

 Research Article

Integrating Gamified Learning, Reflection, and One-Minute Silence to Enhance Students' Subjective Well-Being: A Pre-Post Exploratory Study

Mengkorn Pum^{1,2} 

¹Faculty of Arts, Languages, and Humanities, University of Management and Economics, Battambang, Cambodia

²School of Graduate Studies, National University of Management, Phnom Penh, Cambodia

Abstract

Student well-being has been recognized as an essential factor in educational success. It has been found to impact academic performance, emotional, social, and cognitive enhancement. The current study examines how a 15-week classroom intervention integrating gamified learning, weekly reflection, and one-minute silent mindfulness affects students' subjective well-being. The intervention was implemented in a three-hour weekly course. Students completed the subjective well-being questionnaire before the intervention and at the end of the intervention to assess students' joy of learning, sense of school connectedness, educational purpose, and academic efficacy. The study employed paired-sample *t*-tests, using Statistical Package for the Social Sciences (SPSS) version 27 to compare pre- and post-intervention mean scores. Findings revealed a statistically significant improvement in joy of learning, academic efficacy, and overall student well-being, with small effect sizes. In the current study, two subjective well-being questionnaire subscales, which are school connectedness and educational purpose, showed positive increases in mean scores; however, these changes were not statistically significant. The findings suggest that the current classroom-based interventions using gamified learning, reflection, and mindfulness may be effective in enhancing students' emotional engagement with learning and confidence in academic abilities, while relational and purpose-oriented dimensions of well-being may require longer-term or more targeted approaches. The integration of gamification, reflective practice, and brief mindfulness activities is recommended for educators as feasible and low-cost strategies to promote student well-being within regular instructional settings.

Keywords: Student Well-Being, Gamified Learning, Reflection, Mindfulness, Joy of Learning, Academic Efficacy

✉ Correspondence

Mengkorn Pum
mengkornpum@gmail.com

Received

February 27, 2026

Accepted

July 13, 2026

Published

August 3, 2026

Citation: Pum, M. (2026).

Integrating gamified learning, reflection, and one-minute silence to enhance students' subjective well-being: A pre-post exploratory study. *Journal of Research in Education and Pedagogy*, 3(3), 522–536.

DOI: [10.70232/jrep.v3i3.202](https://doi.org/10.70232/jrep.v3i3.202)

© 2026 The Author(s).

Published by
Scientia Publica Media



This is an open access article distributed under the terms of the Creative Commons Attribution-NonCommercial License.

1. INTRODUCTION

Student well-being has increasingly been recognized as a critical factor in educational success. Studies have found that well-being influences students' academic performance, emotional, social, and cognitive development (Balashov, 2022; Carreño-Flores et al., 2024; Douwes et al., 2023; Renshaw et al., 2015). It is a multi-dimensional construct that consists of emotional engagement, meaningful relationships, purpose in learning, and confidence in academic abilities. These elements collectively contribute to a supportive and thriving school environment (Renshaw, 2024; Seligman, 2011). Many students at the university level experience stress, low motivation, and disengagement. The academic stress is due to an excessive volume of assignments, high-stakes testing, and the challenge of maintaining a healthy work-life balance (Pérez-Jorge et al., 2025), which in turn impacts students' academic performance, causes academic burnout, and affects their well-being (Abdullah et al., 2024; Barbayannis et al., 2022; Zhang et al., 2025). Other serious and persistent concerns in education include low motivation and disengagement (Dağgöl, 2024; Feng & Xiao, 2024; Klassen et al., 2021; Rone et al., 2023). These persistent challenges highlight the need for effective and classroom-based strategies to promote well-being, motivation, and engagement.

Studies recently explored several pedagogical approaches aimed at enhancing student well-being and engagement, including gamified learning, reflective practices, and mindfulness interventions (Carcelén-Fraile, 2025; Johnson et al., 2016; Lindenbach et al., 2024; Ruiz et al., 2024; Zimmer, 2021). Among all of these, gamified learning integrates game elements such as points, challenges, and immediate feedback into instruction, have been found to promote an enjoyable experience, more confident, motivation, and sustained their engagement (Coelho et al., 2025; Hamari et al., 2016; Triantafyllou et al., 2025), while reflection on the other hand, has been found to encourage students to critically evaluate their learning experiences, fostering academic efficacy and metacognitive skills (Boud et al., 2013; Cavilla, 2017; Ratnayake et al., 2024; Zimmerman, 2002). Additionally, brief mindfulness exercises, such as one-minute silent pauses, have been found to support emotional regulation, make individuals focus more, reduce anxiety and stress, which in turn enhances overall well-being even in brief interventions (Call et al., 2014; Komariah et al., 2022; Larrison, 2025; Zenner et al., 2014).

While each of these strategies has demonstrated benefits individually, we believe that combining gamification, reflection, and mindfulness within a single instructional setting fosters students' subjective well-being. Therefore, we aim to examine the influence of a 15-week classroom intervention that integrates gamified learning, weekly reflection, and one-minute silent mindfulness exercises on students' subjective well-being at the higher education level. Specifically, we seek to determine if the intervention produces meaningful changes in the four Student Subjective Well-being Questionnaire (SSWQ) subscales and overall student well-being. The following research questions guide this study:

RQ1: How does the intervention affect students' Joy of Learning (JL)?

RQ2: How does the intervention affect students' School Connectedness (SC)?

RQ3: How does the intervention affect students' Educational Purpose (EP)?

RQ4: How does the intervention affect students' Academic Efficacy (AE)?

