

Digital Learning Fatigue and Academic Motivation in Students at Ahmad Dahlan University Yogyakarta

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ABSTRACT

Digital learning environments have become an integral part of higher education; however, prolonged exposure to online platforms and digital devices increases the risk of digital learning fatigue among university students. This study investigates the effects of digital learning fatigue on academic motivation and learning engagement among undergraduate students at Ahmad Dahlan University, Yogyakarta. Employing a quantitative explanatory design, data were collected from 300 students and analyzed using Structural Equation Modeling–Partial Least Squares (SEM-PLS). Three latent variables were examined: Digital Learning Fatigue (DLF), Academic Motivation (AM), and Learning Engagement (LE). The measurement model demonstrated strong convergent and discriminant validity, with high composite reliability across all constructs. Structural model analysis revealed that digital learning fatigue had a significant negative effect on academic motivation ($\beta = -0.41, p < 0.001$), while academic motivation had a strong positive effect on learning engagement ($\beta = 0.58, p < 0.001$). The direct effect of digital learning fatigue on learning engagement was negative but not statistically significant ($\beta = -0.12, p = 0.060$). Mediation analysis confirmed a significant indirect effect of digital learning fatigue on learning engagement through academic motivation ($\beta = -0.24, p < 0.001$), indicating full mediation. These findings suggest that students' learning engagement declines not directly due to digital fatigue, but because fatigue undermines their academic motivation. The study highlights the central role of motivational processes in sustaining student engagement within digital learning contexts and offers implications for designing supportive and sustainable online learning environments in higher education.

Keywords: Digital learning fatigue; academic motivation; learning engagement; higher education

ABSTRAK

Lingkungan pembelajaran digital telah menjadi bagian integral dari pendidikan tinggi; namun, paparan berkepanjangan terhadap platform daring dan perangkat digital berpotensi menimbulkan kelelahan pembelajaran digital pada mahasiswa. Penelitian ini bertujuan untuk menganalisis pengaruh kelelahan pembelajaran digital terhadap motivasi akademik dan keterlibatan belajar mahasiswa di Universitas Ahmad Dahlan Yogyakarta. Penelitian menggunakan pendekatan kuantitatif eksplanatori

dengan pengumpulan data dari 300 mahasiswa. Analisis data dilakukan menggunakan Structural Equation Modeling–Partial Least Squares (SEM-PLS). Tiga variabel laten yang dianalisis meliputi kelelahan pembelajaran digital, motivasi akademik, dan keterlibatan belajar. Hasil pengujian model pengukuran menunjukkan validitas konvergen dan diskriminan yang baik serta reliabilitas konstruk yang tinggi. Analisis model struktural menunjukkan bahwa kelelahan pembelajaran digital berpengaruh negatif dan signifikan terhadap motivasi akademik ($\beta = -0,41$; $p < 0,001$), sementara motivasi akademik berpengaruh positif dan signifikan terhadap keterlibatan belajar ($\beta = 0,58$; $p < 0,001$). Pengaruh langsung kelelahan pembelajaran digital terhadap keterlibatan belajar bersifat negatif namun tidak signifikan ($\beta = -0,12$; $p = 0,060$). Analisis mediasi menunjukkan adanya pengaruh tidak langsung yang signifikan melalui motivasi akademik ($\beta = -0,24$; $p < 0,001$), yang menandakan mediasi penuh. Temuan ini menunjukkan bahwa penurunan keterlibatan belajar mahasiswa tidak terjadi secara langsung akibat kelelahan digital, melainkan melalui melemahnya motivasi akademik. Penelitian ini menegaskan pentingnya peran motivasi dalam menjaga keterlibatan belajar mahasiswa pada konteks pembelajaran digital di pendidikan tinggi.

Kata-kata Kunci: Kelelahan belajar digital; motivasi akademik; keterlibatan belajar; pendidikan tinggi

1. INTRODUCTION

The rapid advancement of information and communication technology has fundamentally restructured the architecture of higher education, precipitating a global shift in how academic interactions and professional workflows are conceived. In the Indonesian context, this digital transformation is frequently extolled for its capacity to democratize learning, making education significantly more flexible, accessible, and innovative (Warsah & Uyun, 2019). Aligning with this modern framework, Universitas Ahmad Dahlan (UAD) Yogyakarta has aggressively integrated digital ecosystems into its pedagogy, utilizing Learning Management Systems (LMS) and various synchronous and asynchronous platforms to facilitate a borderless academic experience (Mohamed Hashim et al., 2022).

However, the trajectory of this digital integration was drastically accelerated by the COVID-19 pandemic, which shifted online learning from an optional utility to a mandatory survival strategy. This abrupt transition compelled students to adapt instantaneously to a high-intensity technological environment (Aswari, 2021), characterizing a new era of hyper dependence on electronic devices and virtual platforms (Al Masud et al., 2023). Yet, this prolonged digital saturation presents a critical pedagogical challenge: digital learning fatigue. Defined as a state of physical, emotional, and cognitive exhaustion resulting from continuous screen exposure (Al Mulhim, 2023), this phenomenon is increasingly recognized as a barrier that detrimentally impacts the quality of learning and the psychological well-being of students (Romero-Rodríguez et al., 2023).

