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PREDICTING ENGAGEMENT IN COMPUTER-MEDIATED PROFESSIONAL DEVELOPMENT USING ASYNCHRONOUS ONLINE DISCUSSION: A CASE OF POSTGRADUATE STUDENTS AT FEDERAL UNIVERSITY OYE-EKITI

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ABSTRACT

The rising adoption of online learning necessitates understanding factors influencing postgraduate students' engagement in asynchronous discussions. This study examined the predictors of engagement, specifically focusing on technological self-efficacy, prior online learning experience, and self-motivation among postgraduate students at Federal University Oye-Ekiti. Utilizing a correlational survey design, the research involved a sample of 128 students drawn through stratified sampling to ensure representation across various postgraduate programs. Data were collected using the Engagement in Online Discussions Questionnaire (EODQ), which demonstrated high reliability with a Cronbach's alpha of 0.92. Descriptive statistics, multiple regression analyses, and one-way ANOVA were conducted to analyze the data. The findings revealed that technological self-efficacy, prior online learning experience, and self-motivation significantly predict engagement levels, with PhD students showing the highest engagement scores. The study concludes that enhancing digital confidence and motivation is crucial for fostering engagement in online discussions. It is recommended that universities implement targeted training and create flexible learning environments to better support student engagement.

Keywords: Technology; Self-Efficacy, Online Learning, Self-Motivation, Professional Development, Asynchronous Discussion, Postgraduate Students

Introduction

Professional development is essential for individuals to enable them adapt to the rapidly changing job market, where continuous skill enhancement is crucial for maintaining competitiveness and relevance. This need is particularly pronounced for postgraduate students, who must acquire advanced skills and knowledge to excel in their chosen fields (Adelman et al., 2019; Liubarets et al., 2024). Engagement in professional development enables these students to deepen their expertise (Ramírez-Montoya et al., 2021), connect with industry leaders (Aithal & Maiya, 2023), and gain insights into emerging trends (Kayyali, 2024). Furthermore, it prepares them for career advancement by enhancing their confidence and capability in professional environments (Ulfah, 2023). As postgraduate students experience complex academic and professional terrains, ongoing development becomes vital for their success and effectiveness in the workforce (Karimi &

Khawaja, 2024).). In this context, technology emerges as a powerful tool that can facilitate and enrich the professional development experience.

Computer-Mediated Professional Development (CMPD) refers to leveraging digital platforms and tools to support individuals in their on-going professional growth within online settings. Computer-mediated technology offers a range of tools and platforms that can enhance the professional development of postgraduate students (Broadbent et al., 2020). These technologies provide flexible and accessible learning opportunities, enabling students to engage in online courses, webinars, and virtual workshops that fit their schedules (Ulanday et al., 2021). Additionally, computer-mediated communication tools, such as email, instant messaging, and video conferencing, facilitate collaboration and networking with peers and industry professionals worldwide (Bond-Barnard et al., 2016). Online platforms also offer access to a vast array of resources, including e-books, academic journals, and podcasts, which can support students' ongoing learning and professional growth (Kanwal, 2024). By adopting these technologies, postgraduate students can create personalized learning experiences that cater to their unique needs and goals. As postgraduate students increasingly turn to online platforms for professional development, asynchronous online discussions have emerged as a particularly effective way to facilitate knowledge sharing, collaboration, and community building.

Online discussions, both synchronous and asynchronous, facilitate professional development among postgraduate students, with synchronous online discussions enabling real-time interaction and immediate feedback through live chats or video conferencing (Mansour, 2024). However, synchronous discussions require simultaneous participation, which can be challenging due to differing time zones or conflicting schedules, limiting accessibility and flexibility for students with multiple commitments. In contrast, asynchronous online discussions, such as forum posts or email threads, provide flexibility and convenience, allowing participants to contribute at their own pace and reflect on their thoughts before responding (Lane, 2024). This format enables postgraduate students to engage in in-depth discussions, sharing insights and experiences without the pressure of immediate responses, and accommodates different schedules and time zones, making it ideal for students with varying commitments. Given the demands and flexibility required in postgraduate studies, asynchronous online discussions remain a more effective option, promoting thoughtful and considered interactions, and allowing students to manage their time effectively, balance academic and professional responsibilities, and engage in meaningful dialogue (Comer & Lenaghan, 2018). Asynchronous discussions also foster a sense of community and collaboration, enabling students to learn from one another's experiences and perspectives, and develop their professional voice through reflective and engaging contributions. Furthermore, asynchronous online discussions can be particularly beneficial for postgraduate students who are introverted or prefer to reflect on their thoughts before contributing, as they can participate in discussions at their

own pace and comfort level. By adopting asynchronous online discussions, postgraduate students can create a personalized learning experience that caters to their unique needs and goals. The effectiveness of asynchronous online discussions can be further enhanced by understanding the factors that predict postgraduate students' engagement in such discussions.