RQ5: Does the combination of gamified learning, reflection, and one-minute silence significantly impact students' overall subjective well-being (GSW) in school?

2. LITERATURE REVIEW

2.1. Theoretical Framework

This study is grounded in positive psychology and educational psychology, emphasizing the promotion of student well-being through meaningful learning experiences and mindfulness practices. According to Kern et al. (2015) and the PERMA model, which was introduced by Seligman (2011), well-being can be enhanced through activities that increase positive emotions, engagement, relationships, meaning, and accomplishment. In schools, students' subjective well-being, as suggested by Renshaw et al. (2015), consists of four subscales: Joy of learning (JL), school connectedness (SC), educational purpose (EP), and academic efficacy (AE). The interactive quizzes and game-based challenges promote positive emotions, engagement, bring joy into learning, and improve students' performance, leveraging principles of self-determination theory, particularly intrinsic motivation, autonomy, and competence (Deci & Ryan, 2012). Reflection activities, on the other hand, align with metacognitive and experiential learning theories introduced by Kolb (1984), which emphasize that reflection fosters self-awareness, goal-setting, and the integration of learning, thereby strengthening EP and SC. Additionally, one-minute silent mindfulness exercises enhance attention, emotional regulation, and present-moment awareness, reducing stress and increasing focus, which may in turn contribute to SC, JL, and overall well-being, supported by mindfulness-based interventions, as emphasized by Kabat-Zinn (2003). The combination of these interventions represents a multi-component approach that addresses cognitive and affective domains and is expected to influence both SSWQ subscales and overall General Student Well-Being (GSW).

2.2. Conceptual Framework

This study is grounded in principles of positive and educational psychology, focusing on enhancing students' well-being through purposeful learning activities and mindfulness practices. This study examines

the effects of gamified learning, weekly reflection, and one-minute silent mindfulness exercises on the subjective well-being of the students within the school environment, as can be seen in Figure 1. Student well-being is measured through the four SSWQ subscales: Joy of Learning (JL), School Connectedness (SC), Educational Purpose (EP), and Academic Efficacy (AE), which together form General Student Well-Being (GSW) (Renshaw et al., 2015). Gamified learning is expected to enhance JL and AE through increased engagement and intrinsic motivation (Deci & Ryan, 2012), while reflection activities are expected to strengthen EP and SC through self-awareness and integration of learning experiences (Kolb, 1984), and one-minute silent mindfulness exercises are expected to improve SC, JL, and overall well-being through attention regulation and stress reduction (Kabat-Zinn, 2003). The combination of these interventions represents a multi-component approach aimed at enhancing both cognitive and affective aspects of students' well-being, ultimately contributing to GSW.

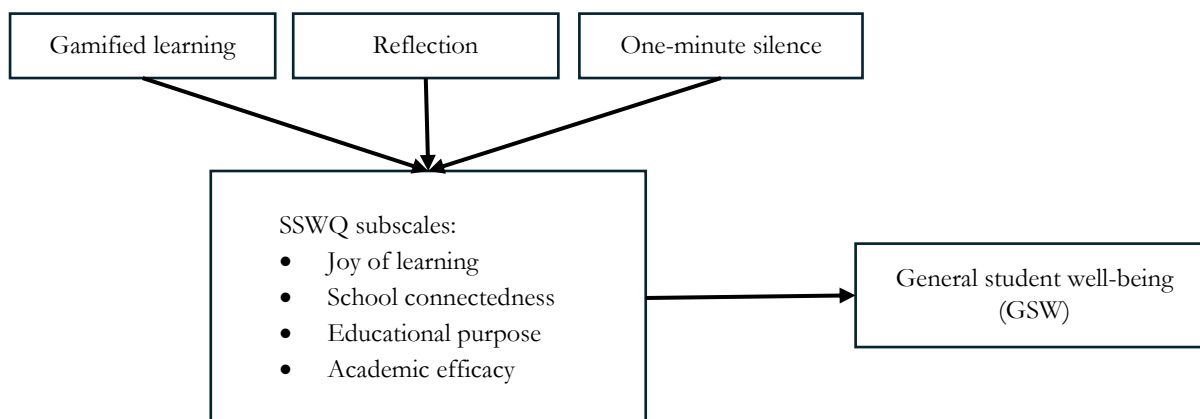


Figure 1. Pretest-Posttest Design

Figure 1 illustrates the conceptual framework, showing how gamified learning, reflection, and one-minute silent mindfulness exercises influence students' SSWQ subscales (Joy of Learning, School Connectedness, Educational Purpose, Academic Efficacy) and overall General Student Well-Being (GSW).

2.3. Gamified and the Joy of Learning

Gamified learning refers to the integration of game elements, including points, leaderboards, challenges, and immediate feedback into non-game contexts like education by educators (Christopoulos & Mystakidis, 2023; Gini et al., 2025), to enhance student engagement, foster their motivation, and make learning enjoyable (Cigdem et al., 2024; Deterding et al., 2011; Gini et al., 2025), which in turn leverage motivation and transform routine learning activities into more stimulating and rewarding experiences because of playful and interactive features of gamification tools (Boudadi & Gutiérrez-Colón, 2020; Mohanty & Christopher, 2023). This approach aligns closely with self-determination theory, which explains that students are more intrinsically motivated when their needs for autonomy, competence, and relatedness are satisfied (Ryan & Deci, 2000a).

