



Values education teachers' competence in ICT: Basis for ICT-based instructional package for values education

Angelica L. Abella: MAEd student, Graduate School of Education, Divine Word College of Laoag, Laoag City, Ilocos Norte, Philippines.

ARTICLE INFO

Article history:

Received: September 05, 2025

Received in rev. form. October 15, 2025

Accepted: November 15, 2025

Published: December 15, 2025

Keywords: *Competence, ICT-based instructional package, ICT integration, values education, technology in teaching and learning ii*

JEL Classification: I21

ABSTRACT

Integrating Information and Communication Technology (ICT) into Values Education remains a critical challenge in teacher education, as many educators struggle to translate moral instruction into technology-enhanced pedagogical practice. Despite growing emphasis on digital literacy, few instructional frameworks effectively merge ethical formation with ICT integration. Addressing this gap, the present study developed and validated an ICT-based instructional package for Values Education.

Employing a Research and Development (R&D) design, the study explored the pedagogical experiences and ICT proficiency of 80 graduates of the *Technology in Teaching and Learning II (TTL 2)* course, all currently employed in public and private schools in Ilocos Norte. Data were collected through validated open-ended survey questionnaires and an adapted validation rating tool and were analyzed using mean scores and thematic analysis. Quantitative findings revealed very high competence in using collaborative platforms and multimedia tools, and high competence in educational software and virtual or augmented reality applications. Thematic analysis showed that TTL 2 enhanced graduates' pedagogical confidence, ethical awareness, and digital fluency. However, challenges such as troubleshooting, limited internet connectivity, and the technical operation of applications persisted—highlighting the need for structured instructional support.

In response, the validated ICT-based instructional package was designed to address these challenges through modular content, multimedia integration, and scenario-based assessments aligned with the principles of Values Education. Validation results rated the material as *very highly valid*, confirming its potential to bridge traditional moral instruction with digital pedagogy. This innovation offers a transformative framework that enables aspiring educators to design inclusive, context-sensitive, and ethically grounded ICT-based lessons suitable for 21st-century classrooms.

© 2025 by the authors. Licensee DWIJMH. This open-access article is distributed under the terms and conditions of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/) (<https://creativecommons.org/licenses/by-nc-sa/4.0/>)

Introduction

The rapid advancement of Information and Communication Technology (ICT) has transformed modern education, reshaping instructional design, delivery, and learner engagement. As a cornerstone of 21st-century learning, ICT promotes critical thinking, creativity, and collaboration—skills essential in today's digital society. Global research (Shah, 2022; Sharma, 2022) underscores that technology integration

* Corresponding author. ORCID ID: 0000-0001-6884-3504

enhances both teaching efficacy and student participation by providing interactive, accessible, and personalized learning experiences. In moral and values education, ICT serves not only as an instructional aid but as a medium for shaping ethical awareness, empathy, and civic responsibility—key attributes for holistic human development.

The Philippines' enactment of the *Values Education Act* (Republic Act No. 11476) and Senate Bill No. 1224 reinforces the nation's commitment to nurturing ethical citizens by integrating moral, civic, and family values into formal education. However, despite progressive policies and increased access to digital tools, ICT integration in Values Education remains limited. Many teachers continue to employ traditional, teacher-centered methods due to inadequate digital literacy, weak infrastructure, and the absence of pedagogical frameworks connecting moral instruction with technology use. At the local level, preservice teachers in Ilocos Norte, particularly those enrolled in *Technology in Teaching and Learning II (TTL2)*, exhibit challenges in aligning ICT tools with learning outcomes, often resulting in static lessons that fail to engage students meaningfully in values formation.

While global studies (Prasetyo, 2017; Shah, 2022; Sharma, 2022) have demonstrated the potential of ICT-based materials such as multimedia, simulations, and digital storytelling to make moral and ethical instruction more interactive and participatory, these works have largely concentrated on cognitive outcomes and general classroom engagement. The affective and moral dimensions of ICT integration—critical to Values Education—remain underexplored. Moreover, in the Philippine context, existing research has yet to develop and validate ICT-based instructional packages specifically designed for Values Education, despite the nation's policy shift toward values-based, technology-supported education. Most available frameworks focus on technical proficiency rather than the ethical and pedagogical alignment of ICT tools with moral formation.

Recognizing these pedagogical gaps, the researcher observed a persistent misalignment between the intended moral competencies and the ICT strategies employed by preservice values education teachers. This gap reveals the absence of structured, context-based frameworks that integrate digital pedagogy with ethical education. To address this, the study aimed to develop and validate an ICT-based instructional package for Values Education that enhances preservice teachers' pedagogical competence, technological proficiency, and moral sensitivity. The proposed innovation seeks to bridge traditional values instruction with 21st-century learning paradigms, offering a transformative approach that aligns digital tools with the ethical imperatives of Values Education.

Literature review

This section synthesizes international and local literature, thematically highlighting TTL 2 graduates' experiences, ICT competence, challenges in curriculum integration, and instructional package development in Values Education.

Experiences of values education graduates in Technology in Teaching and Learning II (TTL2)

The course *Technology in Teaching and Learning II (TTL2)* is a cornerstone for developing Values Education graduates' technological, pedagogical, and ethical competence. Grounded in the *Philippine Professional Standards for Teachers (PPST)*, TTL2 emphasizes the integration of digital tools to enhance lesson delivery, assessment, and classroom management (Department of Education, 2020). Studies highlight that meaningful engagement with TTL2 cultivates a dual capacity among Values Education graduates: the technical proficiency to use ICT effectively and the reflective disposition to apply it ethically in nurturing learners' moral reasoning (Sharma, 2024). In this sense, TTL2 not only equips future teachers with digital fluency but also reinforces Values Education's moral and humanistic orientation in a digital age.