However, a critical empirical gap persists within this emerging body of literature. Most existing studies have predominantly focused on the descriptive prevalence of digital fatigue, failing to adequately explicate the precise causal mechanisms through which this exhaustion degrades learning behavior. Specifically, it remains unclear whether the decline in student engagement is a direct physiological consequence of fatigue or if it is mediated by a deterioration in psychological drive. Furthermore, prior research has largely neglected this dynamic within the specific axiological context of Islamic higher education, leaving a practical blind spot regarding how digital stress intersects with the unique spiritual and academic motivations that characterize students in value-based institutions.

Furthermore, the dynamics of learning within Islamic Higher Education institutions (PTKI/PTM) face unique challenges in balancing scholarly tradition with digital acceleration. The transformation towards the Society 5.0 era demands that Islamic education reorient its curriculum not only to emphasize technological literacy but also to strengthen students' intellectual capacity and critical thinking to face massive information flows (Hermawati et al., 2024). This aligns with recent studies suggesting that while integrating Islamic values with modern approaches such as STEM, is crucial for maintaining educational relevance, the drastic transition in learning methods requires adaptive pedagogical strategies to prevent cognitive overload (Surianto & Umaimah, 2024). Consequently, understanding how students respond to these digital pressures becomes an absolute prerequisite for designing a sustainable learning ecosystem.

In online learning situations, students are faced with a busy academic routine, such as attending online lectures, reading digital materials, completing assignments via the LMS, and participating in virtual discussions (D Mobo, 2020). Intense screen-based activities cause students to experience significant mental stress. They also often experience boredom, loss of interest, and decreased motivation to learn (Idris et al., 2021). When education transitioned back to blended learning in the post-pandemic era, some students still experienced accumulated digital fatigue from their previous fully online learning experiences.

The institutional context of Universitas Ahmad Dahlan (UAD) introduces a distinct axiological dimension often absent in secular educational psychology. Unlike general higher education models that prioritize cognitive achievement, the Islamic educational framework at UAD conceptualizes learning as *Ibadah* (worship), a spiritual endeavor fundamentally driven by *Niat* (sincere intention) and *Adab* (etiquette). Consequently, within this study, 'Academic Motivation' is not operationalized merely as a drive for grades or careers, but as a dual-construct encompassing both intellectual ambition and spiritual obligation. This distinction is critical because uncontrolled digital learning poses a unique threat in this environment; it does not simply cause cognitive exhaustion but risks disrupting the 'spiritual equilibrium' required for maintaining

sincerity in learning (Masduki, 2016). While previous scholars have posited that spiritual resilience acts as a buffer to improve motivation (Warsah et al., 2024) and that students maintaining psychological stability demonstrate higher engagement (Imron et al., 2023), this study argues that chronic digital fatigue has the potential to penetrate this buffer. Thus, a holistic approach integrating cognitive, affective, and spiritual aspects is essential to explain why engagement falters (Masduki, 2015). In this view, Islamic values are positioned not just as a normative backdrop, but as an integral component of the motivational mechanism tested against digital pressures.

Academic motivation is widely recognized as a pivotal determinant of scholastic resilience and adaptive strategy deployment. High motivation fosters persistence and the ability to cope with academic stress (Mahdavi et al., 2023). In conventional frameworks, this construct acts as the primary engine for cognitive and emotional involvement (Oláh et al., 2023). However, the digital learning landscape has introduced a countervailing force; recent evidence suggests that the monotony of screen-based interaction and social isolation significantly degrades this motivational drive (Simaremare et al., 2025). The critical oversight in current literature is treating this decline merely as a loss of interest, whereas in Islamic pedagogy, it represents a deeper erosion of *spiritual intent*, a dimension where academic pursuit is inextricably linked to devotional orientation (Ardiansyah et al., 2022). Consequently, when digital fatigue escalates, it threatens to dismantle not only the student's cognitive ambition but also the spiritual foundation of their learning process.

Parallel to motivation, learning engagement is multidimensional, encompassing behavioral, emotional, and cognitive investments. Research consistently identifies motivation as a strong predictor influencing these engagement levels (Fredricks, 2023). Yet, within the axiological boundaries of Islamic education, engagement extends beyond mere participation or task completion; it requires the internalization of moral values and the sincere application of knowledge (Ramadhany & Anggraeni, 2022). Therefore, digital fatigue presents a more complex hazard in this context: it does not simply result in passivity but potentially severs the link between knowledge acquisition and character formation. This study posits that the disruption of engagement in Islamic universities is not a standalone phenomenon but a cascading effect of compromised motivation.

