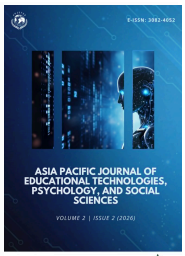
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Research Article

Online Teaching Readiness as a Predictor of Technology Integration Knowledge Among College Instructors in the Philippines

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Abstract

This study aimed to determine the extent to which online teaching readiness and sex predict technology integration knowledge among college instructors in the Philippines and to develop regression models based on sex. A descriptive-correlational research design was employed with 70 college instructors as respondents. Adapted survey questionnaires were used to collect data and were subjected to content validation and reliability analysis. Data were analyzed using the mean, Pearson product-moment correlation, dummy coding, and multiple regression analysis. The findings revealed that college instructors demonstrated a very high level of online teaching readiness and a high level of technology integration knowledge. Online teaching readiness was significantly related to and significantly predicted technology integration knowledge, whereas sex was not significantly related to or predictive of technology integration knowledge. The regression model explained 24.1% of the variance in technology integration knowledge, indicating that online teaching readiness contributed meaningfully to instructors' technology integration knowledge. Separate regression equations were generated for male and female instructors to represent the predicted technology integration knowledge at different levels of online teaching readiness; however, the difference associated with sex was not statistically significant. The findings underscore the importance of sustained professional development that strengthens instructors' readiness for online teaching as a means of supporting effective technology integration in higher education.

Keywords: Online teaching readiness, technology integration knowledge, college instructors, higher education, Philippines

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1. Introduction

The academic workforce faces numerous challenges amid rapid changes in teaching, many of which remain in their nascent stages (Ahmad et al., 2024). Technology integration in teaching has become an unavoidable reality, yet substantial work remains to ensure its effective implementation (Abedi, 2024). Inadequate knowledge of technology integration may hinder teachers' ability to recognize factors that influence classroom outcomes (Alieto et al., 2024). Teachers also struggle to develop such knowledge because of low expectations and unclear ICT goals, limited collaboration and pedagogical support, insufficient technology experience, inadequate time to master learning management platforms, and difficulties integrating ICT during class (Mathebula et al., 2025). Thus, strengthening teachers' technology integration knowledge is essential to facilitate effective technology-supported teaching and learning (Panakaje et al., 2024).

Technology integration also raises concerns about whether teachers' knowledge translates into changes in their teaching practices, as educational technology does not always transform instructional approaches even when implemented (Johnson, 2022). Its effective integration depends partly on teachers' online teaching readiness, professional development, and training. Although educators aim to provide students with opportunities to succeed, it is unrealistic to expect teachers to fully utilize available technologies in every lesson (Han, 2022), including coding and decoding, simulations, design, and multimedia products (Vasconcelos & Kim, 2022). In the Philippines, colleges and universities are increasingly pursuing ICT integration despite various implementation challenges (Espinosa et al., 2025). Teachers with limited technology integration knowledge and skills may be reluctant to adopt technology-related changes and additional learning demands, making such deficiencies a significant constraint to ICT use in higher education (Kennedy, 2023).

Recent developments in technology integration knowledge underscore the need for teachers to use ICT in teaching and learning, preparing students to function effectively in an information-age society (Lawrence, 2022; Romero-Ochoa et al., 2025). Traditional educational environments may be insufficient for preparing learners for contemporary workplaces, highlighting the importance of technology integration knowledge in developing twenty-first-century competencies (Nurhidayat et al., 2024). For higher education institutions, strengthening teachers' technology integration knowledge is therefore essential, despite the challenges faced by administrators and faculty in adopting emerging educational technologies (Alenezi et al., 2023; Hossain, 2023). Such efforts require sustained collaboration among teachers, educational technology professionals, administrators, researchers, and software personnel, with potential benefits for schools, teachers, and students (Haruna et al., 2025).

