



INTERNET ADDICTION AMONG FUTURE TEACHERS: A CROSS-SECTIONAL STUDY OF TEACHER TRAINEES IN NORTHERN MALAYSIA

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Abstract:

Digital religion has become an increasingly important field of research as social media transforms the ways Islamic knowledge is communicated, interpreted, and practiced. Although studies on digital religion and Islamic da'wah have expanded rapidly, the existing literature remains fragmented across different contexts, platforms, and disciplinary perspectives, resulting in limited understanding of the broader patterns and emerging research trends. Therefore, this study systematically reviews the literature to synthesise current evidence on digital religion and Islamic da'wah in social media. A Systematic Literature Review (SLR) was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework. Advanced searches were performed in the Scopus and Web of Science databases using the keywords digital religion, social media, Islamic da'wah, digital Islam, and communication, covering publications from 2022 to 2026. Following a rigorous screening and eligibility process based on predefined inclusion and exclusion criteria, 25 primary studies were selected for qualitative synthesis. The findings were organised into three overarching themes: (1) Digital Religious Communication and Da'wah Practices, (2) Digital Religion, Religious Authority and Online Religious Engagement, and (3) Digital Religion, Social Values and Societal Transformation. The review demonstrates that social media has evolved beyond a communication medium into a dynamic socio-religious ecosystem that reshapes religious communication, reconfigures religious authority, enhances online religious engagement, and influences social values, religious identity,

and societal transformation. This study provides a comprehensive synthesis of the contemporary digital religion literature and offers valuable insights for researchers, religious institutions, and policymakers while identifying directions for future research on Islamic da'wah and digitally mediated religious communication.

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Keyword:

CIAS-BM; Digital Well-Being; Internet Addiction; Pre-Service Teachers; Teacher Education; Malaysia



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Introduction

The problem of Internet use among pre-service teachers has become a significant concern for education and public health, due to its potential impact on academic performance, professional preparedness, and responsible digital citizenship. The increasing availability of internet-connected gadgets has made internet access essential for education, communication, entertainment, and career advancement. However, if internet use is excessive, poorly managed and functionally damaging it may be considered as Internet Addiction (IA) or problematic internet use (Anderson et al., 2017; Griffiths, 2005; Young, 1998).

IA is typically characterized as the ongoing inability to regulate internet use with detrimental academic, social, psychological or health outcomes (Ho et al., 2014; Young, 1998). However, estimations of prevalence should be interpreted depending on the instrument and threshold utilized as there is no single, globally acknowledged diagnostic standard in the field. The developed instrument, such as the Chen Internet Addiction Scale (CIAS) has made possible the screening of the symptoms connected to addiction in a systematic way in adolescents and young adults (Chen et al., 2003).

Recent syntheses highlight the magnitude of concern and also show significant methodological diversity. The pooled prevalence of IA in the general population was 14.22% (Meng et al. 2022), while the pooled prevalence of IA in university students was 41.84% (Liu et al. 2025). Estimates are not directly comparable because of differences in populations, tools, cut-off points and durations of investigation. However, the data suggests that problematic internet use merits targeted research in higher education contexts.

Malaysian studies have well documented problematic internet use among university students but information from teacher education institutes is very scarce. Teacher trainees are in a

unique situation as students with rigorous academic and practical obligations and future teachers expected to exemplify balanced and ethical technology use. Excessive non-academic internet use and digital multitasking have been linked to worse academic performance and quality of life for students (Lau, 2017; Xu et al., 2020). Thus, there is a need for evidence, particularly to teacher trainees, to inform digital well-being programs that are in line with their educational and professional duties.

Although IA has been widely studied among university students, there is minimal evidence from the Malaysian teacher education institutions, although future teachers play a vital role in exemplifying safe digital behavior. Thus, the present study attempted to investigate the amount of IA among teacher trainees in five IPG campuses in the Northern Zone of Malaysia, both overall and per campus. An empirical baseline for preventive and supportive activities in teacher education was established using the CIAS-BM, a validated Malay language adaptation among Malaysian college students (Al-Ani et al., 2018).

