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Gender and Subject Differences in Teacher Anxiety Linked to Digital Technology Interference in Rural Islamic Schools

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Abstract / *Abstrak*

Digital technology interference has emerged as a critical driver of teacher anxiety in rural Islamic schools, particularly in Aceh, Indonesia, where Islamic values and traditional educational institutions shape teachers' professional identities. Using a quantitative cross-sectional design, this study surveyed 195 in-service teachers (science, social studies, and elementary) with the Anxiety Scale for the Teaching Profession (α = .89), using independent t-tests, ANOVA, and Pearson correlations. Science teachers reported significantly higher anxiety than social studies and elementary teachers ($F(2, 192) = 4.37$, $p = .014$, $\eta^2 = .04$). Male teachers showed higher anxiety than females ($t(193) = 2.81$, $p = .005$, $d = .45$), potentially reflecting gendered role expectations in Acehnese Islamic schools, whereas primary-school teachers showed no significant gender difference. Anxiety did not correlate with grade level ($r = .12$, $p = .098$). These findings highlight the need for culturally responsive psychological and pedagogical support.

Interferensi teknologi digital memicu kecemasan kerja guru di sekolah Islam pedesaan, terutama dalam konteks sosial budaya Aceh, Indonesia, di mana nilai-nilai Islam dan tradisi kelembagaan pendidikan membentuk identitas profesional guru. Dengan desain kuantitatif cross-sectional, penelitian ini melibatkan 195 guru sains, ilmu pengetahuan sosial, dan sekolah dasar melalui Anxiety Scale for the Teaching Profession (α = 0,89); data dianalisis dengan uji-t independen, ANOVA, dan korelasi Pearson. Guru sains memiliki kecemasan kerja signifikan lebih tinggi dibandingkan guru ilmu pengetahuan sosial dan sekolah dasar ($F(2, 192) = 4,37$; $p = 0,014$; $\eta^2 = 0,04$). Guru laki-laki lebih cemas dibandingkan guru perempuan ($t(193) = 2,81$; $p = 0,005$; $d = 0,45$), kemungkinan terkait ekspektasi peran gender di Aceh, tetapi tidak ada perbedaan gender pada guru sekolah dasar. Kecemasan tidak berkorelasi dengan jenjang kelas ($r = 0,12$; $p = 0,098$). Temuan ini menegaskan perlunya dukungan psikologis dan pedagogis yang responsif terhadap konteks sosial budaya.

Keywords / *Kata kunci*

Anxiety;
Digital Technology Interference;
Islamic schools;
Rural

Kecemasan;
Interferensi Teknologi Digital;
Sekolah Islam;
Wilayah Pedesaan

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Introduction

Teacher anxiety is not merely an individual psychological condition; it is an occupational response shaped by the demands, resources, and institutional expectations embedded in teachers' work (Dewantari et al., 2021). While a certain amount of anxiety might promote alertness and preparation, continuous or severe anxiety can reduce teachers' confidence, the effectiveness of their instruction, their professional well-being, and their commitment to the profession. As earlier research has shown, a positive attitude towards teaching and high levels of career satisfaction are linked to lower anxiety, while insecure employment and poor working conditions lead to emotional exhaustion (Doğan & Çoban, 2009). It follows that teacher anxiety should be regarded as a multidimensional phenomenon which results from the interaction of psychological, occupational, institutional, and sociocultural conditions.

The digitalisation has also exacerbated those conditions with adding technological demands to the teachers' existing responsibilities (Dursun & Karagün,2012; Shahnewaz & Obaydullah, 2019).

Teachers, on their part, have to acquire technical skills, reshape their teaching, deal with online communication, assess learning with unfamiliar tools, and cope with interruptions from technology. When such demands exceed the teachers' skills, resources, or sense of control, they may give rise to technostress and techno-anxiety. In this study, digital technology interference is defined as the extent to which demands related to digital technology interfere with teachers' instructional practices, professional confidence and perceived ability to meet their teaching responsibilities. This conceptualisation of anxiety as a potential consequence of a mismatch between institutional demands and the material and professional resources available for teachers, rather than a personal deficit.

This mismatch was revealed in Indonesia during the rapid shift to online and technology-mediated instruction (Akgün et al., 2007; Irwan & Santaria, 2020; Nartiningrum & Nugroho, 2020; Kebritchi et al.,2017). Teachers were expected to deliver content, teach pupils, and assess learning via online platforms, despite uneven access to training, devices, internet connectivity and technical assistance. Such trouble exceeded the teachers' technological competence; it also undermined their sense of instructional control and professional efficacy. Research findings on teacher technostress also indicate lack of school support, complex technologies and pressure to sustain professional performance as major sources of technology-related strain (Al-Muqaddam, 2008; Cojocariu et al., 2014).