Furthermore, international and local studies have examined sex differences in teachers' readiness for digital learning, with some reporting significant differences (Getenet et al., 2026). Boggs (2023) found that female teachers' perceived readiness generally lagged behind that of male teachers, particularly among those in the higher readiness band. This issue warrants attention given the unequal sex distribution in the teaching profession, where women substantially outnumber men, potentially contributing to broader national e-competency concerns (Mamnoun & Nfissi, 2023; Malik & Tabassum, 2023). Kianinezhad (2023) likewise reported that male teachers had relatively higher online teaching ability before technology integration, although no sex difference was found in technology integration ability. Despite these findings, limited research has examined the combined relationship between online teaching readiness and technology integration knowledge, particularly in the Philippine context. Existing studies have largely treated technology integration as an outcome of broader ICT use or examined sex differences separately. Thus, examining these variables together may extend the literature and provide context-specific evidence on teachers' technology integration knowledge as educational institutions increasingly adopt digital technologies.

2. Methods

2.1 Research Design

This study employed a descriptive-correlational research design to examine the level and relationships among online teaching readiness, sex, and technology integration knowledge among college instructors. Descriptive research provides a snapshot of existing conditions, while correlational research determines the degree of association between variables without manipulating them (Arikunto, 2007; Creswell, 2012). This design was considered appropriate for describing the respondents' levels of online teaching readiness and technology integration knowledge and examining their relationships with sex. Regression analysis was further employed to determine whether online teaching readiness and sex predict technology integration knowledge. Regression provides a framework for modeling an outcome variable as a function of one or more explanatory variables or predictors and may be used to examine associations and generate predicted values (Casella & Berger, 2002).

2.2 Research Respondents and Sampling

The respondents of the study were 70 male and female college instructors selected through simple random sampling. A roster of eligible instructors was obtained and used as the sampling frame, from which participants were randomly selected. This procedure provided eligible members of the target population with an equal opportunity to participate in the study. Participants were included regardless of age, religion, beliefs, employment status, salary or wages, field of expertise, and department affiliation. Establishing appropriate inclusion criteria helps ensure that participants possess characteristics relevant to the research questions and allows researchers to consider the implications of participant selection for the external validity of findings (Montes de Oca et al., 2017; Hulley et al., 2007).

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2.3 Research Instruments

Two survey instruments were used to collect the data. The first measured online teaching readiness and was developed by Martin and Chuang (2018), while the second measured technology integration knowledge and was designed by Hosseini and Kamal (2012). The instruments underwent expert review to assess their appropriateness and suitability for the study context. The questionnaires were submitted to a panel of experts in questionnaire construction for review and modification to ensure that the items were appropriate to the characteristics and context of the respondents. Validity refers to the extent to which an instrument adequately measures the intended area of investigation (Field, 2005).

The instruments were also pilot-tested to establish their reliability. The reliability analysis yielded a Cronbach's alpha coefficient of .94, indicating very high internal consistency. Reliability concerns the consistency of measurement across the items of an instrument (De Leeuw, 2010). A scale demonstrates high internal consistency when its items consistently measure the same construct (Huck, 2014). Cronbach's alpha is commonly used to assess the internal consistency of Likert-type scales, with .70 generally considered an acceptable minimum coefficient (Whitley, 2010). The obtained coefficient of .94 therefore indicates that the instrument demonstrated a high level of internal consistency.

2.4 Ethical Considerations

The study observed appropriate ethical safeguards throughout the research process. Participation was voluntary, and respondents were informed of the purpose and procedures of the study before providing informed consent. Respondents were assured that their participation was voluntary and that they could withdraw from the study at any time without penalty. No personally identifying information was collected, and the responses were treated anonymously and confidentially. The collected data were securely stored and were accessible only to the researcher. The findings were reported in aggregate form to prevent the identification of individual respondents. Although the study was not subject to institutional review board (IRB) review, these safeguards were observed to protect the rights, privacy, and welfare of the participants.