Literature Review

This section analyzes the theoretical and empirical literature on IA, its conceptualisation, measurement and prevalence amongst students in higher education, with specific attention to teacher-training situations and the Malaysian educational context.

Conceptualisation And Theoretical Frameworks Of Internet Addiction

IA's conceptual basis is grounded in behavioural addiction paradigms. Young (1998) has updated the criteria for compulsive gambling to characterize maladaptive use of the internet. Griffiths (2005) has suggested six components that are often found in addictive behaviours: salience, mood modification, tolerance, withdrawal, conflict and relapse. These frameworks have made an impact, while IA remains an operational, measurement-dependent construct, and not a universally accepted clinical diagnosis.

Chen et al. (2003) developed the CIAS to measure the symptoms of Internet-use associated addiction in adolescents and young adults. The tool contains measures of obsessive usage, withdrawal, tolerance, issues with time management and health or interpersonal effects. The Bahasa Melayu version, CIAS-BM, revealed good psychometric qualities in a sample of college students in Malaysia with an internal consistency coefficient of .89 (Al-Ani et al., 2018). Therefore, the scale is useful for screening symptom severity in the current educational environment, but its categories should not be taken as a substitute for clinical diagnosis.

Prevalence Of Internet Addiction Among University Students

Systematic reviews have found large heterogeneity in IA prevalence in university populations. Previous global estimates ranged from under 1% to around 27%, mainly due to differing classification tools and thresholds utilized in the investigations (Kuss et al., 2014). Cheng and Li (2014) estimated a global incidence of roughly 6% in varied populations, however, the more recent meta-analysis of university students by Liu et al. (2025) gave a substantially greater pooled estimate. These disparities emphasize the necessity to compare findings with caution, and to identify the criteria for measurement utilized in each study.

Studies from Malaysia also give a wide range of estimations. Rosliza et al. (2018) found that 7.8% of undergraduates were addicted and 56.5% were problematic users. Those including medical students found 6.7% (Ansari et al., 2022), 22.8% (Radeef & Faisal, 2018) and 36.9% (Ching et al., 2017) proportions of addiction category. Similarly, Haque et al. (2016) observed a large proportion of students in at least mild or moderate categories. The percentages from these studies are not direct evidence of change over time because different tools, demographics, and criteria were used; rather, they are provided as contextual comparisons.

Recent research from Malaysia underlines the relevance of problematic Internet use to the higher education setting. Suhaili Ariffin et al. (2023) reported moderate and severe categories in students of a public university while Muhamad et al. (2026) in research of 7,278 students from 20 public institutions found 38.6% met the study requirement for IA. However, teacher trainees have different academic, practical and professional-modelling obligations, therefore findings at the national and university level cannot be presumed to reflect the situation of teacher trainees, which is a distinct educational context.

Internet Addiction In Teacher-Training Contexts

Particularly, there is still comparably sparse research on teacher trainees. In Malaysia, Yassin et al. (2021) found that IA among IPG students was normally at a moderate level but needed to be managed proactively so that it did not interfere with daily functioning. Internationally, pre-service teachers' IA was associated with psychological characteristics such as loneliness, depression, and life satisfaction (Essel et al., 2023). Taken together, these data imply that teacher trainees deserve specialized attention and are not interchangeable with the university population generally.

The professional ramifications go beyond the students' current academic experience. Increasing inability to moderate internet use may impact focus, time management, sleep, mental health, and preparedness to undertake practicum obligations. It can also impact on future teachers' ability to demonstrate balanced and appropriate digital activities. In a Turkish teacher-training sample, an inverse association was identified between digital well-being and IA (Şan et al., 2025), suggesting that purposeful and self-regulated technology use could be a significant preventive orientation for teacher education courses.

Malaysia's Digital Education Policy emphasizes the necessity of producing digitally capable educators (Ministry of Education Malaysia, 2023). But digital competency must be supported with digital well-being, ethical use and self-regulation. Thus, determining the level of IA among teacher trainees is relevant to both supporting students and preparing educators who can model responsible digital citizenship in classrooms.

