasir, 2025). Technological competence is also critical in HyFlex implementation. Teachers must be proficient in digital platforms, multimedia tools, collaboration technologies, and accessibility practices to support flexible learning (Peterson, 2021). Studies emphasize that the success of HyFlex learning depends not only on technology availability but also on comprehensive teacher training and institutional support (Çebi, 2022). Pre-service teachers were found to possess access to devices and virtual learning platforms such as Zoom, Google Meet, and Schoology, which support HyFlex learning implementation (Mahinay et al., 2023). Technological proficiency is strongly associated with positive attitudes toward HyFlex learning and self-regulated online learning (Amiruddin et al., 2024). Assessment practices in HyFlex learning require equitable activities and flexible assessment tools that accommodate students across different participation modes (Beatty, 2024). Pre-service teachers face challenges in selecting appropriate assessment methods and ensuring meaningful feedback in online environments (Güngör & Güngör, 2023; Öztürk, 2024). Classroom management in HyFlex learning also requires balancing the needs of online and onsite learners while creating inclusive and engaging learning environments (Gedera, 2023; TJ O'Ceallaigh et al., 2023). Literature further emphasizes the importance of affective and psychological readiness. Teachers with positive attitudes toward innovation and adaptability demonstrate greater readiness to implement HyFlex learning effectively (Mahinay et al., 2023). However, inadequate motivation and limited interest in digital learning technologies hinder effective implementation (Zavalevskyi, 2024). Teachers who receive continuous professional development and technological training are more motivated to integrate HyFlex learning strategies (Brese & Twele, 2023). Studies also identify several challenges in HyFlex learning, including unreliable internet connectivity, limited technological resources, high teacher workload, low student engagement, and difficulties managing both face-to-face and online learners simultaneously (Billy et al., 2023; Omiles & Ramirez, 2025). Addressing these challenges requires institutional support, technical assistance, teacher training, and inclusive instructional practices (Romero-Hall & Ripine, 2021; Morrison et al., 2025).

1.3 Local, National, and Global Context of HyFlex Learning in Teacher Education

Globally, educational institutions have adopted HyFlex learning to ensure continuity and resilience in education amid disruptions. International initiatives such as the Higher Education Sustainability Initiative emphasize digital transformation, innovation, and interdisciplinary learning to strengthen sustainable educational systems (Economic & Social Affairs, 2022). Research across different countries demonstrates that HyFlex learning enhances accessibility and flexibility while also

presenting challenges related to technology, engagement, and instructional delivery (Amiruddin et al., 2024; Billy et al., 2023). Nationally, the Philippines continues to strengthen flexible learning through EDCOM 2 recommendations and DepEd policies that encourage blended and alternative learning delivery systems (Second Congressional Commission on Education, 2025; DO 22, s. 2024). These reforms emphasize preparing teachers with technological and pedagogical competencies aligned with the demands of modern education. Locally, Saint Louis College integrates field study experiences for pre-service teachers, exposing them to actual classroom settings. However, current teacher preparation programs provide limited opportunities for applying HyFlex learning strategies in practice teaching. This contextual gap highlights the need to assess pre-service teachers' preparedness in implementing HyFlex learning environments.

1.4 Theoretical and Conceptual Foundations of Pre-Service Teachers' Preparedness for HyFlex Learning

This study is anchored on the Community of Inquiry (CoI) Framework, the Technological, Pedagogical, and Content Knowledge (TPACK) Framework, and Self-Efficacy Theory. The CoI Framework explains meaningful learning in technology-supported environments through teaching presence, social presence, and cognitive presence (Mahmud et al., 2026; Kurt, 2024). In HyFlex learning, these elements support interaction, engagement, and reflective learning across multiple modalities. The TPACK Framework emphasizes the integration of technological, pedagogical, and content knowledge in effective teaching (Queroda, 2025). HyFlex learning requires teachers to manage face-to-face and online instruction simultaneously while ensuring equitable learning experiences for all students (Wong et al., 2023). The framework highlights the importance of integrating digital tools with instructional strategies and subject matter expertise. Self-Efficacy Theory explains how teachers' beliefs in their capabilities influence their readiness to implement innovative instructional approaches. Teachers with high self-efficacy are more likely to adopt technology, manage instructional challenges, and implement flexible learning environments effectively (Hendricks et al., 2024). Practical teaching experiences and exposure to innovative pedagogies strengthen pre-service teachers' confidence in implementing HyFlex learning (Fairbrother et al., 2025).