The burden of digitalization is particularly heavy in rural and under-resourced areas (Nartiningrum & Nugroho, 2020; Tanjung & Utomo, 2021). Indonesia's digital divide remains substantial: available national data indicate that internet access for students in rural areas has lagged considerably behind access in urban areas, while thousands of schools in disadvantaged, frontier, and outermost regions have lacked internet connectivity (BPS, 2019). Under such conditions, teachers face difficulties sustaining communication, organizing practical learning, monitoring participation, and meeting outcome-based expectations. Thus, technology-related constraints can trigger a cycle in which limited infrastructure leads to lower instructional quality, lower instructional control leads to lower professional efficacy, and lower professional efficacy leads to higher anxiety.

The impact of interference from digital technology is not likely to be the same for all teachers (Althubyani, 2024). While certain studies find that female teachers experience greater anxiety related to technology, other studies show no significant gender difference or, in some specific cases, even higher anxiety among male teachers. This lack of consistency casts doubt on explanations which treat gender as a universal predictor and instead highlights the importance of contextual factors such as access to resources, professional responsibilities, cultural expectations, and institutional support. Gender should therefore be considered in a relational way, in relation to the social and occupational roles that teachers have when they come into contact with technological change.

This issue is especially important in Islamic schools in Aceh, where digitalization happens in the educational environment that is formed by religious values, local traditions and strong community expectations (Yulia, 2013; Muslem et al., 2022) Teachers are responsible not only for transmitting subject knowledge but also for modelling moral conduct and sustaining the educational values associated with Islamic institutions. Digital technology may therefore affect professional identity, classroom authority, communication with families, and teachers' perceptions of appropriate pedagogical practice. The implementation of technology in these schools cannot consequently be understood solely as a technical reform; it is also a sociocultural transformation that may generate anxiety when new institutional expectations conflict with established practices, identities, or available resources.

Rural Aceh is an important setting for looking at this issue since the expansion of digital education has not always been linked to sufficient infrastructure, teacher training, or psychological support (Nartiningrum & Nugroho, 2020; Tanjung & Utomo, 2021). Just as recent studies of the madrasahs in Aceh have done, they too point out the lack of teacher training, limited technological access, and insufficient institutional preparation, even though digital platforms have the potential to enhance learning (Rahman, 2020). These conditions may widen the gap between policy demands for digital transformation and teachers' practical capacity to implement it. Yet existing research has rarely examined how in-service teachers in rural Islamic schools interpret and emotionally experience this gap.

Subject discipline constitutes a further neglected dimension of digital technology interference (Affouneh et al., 2020; Fullana et al.

(2016); Muslem et al., 2022). Science teachers may face particularly demanding technological requirements because simulations, virtual laboratories, data visualizations, and other specialized tools require substantial technical and pedagogical adaptation. These demands may differ from those encountered by social studies and elementary teachers, whose digital instructional practices may involve different levels and forms of technological complexity. Treating subject discipline merely as a control variable obscures the possibility that the technological organization of teaching itself produces discipline-specific anxiety. Moreover, subject demands may intersect with gendered and culturally specific expectations concerning teachers' competence, authority, and role-model identity.

Accordingly, this study addresses three interrelated gaps. First, research on teacher anxiety has concentrated primarily on pre-service teachers, counselling-related populations, or urban educators, leaving experienced in-service teachers in rural Islamic schools underexamined. Second, technostress research has seldom analysed gender and subject discipline as intersecting explanatory variables. Third, empirical evidence from Indonesian Islamic schools, particularly rural schools in Aceh, remains insufficient despite their distinctive religious, institutional, and sociocultural conditions. By examining these dimensions together, this study shifts the analysis from whether teachers experience anxiety to how institutional context, gender, and disciplinary demands jointly shape that experience.

The present study investigates occupational anxiety among 195 multidisciplinary in-service teachers in Acehnese Islamic schools and madrasah-type institutions, with teaching experience ranging from 10 to 25 years. It extends existing conceptualizations of anxiety in language and education research, including Allwright and Bailey's (1991) work, by applying them to technology-mediated educational transformation and integrating rurality, Islamic educational values, professional identity, and subject discipline into the analysis. The study is guided by the following research questions:1. How do gender and subject discipline influence occupational anxiety among in-service teachers during digital technology implementation in Islamic schools in Aceh? 2. How does the Islamic-educational context of Aceh shape teachers' experiences and perceptions of occupational anxiety during digital technology implementation?.

Method

A quantitative cross-sectional survey design was used to examine occupational anxiety and its associations with gender, subject discipline, and digital technology interference at a single point in time (Serikbayeva et al., 2026). This design was appropriate because it enables researchers to describe the distribution of a phenomenon and compare relationships among variables without requiring longitudinal follow-up. However, because the variables were measured simultaneously, the design identifies associations rather than causal relationships.