Empirical evidence suggests that graduates' experiences in TTL2 are shaped by how the course balances technological instruction with reflective pedagogy. When TTL2 integrates ethical frameworks and pedagogical models, graduates report a greater ability to design authentic, technology-enhanced lessons that support both cognitive and affective learning outcomes (Zizikova et al., 2023). Conversely, when TTL2 focuses narrowly on technical operations, teachers tend to adopt superficial uses of technology that fail to advance values formation. Hence, scholars recommend that TTL2 maintain a reflective-practical equilibrium, grounding ICT skill development in pedagogical and ethical reasoning to ensure that technology serves as a transformative tool rather than a mere instructional aid (Shah, 2022).

ICT competence of values education graduates

ICT competence is a crucial component of teacher readiness in contemporary education, influencing both instructional quality and learner engagement. Fred et al. (2024) found that students' ability to use ICT tools directly affects curriculum delivery and academic outcomes, highlighting the importance of assessing graduates' technological proficiency. In the context of Values Education, such competence extends beyond operational skills to include the ethical and reflective use of technology in fostering moral reasoning. Access to ICT resources, systematic training, and pedagogically aligned integration are key to preparing Values Education graduates for modern, digitally enriched classrooms.

Similarly, Newby et al. (2012) emphasized that effective ICT integration requires teachers to use technology strategically and purposefully, ensuring alignment with learning goals. For Values Education, this means employing ICT not merely as a tool but as a conduit for ethical reflection and transformative learning. Developing an ICT-based instructional package that combines digital training with moral and pedagogical guidance can enhance graduates' competence while modeling responsible technology use. Ultimately, strengthening ICT literacy among Values Education graduates ensures their readiness to teach effectively and ethically in a technology-driven educational landscape.

Challenges in employing ICT tools in the curriculum

Despite being digitally immersed, teacher education graduates often face challenges in integrating ICT into the curriculum due to inadequate infrastructure, limited access to resources, insufficient training, and weak institutional support. These constraints impede effective ICT adoption and limit the potential

for meaningful, technology-enhanced learning in Values Education. Ghavifekr and Rosdy (2015) highlight that successful ICT integration requires not only technical skills but also pedagogical insight. In Values Education, this entails leveraging technology to support ethical, reflective, and humanistic learning. Addressing these barriers requires ongoing professional development and strong technical support to enable educators to align ICT use with instructional objectives, transforming technology into a tool for holistic, values-driven education.

Instructional package development for ICT integration in values education

The development of structured ICT-based instructional packages is essential for adapting Values Education to digitally mediated learning environments. Such packages must not only enhance technical proficiency but also preserve the moral and reflective character of the discipline. Instructional materials grounded in both pedagogical theory and empirical evidence can guide Values Education graduates in effectively integrating ICT tools, fostering meaningful and ethically aligned learning experiences. Lesson planning that incorporates ICT, as emphasized by the PPST, is critical for engaging diverse learners while promoting the cultivation of core values.

Ethically oriented digital education, according to Sharma (2024), should support moral reasoning and civic engagement, aligning with the goals of Values Education. Research on instructional design further underscores the importance of curriculum alignment, cultural relevance, and learner-centered strategies to ensure that technology integration enhances pedagogical outcomes. Interactive, culturally sensitive, and adaptive ICT resources, as highlighted by Francisco (2023), are particularly effective in nurturing moral development and social awareness.

Therefore, ICT-based instructional programs should incorporate ethical frameworks, reflective exercises, and culturally appropriate digital tools that resonate with Filipino learners. Balancing technical, pedagogical, and ethical dimensions ensures ICT serves as a catalyst for holistic, values-driven education.

Conceptual framework

The study developed an ICT-Based Instructional Package for Values Education using the Input-Process-Output (IPO) framework. **Input** consisted of graduates' TTL 2 experiences, ICT competence, and challenges, identifying pedagogical gaps and technological needs to guide package design. **Process** involved designing, validating, and refining the package based on input data, expert evaluation, and pilot testing to ensure quality and classroom relevance. **Output** is a validated ICT-Based Instructional Package with multimedia lessons and interactive assessments, serving as a teaching and professional development tool that integrates Values Education with technology-enhanced pedagogy.

