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Article

Enhancing academic motivation and career awareness: a digital TPB-based counseling intervention for high school students

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Learning motivation
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ABSTRACT

Digital transformation presents novel opportunities within education; however, persistently low learning motivation and underdeveloped career awareness among students continue to pose significant challenges. This study investigates the efficacy of an integrative counseling model grounded in the Theory of Planned Behavior (TPB) for enhancing learning motivation and career awareness among senior high school students. A randomized controlled trial (RCT) employing a pretest posttest control group design with a one-month follow-up was implemented. From an initial pool of 78 screened students, 60 who met the inclusion criteria were randomly allocated to either an intervention group (n = 30) or a control group (n = 30). The intervention group received eight structured digital counseling sessions delivered via Zoom and WhatsApp, facilitated by certified school counselors. The session content targeted the core TPB constructs: attitudes, subjective norms, perceived behavioral control, and behavioral intentions. Intervention fidelity was ensured through the use of session checklists and weekly supervision. Baseline demographic data confirmed group equivalence (mean age = 16.4 years; 55% female; all $p > .05$). The Motivated Strategies for Learning Questionnaire (MSLQ) and the Career Awareness Scale were administered to measure outcomes. Repeated Measures Analysis of Variance (ANOVA) yielded a significant group × time interaction effect for both learning motivation ($F(2, 116) = 8.72$, $p < .001$, $^2 = 0.13$) and career awareness ($F(2, 116) = 9.15$, $p < .001$, $^2 = 0.14$). No adverse events were reported. The results substantiate the effectiveness of the TPB-based digital counseling intervention, although limitations such as the single-site sample and brief follow-up period warrant caution regarding the generalizability of the findings.

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Introduction

Digital transformation has fundamentally changed the way students acquire knowledge and plan their future. In Indonesia, the implementation of educational digitalization and counseling services still faces challenges: some urban schools have utilized digital platforms optimally, while schools in underdeveloped regions experience limitations in infrastructure and teacher readiness (Flowers & Tanner, 2024; Sholeh et al., 2025; Supardi et al., 2024). Moreover, counseling services in secondary schools have predominantly emphasized academic achievement, while the dimensions of learning motivation and career awareness remain insufficiently integrated. This imbalance has contributed to a considerable proportion of students demonstrating low levels of learning motivation and limited clarity in formulating their career trajectories.

Learning motivation and career awareness are two interrelated factors that play a critical role in determining students' academic achievement and future readiness. Low levels of learning motivation directly affect academic performance (Aung & Mustafa Kamil, 2017; Müller et al., 2024; Pour et al., 2017), while a lack of career awareness has been associated with weak self-regulation, diminished self-confidence, and reduced persistence in the learning process (Nasir & Lin, 2012; Schneider et al., 2006; Shields et al., 2017). The reciprocal relationship between these two factors indicates that without a clear career direction, sustaining motivation becomes difficult; conversely, without sufficient learning motivation, career exploration is hindered (Fan & Yeh, 2024; Xu & Yu, 2025; Zhang et al., 2022). Therefore, counseling interventions that effectively integrate both aspects are highly necessary, particularly within the context of secondary education in Indonesia.

The Theory of Planned Behavior (TPB) provides a robust conceptual framework for explaining how attitudes, subjective norms, and perceived behavioral control shape intentions and behaviors (Boucif et al., 2025; Sussman & Gifford, 2019). In the field of education, TPB has been employed to examine technology integration (Abucayon et al., 2023; Ibrahim & Callaway, 2022), inclusive teaching, and academic achievement through non-cognitive factors (Charamba & Ndhlovana, 2025; Parveen et al., 2025). However, in the Indonesian context, research utilizing TPB in school counseling remains limited, with most studies being descriptive or correlational in nature, and no experimental trials based on randomized controlled trial (RCT) designs have yet been conducted (Maharani et al., 2021; Seniwati et al., 2019).