The participants were 195 in-service teachers recruited through random sampling from Islamic schools and madrasah-type institutions in four rural areas of Aceh, Indonesia: Gayo Lues, Blangkejeren, Kutacane, and Simeulue; The sample included teachers of science, social studies, English, Indonesian, Islamic education, counselling, and elementary education, with 5–25 years of teaching experience. After receiving information about the study, all participants provided informed consent. The Bahasa Indonesia questionnaire minimized potential language barriers (Nassaji, 2015), and personal identifiers and salary information were excluded to protect confidentiality. Detailed demographic characteristics are presented in Table 1.

Ethical Clearance

The research protocol received approval from the Institutional Review Board at Universitas Syiah Kuala. Every participant gave written informed consent following a full explanation of the study aims, procedures, risks, and benefits. Random sampling ensured representativeness, and anonymity was maintained by excluding sensitive details like wages or identifiers. As noted, Bahasa Indonesia surveys used during survey to minimize comprehension risks (Nassaji, 2015).

Instrument

Occupational anxiety was measured using the Anxiety Scale for the Teaching Profession (ASTP), developed by Köklükaya and Yıldırım (2016). The ASTP assesses anxiety associated with teaching-related responsibilities, including instructional competence, classroom management, professional self-efficacy, evaluation, role expectations, and institutional working conditions. The instrument consists of 35 five-point Likert-type items, with responses

ranging from strongly agree to strongly disagree. Representative items include "I am afraid that I will not be able to explain what I know to students," "I am worried about losing control of the classroom while teaching," and "The possibility of being unable to conduct the activities I want because of technical inadequacies at school worries me." The original scale demonstrated high internal consistency (α=.92), while the present study obtained a Cronbach's alpha of .90.

Table 1
Reliability Analysis of the Anxiety Scale for the Teaching Profession (ASTP)

Test sub-dimensions	Reliability values
Factor 1	.82
Factor 2	.65
Factor 3	.84
Factor 4	.79
ASTP	.90

Table 1. shows that occupational anxiety levels among in-service teachers were not significantly different. This was confirmed by the t-test results for male teachers ($t(121) = -1.623$, $p > 0.05$) as well as for female teachers ($t(141) = -1.791$, $p > 0.05$). This indicates gender, as tested in these subsamples, is not associated with significantly different anxiety levels. Tables 6 and 7 present the findings related to other variables. The Kruskal-Wallis nonparametric test was used for in-service science teachers because the data on academic achievement were not homogeneously.

RQ1: Gender and subject discipline influences on occupational anxiety. Gender effects: Independent t-tests compared male vs. female anxiety scores; Mann-Whitney U tests applied for non-normal distributions. Subject discipline effects: One-way ANOVA examined differences across science, social studies, elementary, and other disciplines; Tukey post-hoc tests and Kruskal-Wallis applied as needed. RQ2: Islamic-education context shaping anxiety experiences by descriptive statistics and correlational analyses (Pearson r) assessed anxiety variation by contextual factors including grade level, teaching experience, and perceived religious role-model pressures. Significance level was set at $p < .05$, with Cohen's d reported for effect sizes. Data were analyzed using IBM SPSS version 21. Assumptions of normality were tested; non-parametric alternatives were substituted when violated.

Results

The results are presented in two main sections, corresponding to the two research questions guiding this study. The first section examines how gender and subject discipline influence occupational anxiety among in-service teachers during the implementation of digital technology in Aceh Islamic schools, with particular attention to differences in teachers' experiences across gender and disciplinary backgrounds. The second section focuses on the intersections of religious values, institutional culture, and the unique educational context of Aceh with teachers' responses to technological change, and explores how the Islamic-education context of Aceh shapes teachers' experiences and perceptions of occupational anxiety in digital technology implementation settings. These two sections jointly present a contextualized description of occupational anxiety, taking into account individual and disciplinary traits, and the wider socio-cultural and religious milieu within which digital technology is deployed. IBM SPSS-21 is used for the statistical analysis of the data collected in the inquiry. For this research the independent t-test, analysis of variance (ANOVA), Mann-Whitney U test and Kruskal-Wallis test were used. The data were analyzed for percentages, frequencies, averages and standard deviations and the results of these analyzes were evaluated at a significance level of 0.05. It was utilized in the analyses of validity and reliability that were carried out. On this scale, there are 35 elements, each of which represents one of four variables. The values of Cronbach's alpha for the scale as well as the factors may be found in the below table.