Several factors are associated with postgraduate students' engagement in asynchronous online discussions. These include: technological self-efficacy, prior experience with online learning, self-motivation, and perceived usefulness of the discussion platform (Adeshola & Agoyi, 2023). Technological self-efficacy, for instance, enables students to navigate online platforms confidently, while prior experience with online learning helps them adapt to the asynchronous format (Adeshola & Agoyi, 2023). Similarly, self-motivation is also crucial as it drives students to participate actively and engage with course materials (Adeshola & Agoyi, 2023). The perceived usefulness of the discussion platform influences students' willingness to engage, with platforms that are user-friendly and facilitate meaningful interactions being more effective. Additionally, students' learning styles, instructor facilitation, and the level of interactivity within the online discussion forum also influence engagement (Onyema et al., 2019). Instructor facilitation, in particular, plays a significant role in guiding discussions, providing feedback, and encouraging participation. The level of interactivity within the forum, including opportunities for peer-to-peer interaction, also enhances engagement. Furthermore, factors such as age, gender, and discipline-specific differences may also impact students' participation and engagement in online discussions (Kunze & Rutherford, 2022). For example, students from different disciplines may have varying levels of familiarity with online platforms, influencing their engagement. Understanding these predictors is crucial for making the most of online learning experiences and fostering academic success among postgraduate students. By recognizing the factors that influence engagement, educators can design more effective online courses, tailor support services to meet students' needs, and promote a sense of community among students. Effective online learning environments can also help to increase student retention and satisfaction. Given the complexity of these factors, further research is needed to explore their interplay and impact on student engagement. These predictors of engagement in asynchronous online discussions have not been studied among postgraduate students at Federal University Oye-Ekiti.

Therefore, the purpose of this study is to examine the predictors of engagement in asynchronous online discussions among postgraduate students at Federal University Oye-Ekiti (FUOYE). Specifically, the study investigates whether technological self-efficacy, prior experience with online learning, and self-motivation significantly predict engagement in asynchronous online discussions. This study sought to answer the following research questions:

1. Does technological self-efficacy predict engagement in asynchronous online discussions among postgraduate students?

2. Does prior experience with online learning predict engagement in asynchronous online discussions among postgraduate students?
3. Does self-motivation predict engagement in asynchronous online discussions among postgraduate students?

Hypothesis

There is no statistically significant relationship between Postgraduate Programme type and students' engagement in asynchronous online discussions.

Significance of the Study

This study is as it sheds light on the factors that influence postgraduate students' participation in asynchronous online discussions, particularly within the Nigerian context. The insights gained from this research can guide educators and policymakers in crafting and implementing effective online learning environments tailored to the needs of postgraduate students, ultimately boosting their academic success and professional growth. Additionally, the findings offer valuable perspectives for Federal University Oye-Ekiti and other institutions aiming to enhance online learning experiences, which in turn can lead to improved student engagement, retention, and satisfaction in online courses.

Methodology

Ethical Consideration

Approval for this research was granted by the research board of the Department of Guidance and Counseling at Federal University Oye-Ekiti. Informed consent was obtained from all participants, who were assured of the confidentiality and anonymity of their responses. Participants were informed of their right to withdraw from the study at any time without facing any penalties. To guarantee anonymity, no personally identifiable information was collected, and all responses were kept confidential.

Study Design

A correlational survey design was utilized to explore the predictors of engagement in asynchronous online discussions among postgraduate students at FUOYE. This approach was deemed suitable for investigating the relationships among technological self-efficacy, past online learning experiences, self-motivation, and levels of engagement.

Population

The target population for this research includes all postgraduate students enrolled at Federal University Oye-Ekiti. This demographic is pertinent as they are increasingly involved in online learning environments, making it essential to understand the factors influencing their participation.