1.5 Research Gaps and Rationale on Pre-Service Teachers' Preparedness in HyFlex Learning

Most existing studies on HyFlex learning focus on adult learners, institutional implementation, and student engagement. Limited research examines the preparedness of pre-service teachers to implement HyFlex learning, particularly in the Philippine context. Furthermore, while studies discuss technological and pedagogical competencies, fewer studies investigate the combined influence of knowledge and skills, affective or psychological readiness, and the ability to address challenges in HyFlex learning environments. The study addresses these gaps by examining the preparedness of pre-service teachers in terms of pedagogy, technology use, assessment, classroom management, psychological readiness, and challenge management. It also seeks to develop a validated HyFlex Sustainability Program to strengthen pre-service teachers' readiness for flexible learning environments.

1.6 Alignment of Pre-Service Teachers' HyFlex Learning Preparedness with Relevant Sustainable Development Goals (SDGs)

This study aligns primarily with SDG 4: Quality Education by promoting inclusive, equitable, and flexible learning opportunities through HyFlex education. It supports the development of teacher competencies necessary for delivering accessible and resilient educational systems (Baker et al., 2024). The study also aligns with SDG 9: Industry, Innovation, and Infrastructure through the integration of digital technologies and innovative teaching strategies in teacher education (OECD, 2023). By improving access to flexible learning modalities for students facing geographic, economic, or health-related barriers, the study contributes to SDG 10: Reduced Inequalities (Mitra & Shah, 2024). Additionally, the study supports SDG 11: Sustainable Cities and Communities by encouraging sustainable educational practices that reduce resource consumption through digital and blended learning approaches (Chugh, 2026).

1.7 Importance of Pre-Service Teachers' HyFlex Learning Preparedness to Multidisciplinary Sustainability

The study contributes to educational sustainability by strengthening the preparedness of future teachers to implement flexible and resilient learning systems. It supports technological sustainability through the integration of ICT competencies, digital platforms, and innovative teaching practices necessary for modern educational environments. The study also contributes to socio-economic sustainability by improving teacher employability and adaptability in evolving educational systems. Institutional sustainability is supported through recommendations for curriculum enhancement, faculty development, and policy improvement in teacher education institutions. Furthermore, community sustainability is promoted by ensuring that learners can continue accessing quality education during emergencies and disruptions through effective HyFlex learning implementation.

2. Material and methods

2.1 Research Design

This study employed a quantitative research approach to determine the level of preparedness of pre-service teachers in using HyFlex learning. Numerical data were collected and analyzed to describe their preparedness in implementing HyFlex

learning. Quantitative research involves numerical data collection and statistical analysis and is appropriate for examining relationships among variables, testing hypotheses, and generating predictions (Seton Hall University Libraries: Research Methods: Quantitative Research Methods, 2025). A correlational research design was utilized to determine whether significant relationships existed among the preparedness variables, specifically knowledge and skills, affective or psychological readiness, and the ability to address challenges in HyFlex learning. Correlational research examines relationships between two or more variables without manipulation (Putri et al., 2025). The study did not attempt to establish causality but focused on analyzing relationships among the variables under investigation.

2.2 Locale of the Study

The study was conducted at Saint Louis College, a private college located in the City of San Fernando. The institution was selected because of its Autonomous Status granted by the Commission on Higher Education (CHED), which provides academic freedom in revising and enriching its teacher education curriculum without undergoing lengthy approval processes. This autonomy allows the institution to align its curricular offerings with global educational standards and evolving classroom demands.

2.3 Respondents of the Study

The respondents of the study were third- and fourth-year pre-service teachers enrolled in field study subjects that expose them to actual classroom settings. These students were selected because of their proximity to teaching internships and their immersion in real educational environments. The target population consisted of 84 pre-service teachers, including 46 third-year and 38 fourth-year students. A total of 75 respondents participated in the study, while one respondent declined participation.

2.4 Sample and Sampling Procedure

The study employed total enumeration because the population size was below 500, making sampling statistically unnecessary. All identified third- and fourth-year pre-service teachers enrolled in field study subjects were included as respondents. Data collection was conducted through an online survey questionnaire distributed via Google Forms and QR code access. The questionnaire remained open until 89.29% of the responses were obtained.

