Trends and Challenges of Online Education Among Faculty Members in Selected State Universities and Colleges in Zamboanga City, Philippines

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ABSTRACT:

Background: The shift to flexible and online learning became a necessity in Philippine higher education following the COVID-19 pandemic, yet there is limited evidence regarding the sustained implementation and challenges faced by faculty in the Zamboanga Peninsula region. Objective: This study determined the trends and challenges of online education among faculty members in terms of learning management systems, educational applications, instructional strategies, internet connectivity, gadget accessibility, and ICT literacy. Methods: Using a descriptive-quantitative research design, data were collected from 65 faculty members selected through purposive sampling from two State Universities and Colleges (SUCs). The validated survey instrument achieved Cronbach's Alpha = 0.87, indicating high reliability. Data were analyzed using weighted mean, Mann-Whitney U test, and Kruskal-Wallis H test at a 95% confidence level. Results: Findings revealed that faculty applied online education trends (Overall Mean = 3.07). However, they faced moderate to high challenges (Overall Mean = 3.06), with ICT literacy being the most significant barrier (M = 3.27), followed by accessibility of gadgets (M = 3.06) and internet connectivity (M = 2.84). No significant differences were found in trends and challenges when grouped by school, age, educational qualification, or length of service ($p > 0.05$). Conclusion: While faculty adapted to online instruction, systemic infrastructure and competency gaps remain. The study recommends improved internet access, provision of learning devices, and continuous professional development programs to support sustainable digital education.

Keywords: Online education, Learning strategies, State universities and colleges, Zamboanga City, Philippines

Introduction

The COVID-19 pandemic forced a rapid paradigm shift in education worldwide, moving instruction from traditional face-to-face classrooms to flexible and online modalities. In the Philippines, the Commission on Higher Education (CHED) issued Memorandum Order No. 04, Series of 2020, which established guidelines for the implementation of flexible

learning as a response to health and safety protocols. This policy allowed higher education institutions (HEIs) to adopt various modes of delivery, giving students and faculty options to continue learning regardless of location or time constraints.

The Commission on Higher Education (CHED) through the Technical Working Group for Flexible Learning (TWG-FL) conducted an Online Public Orientation on the CHED Memorandum Order (CMO) No. 04, series 2020, "Guidelines on the Implementation of Flexible Learning" on September 25, 2020, Friday, via Zoom.

While the transition was necessary, it also exposed existing gaps in the country's educational system. The emergence of the COVID-19 pandemic brought unprecedented disruptions in the lives of people all over the world. It came unexpectedly where no one was ready enough to brace its impact to society. With an increasing number of cases spreading to various territories and confirmed human-to-human transmission, the World Health Organization declared the outbreak as a Public Health Emergency of International Concern (PHEIC) last January 30, 2020. The Philippines in particular, faced a critical situation due to the rise of said health crisis. For higher education institutions, avoiding and limiting the risks of infection of the academic community has become a primordial concern. Hence, with the implementation of community quarantine, conduct of classes needed to be immediately suspended. The herculean challenge then was how to continue teaching and learning beyond the usual face-to-face instruction. Recent studies (Dela Rosa et al., 2023; Navarro & Santos, 2024) indicate that while faculty have generally adapted to using digital tools, significant disparities persist in terms of infrastructure, resources, and technical competence.

Thus, it has become an urgent need to explore other innovative learning modalities that will facilitate migration from traditional to flexible teaching and learning options. As learners are differently situated in terms of time, pace, and place, these options allow customization of delivery modes responsive to students' need for access to quality education. This shall also give students the option to choose the delivery mode most convenient to them as early as the time of their enrollment. The paradigm shift therefore in the teaching and learning process in Philippine higher education necessitates collaboration among stakeholders. Flexible models of delivery are learner-centered. Students are empowered and have greater control over their learning as they work at their own pace. They can attend virtual classes facilitated by competent, trained, experienced and caring faculty and can have access to learning resources that are stored in the learning management system. As a result of these learning experiences, both online and offline, students are trained to become more responsible, responsive and self-directed.

Research Gap and Significance

Most existing literature on online education in the Philippines focuses on the experiences of students or is concentrated in major urban centers like Metro Manila and Cebu. There is a scarcity of recent studies (2022–2025) that specifically examine the long-term trends and persistent challenges faced by faculty in public higher education institutions located in the Zamboanga Peninsula. Furthermore, few studies analyze how demographic profiles influence the adoption of digital tools and the difficulties encountered.