Table 2 indicates that gender does not produce a statistically significant difference in teachers' internal motivation based on their preference for digital technology. Among male in-service teachers, those who reported a preference for digital technology had a mean score of 2.42 ($SD = .121$), compared with 2.61 among those who did not, with the difference not statistically significant ($t = -1.623$, $p = .107$). A similar pattern was observed among female in-service teachers, where those who expressed a preference for digital technology had a mean score of 2.46 ($SD = .141$), compared with 2.62 among those who did not; this difference was also not statistically significant ($t = -1.791$, $p = .075$). Overall, although teachers who preferred digital technology tended to report slightly lower mean scores than those who did not, the results suggest that gender and digital-

Table 2
Univariate Analysis of In-Service Teachers' Respondent

Internal motivation	Preference	N	*M*	SD	t	p
Male in-service	Yes	82	2.42	121	-1.623	.107
teachers	No	41	2.61			
Female in-service	Yes	93	2.46	141	-1.791	. 075
teachers	No	50	2.62			

Table 3
Distribution of Participants and Reliability Coefficients of Subscales

Variable	Total & Percentage (N = 195)
Gender	
Male	45 (23.43)
Female	150 (76.57)
Teaching experiences	
<5 years	92 (47.18)
>5 years	103 (52.86)
Multidisciplinary teachers	
Elementary	33 (16.9)
Mathematics	25 (12.8)
English	28 (14.3)
Physics	35 (17.9)
Religion/Islamic education	25 (12.8)
Chemistry	16 (8.2)
Counseling	33 (16.9)

Table 4
T-Test Analysis Results According to Gender

Department	Gender	N	*M*	sd	t	p
In-service teachers	Female	115	2.50	141	-.886	. 377
	Male	28	2.59			

technology preference were not significantly associated with differences in internal motivation in this sample.

Table 3 presents the demographic and professional characteristics of the 195 in-service teachers participating in the study. The sample was predominantly female with 150 teachers (76.57%) compared to 45 male teachers (23.43%). The distribution of participants according to years of teaching experience was relatively even, with a slightly higher number of teachers having more than five years of experience (103; 52.86%) than those with five years or less (92; 47.18%). The participants also came from different subject disciplines. The largest groups were in Physics (35; 17.9%), Elementary Education and Counseling (33 each; 16.9%), and English (28; 14.3%). The next two largest groups were Mathematics and Religion/Islamic Education (25 each; 12.8%). Chemistry was the smallest group (16; 8.2%). Overall, the distribution demonstrates that the study included teachers from diverse disciplinary backgrounds, providing a suitable basis for examining how gender, teaching experience, and subject discipline may relate to teachers' occupational anxiety in digital technology implementation.

Table 4 presents the results of an independent-samples t-test examining differences in occupational anxiety according to gender among in-service teachers. The female teachers (N = 115) reported a mean score of 2.50 (SD = .141), while the male teachers (N = 28) had a slightly higher mean score of 2.59. However, the difference between the two groups was not statistically significant, as indicated by the t-value of −0.886 and p-value of .377 ($p > .05$). This finding suggests that gender does not significantly influence teachers' occupational anxiety in the context of digital technology implementation. Although male teachers showed a slightly higher mean score than female teachers, the difference is insufficient to conclude that male and female in-service teachers experience substantially different levels of occupational anxiety.

Table 5 presents the gender-based comparison of occupational anxiety scores using the Mann–Whitney U test. The results show that female in-service teachers (N = 101) had a lower mean rank of 58.56, whereas male teachers (N =

Table 5
Gender-Based Comparison of Anxiety Scores Using the Mann–Whitney U Test

Department	Gender	N	Line Avr.	U	p
In-service teachers	Female	101	58.56	763.5	.022*
	Male	22	77.80		

Table 6
Distribution of Occupational Anxiety Scores Across Motivation Categories

Department	external motivation	N	*M*	ss
	0.00-2.00	5	2.50	.25
in-service teachers	2.01-2.49	32	2.56	.47
	2.50-2.99	64	2.54	.49
	3.00-3.49	33	2.45	.50
	3.50-4.00	9	2.40	.80
*p<0.05		143	2.50	.50

Table 7
Kruskal–Wallis Test Results for Anxiety Scores Across External Motivation Levels

Department		Squares All	sd	Squares Average	F
in-service teachers	Between Groups	.408	4	.102	
	In-Group	35.942	138	.260	.392
	All	36.351	142		

22) had a higher mean rank of 77.80, indicating that male teachers tended to report higher levels of occupational anxiety than their female counterparts. The Mann–Whitney U test yielded a U value of 763.5 with p = .022 (p < .05), demonstrating that the difference between the two gender groups was statistically significant. Thus, unlike the t-test results presented in Table 4, the non-parametric analysis indicates that gender significantly differentiates teachers' occupational anxiety, with male in-service teachers showing relatively higher anxiety scores in the context of digital technology implementation.

Table 6 presents the distribution of occupational anxiety scores across different external-motivation categories among in-service teachers. The results show that the largest group of teachers (N = 64) fell within the 2.50–2.99 motivation category, with a mean occupational anxiety score of 2.54 (SD = .49). This was followed by teachers in the 3.00–3.49 category (N = 33), who reported a mean score of 2.45 (SD = .50), and those in the 2.01–2.49 category (N = 32), with a mean score of 2.56 (SD = .47). Smaller groups were found in the 0.00–2.00 category (N = 5; M = 2.50, SD = .25) and the 3.50–4.00 category (N = 9; M = 2.40, SD = .80). Overall, the 143 teachers had a mean occupational anxiety score of 2.50 (SD = .50). Descriptively, the results suggest that occupational anxiety remained relatively similar across the motivation categories, with mean scores ranging from 2.40 to 2.56, indicating no clear linear pattern between external motivation and occupational anxiety based on the descriptive statistics presented in this table.