3. Results

3.1 Level of Online Teaching Readiness of College Instructors

Table 1 indicates that college instructors demonstrated a very high level of online teaching readiness, as reflected by the overall mean of 4.27 (SD = 0.48). Most line items were rated very high, particularly sharing open educational resources (M = 4.54, SD = 0.61), sending announcements or email reminders (M = 4.50, SD = 0.72), and writing measurable learning objectives (M = 4.43, SD = 0.69). Other areas receiving very high ratings included managing grades online, responding promptly to student questions, designing interactive learning activities, and communicating expectations about student behavior. Meanwhile, organizing instructional materials into modules or units (M = 3.94, SD = 0.80), creating instructional videos (M = 3.86, SD = 1.07), using the learning management system to organize teams or groups (M = 4.03, SD = 0.64), and using different online teaching methods (M = 4.16, SD = 0.81)

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were rated high. The lowest mean was observed for creating instructional videos (M = 3.86), while the highest was for sharing open educational resources (M = 4.54). Overall, the findings suggest that the instructors perceived themselves as highly prepared to perform various instructional, communication, and management tasks in online teaching environments.

Table 1. Level of Online Teaching Readiness of College Instructors

	Item	Standard Deviation	Mean	Descriptive Level
1.	creating an online course orientation (e.g., introduction, getting started)	0.82	4.29	Very High
2.	writing measurable learning objectives	0.69	4.43	Very High
3.	creating instructional videos (e.g., lecture video, demonstrations, video tutorials)	1.07	3.86	High
4.	using different teaching methods in the online environment (e.g., brainstorming, collaborative activities, discussions, presentations)	0.81	4.16	High
5.	managing grades online	0.69	4.41	Very High
6.	sending announcements/email reminders to course participants	0.72	4.50	Very High
7.	responding to student questions promptly	0.75	4.41	Very High
8.	providing feedback on assignments	0.66	4.27	Very High
9.	communicating expectations about student behavior (e.g., netiquette)	0.70	4.33	Very High
10.	applying copyright law and fair use guidelines when using copyrighted materials	0.76	4.21	Very High
11.	allocating time to learn about new strategies or tools	0.73	4.24	Very High
12.	using course roster in the learning management system to set up teams/groups	0.64	4.03	High
13.	sharing open educational resources (e.g., learning websites, Web resources, games and simulations)	0.61	4.54	Very High
	Overall	**0.48**	**4.27**	**Very High**

3.2 Level of Technology Integration Knowledge of College Instructors

Table 2 shows that college instructors demonstrated a high level of technology integration knowledge, with an overall mean of 4.15 (SD = 0.54). Seven line items were rated very high, particularly using technology tools and resources to manage and communicate information related to particular content (M = 4.40, SD = 0.62), managing students' learning about particular content (M = 4.37, SD = 0.62), and assessing student learning in multiple ways (M = 4.26, SD = 0.72). The instructors also reported very high knowledge in finding and evaluating resources for particular content, knowing technologies that can support content understanding, using technology to process data and report results, and keeping up with important new technologies.

The remaining eight line items were rated high, with the lowest mean recorded for knowing about a wide range of different technologies (M = 3.87, SD = 0.85), followed by having sufficient opportunities to work with different technologies (M = 3.97, SD = 0.78) and experimenting with technology (M = 4.00, SD = 0.92).

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Overall, the findings indicate that the instructors possessed substantial knowledge of integrating technology for content-related instruction, student learning management, assessment, and information management, although some areas involving breadth of technological knowledge and opportunities for hands-on technology use were comparatively lower.