Studies previously suggested that gamified learning can positively influence students' emotional engagement and overall joy of learning, one of the key dimensions of student subjective well-being (Huang & Wang, 2025; Oliveira et al., 2022; Özhan & Kocadere, 2019; Pum, 2025; Renshaw et al., 2024). Specifically, studies found that when teachers create gamified learning environments that foster flow and emotional engagement, they enhance motivation, improve academic success and emotional well-being, and reduce stress (Huang & Wang, 2025; Özhan & Kocadere, 2019). Additionally, studies have found that the use of gamified platforms, such as Quizizz or Kahoot!, enhances students' enjoyment, participation, increasing their academic performance and attention during lessons (Hamari et al., 2016; Martínez-Jiménez et al., 2021; Pum, 2025), while the immediate feedback and opportunities for mastery provided by the tools not only boost motivation but also reinforce learning outcomes (Martínez-Jiménez et al., 2021; Özhan & Kocadere, 2019; Pum, 2025), and making students more likely to approach academic activities with positive emotions and sustained interest (Coelho et al., 2025; Domínguez et al., 2013; Meşe & Dursun, 2018). However, the effectiveness of gamified learning may depend on the design of the gamified elements and

the context in which it is implemented (Luo, 2022; Pum, 2025; Pum et al., 2025). When gamification has been poorly designed by overly competitive structures or excessive extrinsic rewards, it may undermine intrinsic motivation and engagement (Dah et al., 2023; Deci et al., 1999; Pum et al., 2025). Therefore, it is crucial that gamified interventions balance challenge, reward, and meaningful learning tasks to optimize emotional and academic outcomes. In the context of student well-being, gamified learning is valuable because it targets the emotional and engagement components of learning, contributing to increased joy of learning and a more positive perception of the school environment.

2.4. Reflection and Academic Efficacy

Reflection is a structured, critical thinking process where an individual examines their own learning, behaviors, and observations to bridge the gap between experience and theory. It is a purposeful tool used to gain self-awareness, improve future decision-making, and drive personal or professional development (Boud et al., 2013; Perels et al., 2005; University of Hull Library, 2025). It enables students to gain deeper self-insight (Gelter, 2023; Ryan, 2011), monitor progress and identify challenges, enabling informed decisions that enhance academic outcomes (Boud et al., 2013; Zimmerman, 2002). This practice fosters self-awareness and emotional regulation (Kohn, 2024; Salem et al., 2025), influencing academic efficacy—a student's belief in their capability to succeed (Bandura, 1997; Colley et al., 2012; Renshaw et al., 2015). Empirical research confirms that structured reflection enhances both learning outcomes and self-efficacy (Colley et al., 2012; Hoang et al., 2025). For instance, experimental research conducted by Hoang et al. (2025) revealed that the incorporated structured self-reflection activities delivered notably better results in learning outcomes and hands-on performance than those in the comparison group. This strategy was also found to lead to higher academic confidence and a greater awareness of their learning strategies (Gelter, 2023; Kohn, 2024; McGuire & McGuire, 2009; Salem et al., 2025), fosters positive attitudes, such as persistence and enjoyment, aligning with social cognitive theory's emphasis on mastery experiences and self-monitoring (Ash & Clayton, 2009; Bandura, 1997; Faz & Obod, 2024). However, the effectiveness of this practice depends on quality; while unguided reflection may yield little change, structured reflection with clear prompts and consistent feedback is more likely to produce measurable benefits to student well-being and efficacy (Czyżowska & Gurba, 2021; Moon, 2004).

2.5. Mindfulness, School Connectedness, and Educational Purpose

Mindfulness is defined as a state of expanded awareness and acceptance of one's present-moment inner experiences—that is, intentionally observing one's thoughts, feelings, and sensations as they occur without trying to judge or avoid them. It involves paying attention to what is happening here and now (awareness) and learning to observe and accept the flow of one's thoughts and experiences rather than resisting or suppressing them (Henriques, 2015; Kabat-Zinn, 2003). In schools, interventions like brief breathing exercises help students regulate emotions and improve focus, directly impacting dimensions of subjective well-being such as emotional engagement and academic efficacy (Balban et al., 2023; Crişan et al., 2025; Renshaw et al., 2015; Schonert-Reichl & Lawlor, 2010). These practices reduce anxiety and enhance concentration, allowing students to approach tasks with greater confidence (Balban et al., 2023; Crişan et al., 2025; Zenner et al., 2014). Even one-minute mindful pauses can improve readiness to learn and reduce disruptive behaviors (Napoli et al., 2005). However, the effectiveness of mindfulness depends on consistency; routine, structured practices are more likely to yield measurable benefits than sporadic activities (Meiklejohn et al., 2012).

School connectedness is the sense that students feel cared for, supported, and valued by peers and adults in their school community, and that they belong and are part of the school's learning and social environment. It reflects a student's belief that teachers and other adults care about their learning as well as about them personally, and that the school is a place where they feel accepted, respected, and engaged, which provides the emotional security necessary to buffer against academic stress (American Psychological Association, 2014; Goodenow, 1993; Renshaw et al., 2015; Wentzel, 1998). High levels of connectedness are consistently linked to better academic performance and lower absenteeism (Duke, 2020; Libbey, 2004; Niehaus et al., 2012; Shochet et al., 2006), and because this construct is deeply influenced by broader factors

like classroom climate and teacher support, the impact of short-term interventions may be limited compared to long-term environmental shifts (Loukas et al., 2009).