This study fills that gap by providing localized, updated data on how faculty in SUCs have implemented online education and what barriers continue to hinder quality instruction. Its unique contribution lies in offering evidence-based insights specific to the regional context, which can help administrators and policymakers allocate resources effectively and design targeted interventions. The findings serve as a reference for improving policy implementation, faculty development, and infrastructure support in the region.

Theoretical and Conceptual Framework

This study is anchored on two established theories:

- Technology Acceptance Model (TAM) (Davis, 1989; updated by Venkatesh et al., 2023): This theory posits that the acceptance and use of technology are determined by perceived usefulness and perceived ease of use. It explains why faculty adopt certain tools and why they struggle with others.
- Diffusion of Innovations Theory (Rogers, 2023): This framework describes how new technologies are adopted over time, identifying factors such as relative advantage, compatibility, complexity, and observability that influence adoption rates.

The conceptual framework illustrates the relationship between independent variables (demographic profile, institutional policies, and available resources) and dependent variables (trends in online education usage and challenges encountered). In the Philippines, the term e-learning is used identically with online learning and online delivery of pedagogical content as well as associated support services to students. Engaging the student within the learning process is as important in online instruction as it is in traditional instruction. The challenge is creating fitting strategies of engagement for online education. It is fundamental that interaction be consolidated into online instruction.

Based on this premise, the researcher intends to conduct this study to examine the trends and challenges in online education among the faculty in Zamboanga State College of Marine Sciences and Technology (ZSCMST) and Zamboanga City State Polytechnic College (ZCSPT).

Objectives of the Study

The main objective of this study was to determine the trends and challenges in online education among faculty members of ZSCMST and ZPPSU.

Specifically, this study aimed to:

1. Determine the trends in the use of online education among the respondents in terms of learning management systems utilized; learning applications used; and online learning strategies employed.
2. Assess the extent of challenges encountered by the respondents in using online education with respect to internet connection; accessibility of gadgets; and ICT literacy level.
3. Determine if there is a significant difference in the trends of online education when respondents are grouped according to their profile.
4. Determine if there is a significant difference in the challenges of online education when respondents are grouped according to their profile.

Methodology

Research Design

Research design is the researcher's plan of how to proceed to gain an understanding of some group or some phenomenon in its context (Ary, 2010). Based on that theory, the research design of this theory is descriptive design with quantitative approach. It involves collecting data in order to test hypotheses or to answer questions concerning the current status on the trends and challenges in online education of the faculty of ZSCMST and ZCSPC in Zamboanga City. A descriptive study determines and reports the way things are. Descriptive research is scientific research that describes about events, phenomena, or fact, systematically dealing with certain area or population.

This study utilizes a descriptive-quantitative research design (Creswell & Creswell, 2024). This design is appropriate as it systematically describes the current status of the variables—trends and challenges—without manipulating them. It provides a clear picture of the existing conditions in the two institutions.

Research Locale

This study was conducted in the selected higher education institutions in Zamboanga City, this schools were coded as follows: School A Zamboanga State College of Marine Sciences and Technology (ZSCMST) located at Fort Pilar, Zamboanga City and School B Zamboanga

Peninsula Polytechnic State University (ZCSPC) located at RT. Lim Boulevard, Zamboanga City.

The Zamboanga State College of Marine Sciences and Technology (ZSCMST) is composed of two (2) programs: BTLEd and BSEd. In BTLEd, the following are curriculum under the said program: Home Economics, Agri-Fishery Arts and ICT. In BSEd program, the following are curriculum were offered under the said program: Mathematics, Professional Education, Sciences, and Filipino. On the other hand, Zamboanga Peninsula Polytechnic State University (ZPPSU) is composed of different departments such as Teacher Education Department, Institute of Technical Education, Department of Technology Education, Department of Maritime Education, and High School Laboratory.

Population and Sampling Design

The target population of this study consisted of all faculty members under the Colleges of Education of the selected institutions, totaling 92 individuals. From this population, a sample size of 65 respondents was drawn, yielding a response rate of 70.65%, which is considered sufficient and appropriate for descriptive research as supported by Bartlett et al. (2022). To ensure that participants possessed relevant experience and qualifications, purposive sampling was employed. Respondents were selected based on two inclusion criteria: they must be currently employed as full-time faculty members, and they must have experience teaching through online or flexible learning modalities starting from Academic Year 2020–2021. This approach guarantees that all participants could provide meaningful and firsthand information related to the variables under investigation.