Table 2. Level of Technology Integration Knowledge of College Instructors

	Item	Standard Deviation	Mean	Descriptive Level
1.	knowing how to solve own's technical problems	0.77	4.04	High
2.	learning technology easily	0.78	4.09	High
3.	keeping up with important new technologies	0.73	4.20	Very High
4.	playing around the technology	0.92	4.00	High
5.	knowing about a lot of different technologies	0.85	3.87	High
6.	having the technical skills needed to use technology	0.77	4.04	High
7.	having sufficient opportunities to work with different technologies	0.78	3.97	High
8.	using technology tools to process data and report results	0.81	4.20	Very High
9.	using technology in the development of strategies for solving problems in the real world	0.78	4.06	High
10.	assessing student learning in multiple ways	0.72	4.26	Very High
11.	knowing about technologies can use for understanding (the particular content)	0.65	4.20	Very High
12.	finding and evaluating the resources that needed for the particular content	0.67	4.26	Very High
13.	using technology tools and resources for managing and communicating information of the particular content	0.62	4.40	Very High
14.	being able to manage of students' learning about the particular content	0.62	4.37	Very High
15.	knowing instructional strategies that are suitable for the topic content	0.64	4.23	Very High
	Overall	**0.54**	**4.15**	**High**

3.3 Coding for Dummy Variables

Table 3 presents the dummy variable coding used for sex in the regression analysis. Female instructors were assigned a code of 0 and served as the reference category, while male instructors were assigned a code of 1. This coding scheme allows sex to be incorporated as a categorical predictor in the regression model, with the resulting regression coefficient representing the difference in technology integration knowledge between male instructors and the female reference group, while controlling for the other predictor variables included in the model.

Table 3. Coding for Dummy Variables

Categories of Original Variable	Dummy Variable Coding
Sex	**Sex** (Reference Code)
Female	0
Male	1

3.4 Correlation Between Variables

Table 4 presents the correlation between the independent variables—online teaching readiness and sex—and the dependent variable, technology integration knowledge.

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The results show a moderate positive and statistically significant relationship between online teaching readiness and technology integration knowledge (r = .476, $p < .001$), indicating that higher online teaching readiness is associated with higher technology integration knowledge among college instructors. In contrast, sex was not significantly correlated with technology integration knowledge (r = .036, p = .770), indicating that there was no statistically significant relationship between the two variables. These findings suggest that online teaching readiness has a stronger observed association with technology integration knowledge than sex in the present sample.

Table 4. Correlation Between Variables

Pair of Variables		r-value	*p*-value
Independent Variable	**Dependent Variable**		
Online Teaching Readiness	Technology Integration Knowledge	.476*	.000
Sex	Technology Integration Knowledge	.036	.770

$p<.05$

3.5 Regression Analysis on Online Teaching Readiness and Sex as Predictors of Technology Integration Knowledge

Table 5 shows that online teaching readiness significantly predicted technology integration knowledge among college instructors (β = 0.555, SE = 0.121, t = 4.601, $p < .001$). This indicates that higher online teaching readiness was associated with higher technology integration knowledge. In contrast, sex was not a significant predictor of technology integration knowledge (β = 0.132, SE = 0.116, t = 1.139, p = .259), indicating that differences in sex did not significantly contribute to variations in technology integration knowledge when considered alongside online teaching readiness. The regression results therefore indicate that online teaching readiness was a significant predictor of technology integration knowledge, whereas sex was not.

Table 5. Regression Analysis on Online Teaching Readiness and Sex as Predictors of Technology Integration Knowledge

	Coefficients	Standard Error	t stat	*p*-value	Significance
Intercept	1.705	.533		.002	Sig.
Sex	.132	.116	1.139	.259	Not sig.
OTR	.555	.121	4.601	.000	Sig.

R^2 = .241
F-value = 19.891
p*-value = 0.000 *(significant)

3.6 The Regression Model

Based on the results of the regression analysis of the variables, there are three models generated in this study. The first is the general model; the second model is for male college instructors; and the third model is for female college

instructors. Specific parameter on the comparison between male and female college instructors is shown in Table 6.

Table 6. Interpretation of the Parameter Estimates of Final Model

The Final Model

The general model includes sex and online teaching readiness as predictors of technology integration knowledge. Online teaching readiness significantly predicts technology integration knowledge, whereas sex does not significantly contribute to the model.

General Model: Y = 1.705 + .132(Sex) + .555 (OTR)

The final model below serves as the regression model for male college instructors coded as "1" where "Y" stands for technology integration knowledge (TIK). This specifies further that for every unit increase in online teaching readiness (OTR), there is a corresponding .555 unit increase in technology integration knowledge (TIK).