Educational purpose involves students recognizing the personal value and relevance of school tasks (Damon et al., 2003; Renshaw et al., 2015). This purpose is a vision of what might be that individuals commit to and work toward, requiring self-knowledge, motivation, and the ability to identify what is significant (Steger et al., 2021). According to self-determination theory, perceiving academic work as purposeful enhances intrinsic motivation and persistence (Ryan & Deci, 2000b). While students with a strong sense of purpose view challenges as opportunities, fostering this mindset often requires sustained, goal-oriented strategies like mentoring or values clarification (Cotton Bronk et al., 2009; Heintalu et al., 2025; Macnamara & Burgoyne, 2023). Short-term interventions may show smaller effects on this construct if they do not deeply engage a student's personal meaning-making process (Damon, 2008).

3. METHODS

3.1. Research Design

A quantitative pretest–posttest design was used to investigate the impact of gamified learning, weekly reflection, and one-minute silent mindfulness exercises on students' subjective well-being (Creswell & Creswell, 2017). The study was conducted over a 15-week course, with each session lasting three hours per week. Students' well-being was measured at the beginning and end of the course using the Student Subjective Well-Being Questionnaire (SSWQ), which consists of four dimensions: Joy of Learning (JL), Educational Purpose (EP), School Connectedness (SC), and Academic Efficacy (AE) (Renshaw et al., 2015). The questionnaire also allows for the calculation of overall student well-being (GSW) as a composite of these four subscales (Renshaw et al., 2015). This research design enables the examination of changes in students' subjective well-being before and after the intervention period (Shadish et al., 2002).

3.2. Participants and Data Collection Procedures

The participants were students enrolled in a research methodology course at a private university in Cambodia. A total of 64 students, 37(57.81%) were female, and 27 (42.19%) were male, were selected through convenience sampling to participate in this study. All students were studying in their third year, and 60 (96.80%) of the students were aged between 18 and 24 years old. Only students who completed the full 15-week course and provided verbally informed consent were included in our study. Data were collected by an online survey Google Form administering the SSWQ as a pre-test in Week 1 and a post-test in Week 15. All responses were collected confidentially and voluntarily, and students were informed that they had the right to withdraw from the study without consequences.

3.3. Instruments

The Student Subjective Well-Being Questionnaire (SSWQ) was used to measure students' well-being. This instrument evaluates four subscales: Joy of Learning (JL), School Connectedness (SC), Educational Purpose (EP), and Academic Efficacy (AE) (Renshaw et al., 2015). A composite score, General Student Well-Being (GSW), was calculated to provide an overall measure of well-being. There are 16 items in total, 4 items for each subscale, adapted from the work of Renshaw et al. (2015). All items in the questionnaire were positive, and no negatively worded items were included. Specifically, Joy of Learning (JL) measures the students' presence of favorable emotional and mental states during the performance of educational activities. "e.g., *I enjoy working on class projects and assignments*"; School Connectedness (SC) measures the sense of belonging a student feels when they have positive relationships and feel supported by both classmates and staff "e.g., *I feel like people at my school care about me*"; Educational Purpose (EP) measures the degree to which a student perceives their schooling and coursework as having inherent value and long-term importance "e.g., *I believe things I learn at school will help me in my life*"; and Academic Efficacy (AE) measure student's confidence in their own capacity to manage academic workloads and meet the standards set by their institution "e.g., *I do well on my class assignments*" (Renshaw et al., 2015; Renshaw, 2024; Renshaw, 2025).

To adapt the SSWQ for use in the context of Cambodia, the translation and back-translation technique was used (Behling & Law, 2000). The scales in English form were first translated into the Khmer language (the original language of participants) by two bilingual lecturers who currently teach English at universities. The Khmer version of the questionnaires was then translated back into English by two independent researchers to see if each item of the questionnaire matched the initial meaning in the English version.

In this study, the SSWQ uses a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), and each participant spends around 5 to 7 minutes completing the questionnaire. The internal consistency reliability for the SSWQ in this sample was good for Joy of Learning ($\alpha = 0.68$), Educational Purpose ($\alpha = 0.70$), School Connectedness ($\alpha = 0.74$), Academic Efficacy ($\alpha = 0.89$), and overall student well-being ($\alpha = 0.87$).

3.4. Intervention Procedures

The interventions were integrated into the course schedule and conducted consistently over the 15 weeks. This intervention was implemented in the 15-week “Research Methodology” weekend class, where students attend two sessions every week (1 session equals 90 minutes). All participants in this study completed both the pretest and posttest and participated in the full 15-week intervention. Gamified learning was implemented using Quizizz, engaging students with interactive quizzes designed to increase motivation and enjoyment in learning, both in the classroom and at home, every week, and its use was consistent throughout the study. These activities were also aimed at helping students test their understanding and as a tool for them to review the lesson more easily, enjoyably, and get immediate feedback from the platform.

Weekly reflection activities were conducted at the end of each session. We provided students with 1 week to complete their weekly reflection paper. In this weekly reflection, students responded to guided prompts regarding their learning experiences and identified their strengths and areas of improvement. The students were also instructed to find learning strategies and list support needed for them to master the course and learning materials, working with other peers to enhance their understanding and collaboration. The goals are to help student own their learning, work with others to achieve their learning goals, enhance self-awareness, and support students’ connection to meaningful academic tasks.

Additionally, one-minute silent mindfulness exercises were conducted at the beginning or end of sessions to promote focus, calmness, connectedness to the self, and a sense of school connectedness. This activity was also implemented to help students be ready for each learning session. The strategies also aim to minimize the distraction of noise and digital devices since all the students need to turn off their phones or mute them during these 60 seconds. The students were asked to close their eyes, work with their breath, relax their tension, and connect with themselves. The combination of these interventions was applied systematically throughout the course to maximize potential effects on well-being.