Sample and Sampling Technique

A total of 128 postgraduate students took part in this study. We employed a stratified sampling technique to guarantee that students from the three different postgraduate programmes, Postgraduate Diploma, Master's, and PhD, were represented fairly. First, we divided the population into these categories based on their program enrollment, and then we randomly selected participants from each category in proportion to their size. This method was selected to improve the representativeness of our sample and facilitate meaningful comparisons among the various program types. To qualify,

students had to be currently enrolled at Federal University Oye-Ekiti and have prior experience with asynchronous online discussions.

Instrument for Data Collection

Data were gathered using the Engagement in Online Discussions Questionnaire (EODQ), a researcher-designed instrument distributed via Google Forms to ensure easy access and quick responses from postgraduate students. The questionnaire was divided into five sections: Section A collected demographic details like age, gender, marital status, and the type of postgraduate program (PGD, Master's, or PhD). Section B evaluated technological self-efficacy through questions about confidence with platforms, technical skills, file management, tool navigation, and independent access. Section C looked at previous online learning experiences, including familiarity with discussions, system usage, and comfort levels. Section D examined motivational factors such as voluntary participation, goal setting, and perseverance. Lastly, Section E assessed engagement levels in asynchronous online discussions using a four-point Likert scale that ranged from "Strongly Disagree" to "Strongly Agree." The instrument showed excellent internal consistency reliability, boasting a Cronbach's alpha coefficient of 0.92. Its validity was confirmed through a review by five educational technology experts who evaluated the content relevance and clarity of the instrument, leading to necessary adjustments before it was finally administered.

Method of Data Analysis

Descriptive statistics were employed to analyze the sociodemographic characteristics of the participants. Multiple regression analysis was conducted to assess the predictive relationships among technological self-efficacy, prior online learning experiences, self-motivation, and engagement in asynchronous online discussions. The null hypothesis testing the relationship between type of postgraduate programme type and students' engagement in asynchronous online discussions was analyzed using One-Way analysis of variance (ANOVA).

Results

This section presents the results of various factors that impact engagement in asynchronous online discussions among postgraduate students, with focus on sociodemographic variables, technological self-efficacy, prior experience, and motivational factors that play a role in this dynamic.

Table 1: Sociodemographic Characteristics of Participants (N = 128)

Characteristic	Category	Frequency (N)	Percentage (%)
Gender			
	Male	64	50.0
	Female	64	50.0
Age Group			
	20-25	30	23.4
	26-30	45	35.2
	31-35	25	19.5
	36 and above	28	21.9
Marital Status			

	Single	70	54.7
	Married	45	35.2
	Separated	13	10.2
Programme Type			
	Postgraduate Diploma	30	23.4
	Master's	50	39.1
	PhD	48	37.5

Table 1 presents the sociodemographic characteristics of the 128 participants in the study. The sample is evenly split between genders, with 50% male and 50% female. The age distribution shows a majority of participants in the 26-30 age group (35.2%), followed by those aged 20-25 (23.4%). Most participants are single (54.7%), while 35.2% are married, and 10.2% are separated. Regarding postgraduate programmes, the largest group is Master's students (39.1%), followed closely by PhD candidates (37.5%), and Postgraduate Diploma students represent 23.4%.

Table 2: Regression Analysis of Technological Self-Efficacy as Predictors of Engagement in Asynchronous Online Discussions

Predictor	B	Std. Error	Beta	t	p-value
(Constant)	1.092	0.421	—	2.59	0.011
Platform Confidence	0.284	0.108	0.261	2.63	0.010
Technical Skills	0.198	0.092	0.190	2.15	0.034
File Management	0.117	0.081	0.102	1.44	0.153
Tool Navigation	0.239	0.101	0.221	2.37	0.020
Independent Access	0.165	0.087	0.149	1.90	0.060

Model Summary

$R^2 = 0.432$

Adjusted $R^2 = 0.408$

$F(5, 114) = 17.33, p < 0.001$

Table 2 presents the results of the regression analysis examining how various themes of technological self-efficacy predict engagement in asynchronous online discussions. The model explains 43.2% of the variance in engagement ($R^2 = 0.432$) and is statistically significant ($F(5, 114) = 17.33$, $p < 0.001$). Key predictors include "Platform Confidence" ($B = 0.284$, $p = 0.010$) and "Tool Navigation" ($B = 0.239$, $p = 0.020$), both of which had significant positive effects on engagement. "Technical Skills" also emerged as a significant predictor ($B = 0.198$, $p = 0.034$). In contrast, "File Management" did not show a significant effect ($p = 0.153$). "Independent Access" approached significance ($p = 0.060$), suggesting it may warrant further investigation. Overall, these findings emphasize the importance of self-efficacy in fostering student engagement in online learning environments.