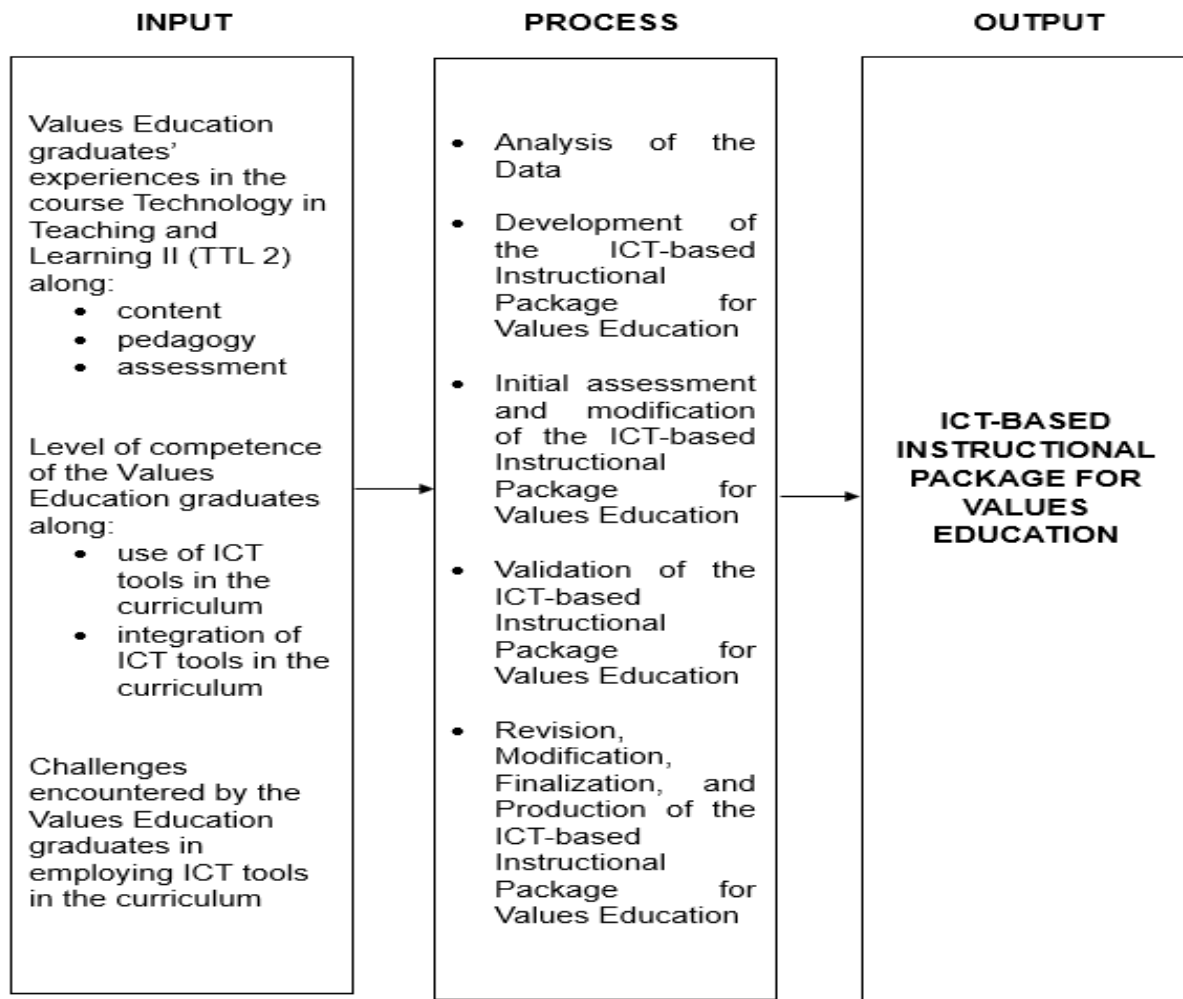


Figure 1: Research Paradigm explains the objective of the study and how the study was carried out

Research questions

This study aimed to develop an ICT-based instructional package for Values Education. Specifically, it sought to answer the following questions:

1. How may Values Education graduates describe their experiences in the course on Technology in Teaching and Learning II (TTL 2) along:
 - 1.1. content;
 - 1.2. pedagogy; and
 - 1.3. assessment?

2. How competent are the Values Education graduates in the:
 - 2.1. use of ICT tools; and
 - 2.2. integration of ICT tools in the curriculum?

3. What are the challenges encountered by the Values Education graduates in employing ICT tools in the curriculum?

4. What can be developed to improve the ICT competence of Values Education graduates in employing ICT tools in the curriculum?
5. How valid is the ICT-based instructional package for Values Education in terms of:
 - 5.1. objectives;
 - 5.2. content;
 - 5.3. Instructional and Technical Qualities; and
 - 5.4. Learning Activities.

Research methodology

This section details the research design, study locale, population and sampling, instrumentation and data collection, and data analysis procedures employed in the study.

Research design

This study adopted a Research and Development (R&D) design, following Borg and Gall (1989) and contextualized by Anggraini et al. (2023), to systematically develop, validate, and refine an ICT-Based Instructional Package for Values Education. The R&D process comprised three sequential phases: Planning, Development, and Validation, ensuring both pedagogical and technological alignment with contemporary classroom requirements.

Locale of the data

Data were collected from graduates of the Bachelor of Secondary Education major in Values Education who are currently employed in public and private schools across the Province of Ilocos Norte.

Population and sampling

The study population comprised all Values Education graduates for Academic Year 2021-2022 up to 2023-2024. Total enumeration was employed; however, this study yielded a response rate of 85%, equivalent to 80 respondents.

Instrumentation and data collection

A structured survey questionnaire, validated by experts, was the primary instrument, capturing participants' experiences in the course Technology in Teaching and Learning II (TTL 2), ICT competence, and challenges in integration. The questionnaire was administered via Google Forms and complemented by follow-up interviews to gather qualitative insights. For validation, a Likert-scale Rating Scale assessed the instructional package across objectives, content quality, pedagogical and technical quality, and learning activities.

Ethical protocols were strictly observed throughout the research process. Prior to data collection, the researcher secured permission from institutional authorities and obtained informed consent from all participants. Participation was voluntary, with assurances of confidentiality, anonymity, and the right to withdraw at any stage of the study. Data were handled with integrity and used solely for academic purposes, ensuring compliance with institutional ethical review standards

Tools for data analysis

Quantitative data on Values Education graduates’ competence in integrating ICT tools and the validity of the package were analyzed using means with descriptive interpretations as shown below:

Range of Mean	Descriptive Interpretation
4.51 - 5.00	Very Highly Competent (VHC) / Very Highly Valid (VHV)
3.51 - 4.50	Highly Competent (HC) / Highly Valid (HV)
2.51 - 3.50	Moderately Competent (MC) / Valid (V)
1.50 - 2.50	Slightly Competent (SC) / Moderately Valid (MV)
1.00 - 1.50	Not Competent (NC) / Not Valid (NV)

Meanwhile, qualitative data from follow-up interviews were analyzed using thematic analysis guided by Braun and Clarke (2006). Data familiarization, coding, and categorization were conducted to identify patterns, which were then synthesized into overarching themes representing recurring insights on ICT use, instructional design, and classroom practice.