A comparative analysis of the state of the art reveals a distinct bifurcation in existing scholarship (Deep & Chen, 2025). On one spectrum, general secular studies have robustly established the negative correlations between digital fatigue, burnout, and performance, primarily utilizing cognitive load frameworks to explain efficiency deficits (Zheng & Xiao, 2024). Conversely, research within Islamic education has largely remained conceptual or normative, focusing on the theoretical importance of spiritual resilience without empirically testing its fragility under the specific pressures of digital stress (Warsah et al., 2024). Furthermore, limited empirical attempts in the Indonesian

context have mostly employed descriptive methods, neglecting to examine causal pathways or mediating mechanisms (Sujadi, 2021). This study addresses this lacuna by bridging the two domains: applying a rigorous causal model to empirically validate how digital fatigue disrupts the specific motivational architecture of students in an Islamic university.

In Indonesia, most research on digital learning burnout tends to use a descriptive approach and has not tested causal relationships involving mediating variables such as academic motivation (Sujadi, 2021). Furthermore, studies on digital burnout in the context of post-pandemic hybrid learning are still very limited, particularly at Islamic universities, which aim to shape students' character and morals.

Recent studies on Islamic education indicate that emotional and spiritual balance are important factors in learning. Students' spiritual resilience plays a crucial role in improving the quality of their learning motivation (Masduki, 2015). A holistic learning approach that integrates cognitive, emotional, and spiritual aspects has also been shown to increase student engagement in the learning process (Ardiansyah et al., 2022). This suggests that Islamic educational values can be a relevant framework for explaining how students respond to digital fatigue.

Based on this review, several research gaps need to be addressed. First, research on the relationship between digital learning fatigue, academic motivation, and learning engagement in the context of Islamic universities remains very limited. Second, studies using causal models based on Structural Equation Modeling (SEM) to examine direct and indirect relationships between variables are rare. Third, the integration of Islamic educational values in the study of digital fatigue has not been a primary focus of previous research. Fourth, the dynamics of post-pandemic hybrid learning have not been widely studied in the context of Islamic education.

The primary novelty of this study lies in its theoretical expansion of the Self-Determination Theory (SDT) by integrating Islamic axiological values as a core component of the motivational construct. Unlike previous research that predominantly treats digital fatigue as a direct physical barrier to behavior, this study contributes theoretically by validating a distinct explanatory mechanism: that digital fatigue degrades learning engagement, specifically by eroding the 'spiritual-academic' drive essential in Islamic education. By proving this mediation pathway, the research offers a new empirical framework where student engagement is understood not merely as a cognitive reaction to technology, but as a function of maintaining spiritual and psychological equilibrium. Practically, these findings provide a grounded basis for Islamic educational institutions to design digital learning strategies that are not only technologically adaptive but also spiritually sustainable.

2. METHOD

This study employed a quantitative explanatory approach with a cross-sectional survey design aimed at examining the structural relationships and mediating mechanisms between digital learning fatigue, academic motivation, and learning engagement among students at Ahmad Dahlan University, Yogyakarta. Data analysis was executed using Structural Equation Modeling based on Partial Least Squares (SEM-PLS) via SmartPLS 4.0 software to empirically validate the proposed mediation mechanism. This analytical framework was specifically selected for its capability to unravel the complex pathway by which Digital Learning Fatigue (DLF) suppresses Learning Engagement (LE) through the deterioration of Academic Motivation (MA). Furthermore, SEM-PLS is particularly advantageous for this study as it robustly handles the potential non-normality inherent in psychological distress data, such as high-intensity fatigue reports, while effectively estimating the predictive power of motivational constructs within the specific sample of Islamic university students.

Population and Sampling Strategy: The study was conducted at Universitas Ahmad Dahlan (UAD), Yogyakarta, selected as a strategic research site representing a prominent Islamic higher education institution under the Muhammadiyah organization. This locus was chosen because UAD implements a hybrid learning ecosystem that uniquely intersects with Islamic value-based education, providing a specific context to examine how digital pressure interacts with spiritual-academic obligations, where service quality is viewed as a form of worship or *ibadah*. The population comprised active undergraduate students participating in hybrid learning. A purposive sampling technique was employed to select 300 respondents based on strict inclusion criteria: (1) active students in at least their first semester to ensure familiarity with academic rhythms; (2) experienced in attending online lectures; and (3) currently engaged in the hybrid learning system at the time of data collection. This non-probability sampling method was chosen to ensure that the data reflects the specific experiences of students exposed to digital fatigue, rather than seeking statistical generalization for the entire population. The sample consisted of late adolescents to early adults (approximately 18–23 years), a demographic specifically vulnerable to digital exhaustion.

Instrument and Operational Definitions: Data was collected using a structured questionnaire developed based on theoretical studies and previous research findings to ensure content validity. The instrument measured three latent variables: Digital Learning Fatigue (DLF), defined as a state of physical, emotional, and cognitive exhaustion that arises from intensive use of digital devices and platforms for academic purposes. This variable was measured using 5 items adapted from the Digital Burnout Scale developed by exposure (Al Mulhim, 2023). Academic Motivation (MA) refers to students' internal and external drives to achieve learning success, which in this study is referenced within the framework of Self-Determination Theory (Deci & Ryan, 2000). Learning

Engagement (LE) is understood as students' cognitive, affective, and behavioral involvement in the learning process, as conceptualized by Fredricks, 2023. All items were scored on a 5-point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree.