2.5 Research Instrument

The primary data-gathering instrument used in the study was a researcher-developed survey questionnaire utilizing a 5-point Likert scale. The instrument assessed the preparedness of pre-service teachers in terms of knowledge and skills related to HyFlex learning, affective or psychological readiness, and the ability to address challenges associated with HyFlex learning. The questionnaire consisted of two parts. The first part gathered the respondents' profiles, including year level, sex assigned at birth, age, course or field of specialization, internet connectivity, devices used, and familiarity with video conferencing applications or virtual platforms. The second part measured their preparedness in the identified variables. The instrument also included its purpose and a data privacy and consent clause to ensure voluntary participation. The validity of the questionnaire was established through internal and external validation. Five experts, namely a pre-service teacher supervising instructor, a DepEd supervisor, a college professor in teacher education, a principal, and a CHED supervisor, evaluated the instrument using a 5-point Likert scale. The questionnaire obtained a validity rating of 4.4, interpreted as highly valid, indicating that the instrument effectively measured its intended constructs. The suggestions of the validators were incorporated before submission to the Ethics Review Board for ethics certification. The questionnaire used a 5-point Likert scale to interpret validity and preparedness levels. Validity ratings ranged from "Not Valid" to "Very Highly Valid," while preparedness levels ranged from "Not Prepared" to "Very Highly Prepared." Relationship interpretations for Pearson-r values ranged from no relationship to complete positive or negative relationship (Pimentel, 2019; Mahinay et al., 2023).

2.6 Data Gathering Procedure

The researcher first secured an ethics clearance certificate from the Research Management Office. After obtaining ethics approval, permission to conduct the study was requested from the college president. Subsequently, a formal letter was submitted to the Pre-service Teachers Supervisor to facilitate questionnaire distribution to the respondents. The questionnaire was administered online through a Google Form link and QR code to simplify access and data collection. Once the required responses were gathered, the questionnaire was closed, and the collected data were exported to Microsoft Excel for analysis. The study also included the formulation of a HyFlex Sustainability Program (HSP), which was designed based on the core variables investigated in the research. The program addressed pedagogical readiness, technology use, assessment practices, classroom management, affective readiness, and the ability to address challenges in HyFlex learning. The HSP consisted of four phases: needs assessment, guided practice, authentic application, and reflection and reinforcement. The program was validated by three experts, namely an Institutional Development and Quality Assurance Officer, an Assistant to the Principal for Academic Affairs, and a college department head in Teacher Education. It received a validity rating of 4.77, interpreted as very highly valid.

2.7 Data Analysis Techniques

The gathered data were tabulated and analyzed using appropriate statistical tools. Frequency counts and percentages were used to analyze the respondents' profiles. Mean ratings were computed through the Excel Data Analysis Tool Pack to determine the respondents' level of preparedness in HyFlex learning based on the established Likert scale interpretations. Pearson-r moment correlation through Jamovi software was used to determine the relationships among the variables, specifically between knowledge and skills and affective or psychological readiness, knowledge and skills and preparedness in addressing challenges, and affective or psychological readiness and addressing challenges in HyFlex learning. The computed p-values were compared with the 0.05 alpha level to determine statistical significance.

2.8 Ethical Considerations

The researcher ensured that the study adhered to ethical research standards throughout the conduct of the study. Participation in the research was voluntary, and respondents were provided with consent forms explaining the scope of their participation. Approval from institutional authorities and respondents was secured before data collection. All information obtained from respondents was treated with strict confidentiality in compliance with the Data Privacy Act of 2012 (Republic Act No. 10173). Electronic data were securely stored and were not shared with unauthorized individuals. Online personal data collected during the study will be destroyed when no longer needed. The researcher also ensured proper acknowledgment and documentation of all sources used in the study in accordance with the Philippine Intellectual Property Code, RA 8293, to uphold copyright regulations and prevent plagiarism.