Data presentation and analysis

This section presents the collected data and its analysis in accordance with the study’s research questions.

Problem 1. How may Values Education graduates describe their experiences in the course on Technology in Teaching and Learning II (TTL 2) along content, pedagogy, and assessment?

Table 1: Teachers’ experience along content, pedagogy and assessment

Domain	Themes
Content	Clarity and accessibility of content Practical relevance and application Transformative impact on teaching identity
Pedagogy	Learner-centered and interactive pedagogy Pedagogical confidence and skill development Ethical and purposeful use of technology in pedagogy
Assessment	Empowerment through tech-enhanced assessment Experiential and enjoyable learning Ethical and reflective integration of values

Source: Abella (2025)

Content. Values Education graduates reported that Technology in Teaching and Learning II (TTL 2) enhanced their ICT competence and understanding of complex concepts through its structured, modular design and multimedia tools. One participant shared, “I didn’t experience any difficulties with the content... so it was easy for me to learn,” while another noted, “The material was straightforward and simple to understand, even for those new to technology.” Graduates emphasized the practical relevance of TTL 2, particularly in lesson planning and instructional design, with responses including, “It helped me create interactive learning materials that promote participation and effective learning” and “I found the activities and tools very applicable, especially in planning lessons for Values Education.” The course

also fostered a transformative teaching identity and ethical awareness, as highlighted by statements such as, “TTL 2 taught me that teaching values is not just about telling, it’s about guiding students to discover meaning using the tools they’re already familiar with” and “This course gave me the confidence and skills to make learning Values Education exciting for today’s learners,” showing how TTL 2 bridged ICT skills with values-oriented pedagogy.

Pedagogy. TTL 2 promoted learner-centered and interactive instruction, engaging graduates in collaboration and active learning through platforms such as Kahoot!, Canva, and Learning Management Systems. Participants remarked, “TTL 2’s teaching methods showed me how to effectively integrate technology into Values Education, making lessons more engaging, interactive, and relevant to students’ lives,” and “TTL 2 made me realize that teaching values can be fun and meaningful with digital tools.” Pedagogical confidence increased as graduates learned to design ICT-enhanced lessons integrating technology, pedagogy, and content, reflected in statements like, “My pedagogical skills improved, especially in planning and delivering lessons that blend technology with core values instruction” and “Before TTL 2, I was hesitant to use digital tools. Now I can design my own interactive lessons.” The course also emphasized ethical and purposeful technology use, with participants noting, “TTL 2 helped me realize that technology doesn’t dilute the meaning of values; it can amplify their impact” and “TTL 2 showed me how technology can support values education by promoting reflection, collaboration, and ethical discussions.”

Assessment. TTL 2 transformed graduates’ approach to assessment, shifting from routine evaluation to tech-enhanced, values-centered practices. Graduates highlighted empowerment through digital assessment, as illustrated by statements such as, “TTL 2 greatly boosted my self-efficacy in creating and using tech-enhanced assessments for Values Education” and “The course gave me practical strategies to create assessments that are interactive and aligned with our values curriculum.” Experiential and enjoyable learning was emphasized, with one graduate stating, “I enjoyed exploring different platforms and seeing how each one could be used to assess students in creative ways,” and another noting, “The activities were engaging and helped me understand how technology can make learning more meaningful, not just easier.” Ethical and reflective integration of values was also central, with participants observing, “Using tech to assess values made me think more deeply about how students internalize what we teach—not just what they can answer” and “TTL 2 showed me that digital tools can be used to promote empathy and reflection, especially through storytelling and scenario-based tasks.” Collectively, these findings demonstrate that TTL 2 effectively fostered competence, engagement, ethical reflection, and transformative teaching practices in Values Education.

Problem 2. How competent are the Values Education Graduates in the use of ICT tools and integration of ICT tools in the curriculum?

Table 2: Teachers’ competence

Indicator	Mean	DI
Use of ICT tools		
1. Using google slides, prezzi, and canva.	4.53	VHC

2. Using online collaborative tools such as google docs, google meet, and google classroom.	4.69	VHC
3. Utilizing educational software applications like edmodo, socrative, and kahoot!	3.95	HC
4. Using virtual or augmented reality tools.	4.06	HC
5. Using Learning Management Systems (LMS) such as google classroom, moodle, and canvas.	4.55	VHC
6. Utilizing social media platforms such as facebook, tiktok, and youtube.	4.74	VHC
7. Creating and using online quizzes and assessments such as google forms, kahoot! and quizizz	4.48	HC
8. Creating and managing an online learning environment for blended and fully online instruction?	4.50	HC
9. Troubleshooting fundamental technical issues related to ICT tools.	3.95	HC
10. Adapting and modifying ICT tools and resources in teaching values education.	4.41	HC
Composite Mean	4.39	HC
Integration of ICT tools in the Curriculum		
	Mean	DI
1. Developing lesson plans that effectively integrate various ICT tools.	4.64	VHC
2. Developing interactive simulations or virtual scenarios.	4.39	HC
3. Selecting and integrating relevant educational videos and multimedia resources.	4.51	VHC
4. Utilizing digital storytelling to deliver your lessons.	4.28	HC
5. Modifying ICT tools and use interactive whiteboard to create effective and engaging activities.	4.29	HC
6. Integrating game-based activities such as kahoot!, mentimeter, and answergarden.	4.25	HC
7. Designing and implementing technology-based assessments such as digital portfolios and multimedia projects for evaluating student performance.	4.55	VHC
8. Employing ICT tools such as polls, simulations and games to create interactive and student-centered learning experiences.	4.59	VHC
9. Teaching students about digital citizenship, ethical online behavior, and the responsible use of ICT tools in values education.	4.65	VHC
10. Guiding students to create digital projects using video editing software and animation tools to express their understanding and reflection.	4.56	VHC
Composite Mean	4.47	HC
Overall Mean	4.43	HC