3.5. Data Analysis

In this study, to answer our research questions and test the proposed hypothesis, data were analyzed using descriptive statistics, including mean and standard deviation for pre- and post-test scores of the general student well-being (GSW) and each subscale (JL, SC, EP, AE). Cronbach’s alpha was assessed for internal consistency reliability of the measurement used in this study. Paired-sample *t*-tests were conducted to determine significant differences between pre- and post-test scores of all subscales of the SSWQ and overall student well-being, and Cohen’s *d* was also calculated to assess the effect size of the interventions. SPSS version 27 was used to assess the scale’s internal consistency reliability using Cronbach’s alpha, and to answer the research questions, the paired-sample *t*-test was conducted. The significance level adopted was $p < 0.05$. The effect size was calculated and interpreted based on the Cohen conventions threshold; according to Hedges (2025), the effect size of $\delta = 0.2$ is considered small, $\delta = 0.5$ is considered medium, and $\delta = 0.8$ is considered large.

3.6. Ethical Considerations

Research ethics were prioritized throughout the study. This study was conducted in accordance with the institutional ethical guidelines. At our institution, this type of educational research does not require formal ethics approval with an official approval number. While formal written consent was not collected, verbal informed consent was obtained from all participating students prior to data collection. Participation in the study was voluntary, and they were informed that they could withdraw at any time without consequences and that it would have no effect on their grade. The confidentiality and anonymity of all responses were ensured, with data used solely for research purposes. The interventions were designed to be non-intrusive, with no risk reported, and were implemented without disrupting regular classroom activities, but rather to improve the learning experiences.

4. RESULTS

4.1. Descriptive Statistics

Table 1 presents the descriptive statistics for students' subjective well-being before and after the 15-week intervention. Mean scores increased for all subscales of the SSWQ and overall student well-being. Specifically, descriptive statistics revealed that students' joy of learning (JL) increased from pre-test ($M = 3.61$, $SD = 0.54$) to post-test ($M = 3.81$, $SD = 0.52$). Additionally, school connectedness (SC) increased from at pre-test ($M = 3.34$, $SD = 0.70$) to post-test ($M = 3.53$, $SD = 0.63$); while educational purpose (EP) and academic efficacy (AE) also showed an increase from ($M = 4.14$, $SD = 0.55$) to ($M = 4.24$, $SD = 0.47$) and ($M = 3.09$, $SD = 0.0.73$) to ($M = 3.35$, $SD = 0.58$), respectively. The findings also revealed that general student well-being (GSW) increased from 3.54 ($SD = 0.48$) at pre-test to 3.73 ($SD = 0.42$) at post-test. More specifically, the mean scores of Joy of Learning (JL), Educational Purpose (EP), School Connectedness (SC), Academic Efficacy (AE), and General Student Well-Being (GSW) were increased by 0.20, 0.10, 0.19, 0.26, and 0.19, respectively, indicating that the interventions had a positive impact on students' subjective well-being throughout the semester.

Table 1. Descriptive Statistics for Pre-Test and Post-Test Scores of SSWQ Subscales and Overall Well-Being

Variable	Pre-test		Post-test		Mean difference (Post – Pre)
	M	SD	M	SD	
Joy of learning (JL)	3.61	0.54	3.81	0.52	0.20
School connectedness (SC)	3.34	0.70	3.53	0.63	0.19
Educational purpose (EP)	4.14	0.55	4.24	0.47	0.10
Academic efficacy (AE)	3.09	0.73	3.35	0.58	0.26
General student well-being (GSW)	3.54	0.48	3.73	0.42	0.19

4.2. Paired-Sample T-Test Results

Table 2 presents the paired-sample *t*-test results. The paired-sample *t*-tests were conducted to determine whether the observed increases were statistically significant.

Table 2. Paired-Sample T-Test Results and Effect Sizes for SSWQ Subscales and Overall Well-Being

Variable	<i>t</i> (df)	<i>p</i> -value	Cohen's <i>d</i>	Interpretation
Joy of learning (JL)	2.007(63)	0.049	0.25	Significant increase
School connectedness (SC)	1.759(63)	0.083	0.22	Not significant
Educational purpose (EP)	1.096(63)	0.277	0.14	Not significant
Academic efficacy (AE)	2.298(63)	0.025	0.29	Significant increase
General student well-being (GSW)	2.341(63)	0.022	0.29	Significant increase

Paired-sample *t*-tests showed a significant increase in students' joy of learning (JL) ($t(63) = 2.007$, $p = 0.049$), academic efficacy (AE) ($t(63) = 2.298$, $p = 0.025$), and general student well-being ($t(63) = 2.341$, $p = 0.022$). The effect sizes, calculated using Cohen's *d*, ranged from 0.25 to 0.29, suggesting that these changes were meaningful, though not large. Although educational purpose (EP) and school connectedness (SC) showed a positive increase in mean scores, the change was not statistically significant ($t(63) = 1.096$, $p = 0.277$, Cohen's *d* = 0.14; $t(63) = 1.759$, $p = 0.083$, Cohen's *d* = 0.22). Additionally, general student well-

being (GSW) improved significantly from pre-test to post-test, with a t -value of 2.341, $p = 0.022$, and a Cohen's d of 0.29, reflecting a small effect.

