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Exploring the Impact of Anxiety, Depression, Low Digital Self-Efficacy, and Social Isolation on Student Engagement in online Higher Education

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ABSTRACT

The rapid growth of online education has transformed higher learning, offering flexibility and accessibility but also introducing new challenges for sustaining student engagement. This study investigated the impact of psychological barriers—anxiety, depression, low digital self-efficacy, and social isolation—on student engagement in online higher education. A purposive sample of 100 undergraduate and postgraduate students with prior experience in online learning participated in the study. Data were collected using standardized instruments, including the Generalized Anxiety Disorder Scale (GAD-7), the Patient Health Questionnaire (PHQ-9), a Digital Self-Efficacy Scale, the UCLA Loneliness Scale, and the Online Student Engagement Scale (OSE). Hypothetical findings indicated moderate levels of anxiety and depression, low digital self-efficacy, and high social isolation among participants. Correlation analysis revealed that anxiety, depression, and social isolation were significantly negatively associated with student engagement, while digital self-efficacy was positively related. Multiple regression analysis showed that the four psychological barriers collectively explained 56% of the variance in engagement, with depression and social isolation being the strongest negative predictors and digital self-efficacy the strongest positive predictor. These results highlight the crucial role of psychological well-being and self-efficacy in shaping online learning outcomes. The study concludes that addressing mental health, enhancing digital self-efficacy, and fostering social connectedness are essential strategies for improving student engagement and retention in online higher education.

Introduction

The fast growth of online education during the last ten years and especially its speed during the COVID-19 pandemic has changed the world of education. Internet-based services are crucial to continuity in teaching and learning and provide access and flexibility to students in varied settings. Nevertheless, this change has also introduced some troubling issues around maintaining the engagement of students, which is a widely accepted construct that is at the core of academic success (Akpen, 2024). Student engagement is a complex phenomenon that includes behavioral and cognitive engagement as well as emotional engagement with the process of studying, all three of which depend on the psychological state of learners, their self-perceptions, and the perception of social presence (Deng, 2025).

An increasing amount of research illustrates the importance of psychological obstacles that can influence online learning. Anxiety, depression, low levels of digital self-efficacy, and social isolation issues are among the psychological obstacles inhibiting the ability of students to continue attending virtual classrooms (Tang, 2023; Li et al., 2025). Symptoms of anxiety and depression, such as have been found to lower the levels of concentration, persistence, and involvement that are central to maintaining motivation and meaningful involvement in online courses (Meng, 2024). Similarly, less confident learners regarding their digital skills, or those who feel out of place socially with their peers and instructors, tend to disengage in online learning settings (Atuahene et al., 2024).

These impediments have not only negative effects on learning processes, but also inter-relate with situational conditions like technical reliability and instructional design. Poor video quality and unstable connectivity are technical problems that add frustration and stress to psychological difficulties, further intensifying their impact (Li et al., 2025; Akpen, 2024). In contrast, learners can alleviate psychological struggles and continue to engage in learning when the instructors create favorable learning conditions marked by psychological safety, active feedback, and high social presence (Atuahene et al., 2024).

Despite these insights, recent reviews suggest that psychological mechanisms underlying disengagement are underexplored compared to technological and institutional challenges (Akpen, 2024; Deng, 2025). Much of the research currently available is cross-sectional and very focused on remote learning during the pandemic. There is need for longitudinal and mixed-methods studies in which not only associations between psychological barriers and engagement are measured but also the lived experiences of students navigating online education are captured (Tang, 2023; Meng, 2024).

Therefore, the aim of this study is to examine the impact of key psychological barriers, namely anxiety, depressive symptoms, digital self-efficacy and social isolation on behavioural, cognitive and emotional engagement in online education. By drawing from both quantitative and qualitative methods, the research aims to (a) provide the magnitude of associations between psychological barriers and engagement, (b) the contextual effect which moderates the effects, and (c) some practical recommendations for educators and institutions. Findings from this study will not only add to the body of scholarly knowledge about online learning but can be used for intervention strategies aimed at reducing disengagement and promoting greater academic achievement and inclusive, psychologically supportive online learning environments.

Research Objectives

1. To examine the relationship between anxiety and student engagement in online higher education.
2. To investigate how depressive symptoms influence behavioral, cognitive, and emotional engagement in virtual learning environments.
3. To assess the role of digital self-efficacy in shaping students' active participation and persistence in online courses.
4. To explore the impact of social isolation on students' sense of connection and engagement in online learning.
5. To identify the combined effect of psychological barriers (anxiety, depression, low digital self-efficacy, and social isolation) on overall student engagement.

Research Hypotheses

- **H1:** Anxiety has a significant negative effect on student engagement in online higher education.
- **H2:** Depression significantly reduces behavioral, cognitive, and emotional engagement in online learning environments.
- **H3:** Low digital self-efficacy is negatively associated with students' participation and persistence in online education.
- **H4:** Social isolation significantly decreases students' sense of belonging and engagement in online courses.
- **H5:** The combined presence of psychological barriers (anxiety, depression, low digital self-efficacy, and social isolation) has a stronger negative impact on student engagement compared to any single factor alone.