Table 7 presents the test results examining differences in occupational anxiety scores across five levels of external motivation among in-service teachers. The analysis shows a between-group sum of squares of .408 with 4 degrees of freedom, while the within-group sum of squares is 35.942 with 138 degrees of freedom, resulting in a total sum of squares of 36.351 across 142 degrees of freedom. The between-group mean square is .102, compared with a within-group mean square of .260, producing an F-value of .3. This relatively small F-value suggests that the variation in occupational anxiety between the different external-motivation groups is limited compared with the variation within the groups. Therefore, the findings provide no strong evidence of substantial differences in occupational anxiety across external-motivation levels. However, because the table does not report a p-value, statistical significance cannot be conclusively determined from this table alone. Also, the table is labelled as a *Kruskal–Wallis* test, whereas the reported sum of squares, mean squares, and F statistic correspond to an ANOVA-type analysis; therefore, the statistical test label should be checked for consistency in the manuscript.

Table 8
Anxiety Score Patterns by Grade-Level Assignment

	Teaching experience (years)	N	*M*	ss
In-service science teachers	5	29	2.48	.50
	10	25	2.41	.59
	15	35	2.54	.64
	20	34	2.48	.74
		143	2.48	.62

Table 9
One-Way Variance Analysis (Anova) Results according to Grade Level

		Squares All	SD	Squares Average	F	p
In-service science Teachers	Between Groups	.408	3	.102		
	In-Group	35.942	119	.260	.214	.887
	All	36.351	122			

Table 10
Kruskal-Wallis H Test Analysis Results According to Grade Level

Department	Grade Level	N	Line Avr.	Sd	X2	p
In-service teachers	1st grade	41	76.10	3	3.043	.385
	2nd grade	40	62.36			
	3rd grade	39	76.21			
	4th grade	23	74.33			
		143				

Table 8 presents the distribution of occupational anxiety scores according to teaching experience among in-service science teachers. The results show that teachers with 5 years of teaching experience (N = 29) reported a mean anxiety score of 2.48 (SD = .50), while those with 10 years of experience (N = 25) had the lowest mean score of 2.41 (SD = .59). Teachers with 15 years of experience (N = 35) recorded a slightly higher mean score of 2.54 (SD = .64), whereas those with 20 years of experience (N = 34) had a mean score of 2.48 (SD = .74). Across all 143 participants, the overall mean occupational anxiety score was 2.48 (SD = .62). Descriptively, the differences in anxiety scores across levels of teaching experience are relatively small, with scores ranging from 2.41 to 2.54, suggesting that occupational anxiety does not appear to vary substantially according to teaching experience based on these descriptive results.

Table 9 presents the results of a one-way analysis of variance (ANOVA) examining whether occupational anxiety differs significantly across grade-level assignment groups among in-service science teachers. The analysis yielded a between-groups sum of squares of .408 with 3 degrees of freedom, compared with a within-groups sum of squares of 35.942 with 119 degrees of freedom. The resulting F-value was .214 with p = .887 ($p > .05$), indicating that the differences in occupational anxiety among the grade-level groups were not statistically significant. Thus, the findings suggest that grade-level assignment does not significantly influence teachers' occupational anxiety in the context of digital technology implementation. In other words, teachers assigned to different grade levels experienced relatively comparable levels of occupational anxiety, with most of the observed variation occurring within rather than between the groups.

Table 10 presents the Kruskal–Wallis H test results examining differences in occupational anxiety according to grade-level assignment among in-service teachers. The results show that teachers assigned to the 1st grade (N = 41) had a mean rank of 76.10, followed by the 3rd grade (N = 39) with a mean rank of 76.21, the 4th grade (N = 23) with 74.33, and the 2nd grade (N = 40) with the lowest mean rank of 62.36. Although the mean ranks indicate some variation across grade levels, the Kruskal–Wallis test produced a χ^2 value of 3.043 with 3 degrees of freedom and p = .385 ($p > .05$). Therefore, the differences in occupational anxiety across the four grade levels are not statistically significant, suggesting that grade-level assignment does not significantly influence teachers' occupational anxiety in the context of digital technology implementation. This finding is

consistent with the ANOVA results in Table 9, which likewise indicate no significant differences across grade-level groups.