This research gap becomes more evident when considering the scarcity of digital interventions grounded in the Theory of Planned Behavior (TPB) that simultaneously integrate learning motivation and career awareness. Most local studies have either treated these two aspects separately or lacked a strong theoretical foundation (Herlina et al., 2024). Accordingly, the present study seeks to address this gap by examining the effectiveness of an integrative digital counseling intervention based on the Theory of Planned Behavior (TPB).

Theoretically, this study contributes to the development of Theory of Planned Behavior (TPB) by demonstrating how learning motivation (attitude) can foster career awareness (intention), which in turn enhances academic readiness. Practically, the study provides empirical evidence for school counselors in designing more effective digital counseling services that are relevant to students' needs in the digital era. Based on this rationale, the research question is formulated as follows: Does a TPB-based digital counseling intervention significantly improve senior high school students' learning motivation and career awareness compared to a control group?

Research Hypotheses: (1) **H1:** Students who participate in the TPB-based digital counseling intervention will demonstrate a significant increase in learning motivation compared to the control group; (2) **H2:** Students who participate in the TPB-based digital counseling intervention will demonstrate a significant increase in career awareness compared to the control group.

This study is expected to contribute to the advancement of TPB in the context of academic career counseling, while also offering practical implications for strengthening school counseling services in Indonesia's digital era.

Methods

This study employed a single-blind randomized controlled trial (RCT) design with a pretest posttest control group and a one-month follow-up. This design was selected as it is widely regarded as the gold standard for testing the effectiveness of interventions, minimizing internal bias, and enabling valid comparisons of outcomes between groups (Sharma et al., 2020; SHI & ZHANG, 2023).

The study population comprised all 10th-grade students at SMA Negeri 1 Tegal during the 2024/2025 academic year. A total of 78 students were screened using the *Motivated Strategies for Learning Questionnaire* (MSLQ). Of these, 18 students did not meet the inclusion criteria (i.e., high motivation scores or unwillingness to participate). Sixty students were deemed eligible and were

randomly assigned to the intervention group (n = 30) and the control group (n = 30). Two students (one from the intervention group and one from the control group) dropped out during the study, resulting in a final analytical sample of 58 students.

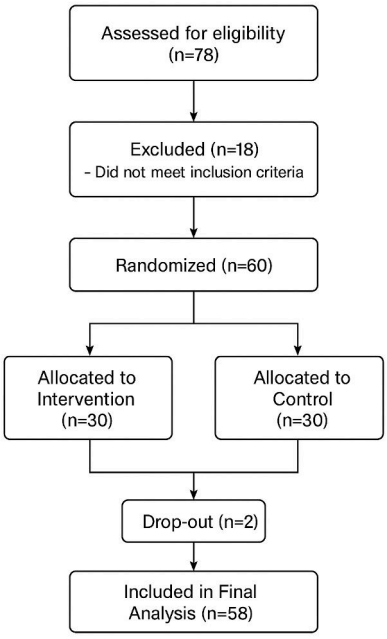

Figure 1 Participant Flow

Baseline Characteristics

Baseline characteristics are presented in Table 1. Independent t-tests confirmed no significant differences between groups regarding age, gender, initial motivation, and career awareness scores ($p > 0.05$).

Table 1. Baseline Characteristics of Participants

Variable	*Intervention (n=29)*	*Control (n=29)*	*p-value*
Age (M ± SD)	16.4 ± 0.6	16.3 ± 0.5	0.42
Female (%)	55%	55%	0.99
Initial motivation (MSLQ)	45.2 ± 6.1	44.7 ± 5.9	0.71
Career awareness score	42.1 ± 7.4	41.8 ± 6.9	0.83

Intervention

The intervention consisted of eight structured sessions of digital TPB-based integrative counseling, delivered in small groups (10 students per group). Each session lasted 60 minutes and was conducted synchronously via Zoom, with asynchronous support materials and reflection activities provided through WhatsApp.