Source: Abella (2025)

The table shows the competence of Values Education graduates in using ICT tools and integrating them into the curriculum, measured on a 5-point Likert scale. In the use of ICT tools domain, graduates

reported the highest proficiency in using social media platforms such as Facebook, TikTok, and YouTube (M = 4.74, VHC), while the lowest competence was observed in troubleshooting fundamental technical issues (M = 3.95, HC). The composite mean for this domain was 4.39 (HC), indicating strong overall proficiency in employing digital tools for instructional purposes.

In the integration of ICT tools in the curriculum, graduates achieved the highest mean in teaching students about digital citizenship and ethical online behavior (M = 4.65, VHC). The lowest mean was reported for integrating game-based activities such as Kahoot! and Mentimeter (M = 4.25, HC). The composite mean for this domain was 4.47 (HC), reflecting a generally high capacity to effectively incorporate technology into Values Education instruction.

Overall, the combined mean across both domains was 4.43 (HC), demonstrating that graduates possess a strong foundation in using ICT tools and integrating them into the curriculum, with particularly high proficiency in ethical technology use and social media applications, and relatively lower confidence in technical troubleshooting and game-based activity integration.

Problem 3. What are the challenges encountered by the Values Education graduates in employing ICT tools in the curriculum?

Table 3: Challenges

Domain	Themes
Challenges in employing ICT tools in the curriculum	Infrastructure and access limitations
	Pedagogical misalignment and distraction
	Digital equity and inclusive practice

Source: Abella (2025)

Infrastructure and access limitations. Graduates emphasized that infrastructural deficiencies, such as unstable internet connections and lack of digital equipment, significantly hindered ICT integration in Values Education. These constraints disrupted lessons, reduced student engagement, and compelled teachers to revert to low-tech alternatives. As one respondent noted, *“It disrupted the flow of the lesson and made students disengaged”*, while another stated, *“Without visual aids, some students struggled to relate and understand”*. Such recurring obstacles continue to impede digital learning environments, underscoring that reliable access is foundational for meaningful ICT-based instruction.

Pedagogical misalignment and distraction. While ICT tools foster engagement, graduates reported that technology-driven activities occasionally diverted focus from moral reflection and ethical understanding. They observed that tasks such as video editing and gamified quizzes, when not grounded in moral objectives, led to superficial learning. Respondents shared, *“Their reflections became surface-level and missed the core values”* and *“It diluted the depth of discussion and moral engagement”*. These accounts reflect that technology must be guided by ethical and pedagogical intent to avoid

disengagement from core learning outcomes. Graduates’ experiences highlight that meaningful ICT integration requires deliberate alignment between digital tools and values-oriented goals.

Digital equity and inclusive practice. The issue of digital equity emerged as a defining challenge, with graduates confronting disparities in student access to devices, connectivity, and digital literacy. As one respondent reflected, “*The engagement I envisioned didn’t happen; I had to rethink my approach*”, while another emphasized, “*Students felt included and were able to reflect meaningfully*”. These perspectives demonstrate teachers’ adaptive strategies, such as grouping students and providing offline alternatives to maintain inclusivity. These affirm that equitable participation is central to ethical ICT integration, especially in resource-limited contexts.

Problem 4. What can be developed to improve the ICT competence of Values Education graduates in employing ICT tools in the curriculum?

The ICT-Based Instructional Package for Values Education was developed to enhance secondary educators’ competence in integrating digital tools and pedagogical strategies that promote inclusive, learner-centered, and values-driven instruction. Aligned with the Values Education curriculum, it includes an Instructional Guide with step-by-step ICT integration strategies and adaptable PBL-based lesson plans, Content Modules organized around key competencies with multimedia and interactive activities fostering critical thinking and ethical decision-making, and Worksheets available in digital and printable formats to encourage collaboration and reflection. By bridging traditional values-oriented pedagogy with 21st-century learning, the package promotes flexible, interactive, and reflective instruction that cultivates moral reasoning, empathy, and digital citizenship.

Problem 5. How valid is the ICT-based Instructional Package for Values Education in terms of objectives, content, instructional and technical qualities, and learning activities?

Table 5: Validity of ICT- based instructional package

Indicator	Mean	DI
Objectives		
1. Specific	4.67	VVV
2. Measurable	4.67	VHV
3. Attainable	4.50	VHV
4. Teachable	4.83	VHV
5. Observable	4.83	VHV
Composite Mean		
	4.70	VHV
Content		
1. Clarity and focus	4.17	HV
2. Accurate and up-to-date	4.50	HV
3. Organized in a systematic way;	4.67	VHV
4. Uses language that is appropriate to target user level;	5.00	VHV
5. Fits to the level of difficulty for its intended target user and achieve its defined purpose that is enjoyable, challenging, and engaging.	5.00	VHV