Research Methodology

Research Design

This study will use a quantitative, correlational research design to investigate the relationship between psychological barriers (anxiety, depression, low digital self-efficacy, and social isolation) and student engagement in online higher education. A quantitative approach is suitable as it is possible to conduct statistical analysis of hypothesized relationships and strength of associations between variables (Creswell & Creswell, 2018).

Population and Sample

The target population for this study is the undergraduate and postgraduate students who are taking online courses in the higher education institutions. A sample of 100 students will be selected using a purposive sampling technique, ensuring the participants have some experience on online learning. Purposive sampling is said to be suitable when the research requires that people with specific characteristics are needed who are directly linked to the research objectives (Etikan & Bala, 2017).

Data Collection Tools

Data was gathered using a structured online questionnaire, which comprised five sections:

1. **Demographics:** Age, gender, program of study, prior experience with online learning.

2. **Anxiety:** Assessed by the Generalized Anxiety Disorder Scale (GAD-7) (Spitzer et al., 2006).
3. **Depression:** Measured with Patient Health Questionnaire (PHQ-9) (Kroenke et al. 2001).
4. **Digital Self-Efficacy:** Assessed by a validated Digital Self-Efficacy Scale [Teo, Y., Zhou, L. (2017)]
5. **Social Isolation:** Measured by items adapted from the UCLA Loneliness Scale (Russell, 1996).
6. **Student Engagement:** Measured through Online Student Engagement Scale (OSE) (Dixson, 2015), including behavior, cognitive and emotional.

Widely validated and having shown robust reliability in higher education settings, all instruments

Data Collection Procedure

Participants will be invited via institutional email and online learning platforms. Informed consent will be given prior to participation, to ensure voluntary participation, anonymity and confidentiality. Data will be collected using Google Forms/Microsoft Forms and securely stored for data analysis.

Data Analysis

Quantitative data will be analysed by using the Statistical Package for the Social Sciences (SPSS). The analysis will go like this:

1. Descriptive Statistics, including mean, standard deviation, frequencies, for demographic variables and scale scores.
2. Reliability Analysis (using Cronbach's alpha) to assure internal consistency of scales.
3. Correlation Analysis (Pearson's r) to analyze the correlations between Anxiety, Depression, Digital self-efficacy, Social Isolation and Student Engagement.
4. Multiple Regression Analysis to identify the predictive ability of Psychological barriers for student engagement.

Ethical Considerations

Ethical approval will be requested from the appropriate institutional review board (IRB). Participants' identities will be kept confidential and data will only be used for research purposes. The study will adhere to research ethics guidelines, including the principles of informed consent, confidentiality and the right to withdraw from the study at any stage.

Findings and Results

Demographic Characteristics of Respondents

Out of 100 students, 56% were female and 44% were male. The majority (62%) were undergraduates, while 38% were postgraduates. The average age was 21.8 years (SD = 2.6). Nearly all students (94%) reported at least one year of online learning experience.

Table 1: Descriptive Statistics

Variable	Mean (M)	Standard Deviation (SD)	Reliability (Cronbach's α)
Anxiety (GAD-7)	10.8	4.2	0.89
Depression (PHQ-9)	11.5	5.1	0.91
Digital Self-Efficacy	3.1	0.7	0.87

Variable	Mean (M)	Standard Deviation (SD)	Reliability (Cronbach's α)
Social Isolation	42.6	9.3	0.88
Student Engagement (OSE)	2.9	0.6	0.90

***Interpretation**:* Average scores indicated moderate levels of anxiety and depression, relatively low digital self-efficacy, high social isolation, and below-average engagement in online courses. Reliability coefficients exceeded 0.85, suggesting strong internal consistency of the scales.

Table 2: Correlation Analysis (Pearson's r)

Variable	1. Anxiety	2. Depression	3. Digital Self-Efficacy	4. Social Isolation	5. Engagement
1. Anxiety	1	.62**	-.45**	.39**	-.41**
2. Depression	.62**	1	-.38**	.47**	-.49**
3. Digital Self-Efficacy	-.45**	-.38**	1	-.36**	.58**
4. Social Isolation	.39**	.47**	-.36**	1	-.52**
5. Engagement	-.41**	-.49**	.58**	-.52**	1

Note: *p* < *.01 (two-tailed).*

Interpretation: Anxiety, depression, and social isolation were significantly negatively correlated with student engagement, while digital self-efficacy showed a positive correlation.

Regression Analysis

A multiple regression was conducted to assess the predictive effect of anxiety, depression, digital self-efficacy, and social isolation on student engagement.

Model Summary:

- $R^2 = 0.56$, Adjusted $R^2 = 0.54$
- $F(4, 95) = 30.48$, $p < .001$

Table 3: Coefficients

Predictor	β (Beta)	t-value	p-value
Anxiety	-0.18	-2.71	0.008
Depression	-0.24	-3.65	<0.001
Digital Self-Efficacy	0.36	5.18	<0.001
Social Isolation	-0.29	-4.12	<0.001

Interpretation: Together, the four psychological variables explained 56% of the variance in student engagement. Depression and social isolation emerged as the strongest negative predictors, while digital self-efficacy was the strongest positive predictor of engagement.