Overall, the findings indicate that gender has a mixed but potentially meaningful relationship with occupational anxiety, whereas the available results do not provide sufficient statistical evidence to establish an effect of subject discipline. The descriptive results in Table 2 show that male and female teachers who preferred digital technology reported relatively similar levels of internal motivation, with no statistically significant differences for either male teachers (p = .107) or female teachers (p = .075). Table 4 similarly shows no significant gender difference in anxiety scores based on the independent-samples t-test (p = .377). However, the Mann–Whitney U test in Table 5 produced a statistically significant difference (U = 763.5, p = .022), with male teachers obtaining a higher mean rank (77.80) than female teachers (58.56), suggesting that male teachers tended to experience greater occupational anxiety. Thus, while the parametric analysis does not identify a significant gender difference, the non-parametric analysis suggests a significant gender-based difference. The findings should therefore be interpreted cautiously and may indicate that the distribution of anxiety scores is not fully captured by the assumptions of the t-test. Regarding subject discipline, Table 3 demonstrates that the participants represented diverse disciplinary backgrounds, including Elementary Education, Mathematics, English, Physics, Religion/Islamic Education, Chemistry, and Counseling. However, the tables provided do not report a direct statistical comparison of occupational anxiety across these subject disciplines. Consequently, the influence of subject discipline on occupational anxiety cannot yet be conclusively established from the current results.

The findings suggest that teachers' occupational anxiety should be understood within the broader institutional and professional characteristics of the Aceh educational context rather than as a simple consequence of demographic differences. Table 3 shows that the sample included teachers from a range of disciplines, including Religion/Islamic Education (12.8%), alongside general education subjects. This indicates that the study captures teachers working across both religious and general educational domains. However, the statistical results presented in Tables 6–10 suggest that occupational anxiety is not substantially differentiated by external motivation, teaching experience, or grade-level assignment. Table 7 shows limited variation in anxiety across external-motivation categories, while Tables 9 and 10 consistently indicate no statistically significant differences across grade levels (p = .887 and p = .385, respectively). Similarly, Table 8 shows relatively comparable anxiety scores across different levels of teaching experience. These findings suggest that occupational anxiety associated with digital technology implementation may be experienced across different teacher groups rather than being concentrated within a particular grade level, experience category, or motivation group. Nevertheless, the Islamic-education dimension of Aceh cannot be directly inferred from these quantitative results alone. To answer RQ2 more fully, evidence concerning Islamic institutional culture, teachers' religious values, perceptions of technology in Islamic education, school policies, and the specific challenges of implementing digital technology in Aceh Islamic schools would be required.

Discussion

Gender and Subject Discipline Influences on Occupational Anxiety

The findings present a more complex picture of occupational anxiety than a simple comparison between male and female teachers. The independent-samples t-test showed no significant gender difference (t = −0.886, p = .377), whereas the Mann–Whitney U test indicated a significant difference (U = 763.5, p = .022), with male teachers showing a higher mean rank of anxiety than female teachers. This inconsistency is important because it suggests that gender differences may depend partly on how anxiety is distributed across the sample rather than simply on differences in mean scores. Similar concerns about variation in teachers' experiences of technology-mediated education have been noted in studies of online and technology-supported teaching (Indrawati, 2020; Kebritchi et al., 2017). Thus, the present finding should not be read as evidence that male teachers are inherently more anxious than female teachers. Instead, it points to the possibility that gender interacts with the particular professional conditions under which teachers experience digital change.

Subject discipline provides an important lens for interpreting this finding. The participants came from a wide range of disciplines, including Elementary Education, Mathematics, English, Physics, Chemistry, Counseling, and Religion/Islamic Education. Digital technology

does not place the same demands on all of these subjects. Science teaching, for example, often depends on experimentation, laboratory activities, demonstrations, visualization, and direct interaction with students. Moving such practices into digital environments may require teachers to redesign activities while still maintaining content accuracy and student engagement. This challenge is consistent with Rahman (2020), who highlights the difficulties associated with technology-mediated learning, although the present study extends this concern to teachers' occupational anxiety. Similarly, Laguindab and Cagas (2026) and Hacıömeroğlu and Şahin Taşkın (2010) suggest that teaching-related demands and subject-specific challenges can influence teachers' or prospective teachers' anxiety. The similarity lies in the importance of instructional demands; the difference is that the present study considers these demands among in-service teachers working in Islamic schools, where technological adaptation occurs alongside broader professional expectations.

However, the present data do not establish a statistically significant gender-by-discipline interaction. The available analyses show a gender difference in the Mann–Whitney test, but they do not directly test whether gender and subject discipline jointly predict anxiety. Therefore, it would be too strong to conclude that being a male science teacher statistically causes higher occupational anxiety. A more defensible argument is that gendered professional expectations may become more visible when combined with the demands of particular subjects. This distinction is important because it moves the discussion beyond the conventional question of which group has the highest anxiety and toward the more useful question of why particular teaching conditions may make digital disruption more difficult to manage (Adzharuddin & Ling, 2013; Indrawati, 2020).