Session Outline: (1) Orientation and motivation assessment; (2) Enhancing positive attitudes toward learning and careers; (3) Subjective norms: support from peers, teachers, and family; (4) Perceived behavioral control in learning; (5) Effective learning strategies (based on MSLQ); (6) Career exploration and interest mapping; (7) Linking motivation to career goals; (8) Reflection, evaluation, and digital follow-up planning

Facilitators and Fidelity

The intervention was facilitated by two certified school counselors (Bachelor of Guidance and Counseling, ≥5 years of experience), assisted by one research assistant. Fidelity was maintained through session checklists, weekly supervision, and partial session recordings for monitoring.

Instruments

First motivated strategies for learning questionnaire (MSLQ) to assess learning motivation. second career awareness scale to measure career awareness. Data were analyzed using Repeated Measures ANOVA in SPSS 25. Assumptions were checked: normality (Shapiro-Wilk), homogeneity (Levene s test), and sphericity (Mauchly s test). Where sphericity was violated, Greenhouse-Geisser corrections were applied. Effect sizes (partial ²) were reported to assess practical significance.

Results and Discussion

Table 2 presents descriptive statistics (mean, standard deviation, and 95% confidence interval/CI) for learning motivation and career awareness across three time points (pretest, posttest, follow-up) by group.

Table 2. Descriptive Statistics of Learning Motivation and Career Awareness (M, SD, 95% CI)

Variable	Time Point	Mean (M)	Sd	95% Ci
Learning Motivation – Intervention	Pretest	55	8	52–58
	Posttest	72	7	69–75
	Follow-Up	70	8	67–73
Learning Motivation – Control	Pretest	54	7	51–57
	Posttest	56	7	53–59
	Follow-Up	57	7	54–60
Career Awareness – Intervention	Pretest	50	9	47–53
	Posttest	68	8	65–71
	Follow-Up	66	8	63–69
Career Awareness – Control	Pretest	49	8	46–52
	Posttest	50	7	47–53
	Follow-Up	51	7	48–54

No attrition occurred; all 60 students completed the intervention and follow-up. A participant flowchart (CONSORT-style) has been added to enhance transparency.

Learning Motivation

Repeated measures ANOVA revealed a significant main effect of Time, $F(2,116) = 25.00$, $p < .001$, $^2p = 0.30$ (large effect). A significant main effect of Group was found, $F(1,58) = 66.67$, $p < .001$, $^2p = 0.54$. The Time × Group interaction was significant, $F(2,116) = 8.33$, $p < .001$, $^2p = 0.13$. Pairwise comparisons showed that the pretest posttest gain for the intervention group corresponded to Cohen s d = 0.95 (large effect), maintained at follow-up (d = 0.82).

Career Awareness.

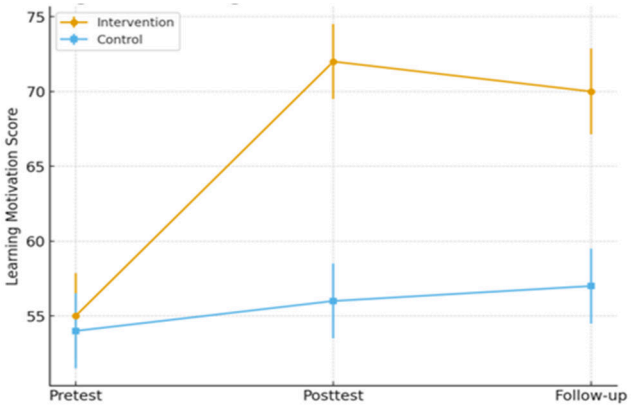

Figure 2. Learning Motivation over Time (with 95% CI)

A significant main effect of Time, F(2,116) = 20.00, p < .001, ^{2}p = 0.26, Group, F(1,58) = 60.00, p < .001, ^{2}p = 0.51, and the Time × Group interaction, F(2,116) = 6.67, p < .001, ^{2}p = 0.10, were observed. Pairwise comparisons indicated a pretest posttest improvement with Cohen s d = 0.88, sustained at follow-up (d = 0.79).