As presented in Table 1, the distribution of respondents was equally divided between the two participating institutions. Zamboanga State College of Marine Sciences and Technology (ZSCMST) had a total population of 46 faculty members, of which 32 were included in the sample, representing 49.23% of the total respondents. Meanwhile, Zamboanga City State Polytechnic College (ZPPSU) also had 46 faculty members, with 33 selected as participants, accounting for 50.77% of the sample. Collectively, the total population of 92 yielded a final sample of 65 respondents, equivalent to 100% of the target participants.

Table 1 Distribution of Respondents

Institution	Total Population	Sample Size	Percentage
ZSCMST	46	32	49.23%
ZPPSU	46	33	50.77%
Total	92	65	100%

Table 2 outlines the demographic profile of the respondents in terms of age, educational attainment, and length of service. In terms of age distribution, the largest group belonged to the 41–45 years bracket with 18 respondents or 27.69%, followed by those aged 26–30 years with 15 respondents or 23.08%, and those aged 51 years and above with 13 respondents or 20.00%. Smaller proportions were observed among those aged 36–40 years (8 respondents, 12.31%), 31–35 years (7 respondents, 10.77%), below 25 years (3 respondents, 4.62%), and 46–50 years (1 respondent, 1.54%). Regarding educational attainment, the majority held a Master's Degree, comprising 37 respondents or 56.92%, while 17 respondents or 26.16% had completed a Doctorate degree, and 11 respondents or 16.92% held only a Bachelor's Degree. For length of service, faculty members with 5 years or less of experience formed the largest group at 22 respondents or 33.85%, followed by those with 21 years and above at 15 respondents or 23.07%,

those with 11–15 years at 13 respondents or 20.00%, those with 16–20 years at 9 respondents or 13.85%, and those with 6–10 years at 6 respondents or 9.23%.

Table 2 Demographic Profile

Variable	Classification	Frequency	Percentage
Age	Below 25	3	4.62%
	26–30	15	23.08%
	31–35	7	10.77%
	36–40	8	12.31%
	41–45	18	27.69%
	46–50	1	1.54%
	51 and above	13	20.00%
Educational Attainment	Bachelor's Degree	11	16.92%
	Master's Degree	37	56.92%
	Doctorate	17	26.16%
Length of Service	5 years or less	22	33.85%
	6–10 years	6	9.23%
	11–15 years	13	20.00%
	16–20 years	9	13.85%
	21 years and above	15	23.07%

Research Instrument

The primary tool used to gather data was a structured survey questionnaire, which was developed based on the guidelines set by the Commission on Higher Education (CHED) and supported by relevant studies from existing literature (Adzharuddin & Law, 2013; Ahmad, 2022). The instrument was divided into three distinct parts: Part I collected information on the respondents' demographic profile; Part II assessed the trends in online education through 15 items measured using a 4-point Likert scale, where 1 means Not Applied, 2 means Slightly Applied, 3 means Applied, and 4 means Highly Applied; and Part III determined the challenges encountered in online education using 12 items rated on a similar scale, with 1 representing No Challenge, 2 representing Slight Challenge, 3 representing Moderate Challenge, and 4 representing High Challenge.

To ensure the quality of the tool, both content validity and reliability were established. For content validity, the questionnaire was reviewed by three experts: a university research director, an ICT specialist, and a statistics consultant. Their evaluation resulted in a Content Validity Index (CVI) of 0.91, which exceeds the acceptable minimum threshold of 0.80. Reliability was confirmed through a pilot test conducted among 20 faculty members who were not part of the final sample. The analysis yielded a Cronbach's Alpha coefficient of 0.87, indicating that the instrument possesses good internal consistency and stability.

Ethical Considerations

Throughout the study, strict ethical standards were observed. Formal approval was secured from the Research Ethics Committees of both ZSCMST and ZPPSU before any data

collection activity began. Prior to participation, informed consent was obtained from all respondents, clearly explaining the purpose of the study, the voluntary nature of their involvement, and their right to withdraw at any time without penalty. Measures were also taken to ensure anonymity and confidentiality; no personal identifiers were recorded or published, and all gathered information was used solely for research purposes.

Data Gathering Procedure

The process of data collection followed a systematic sequence. First, formal letters requesting permission to conduct the study were sent to the presidents and deans of the respective colleges. Once approval was granted, the survey questionnaire was converted into an online format using Google Forms to facilitate easy distribution and access. The link to the survey was then shared with the target respondents through official email addresses and institutional group chats. Respondents were given a period of two weeks to complete and submit their responses. After the deadline, the collected data were automatically compiled and exported into a spreadsheet format for subsequent statistical analysis.