Methodology

The study design was a quantitative cross-sectional survey. The target population was 5,174 teacher trainees from five IPG campuses in the Northern Zone of Malaysia (Campuses A-E). Stratified random sampling was employed at each campus to ensure representation from each institutional stratum. To allow for sufficient representation of each campus, the Krejcie and Morgan (1970) table was applied independently to the five campus populations which totaled a minimum of 1378 respondents. Adding an allowance of 20% for non-response raised the aim to 1,654. The final analytic sample consisted of 1,950 valid replies.

Internet addiction was assessed using the validated 26-item CIAS-BM (Al-Ani et al., 2018) with an internal consistency coefficient of .89 reported in its Malaysian validation study. Total scores were grouped into the recommended thresholds for CIAS screening and diagnosis: normal use (26-57), at-risk use (58-63), and internet-addicted category (64-104) (Ko et al., 2005). The frequencies, percentages, cumulative percentages and mean scores were determined using IBM SPSS Statistics Version 29. As the present paper is concerned with the descriptive purpose, no inference was made from the distributions on campus about causality or determinants. Ethical approval was obtained, and all subjects provided written informed consent.

Results

Sample Characteristics

There were 1,950 teacher trainees involved in the five IPG campuses. The sample included 451 males (23.1%) and 1499 females (76.9%). Campus C had the most percentage of responders (n = 495; 25.4%) followed by Campus D (n = 465; 23.8%), Campus E (n = 367; 18.8%), Campus B (n = 337; 17.3%) and Campus A (n = 286; 14.7%). The resulting sample was well aligned with the matching population distribution across campuses. The highest absolute divergence was 2.9 percentage points, for Campus A.

Sample Distribution by Campus

Campus	Male n (%)	Female n (%)	Total Population n (%)	Actual Respondents n (%)
Campus A	226 (14.3)	382 (10.6)	608 (11.8)	286 (14.7)
Campus B	300 (19.0)	718 (20.0)	1,018 (19.7)	337 (17.3)
Campus C	375 (23.7)	1,041 (29.0)	1,416 (27.4)	495 (25.4)
Campus D	356 (22.5)	746 (20.8)	1,102 (21.3)	465 (23.8)
Campus E	325 (20.5)	705 (19.6)	1,030 (19.9)	367 (18.8)
Total	1,582 (100.0)	3,592 (100.0)	5,174 (100.0)	1,950 (100.0)

Level Of Internet Addiction

Table 2 shows the distribution of the 1,950 teacher trainees by CIAS-BM category. Most of the responders were in the normal-use group (63.3%, n = 1,235). The remaining respondents comprised 13.0% (n = 254) in the at-risk category and 23.6% (n = 461) who met the CIAS-BM criterion for the internet-addicted category.

In total, 36.6% of respondents were classified as either at-risk or internet addicted. Most of the sample was normal users, although over one third of the sample reported CIAS-BM scores indicative of some level of problematic internet use. This is the main descriptive finding of the study and offers the basis for preventive screening and digital wellbeing support in IPG settings.

Table 2: Distribution of Internet Addiction Levels Among IPG Northern Zone Teacher Trainees

Internet Addiction Level	Frequency (n)	Percentage (%)	Cumulative Percentage (%)
Normal Internet Use	1,235	63.3	63.3
At-Risk Internet Use	254	13.0	76.4
Internet Addicted	461	23.6	100.0
Total	1,950	100.0	100.0

Note. Classification based on established CIAS thresholds: Normal = 26-57; At-Risk = 58-63; Internet Addicted = 64-104 (Ko et al., 2005).