Data Collection and Analysis: The survey was distributed digitally to eligible students through the campus academic network, where participation was voluntary, and data were used solely for research purposes. To ensure data quality, a rigorous cleaning process was conducted prior to analysis to ensure completeness and consistency of responses. The data were analyzed using Structural Equation Modeling–Partial Least Squares (SEM-PLS) with SmartPLS 4.0 software. This approach was chosen because it can simultaneously test direct and indirect relationships between latent variables in a mediation model, while remaining robust to non-normal data distributions. The measurement model was evaluated based on specific cut-off values: outer loadings, Average Variance Extracted (AVE), and Composite Reliability were assessed to ensure convergent validity, discriminant validity, and construct reliability. Finally, hypothesis testing, including path coefficient significance, was conducted using the bootstrapping procedure in SEM-PLS.

3. RESULT AND DISCUSSION

The demographic profile of the 300 respondents aged 18–23 and predominantly in their third to seventh semesters confirms a sample deeply embedded in the post-pandemic hybrid learning ecosystem. Crucially, the finding that daily academic digital usage ranges from two to six hours places UAD students in a high-risk category for digital fatigue. This duration significantly exceeds cognitive safety thresholds, as (Al Mulhim, 2023) indicates that continuous screen exposure beyond four hours precipitates severe emotional exhaustion. Furthermore, such prolonged engagement is explicitly correlated with cognitive burnout and diminished psychological well-being (Romero-Rodríguez et al., 2023). Unlike secular contexts, this exposure within a Muhammadiyah institution creates a unique axiological tension, where students must balance intense technological engagement with the preservation of *adab* (etiquette) and spiritual focus.

Descriptive statistics reveal a distinct pattern across the three latent variables. Digital Learning Fatigue (DLF) falls into the moderate-to-high category (Mean = 3.8; SD = 0.65), indicating a substantial burden of digital exposure. In contrast, Academic Motivation (MA) is remarkably high (Mean = 4.7; SD = 0.35), demonstrating that students maintain a strong psychological drive despite these pressures. However, this high motivation does not fully translate into behavior, as Learning Engagement (LE) remains only in the moderate category (Mean = 3.5; SD = 0.55). This statistical discrepancy suggests that while the intention to learn remains robust, the capacity to actively engage is likely constrained by the prevailing levels of digital exhaustion.

Analysis of the measurement model demonstrates that all research indicators satisfy the rigorous criteria for convergent validity. Specifically, the factor loading values ranged from 0.71 to 0.92, surpassing the fundamental threshold of 0.70 established in contemporary methodological literature (Hair et al., 2019). Furthermore, the Average Variance Extracted (AVE) values for Digital Learning Fatigue (DLF = 0.62), Academic Motivation (MA = 0.73), and Learning Engagement (LE = 0.68) all exceeded the 0.50 cut-off, confirming adequate convergence. Internal consistency was also robust, evidenced by Cronbach's Alpha coefficients (0.91–0.95) and Composite Reliability scores (0.93–0.96), which are well above the acceptance limit. Finally, discriminant validity was established through the Fornell–Larcker criterion and Heterotrait-Monotrait (HTMT) ratios below 0.90, empirically confirming that the constructs are distinct from one another.

The structural model yielded results consistent with relevant theories. The coefficient of determination showed that digital fatigue explained 17% of the variance in academic motivation, while the combination of DLF and MA explained 46% of the variance in learning engagement, which is considered moderate to strong. The predictive relevance (Q^2) values of 0.11 for MA and 0.29 for LE indicate that the model has good predictive power. Path analysis revealed that digital fatigue had a significant negative effect on academic motivation ($\beta = -0.41$, $t = 6.12$, $p < 0.001$), indicating that the higher the level of digital fatigue, the lower the students' academic motivation. Conversely, academic motivation showed a very strong positive effect on learning engagement ($\beta = 0.58$, $t = 11.47$, $p < 0.001$), highlighting the role of motivation as a key driver of engagement. Meanwhile, the direct effect of digital fatigue on learning engagement was found to be insignificant ($\beta = -0.12$, $t = 1.88$, $p = 0.060$), indicating that digital fatigue did not directly reduce students' levels of learning engagement. However, a mediation analysis showed that the indirect effect of DLF on LE through MA was significant ($\beta = -0.24$, $t = 5.02$, $p < 0.001$). Because the direct effect was insignificant and the indirect effect was significant, it can be concluded that the model experienced full mediation. Thus, the decrease in students' learning engagement was not caused directly by digital fatigue, but rather by fatigue preemptively reducing academic motivation. This finding is fully consistent with Self-Determination Theory (SDT), which emphasizes the importance of internal psychological states as mediators of learning behavior.

a. The Effect of Digital Learning Fatigue on Student Academic Motivation

Research findings indicate that digital learning fatigue has a significant negative impact on student academic motivation. This finding aligns with the theoretical assumptions of Self-Determination Theory (Deci & Ryan, 2000), which emphasizes that motivation grows when basic psychological needs are met. Digital fatigue has the potential to erode these needs through three main mechanisms: reduced perceptions of

competence due to difficulty understanding digital material, decreased autonomy due to repetitive online tasks, and weakened social connectedness due to limited virtual interactions.