3. Results and Discussion

3.1 Profile and Preparedness of Pre-Service Teachers for HyFlex Learning

3.1.1 Year Level of Respondents

The study obtained responses from 74 out of 84 pre-service teachers, yielding an overall participation rate of 88.10%. Third-year students comprised the majority of respondents with a 91.82% participation rate, while fourth-year students recorded 76.32% participation. The higher participation of third-year students suggests greater accessibility during the data collection period, while fourth-year students were likely occupied with teaching internships and practice teaching responsibilities. Despite this, the inclusion of both year levels provided perspectives from students engaged in theoretical preparation and those approaching professional teaching practice. Omiles and Ramirez (2025) noted that internship fatigue and logistical demands often affect participation among final-year pre-service teachers, while Billy et al. (2023) emphasized the importance of including both cohorts to capture theoretical and practical dimensions of teaching preparedness.

3.1.2 Sex Assigned at Birth of Respondents

Female respondents dominated the sample, accounting for 72.97%, while males represented 25.68%. One respondent chose not to disclose this information. The findings reflect the common demographic trend in teacher education programs where female students outnumber males. The female-dominated sample may influence overall readiness levels, particularly in digital engagement and pedagogical adaptation. However, the presence of male respondents also contributed varied perspectives regarding technological and psychological readiness. The result aligns with Getenet et al. (2026), who reported that women comprised the majority of pre-service teacher participants in studies on digital competence and online engagement. Mahinay et al. (2023) similarly found that female respondents dominated studies on HyFlex readiness in the Philippine context.

3.1.3 Age of Pre-Service Teachers

Most respondents belonged to the traditional college-age bracket, with 21-year-olds comprising 36.49% and 22-year-olds accounting for 32.43% of the sample. Smaller proportions belonged to older age groups ranging from 23 to 26 years old. The respondents primarily belong to Generation Z, a cohort commonly associated with extensive exposure to digital technology. Their age profile likely contributed to their high technological readiness and positive attitudes toward HyFlex learning. The findings support Mahinay et al. (2023), who observed that pre-service teachers aged 18–25 demonstrated high readiness in HyFlex learning. Ramos et al. (2025) likewise found that younger pre-service teachers showed stronger engagement and familiarity with flexible digital learning environments.

3.1.4 Course or Field of Specialization

Most respondents were enrolled in the Bachelor in Secondary Education program, representing 58.11% of the sample, followed by Bachelor in Physical Education students at 21.62%. Smaller groups came from Elementary Education and Special Needs Education programs. The dominance of secondary education majors suggests that the findings largely reflect perspectives related to secondary-level instruction. The inclusion of Physical Education and Special Needs Education students indicates the need for HyFlex readiness across diverse instructional contexts, including movement-based and individualized teaching approaches. Omiles and Ramirez (2025) noted that students in specialized education fields often require tailored support when adapting hands-on pedagogies to hybrid learning environments.

3.1.5 Internet Connectivity and Device Readiness

Most respondents relied on DSL or fiber internet connections, while more than one-third also used prepaid mobile data. Cellphones and laptops were the most commonly used devices, while fewer respondents owned specialized tools such as microphones and pen tablets. Google Meet, Zoom, and Google Classroom were the most familiar digital platforms among respondents. The findings indicate strong technological accessibility among pre-service teachers, particularly in internet connectivity and device ownership. The high use of DSL suggests access to stable internet suitable for synchronous HyFlex instruction, while reliance on prepaid mobile data indicates the need for backup connectivity options. The widespread familiarity with Google-based platforms demonstrates foundational digital fluency, although lower exposure to advanced learning management systems suggests the need for further training in complex platform management. Hortelano (2026) emphasized that stable connectivity and platform familiarity are critical for successful HyFlex implementation, while Giray et al. (2024) highlighted the dominance of mobile-compatible technologies in Philippine higher education.

3.2 Preparedness of Pre-Service Teachers in HyFlex Learning

3.2.1 Pedagogical Knowledge and Skills

Pre-service teachers obtained an overall mean of 4.15, interpreted as Very Prepared in pedagogical knowledge and skills. The highest-rated competency involved designing collaborative activities for online and in-person learners, while the lowest-rated competencies involved balancing attention between student groups and developing flexible lesson packages. The findings indicate that pre-service teachers possess strong pedagogical readiness for collaborative and inclusive learning environments. However, balancing attention between online and face-to-face learners remains cognitively demanding. The results support Hortelano (2026), who found that Philippine pre-service teachers adapted quickly to hybrid modalities, while Waterhouse and Samra (2026) emphasized the cognitive strain associated with simultaneous classroom orchestration. Kytälä et al. (2024) similarly observed that managing dual-mode instruction remains a major challenge in HyFlex environments.