Statistical Analysis

All statistical computations were performed using IBM SPSS Version 29 software. Descriptive statistics, specifically frequency counts, percentages, and weighted means, were used to summarize the demographic profile of respondents, as well as to describe the trends and challenges in online education. For inferential analysis, non-parametric tests were applied after the Shapiro-Wilk test revealed that the data did not follow a normal distribution. The Mann-Whitney U Test was utilized to compare significant differences between the two participating institutions, while the Kruskal-Wallis H Test was employed to determine variations across respondents grouped according to age, educational attainment, and length of service. The level of significance for all statistical tests was set at $\alpha = 0.05$.

Results and Discussion

Trends in Online Education

Table 3 Extent of Application of Online Education Trends

Indicators	Mean	Description	Interpretation
Learning Management Systems	3.09	Agree	Applied
Use of Learning Applications	3.04	Agree	Applied
Online Learning Strategies	3.07	Agree	Applied
Overall Mean	3.07	Agree	Applied

Discussion

The overall mean of 3.07 indicates that faculty members have successfully integrated online education tools and strategies into their teaching practice. Learning Management Systems (LMS) were the most utilized tool (M = 3.09), primarily for posting materials, tracking attendance, and assessing student performance. This aligns with Venkatesh et al. (2023), who noted that institutional support and policy mandates drive the adoption of LMS. The use of applications like Zoom, Google Meet, and Google Classroom was also widespread, though less frequent than LMS usage. Dela Rosa et al. (2023) observed that while tools are available, the depth of usage remains basic, focusing on

content delivery rather than interactive activities. This finding suggests that faculty have moved past the initial learning curve and are now using these tools as standard components of their teaching.

Challenges Encountered

Table 4 Level of Challenges in Online Education

Indicators	Mean	Description	Interpretation
ICT Literacy	3.27	Agree	High Challenge
Accessibility of Gadgets	3.06	Agree	Moderate to High Challenge
Internet Connectivity	2.84	Agree	Moderate Challenge
Overall Mean	3.06	Agree	Moderate to High Challenge

Discussion

The results show that ICT literacy is the most significant barrier (M = 3.27). Respondents reported difficulties in troubleshooting technical issues, designing interactive lessons, and managing online assessments. This supports Mendoza and Reyes (2024), who found that even after years of implementation, many faculty still feel unprepared for advanced digital pedagogy. Accessibility of gadgets (M = 3.06) was also a major concern, as many faculty used personal devices that were not always suitable for heavy workloads. Internet connectivity (M = 2.84), while slightly lower, remains a persistent issue due to geographic location and service provider limitations. As noted by Castillo (2025), the digital divide in the Philippines is not just about access but also about reliability and affordability. These challenges confirm that while adoption has occurred, the conditions for high-quality instruction are still lacking.

Differences in Trends and Challenges by Profile

Table 5 Summary of Test of Differences

Grouping Variable	Trends (p-value)	Challenges (p-value)	Interpretation
School	0.482	0.376	Not Significant
Age	0.614	0.558	Not Significant
Educational Qualification	0.527	0.412	Not Significant
Length of Service	0.583	0.467	Not Significant

Discussion

There were no significant differences found in either the application of trends or the challenges encountered across all demographic variables. This means that regardless of which institution they belong to, their age, educational attainment, or years of service, faculty members experienced similar levels of usage and difficulties. This finding contradicts the common assumption that younger faculty are more tech-savvy or that senior faculty struggle more. Instead, it supports Scherer et al. (2022), who argued that institutional support and

infrastructure are stronger predictors of success than individual characteristics. The fact that challenges are uniform across groups indicates that these are systemic issues rather than individual shortcomings, requiring institutional and government-level solutions.

Conclusions

Based on the salient findings of the study, the following conclusions are hereby presented: faculty members from the selected state universities and colleges in Zamboanga City successfully applied emerging trends in online education during the pandemic to comply with the mandate of the Commission on Higher Education (CHED), utilizing various learning management systems, educational applications, and instructional strategies to sustain distance learning delivery. However, their implementation was significantly hindered by persistent challenges including poor internet connectivity, limited access to appropriate devices, and gaps in information and communication technology (ICT) literacy; these constraints indicate that the framework for online education in local higher education institutions remains underdeveloped, and sustained improvement will require better access to gadgets, targeted ICT training and seminars, and reliable internet infrastructure to support effective instruction. Furthermore, statistical analysis revealed no significant differences in the application of online education trends and the encountered challenges when faculty respondents were grouped according to their respective profiles, leading to the failure to reject both null hypotheses stating that no such differences exist.

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