In the context of post-pandemic digital learning, psychological distress is no longer temporary but chronic. Students experience fatigue not only due to the duration of device use but also due to fragmented attention, information overload, and the expectation to be constantly responsive in the digital space. This is consistent with the findings of (Romero-Rodríguez et al., 2023), who explained that digital fatigue manifests through three dominant symptoms: cognitive fatigue, visual fatigue, and emotional exhaustion. These three aspects significantly impact students' ability to maintain intrinsic motivation.

Several recent studies support this phenomenon. (Deep & Chen, 2025) revealed that prolonged digital exposure decreases learning efficiency, reduces academic satisfaction, and ultimately weakens motivation. (Mosleh et al., 2022) also showed that students experiencing digital burnout tend to experience decreased mental energy, decreased interest, and diminish academic aspirations. In another study, (Zheng & Xiao, 2024) emphasized that digital fatigue affects motivation through a mechanism that decreases self-regulation, a crucial aspect of Self-Determination Theory.

This research delineates a distinct theoretical contribution by extending the analysis of digital fatigue beyond the secular frameworks dominating current literature, which primarily focus on cognitive and emotional exhaustion (Romero-Rodríguez et al., 2023). Unlike these antecedent studies that limit the impact of fatigue on academic performance (Zhang et al., 2024). This study demonstrates that students in an Islamic university face a dual-layered crisis: digital stress erodes not only their academic motivation but also their spiritual motivation in pursuing knowledge. In the Islamic educational framework, learning is interpreted as an act of worship (*ibadah*) that must be grounded in sincere intention (*niyyah*), perseverance, and etiquette (Masduki, 2016). However, this study critically argues that prolonged digital fatigue has the potential to disrupt students' inner peace and diminish the quality of that sacred intention, a finding that fills a significant gap in educational psychology by highlighting how techno-stress can compromise the spiritual dimensions of learning.

Concepts such as *mujahadah* (seriousness in seeking knowledge), *ikhtiyar* (best effort), and *tawazun* (balance between the physical and spiritual) are strongly relevant to this phenomenon. According to research by (Masduki, 2016), Islamic education emphasizes the importance of maintaining physical, mental, and spiritual balance in the academic process. When digital fatigue disrupts this balance, learning motivation weakens, even in institutions with a strong Islamic climate.

These findings expand on the findings of a study by (Warsah et al., 2024), which confirmed that spiritual resilience can enhance learning motivation. However, this study shows that this resilience can weaken when digital fatigue reaches a certain level,

confirming that digital aspects are a significant external factor that many Islamic universities have not adequately addressed.

From a theoretical perspective, these findings confirm that digital fatigue is an academic stressor that cannot be underestimated. It has the potential to reduce motivation, both intrinsic and spiritual. In the context of hybrid learning, digital fatigue is more subtle but more persistent than during a full-blown pandemic. Therefore, Islamic universities need to develop moderate learning strategies that not only optimize technology but also address students' psychological and spiritual well-being.

b. The Influence of Academic Motivation on Student Learning Engagement

Academic motivation has been found to play a significant role in driving student learning engagement. This finding confirms that engagement cannot be viewed solely as a behavioral phenomenon, but rather as a manifestation of students' internal drive. When motivation is high, students are not only more physically active in the learning process but also demonstrate deeper cognitive engagement, such as critical thinking, persistence, and initiative in developing new knowledge.

The learning engagement model developed by (Fredricks, 2023) divides engagement into three dimensions: behavioral, emotional, and cognitive. This research shows that academic motivation has a strong influence on all of these dimensions. This influence is also consistent with Expectancy-Value theory (Eccles & Wigfield, 2002), which emphasizes that engagement occurs when students believe they can succeed (expectancy) and that learning activities have significant value (value).

Several recent studies support these findings. (Mahdavi et al., 2023 reported that academic motivation encourages students to take an active role in hybrid learning. (Oláh et al., 2023), showed that motivation is strongly linked to emotional engagement, such as enthusiasm and satisfaction with learning, as well as cognitive engagement, such as striving to deeply understand the material. Meanwhile, (Urhahne & Wijnia, 2023) emphasized that motivation is a psychological buffer that keeps students engaged despite the pressures of digital learning.

In the context of Islamic higher education, academic motivation is not entirely secular. Islamic education views motivation as a spiritual drive based on sincere intentions, a sincere desire to seek knowledge, and a desire to attain nobility (*karamah*) through education. Research by (Ramadhany & Anggraeni, 2022) revealed that student learning engagement in Islamic educational institutions encompasses aspects of etiquette, such as respect for lecturers, time management, and the use of knowledge for the benefit of the community. This demonstrates that engagement in Islamic education is multidimensional and more comprehensive than the definition of engagement in general educational psychology.