5. DISCUSSION

The current study aims to determine if a multi-modal pedagogical intervention by integrating gamification, reflection, and mindfulness could significantly shift the landscape of student well-being within a high-stakes Research Methodology course. Our findings revealed that this integration significantly improves students' general subjective well-being (GSW), fosters joy of learning (JL), and enhances academic efficacy (AE). These findings support the central hypothesis that this combined intervention would improve well-being. While the impact on relational and purpose-driven constructs was less pronounced than anticipated, the significant growth in overall well-being confirms that even brief, non-intrusive classroom practices can change the psychological climate of a higher education environment. We found a significant improvement in joy of learning, which underscores the efficacy of integrating game elements like points and challenges into a rigorous academic curriculum. The increase in Joy of Learning aligns with Seligman's (2011) PERMA model, which emphasizes that engagement and positive emotions are central to well-being (Doan et al., 2023; Tsujimoto et al., 2024). Through gamified learning, students experienced interactive and enjoyable learning activities that enhanced intrinsic motivation, autonomy, and competence, as suggested by self-determination theory (Deci & Ryan, 2012). This likely contributed to both increased enjoyment of learning and enhanced academic efficacy, as students received immediate feedback and reinforcement through quizzes and game-based challenges. This finding is also consistent with the studies of Christopoulos and Mystakidis (2023) and Gini et al. (2025), who suggest that gamification transforms routine learning into stimulating, rewarding experiences. Our results also validate Self-Determination Theory (SDT) in the Cambodian context; by using Quizizz, we provided the "immediate feedback" and "opportunities for mastery" that Ryan and Deci (2000b) and Pum (2025) identified as vital for satisfying students' needs for autonomy and competence. Furthermore, the interactive nature of the intervention likely facilitated a "flow state," as described by Özhan and Kocadere (2019), which directly countered the "academic burnout" and "stress" prevalent in university students (Abdullah et al., 2024; Pérez-Jorge et al., 2025). By fostering emotional engagement, the gamified elements enabled students to approach academic tasks with sustained interest rather than anxiety (Coelho et al., 2025).

We also found a significant improvement in academic efficacy, which provides empirical evidence for Bandura's (1997) Social Cognitive Theory, emphasizing the power of "mastery experiences" and "self-monitoring." As established in the literature, structured reflection acts as a purposeful tool for gaining self-insight (Gelter, 2023; Ryan, 2011). The significant improvement in Academic Efficacy reflects the role of gamified learning and reflective practices in building students' confidence in their academic abilities. Reflection activities, grounded in Kolb's (1984) experiential learning theory, encouraged students to assess their learning, set goals, and apply strategies, thereby strengthening self-regulation and perceived competence. These cognitive processes likely facilitated a sense of mastery and academic accomplishment, which are key elements of PERMA's accomplishment domain. Our findings are also consistent with the work of Hoang et al. (2025), demonstrating that when students critically evaluate their progress, they develop the "academic confidence" necessary to meet institutional standards. Additionally, this efficacy was likely supported by the one-minute mindfulness pauses. The findings are consistent with Balban et al. (2023) and Zenner et al. (2014); these brief intervals of "present-moment awareness" likely assisted in emotional regulation and anxiety reduction. By minimizing the "distraction of noise and digital devices" through silent breathing, students achieved a state of "readiness to learn" (Napoli et al., 2005). This cognitive clarity, combined with the metacognitive skills gained through reflection (Ratnayake et al., 2024; Zimmerman, 2002), allowed students to perceive their capacity to succeed as significantly higher than at the pre-test stage. The positive but non-significant trends in School Connectedness (SC) and Educational Purpose (EP) offer a nuanced insight into the temporal boundaries of well-being interventions. Goodenow (1993) and Wentzel (1998) argued that connectedness is built on deep emotional security and the belief that peers and staff care about the student personally, which is significant for adolescence health, mental well-being (Attri et al., 2025; Hertz et al., 2022). Our results support Loukas et al. (2009), suggesting that these perceptions are influenced by broader "classroom climate" factors. Because our intervention focused primarily on individual reflection and digital interaction, it may not have provided the "sustained relational experiences" (Libbey, 2004) or "structured social interaction" (Allen et al., 2018) required to move this stable construct

within a single semester. Furthermore, Damon et al. (2003) and Steger et al. (2021) define purpose as a “vision of what might be.” While our reflection activities promoted self-awareness, they may not have explicitly targeted the “values clarification” or “mentoring” necessary to reshape a student’s long-term motivational process (Cotton Bronk et al., 2009; Heintalu et al., 2025). This outcome confirms that EP remains a relatively “stable and resistant” construct (Damon, 2008) that requires more than 15 weeks of course-specific activities to modify fundamentally.

Moreover, we found a significant shift in General Subjective Well-being (GSW), which reinforces the conceptualization of well-being as a “multidimensional construct” (Renshaw et al., 2015; Seligman, 2011). The increase in General Student Well-Being (GSW) suggests that combining interventions targeting both cognitive and affective domains can have a cumulative effect on overall well-being. One-minute silent mindfulness exercises, supported by Kabat-Zinn’s (2003) mindfulness framework, may have enhanced attention, emotional regulation, mental well-being, and stress reduction, contributing indirectly to higher JL and AE scores (Alvarado-García et al., 2025; Calderone et al., 2024). Mindfulness may also have fostered a calm, focused learning environment, reinforcing the benefits of gamification and reflection. By addressing the emotional (gamification), cognitive (reflection), and regulatory (mindfulness) facets of the student experience, the intervention created a cumulative effect that outweighed the stability of individual subscales. This supports the move toward “classroom-based strategies” to promote a thriving school environment, effectively mitigating the “low motivation and disengagement” cited as persistent concerns in modern education (Dağgöl, 2024; Feng & Xiao, 2024).