3.2.2 Technological Knowledge and Skills

Respondents obtained an overall mean of 4.26, interpreted as Very Highly Prepared in technological knowledge and skills. The highest-rated competencies involved internet connectivity, screen sharing, collaborative digital tools, and online content management. The lowest-rated competency involved the use of annotation tools and specialized hardware. The findings suggest that pre-service teachers possess strong technological readiness and are comfortable using collaborative digital platforms. However, limited familiarity with specialized instructional hardware indicates the need for additional training in advanced classroom technologies. Giray et al. (2024) observed that prolonged exposure to online learning improved digital fluency among college students, while Hortelano (2026) noted that effective HyFlex instruction requires specialized technological orchestration beyond basic computer literacy.

3.2.3 Assessment Knowledge and Skills

Pre-service teachers achieved an overall mean of 4.11, interpreted as Very Prepared in assessment knowledge and skills. The highest-rated competencies involved rubric development and time management for assessments, while the lowest involved using LMS features to ensure academic honesty. The results indicate strong confidence in designing assessments and providing equitable evaluation practices across learning modalities. However, concerns regarding academic integrity and digital assessment security remain evident. Hortelano (2026) emphasized that transparency and equivalency are essential in hybrid assessment practices, while Kytälä et al. (2024) highlighted that digital self-efficacy strongly influences assessment readiness in hybrid learning contexts.

3.2.4 Classroom Management Knowledge and Skills

The respondents obtained an overall mean of 4.27, interpreted as Very Highly Prepared in classroom management knowledge and skills. The highest-rated competency involved recognizing that students learn in different places and at different times, while lower scores were recorded in addressing dual-cohort learning needs during synchronous sessions. The findings demonstrate strong awareness of inclusivity, flexibility, and communication in HyFlex environments. However, simultaneously managing online and onsite learners remains cognitively demanding. Gedera (2023) emphasized the importance of social presence in hybrid classrooms, while Morrison et al. (2025) identified hybrid fatigue and split-attention demands as major challenges in classroom orchestration. Amiruddin et al. (2024) likewise stressed the teacher's role as a digital facilitator in maintaining engagement and support in the post-pandemic learning environment.

3.2.5 Overall HyFlex Knowledge and Skills

The overall mean for HyFlex knowledge and skills was 4.21, interpreted as Very Prepared. Classroom management and technological knowledge emerged as the strongest domains, while assessment knowledge obtained the lowest mean among the four domains. The findings suggest that pre-service teachers are highly confident in technological and managerial aspects of HyFlex learning but remain more cautious regarding pedagogy and assessment integration. Kytälä et al. (2024) explained that pre-service teachers often develop technical competencies faster than deeper pedagogical integration skills. Hortelano (2026) further argued that recent exposure to distance learning created a generation of teachers who are

technologically prepared for HyFlex environments but still require support in sustaining instructional quality and assessment equivalency.

3.3 Affective Readiness and Challenges in HyFlex Learning

3.3.1 Affective and Psychological Readiness

Pre-service teachers obtained an overall mean of 4.34, interpreted as Very Highly Prepared in affective and psychological readiness. The highest-rated competencies involved awareness of student differences and creating safe, inclusive learning environments, while confidence in performing teaching responsibilities obtained the lowest mean. The findings indicate that pre-service teachers possess strong empathy, inclusivity, and adaptability toward HyFlex learning. However, slight hesitation in overall teaching confidence suggests the continued development of instructional self-efficacy. Gedera (2023) emphasized the importance of humanizing digital learning spaces, while Brese and Twele (2023) identified relational competence as a key predictor of psychological readiness in hybrid instruction. Zavalevskyi (2024) further noted that affective readiness often develops faster than professional confidence in managing technology-rich learning environments.

3.3.2 Readiness in Addressing HyFlex Learning Challenges

Respondents obtained an overall mean of 4.16, interpreted as Very Prepared in addressing HyFlex learning challenges. The highest-rated competencies involved encouraging online participation and handling collaboration challenges, while lower scores involved technical troubleshooting and contingency planning. The results indicate that pre-service teachers prioritize student engagement and participation but feel less confident managing technical disruptions and infrastructure failures. Billy et al. (2023) emphasized the importance of maintaining student participation in multimodal classrooms, while McLeod et al. (2024) found that many pre-service teachers remain underprepared for technical crisis management. Romero-Hall and Ripine (2021) similarly described HyFlex teaching as requiring both instructional and technical support capabilities.