Model 1: Y = 1.705 +(.132) (Sex) + .555 (OTR)
Y = 1.705 +(.132) (1) + .555 (OTR)

Using the final regression model, the predicted technology integration knowledge of female college instructors, who were coded as "0," is represented by the equation below. Since female instructors serve as the reference category, the coefficient for sex is multiplied by zero and therefore does not contribute to the predicted value. Thus, the model for female college instructors is:

Model 2: Y = 1.705 +(.132) (Sex) + .555 (OTR)
Y = 1.705 +(.132) (0) + .555 (OTR)

Comparing the two groups using the final regression models, with OTR set at 1, the predicted technology integration knowledge of male instructors is 2.392, calculated as Y = 1.705 + 0.132 + 0.555. For female instructors, the predicted value is 2.260, calculated as Y = 1.705 + 0 + 0.555. Thus, at the same level of OTR, the model yields a 0.132-point difference in predicted technology integration knowledge between male and female instructors. However, this difference is not statistically significant (p = .259). Overall, the regression model is statistically significant (F = 19.891, p < .001), with online teaching readiness significantly predicting technology integration knowledge (p < .001).

4. Discussion

4.1. Level of Online Teaching Readiness

The very high rating of the online teaching readiness denotes that this variable is always manifested, congruent to the affirmations of Ersin et al. (2020) that increased readiness of teachers to teach online classes are evident in the openness to alternative ways of instructional interaction.

Other foreign authors indicated that most of the college faculty realized that some of the same approaches used in online classes can be used to engage teaching-learning in face-to-face classes (Atwa et al., 2022; Lewohl, 2023). Abdelhadi (2022) further confirmed that instructors who are more prepared for online teaching are better able to move beyond the confines of traditional face-to-face classrooms, enabling them to acquire new knowledge and develop additional competencies in distance education.

Effective teaching methods, structured lesson plans, and modern teaching tools improve academic outcomes (Javed, 2023). The result of the present study is also substantiated by the concurrence of Bolliger and Halupa (2022) and Badiozaman (2024) that instructors with incremental sense of readiness to teach online are more conscious of their teacher roles, teaching strategies, more acquainted with the use of technology, new pedagogical techniques, unique forms of accountability, and collaborative learning practices.

4.2. Level of Technology Integration Knowledge

The high rating of the respondents on technology integration knowledge attests that this variable is oftentimes manifested, parallel to the assertations of various authors that a great effectiveness of technology integration knowledge of teachers is well-equipped preparation with ICT tools and facilities, improve and increase the quality, accessibility and cost-efficiency of the delivery of instruction benefits learning success of students (Bandara & Jayaweera, 2024; Aithal & Aithal, 2024). Several ICT counterparts vouched that teacher's higher knowledge of technology integration in the classroom provides complementary supports for students learning. Moreover, the positive relationship between the use of technology and students' attitudes and behavioral intentions can have a critical role in shaping perceptions of technology through knowledge and exposure (Obenza et al., 2024). A more skillful teacher in ICT would assist and guide another teacher in the preparation work for teaching and learning process (Gümüs, 2022; Ngao et al., 2022).

4.3. Coding for Dummy Variables

In regression analysis involving continuous variables (online teaching readiness as predictor of technology integration knowledge) and nominal variable (sex), dummy coding of variables plays an important role in the analysis of data, whether they are real-valued variables, categorical data, or analog signals. The extreme case of representing all the variables (independent and dependent) as dummy variables provides a high degree of flexibility in selecting a modeling methodology (Genov et al., 2024). The use of categorical variable in regression involves the application of coding methods. In this study, categorical independent variable (sex) can be incorporated into regression by virtue of two coding methods: dummy (0 for female) and effect coding (1 for male). Hence, this paper discusses the uses, interpretations, and underlying assumptions of each method. In general, overall results of the regression are unaffected by the methods used for coding the categorical independent variable (sex).