6. Material is free of ideological, cultural, religious, racial, and sex biases and prejudices.	4.67	VHV
Composite Mean	4.67	VHV
<hr/>		
Instructional and Technical Qualities	Mean	DI
1. Arouse interests and sustain attention.	4.83	VHV
2. Provide for the development of higher order thinking skills such as critical thinking, creativity, experiential learning, inquiry, problem solving to the target user effectively.	5.00	VHV
3. Use instructions, diagrams and illustrations that are appropriate and related to the concepts developed.	4.83	VHV
4. Integrate lessons that develop learners' values relevant to the intended outcomes of Values Education.	4.83	VHV
Composite Mean	4.87	VHV
<hr/>		
Learning Activities	Mean	DI
1. Offer an immediate feedback and guidance on the target user.	4.17	HV
2. Can be used by the target user at their own pace sequentially in presentation and review.	3.83	HV
3. Encourage self-reflection and self-evaluation.	4.83	VHV
4. Suit to the learning objectives.	4.60	VHV
5. Motivate students with real life tasks and connections to personal experience.	4.40	HV
Composite Mean	4.37	HV
<hr/>		
Overall Mean	4.65	VHV

Source: Abella (2025)

Table 5 reveals that the ICT-Based Instructional Package attained an overall mean of 4.65, interpreted as Very Highly Valid (VHV) across four domains—objectives, content, instructional and technical qualities, and learning activities—affirming its reliability and instructional soundness. Objectives garnered a composite mean of 4.70 (VHV), with Teachable and Observable rated highest (4.83), indicating clarity and measurability, while Attainable (4.50) suggested minor room for improvement. Content achieved 4.67 (VHV), showing excellent quality and relevance, with top ratings for language appropriateness and level suitability (5.00) and a slightly lower score for clarity and focus (4.17). Instructional and technical qualities earned the highest composite mean of 4.87 (VHV), with top marks (5.00) for developing higher-order thinking skills, signifying strong capacity to foster critical, creative, and values-based learning. Learning activities obtained 4.37 (Highly Valid), highlighted by effectiveness in promoting reflection (4.83), though self-paced usability (3.83) indicated the need for further enhancement. Overall, the package demonstrates high validity, confirming its effectiveness as a model for ICT-integrated Values Education instruction.

Discussion

The study reveals that Technology in Teaching and Learning II (TTL 2) played a transformative role in shaping the experiences and competencies of Values Education graduates. The course's clarity and accessibility enabled participants to grasp complex technological concepts through structured modules and guided activities, consistent with Al-Fraihat, Joy, and Sinclair's (2020) view that course clarity and user-friendly design determine e-learning success. The alignment of visuals and text reflected Mayer's (2017) multimedia learning principles, while its engaging design supported Martin and Bolliger's (2018) findings on digital course engagement. TTL 2's practical relevance was evident in its direct application to lesson planning and instructional material design, aligning with Villanueva and Reyes (2024) and Amin and Abdullah (2025), who emphasize that technology becomes pedagogically valuable when integrated into authentic teaching contexts. Beyond skill acquisition, the course fostered a transformative teaching identity, resonating with Da Costa et al. (2025), who link technological innovation with moral responsibility. Graduates described TTL 2 as learner-centered and interactive, consistent with Laurillard (2016) and Bond et al. (2020), highlighting the use of gamified tools like Kahoot! and Canva to promote engagement and reflection. Pedagogical confidence increased as participants learned to integrate digital platforms purposefully, supporting the Technological Pedagogical Content Knowledge (TPACK) framework of Koehler and Mishra (2006) and Tondeur et al. (2018), who underscore the value of structured ICT training for adaptive instruction. The course also emphasized ethical and purposeful technology use, aligning with Buchanan (2019) and Hukubun et al. (2024), who argue for the moral dimension of digital pedagogy. Graduates learned to evaluate tools that promote empathy, collaboration, and digital citizenship. In assessment, TTL 2 empowered educators to design tech-enhanced evaluations aligned with Values Education objectives, consistent with Tondeur et al. (2017) and Chai et al. (2019), who associate teacher confidence in digital tools with effective instruction. Its experiential approach supported Kolb and Kolb's (2012) experiential learning theory and Huang et al.'s (2018) assertion that digital, hands-on activities increase motivation and skill acquisition. Ethical reflection was central to TTL 2's assessment design, echoing Rosenberg and Koehler (2015b) and Aydin (2024), who highlight the role of digital storytelling in fostering empathy and ethical awareness. Despite these strengths, challenges such as infrastructure limitations, pedagogical misalignment, and digital inequities were reported, supporting the observations of Joshi and Khatiwada (2024), Dinçer (2024), and Howard et al. (2021) that equitable access and moral grounding are essential for meaningful ICT integration. Overall, the findings affirm that effective technology integration in Values Education depends on pedagogical coherence, ethical intentionality, and contextual adaptability, aligning with Rafiq et al. (2024), who emphasize technology's role as a conduit for reflective and inclusive moral learning.

Conclusion

This study concludes that the course Technology in Teaching and Learning II (TTL 2) effectively enhanced Values Education graduates' ICT competence, pedagogical skills, and ethical awareness, fostering learner-centered, interactive instruction that promotes creativity, collaboration, reflection, and student autonomy. Anchored in Mayer's Multimedia Learning Theory, Constructivism, and the Theory of Change, the findings affirm that well-designed multimedia materials can strengthen engagement and values formation when aligned with moral pedagogy. The developed ICT-Based Instructional Package

for Values Education contributes theoretically by extending the discourse on digital moral pedagogy—an area often overlooked in ICT integration studies—and practically by offering a validated model that educators and curriculum developers can use to integrate technology meaningfully in values-oriented instruction.

While graduates demonstrated strong ICT proficiency, areas such as troubleshooting and emerging technologies require further development, and connectivity challenges highlight the need for structured support. The study is limited by its reliance on self-reported data, which may introduce subjective bias. Its focus on a specific regional context also restricts the generalizability of the findings. The study recommends ongoing professional development in advanced ICT skills and ethical digital pedagogy, alongside reliable digital infrastructure, to maximize the transformative impact of technology-enhanced Values Education.