3.4 Relationship Among HyFlex Preparedness Variables

The correlation analysis revealed very strong positive and statistically significant relationships among HyFlex knowledge and skills, affective or psychological readiness, and the ability to address HyFlex learning challenges. The strongest relationship was found between HyFlex knowledge and skills and addressing challenges in HyFlex learning ($r = .92$, $p < .001$). The findings indicate that preparedness dimensions are highly interdependent. Increased pedagogical and technological competence is strongly associated with improved confidence and problem-solving abilities in HyFlex environments. McLeod et al. (2024) emphasized that digital crisis management is an extension of technological fluency, while Romero-Hall and Ripine (2021) argued that effective HyFlex implementation requires synchronized growth in technical capability and emotional readiness. Mobo and Gracia (2023) further observed that techno-pedagogical integration in the Philippine context contributes to stronger confidence and adaptability among educators.

3.5 Development of the HyFlex Sustainability Program

The study culminated in the development of the HyFlex Sustainability Program (HSP): Strengthening Pre-Service Teachers' Preparedness for Flexible Learning Environments. The program was designed to sustain and enhance pre-service teachers' competencies in pedagogy, technology integration, assessment, classroom management, affective readiness, and challenge management within HyFlex learning environments. The program was grounded in the Community of Inquiry framework, the TPACK framework, and Self-Efficacy Theory. It emphasized guided practice, authentic application, reflective learning, and continuous support to strengthen future teachers' preparedness for flexible learning environments. The proposed program also included institutional recommendations involving technological infrastructure, connectivity support, professional development, monitoring, evaluation, and policy integration to ensure sustainable implementation of HyFlex learning practices.

4. Conclusion & Recommendations

The study concluded that pre-service teachers possess a high level of preparedness for HyFlex learning due to their familiarity with digital technologies, access to necessary devices and internet connectivity, and exposure to commonly used virtual platforms. They demonstrated strong pedagogical, technological, assessment, and classroom management competencies, as well as high affective or psychological readiness in implementing HyFlex learning. The findings further revealed that increased knowledge and skills in HyFlex learning are significantly associated with stronger psychological readiness and improved ability to address HyFlex learning challenges. The developed HyFlex Sustainability Program was therefore considered essential in sustaining, strengthening, and institutionalizing the competencies of pre-service teachers in flexible learning environments.

Teacher Education Institutions should integrate the HyFlex Sustainability Program into Field Study subjects and redesign teaching internships to include HyFlex teaching experiences. Curriculum developers should strengthen the integration of assessment, classroom management, and technological training to improve instructional preparedness. Institutions are also

encouraged to establish Communities of Practice for pre-service teachers to support psychological flexibility, digital resilience, and collaborative learning. Furthermore, Teacher Education Institutions and laboratory schools should invest in HyFlex technologies, tools, and dedicated learning spaces to support effective implementation of flexible learning modalities. The demonstrated preparedness of pre-service teachers may also serve as a basis for broader adoption of HyFlex learning in Basic Education Schools.

The study was limited to third- and fourth-year pre-service teachers enrolled in field study subjects at Saint Louis College, which may limit the generalizability of the findings to other institutions and educational contexts. The study also relied on self-reported data gathered through survey questionnaires, which may be influenced by respondents' perceptions and personal biases. In addition, the research focused only on preparedness, affective or psychological readiness, and the ability to address challenges in HyFlex learning without examining actual classroom implementation and long-term teaching performance in HyFlex environments.

Compliance with ethical standards

This study adhered to established ethical research standards throughout its conduct. Ethics clearance and institutional permission were secured prior to data collection. Participation in the study was voluntary, and informed consent was obtained from all respondents. Confidentiality and privacy of participant information were maintained in compliance with the Data Privacy Act of 2012 (Republic Act No. 10173). All collected data were securely stored, used solely for research purposes, and protected from unauthorized access. Proper acknowledgment of all sources was likewise observed in accordance with the Philippine Intellectual Property Code (RA 8293) to uphold academic integrity and prevent plagiarism.

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