In any of the methods, Meng (2022) accentuated that the analysis tests whether group membership is related to the dependent variable. Both methods yield identical R2 and F-value. However, the interpretations of the intercept and regression coefficients depend on what coding method has been applied and whether the groups have equal sample sizes.

4.4. Correlation Between Variables

Online teaching readiness is related to technology integration knowledge because the null hypothesis is rejected. The result conforms to the proposition of Limbong and Wadham (2024) that the audacity of teacher readiness and preparedness configure the formation of their knowledge in technology integration. Teaching online requires technological skills, but also different pedagogical approaches than teaching face-to-face, to support learning online. In the stance, Ali et al. (2023) theorized that online teaching readiness can be considered a key component to augment educators' knowledge in technology integration.

The null hypothesis that there is no significant relationship between sex and technology integration knowledge is accepted in the study. The result commensurate the claims of Hosseini et al. (2025) that women and men gain the same stronger voice from the academic communities of how knowledgeable they are in integrating technology to successfully achieve the expected learning outcomes of the subjects they teach. Although previous studies have reported mixed findings regarding sex differences in technology-related competencies, the present result suggests that sex may be less influential when instructors have comparable exposure to technology, training, and instructional experiences. Seemingly, gender advocates observed that quality knowledge of technology integration in teaching-learning preparations breakdown gender disparity; gender gap narrowed when both genders are exposed to the same amounts and types of learning experiences on computers; and absence of gender disparity is obvious when females and males are in a learning environment that requires constant use of technology to support instructional activities. Hence, recognizing gender equality is essential for ensuring that men and women in the academe can contribute fully for the betterment of societies and economies at large (Correa et al., 2025; Jeevanasai et al., 2023; Velasco-Balmaseda et al., 2024).

4.5. Regression Analysis on Online Teaching Readiness and Sex as Predictors of Technology Integration Knowledge

Online teaching readiness predicts technology integration knowledge, consonance to the concept of Mpuangnan (2024) that it is important to acknowledge that the online teaching readiness of teachers has a positive effect to their knowledge of technology integration. In particular, the studies of Chaya (2023) and Mane (2025) revealed that teachers' readiness to teach online ramifies a more detailed knowledge which positively affects technology integration for instructional delivery.

Sex, on the other hand, is not a function of technology integration knowledge. As confirmed by Campos and Scherer (2024), sex plays no role in technology integration knowledge. It was also affirmed by Dikmen and Demirer (2022) that sex is not a good predictor to acquire knowledge in technology integration. While earlier studies have shown inconsistent results regarding sex differences in technology-related competencies, the present finding indicates that technology integration knowledge may depend more on factors such as professional exposure, access to technological resources, and opportunities for competency development than on sex. This is further confirmed by Epstein (2022) and McDowell (2023) that in attaining knowledge in technology integration, male oriented concept is no longer apply in the provision of teaching profession whilst cannot alienate females to participate in the field of teaching. Thus, male and female teachers are more likely to be knowledgeable in technologies that support increased interaction and participatory in the avenue of teaching profession.

4.6 The Regression Model

The output on the totality of the model is confined with the affirmation of Fawait et al. (2024), elucidating that the optimal goal of learning requires teachers who are competent in managing learning. Teachers' readiness in the context of online teaching is a critical need to improve learning outcomes (Permatasari & Tandiayuk, 2023; Wolterinck et al., 2024). The linkage between teaching readiness and knowledge of technology integration is individuals' ability to work and can begin from exploring ICT tools and applications with constant practice. Thus, in order for teachers to be ready to teach online, they are required to follow the development of technology to improve their technology integration knowledge. Further reinforcing the anchored theory, Almusawi and Durugbo (2024) emphasized that teachers' readiness is a significant factor influencing their willingness to integrate technological knowledge into teaching and learning. Readiness to use and master ICT applications can enhance teachers' skills and capabilities, which, over time, may facilitate greater and more sustained ICT integration in educational practice. Thus, continuous efforts to develop and strengthen teachers' ICT competencies are essential for promoting effective technology integration in teaching and learning.