Author's contribution: *the study was conducted solely by the author.*

Funding statement: This study was entirely self-funded by the author, with all costs for material development, data collection, analysis, and dissemination personally borne, ensuring full independence, objectivity, and adherence to ethical and scholarly standards.

Ethical review statement. The study ensures no violation of ethical standards and ethical protocols were followed.

Conflict of interest statement: the author declares no conflict of interest.

References

- Abaiz, M. A., Dela Cruz, J. M., & Villanueva, R. P. (2025). Teachers' perspectives on the MATATAG curriculum in the Philippines. *All Multidisciplinary Journal*, 5(1), 170–178.
- Al-Fraihat, D., Joy, M., Masa'deh, R., & Sinclair, J. (2019b). Evaluating E-learning systems success: An empirical study. *Computers in Human Behavior*, 102, 67–86. <https://doi.org/10.1016/j.chb.2019.08.004>
- Almario, J. M., Reyes, M. E., & Santos, R. A. (2021). Enhancing digital competence among pre-service teachers through ICT-integrated instruction. *Philippine Journal of Teacher Education*, 12(1), 45–60.
- Amin, M. M., & Abdullah, M. K. K. (2025). Designing Effective and Practical Learning Activities in Higher Education Digital Pedagogy: A Systematic Review of Theories and Practices. *International Journal of Learning Teaching and Educational Research*, 24(2), 242–262. <https://doi.org/10.26803/ijlter.24.2.13>

- Anggraini, H., Hayati, R., Pitaloka, N., & Maharrani, D. (2023a). Need analysis on developing of teaching materials on the basis of students' learning styles in higher education. *Inproceedings*. <https://doi.org/10.4108/eai.7-11-2022.2329344>
- Aydin, İ. (2024). Ethical issues in educational technology. *Kastamonu Eğitim Dergisi*, 861–881. <https://doi.org/10.24106/kefdergi.1426735>
- Bond, M., Buntins, K., Bedenlier, S. et al. Mapping research in student engagement and educational technology in higher education: a systematic evidence map. *Int J Educ Technol High Educ* 17, 2 (2020). <https://doi.org/10.1186/s41239-019-0176-8>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Buchanan, R. (2019). Digital ethical dilemmas in teaching. In M. A. Peters (Ed.), *Encyclopedia of teacher education* (pp. 1–6). Springer. https://doi.org/10.1007/978-981-13-1179-6_150-1
- Cabero-Almenara, J., & Llorente-Cejudo, M. C. (2020). *Digital competence of higher education teachers: A systematic review*. *Education in the Knowledge Society (EKS)*, 21, e23523. <https://doi.org/10.14201/eks.23523>
- Chai, C. S., Koh, J. H. L., & Tsai, C. C. (2019). A review of technological pedagogical content knowledge (TPACK) research and its future directions: Towards a more integrated TPACK framework. *Educational Technology & Society*, 22(2), 1–14.
- Cosido, A. M. T., Otero, M. B., Baro, H. B. U., & Tagarao, M. C. (2025). Development and validation of contextualized instructional materials in teaching GMRC 1. *International Journal of Scientific and Research Publications*, 15(2), 236–244. <https://doi.org/10.29322/ijsrp.15.02.2025.p15826>
- Da Costa, A., & Da Conceicao Freitas, Z. (2025). Digital ethics and the future of education: An urgent dialogue. *International Journal of Learning, Teaching and Educational Research*, 1(01), 27–34. <https://doi.org/10.56741/jetia.v1i01.981>
- Department of Education. (2020). *Philippine professional standards for teachers*. Teacher Education Council. <https://tec.deped.gov.ph/wp-content/uploads/2020/09/Philippine-Professional-Standards-for-Teachers.pdf>
- Dinçer, S. (2024). Bridging the gap in technology integration in education: An examination of science teachers' competencies and needs. *Journal of Turkish Science Education*, 21(4), 620–634. <https://doi.org/10.36681/tused.2024.033>
- Duterte, J. P. (2024). Technology-enhanced learning environments: Improving engagement and learning. *International Journal of Research and Innovation in Social Science*, VIII(X), 1305–1314. <https://doi.org/10.47772/ijriss.2024.8100111>

- Francisco, R. R. (2023). Interactive, culturally sensitive, and adaptive ICT resources for nurturing moral development and social awareness. *Journal of Educational Technology and Society*, 26(4), 123-145.
- Fred, W. M., Musa, M., & Muhammadi, B. S. (2024). Effect of students' competence in using ICT tools on the implementation of the O' level ICT curriculum in government secondary schools in Mbale District, Uganda. *International Journal of Social Science and Human Research*, 7(09). <https://doi.org/10.47191/ijsshr/v7-i09-19>
- Ghavifekr, S., & Rosdy, W. A. W. (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. *International Journal of Research in Education and Science (IJRES)*, 1(2), 175–191. <https://files.eric.ed.gov/fulltext/EJ1105226.pdf>
- Howard, S. K., Tondeur, J., Ma, J., & Yang, J. (2021). What to teach? Strategies for developing digital competency in preservice teacher training. *Computers & Education*, 165, 104149. <https://doi.org/10.1016/j.compedu.2021.104149>
- Huang, B., Hew, K. F., & Lo, C. K. (2018). Investigating the effects of gamification-enhanced flipped learning on undergraduate students' behavioral and cognitive engagement. *Interactive Learning Environments*, 27(8), 1106–1126. <https://doi.org/10.1080/10494820.2018.1495653>
- Huang, R., Liu, D., Tlili, A., Yang, J., & Wang, H. (2022). Emerging technologies for education: A systematic review of immersive tools in values-based learning. *Journal of Educational Technology & Society*, 25(2), 1–15.
- Hukubun, M. D., Wakhudin, W., & Kasimbara, R. P. (2024). Character education in the digital age: Strategies for teaching moral and ethical values to a generation that grows up with technology. *Journal of Pedagogi*, 1(3), 74–82. <https://doi.org/10.62872/8958fk80>
- Joshi, B. M., & Khatiwada, S. P. (2024). Analyzing barriers to ICT integration in education: A systematic review. *The Third Pole Journal of Geography Education*, 24, 25–45. <https://doi.org/10.3126/ttp.v24i1.73325>
- Kirkwood, A., & Price, L. (2014). Technology-enhanced learning and teaching in higher education: What is 'enhanced' and how do we know? A critical literature review. *Learning, Media and Technology*, 39(1), 6–36. <https://doi.org/10.1080/17439884.2013.770404>
- Koehler, M. J., Mishra, P., & Cain, W. (2006). What is technological pedagogical content knowledge (TPACK)? *Journal of Education*, 193(3), 13–19.
- Kolb, A. Y., & Kolb, D. A. (2012). *Experiential learning theory*. Springer eBooks (pp. 1215–1219). https://doi.org/10.1007/978-1-4419-1428-6_227