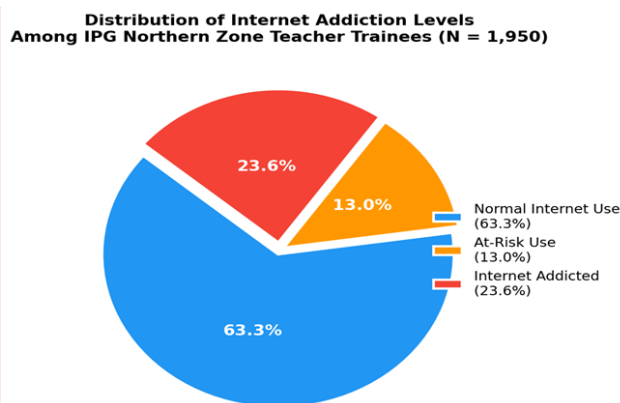


Figure 1: Distribution of Internet Addiction Levels Among IPG Northern Zone Teacher Trainees (N = 1,950)

Note. Derived from CIAS-BM total scores. Data reconstructed from primary research findings

Internet Addiction Level By Campus

Table 3 disaggregates the CIAS-BM classifications by campus. The proportion meeting the internet-addicted threshold ranged from 18.9% in Campus A to 26.2% in Campus E. The at-risk category ranged from 7.6% in Campus E to 15.4% in Campus A. When the at-risk and internet-addicted categories were considered together, problematic-use classifications were observed in every campus.

The descriptive pattern therefore suggests that problematic internet use was not confined to a single campus. However, the present analysis did not test institutional, geographical, cultural, or individual-level determinants; consequently, the observed campus distributions should not be used to attribute the pattern to any particular causal factor.

Table 3: Distribution of Internet Addiction Levels by Campus

Campus	Normal Internet Use	At-Risk Use	Internet Addicted	Total
Campus A	188 (65.7%)	44 (15.4%)	54 (18.9%)	286
Campus B	215 (63.8%)	44 (13.1%)	78 (23.2%)	337
Campus C	305 (61.6%)	67 (13.5%)	123 (24.8%)	495

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Campus D	284 (61.1%)	71 (15.3%)	110 (23.7%)	465
Campus E	243 (66.2%)	28 (7.6%)	96 (26.2%)	367
Total	1,235 (63.3%)	254 (13.0%)	461 (23.6%)	1,950

Note. Percentages in parentheses represent the proportion within each campus

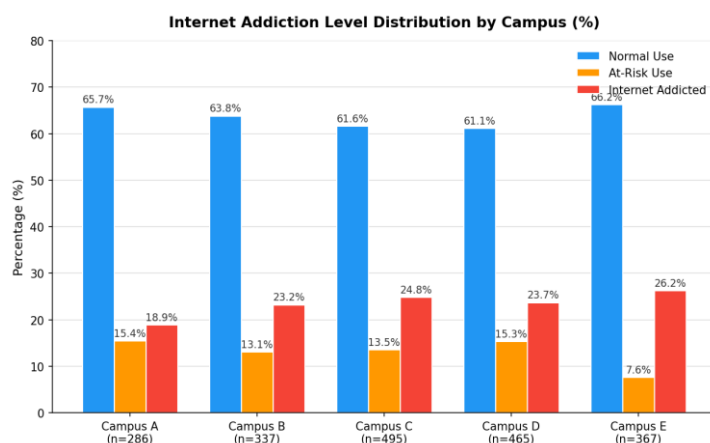


Figure 2: Internet Addiction Level Distribution by Campus (%)

Note. Percentage values reflect the proportion within each campus. Data reconstructed from primary research findings.

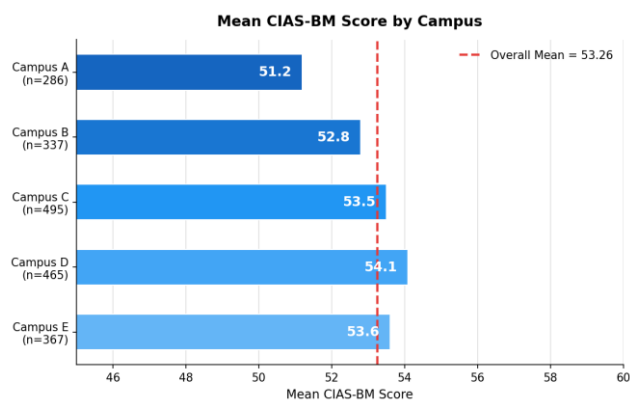


Figure 3: Mean CIAS-BM Score by Campus

Note. The dashed line represents the overall mean ($M = 53.26$). Data reconstructed from primary research findings