5. Conclusions

Based on the findings and results of the study, the following conclusions are drawn. First, the college instructors demonstrated a very high level of online teaching readiness, particularly in their ability to share instructional resources through open web-based sources. Second, the instructors exhibited a high level of technology integration knowledge, indicating their ability to select and use appropriate ICT tools in support of specific learning content and instructional purposes. Third, online teaching readiness was significantly associated with technology integration knowledge, whereas sex did not show a statistically significant relationship with technology integration knowledge.

The regression analysis further established that online teaching readiness significantly contributed to the prediction of technology integration knowledge, while sex did not significantly contribute to the model. Finally, separate regression equations were derived for male and female college instructors based on the coding of sex as a predictor. Although the male model yields predicted technology integration knowledge values that are 0.132 points higher than those of the female model at the same level of online teaching readiness, this difference was not statistically significant ($p = .259$). Thus, the findings indicate that online teaching readiness, rather than sex, is the significant predictor of technology integration knowledge among the college instructors included in the study.

6. Recommendation

To sustain the very high level of online teaching readiness and further strengthen technology integration knowledge, the institutional academic council and top management may continue providing institutional support for the professional development of college instructors. This may include sustained training on online teaching pedagogy and methodology, technical skills, technology-enhanced instruction, and seminars that facilitate the sharing of effective online teaching experiences.

College instructors may likewise continuously explore emerging technologies, innovative instructional strategies, and new approaches to technology integration to enhance classroom instruction. Since online teaching readiness significantly predicts technology integration knowledge, sustained investment in relevant training and development programs may help further strengthen instructors' capacity to integrate technology effectively into teaching and learning.

The Deans and Program Heads may also promote an inclusive and supportive environment in which both male and female instructors are provided equitable opportunities to develop and apply technology-related competencies. Since sex did not significantly predict technology integration knowledge in the present study, professional development initiatives may be designed based on instructors' actual training needs and technology-related experiences rather than sex alone.

The generated regression models may serve as reference points for understanding predicted differences between male and female instructors; however, the observed difference was not statistically significant. Thus, future institutional planning may consider other factors not examined in the present study, such as teaching experience, access to technological resources, training exposure, and frequency of technology use, to further explain variations in instructors' technology integration knowledge.

7. Limitations of the Study

Several limitations should be considered when interpreting the findings of the study. The respondents were limited to 70 college instructors from the selected higher education institution, which may constrain the generalizability of the findings to instructors from other institutions, academic disciplines, or geographical contexts. The study also relied on self-report questionnaires to measure online teaching readiness and technology integration knowledge, which may be influenced by participants' perceptions and response tendencies. Moreover, the use of a descriptive-correlational design with regression analysis identifies relationships and predictive patterns among the variables but does not establish causal relationships between online teaching readiness, sex, and technology integration knowledge. Although online teaching readiness significantly predicted technology integration knowledge, the model accounted for 24.1% of its variance, indicating that other relevant factors not examined in the study may contribute to instructors' technology integration knowledge. Future research may therefore involve larger and more diverse samples across institutions and disciplines, incorporate objective or performance-based measures of technology integration knowledge, and examine additional factors such as teaching experience, professional development, access to technology, and frequency of technology use to provide a broader understanding of technology integration among college instructors.

Supplementary Details

Supplementary Materials & Data availability statement:
The study does not have any supplementary materials and data availability statements.

Author Contributions:
This paper was collaboratively authored by two researchers, each contributing according to their area of expertise: Dr. Diamante led the development of the introduction, interpretation of results, discussion of findings, and ensured the rigor of the study through validation of the methodology and results; Dr. Caloc was responsible for the comprehensive review and critical refinement of the manuscript.

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Institutional Review Board Statement:
This study did not require ethical approval, as St. John Paul II College of Davao does not have an Institutional Review Board. Thus, no protocol number or formal approval was applicable to this research.

Informed Consent Statement:
Informed consent was obtained from all subjects involved in the study.

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