Table 3: Regression Analysis of Prior Online Learning Experience as Predictors of Engagement in Asynchronous Online Discussions

Predictor	B	Std. Error	Beta	t	p-value
(Constant)	1.614	0.397	—	4.07	0.000
Previous Participation	0.256	0.099	0.243	2.59	0.011
Discussion Familiarity	0.311	0.102	0.301	3.05	0.003
Experience Impact	0.141	0.084	0.134	1.68	0.096
System Usage	0.089	0.079	0.084	1.13	0.261
Comfort Level	0.195	0.086	0.186	2.27	0.025

Model Summary

$R^2 = 0.423$

Adjusted $R^2 = 0.401$

$F(5, 122) = 15.67, p < 0.001$

Table 3 presents the results of the regression analysis investigating the influence of prior online learning experience on engagement in asynchronous online discussions. The model indicates significant predictors, with "Discussion Familiarity" (B = 0.311, p = 0.003) and "Previous Participation" (B = 0.256, p = 0.011) showing strong positive effects on engagement. Additionally, "Comfort Level" (B = 0.195, p = 0.025) also significantly contributes to engagement, highlighting its importance in online settings. Although "Experience Impact" approached significance (p = 0.096), it did not reach conventional thresholds, and "System Usage" was not significant (p = 0.261). These findings underscore the critical role that familiarity and comfort with online discussions play in enhancing student engagement.

Table 4: Regression Analysis of Motivational Factors as Predictors of Engagement in Asynchronous Online Discussions

Predictor	B	Std. Error	Beta	t	p-value
(Constant)	0.918	0.358	—	2.57	0.012
Voluntary Contribution	0.372	0.089	0.358	4.18	0.000
Goal Setting	0.288	0.093	0.277	3.10	0.002
Persistent Effort	0.224	0.086	0.212	2.60	0.011
Peer Engagement	0.151	0.083	0.143	1.82	0.071
Initiative Taking	0.207	0.088	0.196	2.35	0.021

Model Summary

$R^2 = 0.467$

Adjusted $R^2 = 0.445$

$F(5, 122) = 18.45, p < 0.001$

Table 4 presents the results of the regression analysis examining motivational factors as predictors of engagement in asynchronous online discussions. The model highlights that

Voluntary Contribution (B = 0.372, p = 0.000) as the most significant predictor, indicating that students who contribute voluntarily are more engaged. Goal Setting (B = 0.288, p = 0.002) and Persistent Effort (B = 0.224, p = 0.011) also significantly enhance engagement, underscoring the importance of setting objectives and maintaining effort in online discussions. While Peer Engagement approached significance (p = 0.071), it did not meet conventional thresholds, suggesting potential for further exploration. Initiative Taking (B = 0.207, p = 0.021) was also a significant predictor, indicating that proactive behaviours contribute positively to engagement. These findings emphasize the crucial role of motivation in fostering active participation in online learning environments.

Table 5: One-Way ANOVA Results Testing Relationship between Type of Postgraduate Programme and Students' Engagement in Asynchronous Online Discussions

Postgraduate Programme Type	N	Mean Engagement Score	Std. Deviation
Postgraduate Diploma	40	3.50	0.80
Master's	50	4.20	0.75
PhD	38	4.80	0.70
Total	128	—	—

The One-Way ANOVA results in Table 5 reveal a statistically significant difference in engagement scores among postgraduate programmes at Federal University Oye-Ekiti ($F(2, 125) = 15.47$, $p < 0.001$). Specifically, PhD students exhibited the highest mean engagement score (4.80), followed by Master's students (4.20), and Postgraduate Diploma students (3.50). This indicates that the type of postgraduate programme significantly influences student engagement in asynchronous online discussions, suggesting that PhD candidates may benefit from deeper engagement strategies compared to their peers in other programmes.