Discussion

This study found that 23.6% of teacher trainees met the CIAS-BM threshold for the internet-addicted category and a further 13.0% were classified as at risk. Accordingly, 36.6% of the samples recorded problematic-use classifications. This proportion is higher than the addiction-category estimate reported by Rosliza et al. (2018), but it is close to 38.6% reported in the

recent multi-university study by Muhamad et al. (2026). These comparisons should be interpreted cautiously because the studies differed in sampling frames, instruments, and classification criteria.

The results indicate that addiction-related internet-use symptoms are widespread in a large sample of teacher-trainees, but do not identify which CIAS dimensions or psychological mechanisms account for the classifications. The study consequently supports the usefulness of screening problematic internet usage in teacher education, without claiming validation of particular theoretical components like tolerance, withdrawal or obsessive use. Such ideas would need to be directly tested with dimension-level and explanatory analysis.

The categorization of problematic use across the five campuses are generally similar to the increasing worldwide literature on teacher trainees. For example, Şan et al. (2025) observed worrying IA-related patterns among pre-service teachers and reported that higher digital well-being was related to decreased IA. But the available cross-sectional descriptive statistics do not show whether the campus pattern is influenced by human traits, institutional settings, or more general digital environmental factors. The defensible reading is that the issue was seen across the five-campus sample and not confined to one institutional environment.

There are important practical implications for teacher education. Teacher trainees need to be able to use digital resources effectively and to manage their own use and model appropriate behaviour for learners. IPG institutions may thus consider tiered responses that include universal digital well-being education, self-monitoring and time-management activities, early screening for students who reported functional impairment, and referral pathways for students requiring counselling or mental health support. These measures have to be positioned as preventative and supportive as opposed to clinical diagnosis on the basis of a self-report score.

Such initiatives would complement the Digital Education Policy to strike a balance between digital competency and ethical, meaningful and self-regulated use of technology. Digital well-being and IA are found to be inversely connected among teacher trainees (Şan et al., 2025), which is a relevant basis for incorporating digital self-regulation, reflective technology-use practices, peer support, and accessible student-support services into teacher education programmes. The present findings identify the extent of need and intervention studies are necessary to find out the best strategies in Malaysian IPG environment.

Limitations And Future Research

There are several limits that influence interpretation. First, the cross-sectional design does not allow causal or temporal conclusions. Second, the classifications of the CIAS-BM are based on self-report screening and should not be considered as clinical diagnosis. Thirdly, the study was limited to five IPG campuses in the Northern Zone, so, caution is needed in generalising the findings to all Malaysian teacher trainees. Fourth, this article provides descriptive results and does not address psychosocial, academic or institutional correlates. Future study should include longitudinal and mixed-method design, test psychometric features of the current sample, explore functional impairment and associated variables and assess targeted digital well-being therapies.

Conclusion

The current study constitutes one of the broadest empirical evaluations of IA categories among Malaysian teacher trainees. Of the 1,950 respondents, 63.3% were typical users, 13.0% were at risk and 23.6% were in the internet-addicted category according to the CIAS-BM criteria. 36.6% of students had scores indicative of problematic internet use. The occurrence of these classifications at all five campuses suggests that the worry is significant across the sampled teacher-education environment, however the study does not show the reasons for the pattern.

The study not only provides a baseline of prevalence but also indicates the necessity to frame digital well-being alongside digital competence in teacher education. Preventive education, self-regulation training, early support and responsible technology-use efforts that enable future teachers to regulate their own digital behaviour and model healthy digital citizenship must be part of the considerations of IPG institutions and the Ministry of Education Malaysia. More explanatory and intervention research is needed before conclusions can be formed on determinants or programme effectiveness.

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