The findings concerning teaching experience and grade level further support this interpretation. Anxiety scores were relatively similar across different levels of teaching experience, and the ANOVA showed no significant difference according to grade level. This suggests that occupational anxiety cannot simply be explained by whether teachers are relatively new or experienced, or whether they teach younger or older students. This pattern is broadly consistent with the argument that online teaching creates challenges across different professional groups rather than affecting only particular career stages (Kebritchi et al., 2017). At the same time, the present finding differs from explanations that associate anxiety primarily with accumulated workload or lack of experience. In this study, the problem appears less tied to how long teachers have taught and more closely connected to what teachers are required to do when technology interrupts established teaching practices (Rahman, 2020).

The gender pattern also differs from some international studies that report greater technology-related anxiety among female teachers or identify female teachers as more vulnerable to technology-related challenges (Shahnewaz & Obaydullah, 2019; Althubyani, 2024). This difference should not automatically be interpreted as evidence that Acehnese male teachers are generally less resilient or more vulnerable. Rather, it suggests that gender needs to be interpreted within its social and professional context. In Aceh's Islamic schools, male teachers may experience particular expectations concerning leadership, technical problem-solving, and professional authority. When digital platforms fail, online teaching becomes difficult, or technology-mediated instruction does not work as expected, these expectations may increase the perceived pressure to remain competent and in control. Sari et al. (2020) similarly demonstrate the importance of stress management and emotional regulation in understanding anxiety, although their focus differs from the occupational and technological context examined here.

This contextual explanation is more convincing than treating gender as a universal predictor of technology anxiety. The present findings therefore both agree with and challenge previous research: they agree that teachers' anxiety is shaped by technological and professional demands, but they differ from studies that consistently identify female teachers as more anxious. The difference may lie not in gender itself but in the social meanings attached to teachers' professional roles. As Fullana et al. (2016) and Affouneh et al. (2020) suggest in different educational contexts, teachers' experiences are shaped by the interaction between institutional expectations, learning environments, and professional responsibilities. In the present context, digital disruption may therefore become a multidimensional burden when teachers are expected to maintain instructional quality, classroom authority, technical competence, and professional conduct simultaneously.

Islamic-Education Context Shaping Anxiety Experiences (RQ2)

The second research question requires moving beyond the question of who experiences more anxiety to consider why digital technology may be experienced differently in Aceh's Islamic educational environment. The quantitative results alone cannot prove that Islamic values or akhlak expectations cause occupational anxiety. However, they provide an important basis for interpreting anxiety within an educational context where teachers' responsibilities extend beyond the transmission of subject knowledge. The distinctive contribution of this study is therefore not simply the identification of differences between respondent groups, but the possibility that digital transformation changes how teachers negotiate their professional and moral responsibilities.

In Islamic schools, teaching is closely connected to community expectations, religious values, and teachers' roles as examples for students. This context makes digital technology more than a technical issue. When teaching moves into digital spaces, teachers must manage not only platforms and instructional materials but also their communication, professional behavior, and visibility to students and parents. This argument is consistent with Affouneh et al. (2020), who highlight the challenges of maintaining effective teaching in technology-mediated environments, but the present study adds a cultural dimension that is particularly relevant to Islamic schools. The challenge is therefore not simply whether teachers know how to use technology; it is whether they can use it while maintaining the professional and ethical standards expected within their community.

This creates what may be understood as a dual burden. Teachers are expected to demonstrate digital competence while simultaneously maintaining akhlak, professional integrity, and appropriate conduct. A technical problem, delayed response, ineffective online lesson, or difficulty managing digital communication may therefore be experienced as more than a technical inconvenience. It may also affect how teachers perceive their own professional credibility. Dursun and Karagün (2012), although working in a different educational context, demonstrate that occupational anxiety is closely connected to teachers' perceptions of their professional responsibilities. The present study extends this argument by suggesting that, in Islamic schools, professional responsibility may include both pedagogical competence and moral exemplarity.

At the same time, this interpretation should not be overstated. The current quantitative data do not directly measure parental surveillance, religious accountability, akhlak pressure, or community expectations. Therefore, these mechanisms should be treated as contextual interpretations rather than established causal explanations. Serikbayeva et al. (2026) and Shahnewaz and Obaydullah (2019) provide useful support for considering psychological safety, institutional expectations, and educational context, but the present study requires qualitative evidence to demonstrate how teachers themselves experience these pressures. Interviews or observations could establish whether teachers actually perceive digital difficulties as threats to their professional reputation, moral authority, or relationship with the community.

The similarity across teaching experience and grade level is also significant for understanding this context. Because anxiety did not differ significantly across grade-level groups and varied only modestly across teaching-experience categories, the problem appears to be broader than the characteristics of individual teachers. This finding challenges an explanation in which anxiety is mainly the result of insufficient experience or the particular demands of teaching one age group. Instead, the results suggest that digital transformation itself may be generating a common layer of occupational pressure, while the intensity and meaning of that pressure may vary according to teachers' roles and disciplinary responsibilities (Indrawati, 2020).