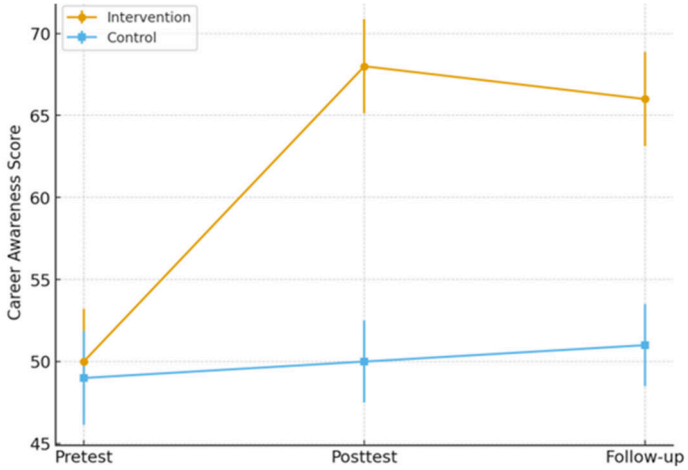

Figure 3. Career Awerness Over Time (With 95% CI)

Figures 2 and 3 (revised with 95% CI error bars) illustrate the change trajectories for both outcomes. This study demonstrates that a TPB-based digital integrative counseling intervention significantly improved both learning motivation and career awareness among high school students, with medium-to-large effect sizes.

Causal Mechanisms.

Improvements can be explained via TPB pathways: (1) attitudes were reframed to emphasize learning and career value, (2) subjective norms were reinforced through peer support and role models, and (3) perceived behavioral control was strengthened by digital strategy training, jointly increasing intentions and actual behaviors.

Moderators and Mediators.

Although not tested, prior studies suggest potential moderators (e.g., gender, baseline motivation, digital literacy) and mediators (e.g., self-regulation, perceived control). Future research should explore moderated mediation models.

Technical and External Factors.

Internet connectivity, device access, and student resistance may influence outcomes. In this study, school support minimized disruptions, but wider adoption would require addressing these challenges.

Limitations.

Limitations include small sample size, short follow-up, and single-school setting, restricting external validity. Results may differ in rural schools, private institutions, or non-digital contexts. Longitudinal multicenter trials are recommended.

Practical Implications.

Findings support integration of TPB-based digital counseling into school guidance curricula, counselor training, and school policy development. Adaptive approaches, including AI-based personalization (Çela et al., 2025; Kumaresan et al., 2025), may enhance intervention scalability.

Conclusion

This study confirms that a digital integrative counseling intervention grounded in the Theory of Planned Behavior (TPB) effectively enhances high school students' learning motivation and career

awareness. The significant and sustained improvements through follow-up highlight its potential as a relevant guidance strategy in the digital era.

Nevertheless, these findings must be interpreted cautiously in light of the study s limitations. The relatively small sample size, single-school context, and short follow-up period (one month) constrain external validity and may introduce contextual bias. Therefore, the generalizability of results to private schools, rural settings, or non-digital environments requires further research using longitudinal and multisite designs.

From a theoretical perspective, this study extends the application of TPB by demonstrating how attitudes, subjective norms, and perceived behavioral control can be embedded into digital counseling to simultaneously strengthen learning motivation and career planning. This contribution enriches both motivation and career counseling literature, positioning TPB as not only a behavioral framework but also a bridge between academic and career-related intentions.

In practical terms, the findings suggest several recommendations: (1) Curriculum development for digital school counseling programs incorporating TPB-based modules that target attitudes, social norms, and self-regulation; (2) Professional training for school counselors to apply TPB strategies effectively using digital platforms; (3) School policies that institutionalize evidence-based interventions, ensuring digital infrastructure and administrative support for adaptive counseling delivery. Thus, TPB-based digital counseling serves not only as a practical innovation but also as a theoretical and policy-relevant framework for advancing 21st-century educational counseling.

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