5.1. Limitations and Suggestions for Further Research

While this research provides important evidence for the efficacy of a multi-modal well-being intervention, several limitations must be considered when interpreting the results. First, the primary limitation is the use of a one-group pretest–posttest design. Without a randomized control group, it is difficult to definitively attribute the observed increases in joy of learning and academic efficacy solely to the intervention. As noted, university students face fluctuating levels of stress related to “high-stakes testing” and “workload”; therefore, external factors such as the natural rhythm of the semester or the instructor’s teaching style may have influenced the outcomes. We suggest that subsequent studies should employ experimental or quasi-experimental designs with a control group to strengthen causal inferences and isolate the “intervention effect” from natural development. Second, the sample was limited to a specific cohort of third-year students in a Research Methodology course at a single private university in Cambodia. The difficulty of this subject matter may have made the “regulatory buffer” provided by mindfulness and the “emotional engagement” of gamification particularly effective. Consequently, these results may not be fully generalizable to less rigorous subjects or different cultural and educational contexts. We suggest that researchers should explore the intervention across diverse disciplines (e.g., arts, hard sciences) and educational levels (e.g., secondary schools) to determine if the “well-being boost” remains consistent across varied academic pressures. Thirdly, this study relied exclusively on the SSWQ. While the SSWQ is a validated and reliable instrument (Renshaw et al., 2015), self-report data are inherently subject to social desirability bias. Students may have reported higher well-being because they perceived the innovative interventions (like Quizizz) as a positive effort by the instructor, rather than experiencing a fundamental psychological shift. Thus, future studies should incorporate mixed-methods approaches. Qualitative data, such as “reflective journals” or focus groups, could provide a deeper understanding of the lived experience behind the numerical shifts in well-being.

Furthermore, the 15-week duration, while sufficient to move “situational” states like Joy of Learning, appeared insufficient to significantly alter “dispositional” or relational constructs like educational purpose and school connectedness, as these dimensions are deeply rooted in long-term meaning-making and institutional climate. So, longitudinal studies are needed to determine if the positive trends in SC and EP reach statistical significance over a full academic year. Additionally, future interventions should explicitly include collaborative, peer-driven activities to target the relational depth required for school connectedness. Finally, because the intervention combined gamification, reflection, and mindfulness simultaneously, it is impossible to determine the individual contribution of each element. We cannot say for certain if the “one-minute silence” was more or less effective than the “weekly reflection” in driving academic efficacy. We highly recommend that a separate study design—where different groups receive only one component (e.g.,

Gamification-only vs. Mindfulness-only)—would help identify which specific strategy is the most potent driver for each subscale of student well-being.

5.2. Conclusion and Implications

This study provides compelling evidence that a 15-week classroom-based intervention integrating gamified learning, weekly reflection, and one-minute mindfulness significantly enhances students' General Subjective Well-being (GSW). By targeting the multidimensional nature of well-being as defined by Renshaw et al. (2015), the intervention successfully addressed the persistent challenges of “academic stress, low motivation, and disengagement” that often characterize the university experience.

The most significant impact of the intervention was observed in the joy of learning (JL) and academic efficacy (AE) subscales. These findings demonstrate that pedagogical strategies focusing on “emotional engagement” and “metacognitive skills” can produce measurable shifts in student well-being within a single semester. While school connectedness (SC) and educational purpose (EP) did not show statistically significant changes, the positive trends observed suggest that these “stable and resistant” constructs may require more longitudinal or social-relational interventions to fully transform. The results offer several actionable insights for higher education practitioners. First, rather than treating well-being as a separate seminar, educators can embed “low-cost, non-intrusive” practices like Quizizz and one-minute silence directly into the curriculum. This creates a “supportive and thriving school environment” without sacrificing instructional time. Second, the success of weekly reflections in boosting academic efficacy suggests that providing “clear prompts and consistent feedback” is essential for helping students gain “self-insight” and confidence in their capacity to manage workloads. Furthermore, the significant increase in joy of learning confirms that “playful and interactive features” can reduce the anxiety associated with complex subjects like research methodology, fostering “sustained interest.” This holistic approach ensures that academic achievement and psychological health are treated as complementary, rather than competing, priorities.

Acknowledgments. I thank the University of Management and Economics for providing the necessary facilities and resources to conduct my research.

Research Ethics. This study was conducted in accordance with the institutional ethical guidelines. At our institution, this type of educational research does not require formal ethics approval with an official approval number. While formal written consent was not collected, verbal informed consent was obtained from all participating students prior to data collection. Participation in the study was voluntary, and they were informed that they could withdraw at any time without consequences and that it would have no effect on their grade. The confidentiality and anonymity of all responses were ensured, with data used solely for research purposes. The interventions were designed to be non-intrusive, with no risk reported, and were implemented without disrupting regular classroom activities, but rather to improve the learning experiences.

Data Availability Statement. Data from this study are available from the corresponding author upon reasonable request.

Conflicts of Interest. The authors declare that there are no competing interests.

Funding. The author(s) received no financial support for the research, authorship, and/or publication of this article.