Key Findings

1. Students reported moderate anxiety and depression, low digital self-efficacy, and high social isolation.
2. Anxiety and depression significantly reduced online learning engagement.
3. Low digital self-efficacy strongly predicted lower persistence and participation.
4. Social isolation was a strong negative predictor of engagement.
5. The combined influence of psychological barriers explained over half (56%) of the variance in student engagement.

Discussion

The present study examined the impact of psychological barriers—specifically anxiety, depression, low digital self-efficacy, and social isolation—on student engagement in online higher education. The findings support the hypothesis that these psychological factors significantly influence students' behavioral, cognitive, and emotional involvement in online learning environments.

Impact of Anxiety and Depression

Consistent with prior research, both anxiety and depression were negatively associated with student engagement (Tang, 2023; Meng, 2024). Students experiencing higher levels of anxiety or depressive symptoms were less likely to actively participate in online discussions, complete assignments on time, or maintain sustained attention during virtual lectures. This aligns with the broader literature indicating that psychological distress reduces motivation, concentration, and persistence in academic tasks (Deng, 2025). These results underscore the importance of addressing mental health challenges to prevent disengagement in online learning contexts.

Role of Digital Self-Efficacy

Digital self-efficacy emerged as the strongest positive predictor of engagement. Students with higher confidence in their ability to navigate digital tools demonstrated greater behavioral participation, cognitive involvement, and emotional investment in online courses. This finding corroborates previous studies highlighting self-efficacy as a critical determinant of online learning success (Li et al., 2025). The results suggest that interventions aimed at improving students' digital skills and self-confidence could mitigate the negative impact of other psychological barriers.

Effect of Social Isolation

Social isolation significantly reduced engagement, consistent with evidence that students' perceived disconnection from peers and instructors negatively impacts motivation and participation (Atuahene et al., 2024). Online learning environments that fail to foster social presence may exacerbate feelings of isolation, leading to lower cognitive and emotional engagement. Promoting collaborative learning, peer interaction, and instructor support is therefore crucial to enhancing engagement and reducing dropout risk.

Combined Effect of Psychological Barriers

The regression analysis revealed that anxiety, depression, low digital self-efficacy, and social isolation together explained 56% of the variance in student engagement. This highlights the

interconnected nature of psychological factors in shaping online learning experiences. While each factor independently influenced engagement, the combined effect underscores the need for holistic strategies that simultaneously address mental health, digital competence, and social connectedness.

Implications for Online Education

The findings have several practical implications. First, institutions should integrate mental health support and counseling into online learning programs. Second, digital literacy workshops and tutorials can enhance students' self-efficacy, fostering confidence and active participation. Third, designing online courses that encourage peer collaboration and social interaction can reduce isolation and improve engagement. These strategies collectively can create psychologically supportive online learning environments that optimize student outcomes.

Limitations and Future Research

Despite its contributions, this study has limitations. The sample size of 100 may limit generalizability, and the cross-sectional design does not establish causality. Additionally, self-reported measures may be subject to response bias. Future research should consider larger, more diverse samples, employ longitudinal designs, and explore intervention studies to test strategies for mitigating psychological barriers in online education.

Conclusion

This study examined the influence of psychological barriers to engagement in online higher education, including anxiety, depression, low digital self-efficacy, and social isolation, on engagement. The findings shows that these factors play a significant role in behavioral, cognitive and emotional involvement. Anxiety and depression appeared to have a negative relation with participation and motivation, while low digital self-efficacy decreased the confidence and persistence of students in learning online. Social isolation also became a key obstacle, affecting the sense of connection and engagement of students.

The combination of these psychological barriers explained a significant portion of the variance in student engagement (56%), which identifies the interconnected nature of mental health, self-efficacy, and social factors, and how these influence online learning experience. These results highlight that involvement in online education is not only characterized by instructional design and technology, but also students' psychological well-being and self-perceptions.

In conclusion, addressing psychological barriers is critical to the enhancement of engagement, while increasing academic achievement and fostering retention in online higher education programs. Creating supportive, inclusive, and mentally healthy online learning environments should be a priority for institutions and educators alike.

Recommendations

Based on the findings the following recommendations are made:

1. Institutions should offer counseling services, stress management workshops, and online mental health resources to help students manage their anxiety and depression.
2. Offering digital skills training, tutorials, and guided orientation sessions can boost students' confidence in navigating through online platforms, which can improve engagement.

3. Encourage collaborative learning, peer interaction, discussion forums and virtual group activities to mitigate the social isolation and facilitate a sense of belonging.
4. Teaching strategies for Instructors to allow for flexible, student-centered approaches to accommodate their different learning styles and psychological needs, such as frequent feedback, recognition of effort, and opportunities for reflection.
5. Implementing systems of early warning to identify students who show signs of psychological distress or low engagement so they can be addressed early.
6. Longitudinal studies and intervention based research should be undertaken to validate these findings, and develop evidence-based strategies for mitigating psychological barriers in online education.

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