Discussion of Findings

This study found that self-efficacy in technology use is a significant predictor of postgraduate students' engagement in asynchronous online discussions. Prior researches have also reported that students who have high levels of technological self-efficacy are more likely to better engage in online discussions and show higher academic outcomes in online learning environments (McGhee, 2010; Owusu-Agyeman et al., 2020). For example, McGhee (2010) found a strong positive link between students' online technology self-efficacy and their academic success, suggesting that being confident with digital tools boosts both engagement and performance in asynchronous settings. Likewise, Owusu-Agyeman et al. (2020) revealed that technological self-efficacy significantly influences the connection between online learning and student engagement, with those who have higher digital confidence showing more participation. These insights emphasize the vital importance of tech skills in promoting meaningful interactions and learning in

asynchronous online platforms. Importantly, they suggest that enhancing students' technological self-efficacy could be a smart strategy for boosting overall engagement in postgraduate online learning environments.

This study also found that prior experience with online learning significantly predicts engagement in asynchronous online discussions among postgraduate students. Previous studies have indicated that while experience generally increases technology utilization (Thompson et al., 1994), its influence can be both direct and indirect, moderating the relationship between attitudes and usage. Prior knowledge is often cited as a key factor in successful technology use, particularly among older adults (O'Brien et al., 2012). For instance, as students become more familiar with online courses, they often take on more responsibility for their own learning (Richardson & Newby, 2006). Hence, the effect of previous online experience on different aspects of student engagement seems to be somewhat limited, with only social presence and emotional engagement showing minor variations based on past online course experiences (Duha et al., 2022). Generally, postgraduate students appreciate asynchronous online discussions as a valuable learning tool, seeing them as welcoming spaces for collaboration and knowledge sharing (Bassett, 2011). To boost engagement, it's suggested to create less structured forums with smaller groups (Belle Louis Jinot, 2020). In summary, while prior online learning experience can influence student engagement, other elements like course design, facilitation, and student perceptions also play a crucial role in how effective asynchronous online discussions can be.

Furthermore, we found that self-motivation significantly predicts engagement in asynchronous online discussions among postgraduate students. Research by Vol et al. (2011) and Qiang Yang (2014) shows a strong link between students' motivation and their participation in these discussions, with intrinsic motivation and perceived value staying at moderate to high levels throughout their courses. Nelson et al. (2019) found that graduate students tend to prefer having choices in discussion topics, which boosts their intrinsic motivation and participation. Additionally, external factors like job status and life responsibilities can influence students' motivation to take part in online discussions (Nelson et al., 2019). Fatima Afzal & Crawford (2022) highlighted that, self-motivated students are more likely to engage with their peers in online project management courses, and that this engagement is closely tied to their performance. These insights underscore the need to nurture self-motivation and create learner-centered environments to improve student engagement and performance in online learning settings.

Finally, our study found that the type of postgraduate programme really influences how students engage in asynchronous online discussions. Interestingly, PhD students are more active in asynchronous online discussions compared to their peers in other programmes. While there has not been specific research directly comparing engagement levels in asynchronous discussions among PGD, Master's, and PhD

students, existing studies indicate that PhD students generally interact more with online resources than those in Master's and postgraduate diploma programs. For instance, during the COVID-19 pandemic, PhD students made more use of e-learning platforms to connect with their peers and professors, surpassing those in other postgraduate programmes (Agrifoglio et al., 2022). Moreover, a previous study pointed out that PhD candidates often demonstrate greater engagement with online resources than Master's students (Mello, 2016). These reports lend credence to the finding of this study.

Conclusion

The findings from this study reveal that factors like technological self-efficacy, previous online learning experiences, and self-motivation play a crucial role in how engaged postgraduate students are in asynchronous online discussions. Interestingly, the results show that PhD students tend to be more engaged than their counterparts in Master's and Postgraduate Diploma programs. By weaving together theories of self-efficacy, motivation, and online learning, this research sheds light on what really drives meaningful participation in these online settings. These insights highlight the need to boost digital confidence, draw on past experiences, and foster intrinsic motivation to enhance student engagement and academic success in postgraduate online learning.

Recommendations

1. Universities should prioritize the development of students' technological self-efficacy through targeted training and ongoing support, helping them navigate online learning platforms with confidence.
2. Online course designers ought to develop flexible and learner-centered discussion forums that accommodate various levels of prior experience and encourage voluntary, motivated participation.
3. Educators should adopt motivational strategies, such as providing choices in discussion topics and setting clear goals, to sustain and deepen postgraduate students' engagement.
4. Institutions need to recognize differences across postgraduate programs and address the unique needs and learning preferences of PhD candidates when designing engagement strategies.
5. Further research should explore the longitudinal impacts of these predictors and consider cross-institutional studies to validate findings and refine engagement interventions in asynchronous learning contexts.

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