The results of this study indicate that motivation, both academic and spiritual, is a crucial foundation for maintaining the quality of student engagement. Even amidst digital fatigue, students with strong motivation are able to demonstrate more stable levels of engagement. This finding corroborates the study by (Masduki, 2015) that the integration of spiritual values contributes to maintaining student engagement in Islamic higher education. Therefore, this study broadens the understanding that motivation in Islamic education not only improves academic performance but also shapes character and better learning etiquette.

c. The Effect of Digital Learning Fatigue on Learning Engagement

The lack of a significant direct effect between digital fatigue and learning engagement is an important finding. These results indicate that even though students experience digital fatigue, they are still able to maintain their participation in learning. This contrasts with the findings of several studies, such as (Zhang et al., 2024), which concluded that digital fatigue significantly reduces engagement.

Several factors may explain this phenomenon. First, UAD students live in an educational environment that integrates technology with Islamic values. They are bound not only by academic obligations but also by spiritual responsibilities in pursuing knowledge. Concepts such as patience in facing learning difficulties, mujahadah in facing digital challenges, and trustworthiness in carrying out academic tasks can strengthen student engagement even when experiencing digital fatigue.

Second, the hybrid learning model implemented by UAD provides students with high flexibility. This flexibility allows them to independently regulate their learning rhythm, choose the most comfortable learning mode, and reduce digital burden. This finding aligns with research by (Alemayehu & Chen, 2023), which found that learning flexibility can reduce the impact of academic fatigue on student engagement.

Third, students at Islamic universities have a strong moral identity as seekers of knowledge who must undertake their education with etiquette and commitment. This can be a protective factor against declining engagement. From Ibn Jama'ah's perspective, a seeker of knowledge must remain actively engaged even in difficult circumstances as part of spiritual discipline. The findings of this study indicate that these values remain embedded in the academic culture of UAD students.

Theoretically, these results broaden the understanding that learning engagement is influenced not only by psychological conditions but also by students' cultural and spiritual values. Digital fatigue does not automatically decrease engagement because students possess strong self-regulation capacities and spiritual motivations to remain engaged in learning.

d. The Role of Academic Motivation in Mediating Digital Fatigue and Learning Engagement

Although digital fatigue does not directly affect learning engagement, the results show a significant indirect effect through motivation. Full mediation indicates that digital fatigue will impact learning engagement only when academic motivation decreases. In other words, academic motivation is the primary mechanism explaining how digital fatigue affects engagement.

This finding supports the findings of global research. (Zheng & Xiao, 2024) explained that digital fatigue weakens self-regulation, which then decreases motivation and impacts engagement. (Zhang et al., 2024) also found that motivation is an important mediator in online education.

However, this study makes a new contribution by integrating the context of Islamic education. Motivation in Islamic education is not only related to academic achievement but also spiritual orientation. When digital fatigue decreases students' inner peace, it weakens spiritual motivations such as sincerity, sincerity, and patience. The decrease in spiritual motivation then impacts student engagement in learning.

Thus, motivational mediation in the context of Islamic universities is more multidimensional: encompassing cognitive, emotional, social, and spiritual motivation. This finding is consistent with (Norabuena-Figueroa et al., 2025) research which emphasized that spiritual motivation has an important role in maintaining students' commitment to learning at Islamic universities.

Overall, the results of this study indicate that motivation functions as the psychological bridge connecting digital fatigue with student engagement. Students at UAD remain engaged not because they are free from digital fatigue, but because their academic and spiritual motivation remains strong. However, when motivation declines, engagement will also decrease even within an Islamic educational environment. These findings emphasize the importance of strengthening student motivation through pedagogical, psychological, and spiritual approaches.

A critical analysis of this study shows that digital learning fatigue plays a role in decreasing learning motivation, which aligns with the perspective of educational psychology, specifically the cognitive load theory, which explains that excessive cognitive load due to the use of digital devices hinders information processing and weakens students' intrinsic motivation. From an Islamic education perspective, digital fatigue also affects students' spiritual aspects, where inner peace, a prerequisite for learning motivation within the framework of Islamic education, is disrupted. This enriches Self-Determination Theory by placing the spiritual dimension as part of students' psychological needs in the context of Islamic higher education. Institutionally, the implications suggest that Islamic higher education institutions must view digital fatigue

not merely as an individual issue but as a structural issue that requires more humane, proportional, and Islamic-value-based digital learning policies. In terms of comparison with previous research, this study's findings differ from those of (Eccles & Wigfield, 2002) who found a direct effect of digital fatigue on engagement, as this study showed that the effect was insignificant. Nevertheless, the study's findings are consistent with those of (Deep & Chen, 2025) and (Zheng & Xiao, 2024), who reported that digital fatigue significantly reduced academic motivation. This study also extends the findings of (Warsah et al., 2024), who emphasized the role of spiritual resilience, by showing that spiritual resilience alone is insufficient when digital exposure increases intensively. Overall, this study provides a new theoretical contribution that spiritual motivation in Islamic education can be a protective factor for learning engagement, although it remains vulnerable to high digital stress.