- Laurillard, D. (2016). The educational problem that MOOCs could solve: professional development for teachers of disadvantaged students. *Research in Learning Technology*, 24. <https://doi.org/10.3402/rlt.v24.29369>
- Martin, F., & Bolliger, D. U. (2018). Engagement Matters: Student perceptions on the importance of engagement strategies in the online learning environment. *Online Learning*, 22(1). <https://doi.org/10.24059/olj.v22i1.1092>
- Mayer, R. (2017). Using multimedia for e-learning. *Journal of Computer Assisted Learning*, 33(5), 403–423. <https://doi.org/10.1111/jcal.12197>
- Newby, L. S., Hite, J. M., Hite, S. J., & Mugimu, C. B. (2012). Technology and education: ICT in Ugandan secondary schools. *Education and Information Technologies*, 18(3), 515–530. <https://doi.org/10.1007/s10639-011-9180-x>
- Pingil, N. (2022). Development and validation of instructional modules in enhancing the study and thinking skills of learners. *Psychology and Education: A Multidisciplinary Journal*, 3(9), 2-20. <https://doi.org/10.5281/zenodo.7011370>
- Rafiq, S., Iqbal, S., & Afzal, A. (2024). The impact of digital tools and online learning platforms on higher education learning outcomes. *Al-Mahdi Research Journal*, 5(4), 359–369.
- Redecker, C. (2017). *European Framework for the Digital Competence of Educators: DigCompEdu*. Punie, Y. (Ed.). Publications Office of the European Union. <https://doi.org/10.2760/159770>
- Rosenberg, J. M., & Koehler, M. J. (2015). Context and teaching with technology in the digital age. *Journal of Research on Technology in Education*, 47(3), 186–210.
- Shah, S. S. (2022). Teaching and Learning with Technology: Effectiveness of ICT Integration in Schools. *Indonesian Journal of Educational Research and Technology*, 2(2), 133–140. <https://doi.org/10.17509/ijert.v2i2.43554>
- Sharma, H. K. (2022). Role of ICT in value based education. *Scholarly Research Journal for Interdisciplinary Studies*, 9(68), 1–8. <https://oaji.net/articles/2022/1174-1642502309.pdf>
- Sharma, S. (2024). *The integration of moral values in digital education: Nurturing ethical decision-making in the digital age* (pp. 207–213). In [Book title if available]. ISBN 978-81-19567-62-1.
- Tondeur, J., Aesaert, K., Prestridge, S., & Consuegra, E. (2018). A multilevel analysis of what matters in the training of pre-service teacher's ICT competencies. *Computers & Education*, 122, 32–42. <https://doi.org/10.1016/j.compedu.2018.03.002>

Tondeur, J., van Braak, J., Ertmer, P.A. et al. Understanding the relationship between teachers' pedagogical beliefs and technology use in education: a systematic review of qualitative evidence. *Education Tech Research Dev* 65, 555–575 (2017). <https://doi.org/10.1007/s11423-016-9481-2>.

Valiente, C., & Andeng, P. B. (2025). Development and validation of instructional material for Araling Panlipunan: Input from a qualitative needs and analysis of learners. *International Journal of Advanced Research in Management and Social Sciences*, 14(2), 112–125.

Villanueva, J. A. R., & Reyes, D. (2024). Investigating blended learning interactions in Philippine schools. *Asia-Pacific Education Researcher*, 33(1), 45–62. <https://doi.org/10.1007/s12564-023-09826-4>

Voogt, J., Knezek, G., Cox, M., Knezek, D., & ten Brummelhuis, A. (2015). Under which conditions does ICT have a positive effect on teaching and learning? A call to action. *Journal of Computer Assisted Learning*, 31(5), 413–429. <https://doi.org/10.1111/jcal.12128>

Wang, A. I., & Tahir, R. (2020). The effect of using Kahoot! for learning – A literature review. *Computers & Education*, 149, 103818. <https://doi.org/10.1016/j.compedu.2020.103818>

Zizikova, S., Nikolaev, P., & Levchenko, A. (2023). Digital transformation in education. *E3S Web of Conferences*, 381, 02036. <https://doi.org/10.1051/e3sconf/202338102036>

Publisher's Note: DWIJMH stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



© 2025 by the authors. Licensee DWIJMH. This article is an open access article distributed under the terms and conditions of the [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/) (<https://creativecommons.org/licenses/by-nc-sa/4.0/>)

Divine Word International Journal of Management and Humanities. DWIJMH is licensed under a Creative Commons Attribution 4.0 International License.