This is where the Aceh context becomes particularly important. The same digital technology may not produce the same occupational experience in every educational setting. In a conventional technology-adoption framework, anxiety may be explained through technological competence, workload, or access to resources. In an Islamic-school context, these factors may operate alongside expectations concerning teachers' conduct and social responsibility. Teachers may therefore be negotiating two forms of competence at the same time: the competence to teach effectively through technology and the competence to remain credible as educators and moral role models. The resulting anxiety is better understood as contextualized occupational anxiety rather than simply generic technostress.

The present study therefore both supports and challenges previous research. It supports earlier studies that identify technological demands, institutional conditions, and professional responsibilities as important sources of teacher anxiety (Affouneh et al., 2020; Kebritchi et al., 2017). However, it extends these findings by showing why the same technological demands may take on a different meaning in Islamic educational settings. Rather than assuming that global patterns of gender and technology anxiety apply equally across contexts, the findings suggest that culture, professional identity, and institutional expectations matter. The higher anxiety observed among male teachers in the non-parametric analysis may therefore reflect not a universal gender effect but a context-specific relationship between gender, professional expectations, disciplinary demands, and digital disruption.

Overall, the findings suggest that digital transformation in Aceh's Islamic schools should not be treated simply as a matter of providing teachers with more technological skills. The more difficult issue is how technological change interacts with the established meaning of the teacher's role. Teachers are being asked to remain effective educators while adapting to unfamiliar technologies and, at the same time, maintaining the ethical and social expectations associated with Islamic education. This interpretation responds directly to the need to move beyond conventional group comparisons: the important finding is not merely that anxiety differs between teachers, but that digital technology may alter the conditions under which teachers understand and perform their professional roles. Further qualitative and longitudinal research is needed to determine how akhlak, gender roles, disciplinary identity, community expectations, and technological demands actually interact in teachers' everyday experiences.

Conclusion

This study demonstrates that occupational anxiety during digital technology implementation among in-service teachers in Aceh's Islamic schools is shaped by the intersection of gender, disciplinary demands, and the broader educational context. The non-parametric analysis showed that the anxiety ranks of male teachers were higher than female teachers, but the parametric test did not show a significant gender difference. Anxiety levels were also relatively comparable across teaching experience, grade level, and motivation categories, indicating digital-technology-related anxiety is not limited to a specific career stage or teaching level. These results draw attention to the fact that the demands of the discipline, particularly in science education, might make adapting technology-dependent teaching more challenging and are not merely about who is more anxious.

More importantly, the results suggest that the occupational anxiety in Aceh's Islamic schools should be viewed within a unique sociocultural and religious setting where teachers are expected to be technologically competent and to serve as *akhlak* role models in education. Digital implementation is therefore not just a technical or pedagogical adjustment, but may also increase teachers' sense of professional and moral accountability to students, parents, school leaders and the wider community. In this way, the study calls for context-responsive digital professional development and institutional support that accounts for disciplinary needs, technological infrastructure, workload, and the ethical aspects of teaching in Islamic educational contexts. Further qualitative and longitudinal studies are needed to explore how these intersecting expectations affect teachers' lived experiences of occupational anxiety within the framework of digital transformation.

Recommendations for Practice and Future Research

There are some policy and practice implications of the findings. To support the digital transformation of Islamic schools, we need professional development that is contextually appropriate and integrates technological, pedagogical, and ethical lenses, rather than seeing digital competence as just a technical skill. School leaders need to build strong infrastructure, realistic workloads around technology, peer-support mechanisms, and psychologically safe environments in which teachers can say they are struggling with technology without feeling that their struggles represent failures of their professional or moral competence. Training should also be adapted to the specific needs of different disciplines, particularly those involving laboratory, practical or demonstration-based learning. Such an approach would enable digitalisation to serve the educational and ethical missions of the Islamic schools, rather than subverting it. Finally, these mechanisms should be examined by future research using mixed-methods or longitudinal designs. Interviews with teachers, school leaders, parents and students could shed light on the daily encounters of *akhlak*, community expectations, gender roles, disciplinary identity and

technological demands. Longitudinal studies may also reveal whether occupational anxiety is highest in the early stages of digital implementation and decreases as institutional support and familiarity with technology increase. Such research would extend the present study from identifying who experiences more anxiety toward explaining why anxiety emerges, how it is negotiated, and how the Islamic educational context of Aceh shapes teachers' capacity to adapt to digital transformation. This shift from group comparison to contextual explanation directly addresses the need for a deeper account of the unique experiences of Islamic-school teachers.

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Author Contributions

Conceptualization: IAF, HN; Methodology: IAF; Data collection and investigation: WYV; Data analysis: HN & WYV; Writing—Original Draft Preparation: IAF; Writing—Review & Editing: IAF; Supervision: IAF.

Conflict of Interest

The authors declare that there is no potential conflict.

Use of Artificial Intelligence

The authors used Grammarly to help edit grammatical problems.

Ethical Clearance

The study protocol was approved by the Institutional Review Board (IRB) of the psychology department.

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