4. CONCLUSION

The findings demonstrate that digital learning fatigue significantly undermines academic motivation among university students, and that motivation plays a central mediating role in sustaining learning engagement within hybrid learning environments. Rather than exerting a direct influence, digital fatigue affects engagement indirectly through motivational erosion, indicating that cognitive and affective motivational processes constitute the primary mechanism by which digital stress interferes with academic participation. This mechanism reflects the theoretical position proposed in the introduction, suggesting that learning engagement cannot be understood merely as a behavioral outcome, but as a function of preserved motivational integrity. Theoretically, the study expands Self-Determination Theory by integrating an Islamic axiological dimension into the motivational construct. Within this context, academic motivation entails not only cognitive ambition but also spiritual intentionality, sincerity (*niyyah*), and moral discipline elements that are particularly vulnerable to chronic digital saturation. The study thus contributes to contemporary Islamic educational psychology by empirically demonstrating how digital fatigue induces spiritual-psychological disturbances that, in turn, reduce learning engagement. This framework offers a novel explanatory account for digital learning challenges in value-based higher education systems. Practically, the findings underscore the need for Islamic higher education institutions to implement digitally sustainable learning ecosystems. This includes managing digital workload, moderating synchronous exposure, and adopting pedagogical strategies that integrate spiritual motivation with technological adaptation. Institutions may operationalize these insights through curricular adjustments, faculty training in digital wellness, and policy interventions that regulate the intensity of screen-based academic requirements. Such measures are essential not only for preventing digital burnout but also for preserving the spiritual integrity of the learning process. Future

research may extend these findings by examining additional mediating or moderating variables, such as self-regulation, spiritual resilience, social presence, or learning interaction quality. Comparative studies across different Islamic, secular, or international university contexts would also enable stronger generalization. Longitudinal designs could further illuminate how digital fatigue evolves over time, particularly in post-pandemic hybrid learning environments. Taken together, these research trajectories may strengthen the understanding of digital learning fatigue as both a psychological and spiritual phenomenon in higher education.

5. REFERENCES

- Al Masud, A., Hossain, M. A., Biswas, S., Ruma, A. P., Rahman, K. S., & Tagore, S. (2023). The emergence of digital learning in higher education: A lesson from the COVID-19 pandemic. *The International Journal of Information and Learning Technology*, 40(3), 202–224. <https://doi.org/10.1108/IJILT-08-2022-0176>
- Al Mulhim, E. N. (2023). Technology fatigue during the COVID-19 pandemic: The case of distance project-based learning environments. *Turkish Online Journal of Distance Education*, 24(1), 234–245. <https://doi.org/10.17718/tojde.1034006>
- Alemayehu, L., & Chen, H.-L. (2023). The influence of motivation on learning engagement: The mediating role of learning self-efficacy and self-monitoring in online learning environments. *Interactive Learning Environments*, 31(7), 4605–4618. <https://doi.org/10.1080/10494820.2021.1977962>
- Ardiansyah, A., Al Anshori, T., Zakaria, Z., & Cahyanto, B. (2022). Principles of online learning assessment: A literature review between Western education theory and Islamic education theory. *Jurnal Pendidikan Agama Islam*, 19(1), 13–28. DOI: 10.14421/jpai.2022.191-02
- Aswari, A. (2021). System of education changes due to Covid-19 pandemic. *Asian Journal of Advances in Research*, 6(4), 10–15.
- D Mobo, F. (2020). Implementation of learning management systems amidst COVID-19 crisis. *International Journal of Learning Management Systems*, 8(2), 10–14. DOI: 10.18576/ijlms/080204
- Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Taylor & Francis EL Deci, RM Ryan Psychological Inquiry*, 2000•Taylor & Francis, 11(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01
- Deep, P. D., & Chen, Y. (2025). Student Burnout and Mental Health in Higher Education during COVID-19: Online Learning Fatigue, Institutional Support, and the Role of Artificial Intelligence. *Higher Education Studies*, 15(2), 381–401.
- Eccles, J. S., & Wigfield, A. (2002). Motivational Beliefs, Values, and Goals. *Annual Review of Psychology*, 53(1), 109–132. <https://doi.org/10.1146/annurev.psych.53.100901.135153>
- Fredricks, J. A. (2023). Getting Students Engaged in Learning. *State Education Standard*, 23(3), 6–12.

- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, 31(1), 2–24. <https://doi.org/10.1108/EBR-11-2018-0203>
- Hermawati, K. A., Rohmatuszahroh, A. I., Afrihadi, A., Akbar, M. F. R., Yusuf, M. H., & Utami, L. D. (2024). The Relevance of Tyler's Curriculum Development to Islamic Education 5.0. *Jurnal Tarbiyatuna*, 15(2), 106–115. <https://doi.org/10.31603/tarbiyatuna.v15i2.10810>
- Idris, F., Zulkipli, I. N., Abdul-Mumin, K. H., Ahmad, S. R., Mitha, S., Rahman, H. A., Rajabalaya, R., David, S. R., & Naing, L. (2021). Academic experiences, physical and mental health impact of COVID-19 pandemic on students and lecturers in health care education. *BMC Medical Education*, 21(1), 542. <https://doi.org/10.1186/s12909-021-02968-2>
- Imron, I., Mawardi, I., & Şen, A. (2023). The influence of spirituality on academic engagement through achievement motivation and resilience. *International Journal of Islamic Educational Psychology*, 4(2), 314–326. <https://doi.org/10.18196/ijiep.v4i2.19428>
- Mahdavi, P., Valibeygi, A., Moradi, M., & Sadeghi, S. (2023). Relationship Between Achievement Motivation, Mental Health and Academic Success in University Students. *Community Health Equity Research & Policy*, 43(3), 311–317. <https://doi.org/10.1177/0272684X211025932>
- Masduki, Y. (2015). Virus N-Ach Dalam Al Qur'an: Dorongan Beragama dan Berkompetisi. *Jurnal Tarbiyatuna*, 6(2), 172–187. <https://doi.org/10.31603/tarbiyatuna.v6i2.5196>
- Masduki, Y. (2016). Pendidikan Kecerdasan Berbasis Keimanan. *Jurnal Tarbiyatuna*, 7(1), 53–81.
- Mohamed Hashim, M. A., Tlemsani, I., & Matthews, R. (2022). Higher education strategy in digital transformation. *Education and Information Technologies*, 27(3), 3171–3195. <https://doi.org/10.1007/s10639-021-10739-1>
- Mosleh, S. M., Shudifat, R. M., Dalky, H. F., Almalik, M. M., & Alnajar, M. K. (2022). Mental health, learning behaviour and perceived fatigue among university students during the COVID-19 outbreak: A cross-sectional multicentric study in the UAE. *BMC Psychology*, 10(1), 47. <https://doi.org/10.1186/s40359-022-00758-z>
- Norabuena-Figueroa, R. P., Deroncele-Acosta, A., Rodríguez-Orellana, H. M., Norabuena-Figueroa, E. D., Flores-Chinte, M. C., Huamán-Romero, L. L., Tarazona-Miranda, V. H., & Mollo-Flores, M. E. (2025). Digital Teaching Practices and Student Academic Stress in the Era of Digitalization in Higher Education. *Applied Sciences*, 15(3), 1487. DOI: 10.3390/app15031487
- Oláh, B., Münnich, Á., & Kósa, K. (2023). Identifying academic motivation profiles and their association with mental health in medical school. *Medical Education Online*, 28(1), 2242597. <https://doi.org/10.1080/10872981.2023.2242597>
- Ramadhany, M., & Anggraeni, D. (2022). Relationship Of Learning Engagement And Classroom Incivility Of Islamic Education Religion Students In Jakarta. *Fikroh: Jurnal Pemikiran Dan Pendidikan Islam*, 15(1), 30–51. <https://doi.org/10.37812/fikroh.v15i1.378>

- Romero-Rodríguez, J.-M., Hinojo-Lucena, F.-J., Kopecký, K., & García-González, A. (2023). Digital fatigue in university students as a consequence of online learning during the Covid-19 pandemic. *Educación XXI*, 26(2), 165–184. DOI:10.5944/educxx1.34530
- Simaremare, W. L., Panjaitan, H., & Napitupulu, R. (2025). Dampak Teknologi Digital Terhadap Proses Pembelajaran Dan Kesejahteraan Psikologis. *Jurnal Pendidikan Sosial Dan Humaniora*, 4(1), 243–252.
- Sujadi, E. (2021). Stres akademik dan motivasi belajar mahasiswa mengikuti pembelajaran daring selama pandemi COVID-19. *Educational Guidance and Counseling Development Journal*, 4(1), 29–41. <http://dx.doi.org/10.24014/egcdj.v4i1.12679>
- Surianto, M. A., & Umaimah, U. (2024). Social Responsibility Model based on The Thoughts of KH Ahmad Dahlan at Muhammadiyah Schools. *Jurnal Tarbiyatuna*, 15(1), 70–84. <https://doi.org/10.31603/tarbiyatuna.v15i1.10936>
- Urhahne, D., & Wijnia, L. (2023). Theories of Motivation in Education: An Integrative Framework. *Educational Psychology Review*, 35(2), 45. <https://doi.org/10.1007/s10648-023-09767-9>
- Warsah, I., Morganna, R., Warsah, B. A. A., & Warsah, B. H. H. (2024). Applying Positive Psychology Principles in Islamic Education: A Conceptual Review. *Belajea: Jurnal Pendidikan Islam*, 9(2), 87–118. <https://doi.org/10.29240/belajea.v9i2.11192>
- Warsah, I., & Uyun, M. (2019). Kepribadian pendidik: Telaah psikologi islami. *Psikis: Jurnal Psikologi Islami*, 5(1), 62–73. <https://doi.org/10.19109/psikis.v5i1.3157>
- Zhang, S., Rehman, S., Zhao, Y., Rehman, E., & Yaqoob, B. (2024). Exploring the interplay of academic stress, motivation, emotional intelligence, and mindfulness in higher education: A longitudinal cross-lagged panel model approach. *BMC Psychology*, 12(1), 732. <https://doi.org/10.1186/s40359-024-02284-6>
- Zheng, Y., & Xiao, A. (2024). A structural equation model of online learning: Investigating self-efficacy, informal digital learning, self-regulated learning, and course satisfaction. *Frontiers in Psychology*, 14, 1276266 <https://doi.org/10.3389/fpsyg.2023.1276266>



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