REFERENCES

- Abdullah, T., Ali, J., & Alam, A. (2024). Academic stress and its impact on students' emotional well-being and performance at universities. *Journal of Educational Psychology and Pedagogical Sciences*, 4(1), 13-30. <https://jepps.su.edu.pk/article/34>
- Allen, K. A., Kern, M. L., Vella-Brodrick, D., Hattie, J., & Waters, L. (2018). What schools need to know about fostering school belonging: A meta-analysis. *Educational Psychology Review*, 30(1), 1–34. <https://doi.org/10.1007/s10648-016-9389-8>
- Alvarado-García, P. A. A., Soto-Vásquez, M. R., Infantes Gomez, F. M., Guzman Rodriguez, N. M., & Castro-Paniagua, W. G. (2025). Effect of a mindfulness program on stress, anxiety, depression, sleep quality, social

- support, and life satisfaction: a quasi-experimental study in college students. *Frontiers in Psychology*, 16. <https://doi.org/10.3389/fpsyg.2025.1508934>
- American Psychological Association. (2014). *School connectedness*. APA Safe and Supportive Schools. <https://www.apa.org/pi/lgbt/programs/safe-supportive/school-connectedness>
- Ash, S. L., & Clayton, P. H. (2009). Generating, deepening, and documenting learning: The power of critical reflection in applied learning. *Journal of Applied Learning in Higher Education*, 1, 25–48. https://doi.org/10.57186/jalhe_2009_v1a2p25-48
- Attri, S. A., Springer, A. E., & Kelder, S. H. (2025). A scoping review of school connectedness interventions for adolescents. *The Journal of School Health*, 95(10), 880–899. <https://doi.org/10.1111/josh.70036>
- Balashov, E. (2022). Psychological well-being as cognitive-emotional component of student self-regulated learning. *International Journal of Cognitive Research in Science, Engineering and Education*, 10(2), 101–109. <https://doi.org/10.23947/2334-8496-2022-10-2-101-109>
- Balban, M. Y., Neri, E., Kogon, M. M., Weed, L., Nouriani, B., Jo, B., ... & Huberman, A. D. (2023). Brief structured respiration practices enhance mood and reduce physiological arousal. *Cell Reports Medicine*, 4(1). <https://doi.org/10.1016/j.xcrm.2022.100895>
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. Macmillan
- Barbayannis, G., Bandari, M., Zheng, X., Baquerizo, H., Pecor, K. W., & Ming, X. (2022). Academic stress and mental well-being in college students: Correlations, affected groups, and COVID-19. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.886344>
- Behling, O., & Law, K. S. (2000). *Translating questionnaires and other research instruments: Problems and solutions*. Sage.
- Boud, D., Keogh, R., & Walker, D. (2013). *Reflection: Turning experience into learning*. Routledge.
- Boudadi, N. A., & Gutiérrez-Colón, M. (2020). Effect of gamification on students' motivation and learning achievement in second language acquisition within higher education: A literature review 2011–2019. *The EuroCALL Review*, 28(1), 57–69. <https://doi.org/10.4995/eurocall.2020.12974>
- Calderone, A., Latella, D., Impellizzeri, F., de Pasquale, P., Famà, F., Quartarone, A., & Calabrò, R. S. (2024). Neurobiological changes induced by mindfulness and meditation: A systematic review. *Biomedicines*, 12(11). <https://doi.org/10.3390/biomedicines12112613>
- Call, D., Miron, L., & Orcutt, H. (2014). Effectiveness of brief mindfulness techniques in reducing symptoms of anxiety and stress. *Mindfulness*, 5(6), 658–668. <https://doi.org/10.1007/s12671-013-0218-6>
- Carcelén-Fraile, M. D. C. (2025). Active gamification in the emotional well-being and social skills of primary education students. *Education Sciences*, 15(2), 1–19. <https://doi.org/10.3390/educsci15020212>
- Carreño-Flores, O. D., Jalixto-Erazo, H. M., Oré de los Santos, M. A., Mejía-Guerrero, H., Cantaro-Popayan, F. A., Quispe-Anccasi, F. K., & Rodríguez-Barboza, J. R. (2024). Emotional well-being and its impact on academic performance in university students: A pathway to achieving the Sustainable Development Goals (SDGs). *Pakistan Journal of Life & Social Sciences*, 22(2). <https://doi.org/10.57239/PJLSS-2024-22.2.00365>
- Cavilla, D. (2017). The effects of student reflection on academic performance and motivation. *Sage Open*, 7(3). <https://doi.org/10.1177/2158244017733790>
- Christopoulos, A., & Mystakidis, S. (2023). Gamification in education. *Encyclopedia*, 3(4), 1223–1243. <https://doi.org/10.3390/encyclopedia3040089>
- Cigdem, H., Ozturk, M., Karabacak, Y., Atik, N., Gürkan, S., & Aldemir, M. H. (2024). Unlocking student engagement and achievement: The impact of leaderboard gamification in online formative assessment for engineering education. *Education and Information Technologies*, 29(18), 24835–24860. <https://doi.org/10.1007/s10639-024-12845-2>
- Coelho, F., Rando, B., Aparício, D., Pontífice-Sousa, P., Gonçalves, D., & Abreu, A. M. (2025). The impact of educational gamification on cognition, emotions, and motivation: A randomized controlled trial. *Journal of Computers in Education*, 1–48. <https://doi.org/10.1007/s40692-025-00366-x>
- Colley, B. M., Bilics, A. R., & Lerch, C. M. (2012). Reflection: A key component to thinking critically. *The Canadian Journal for the Scholarship of Teaching and Learning*, 3(1). <https://doi.org/10.5206/cjsotl-rcacea.2012.1.2>
- Cotton Bronk, K., Hill, P. L., Lapsley, D. K., Talib, T. L., & Finch, H. (2009). Purpose, hope, and life satisfaction in three age groups. *The Journal of Positive Psychology*, 4(6), 500–510. <https://doi.org/10.1080/17439760903271439>

- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage Publications.
- Crișan, A. F., Pescaru, C. C., Maritescu, A., Carunta, V., Stoicescu, E. R., Oancea, C., ... & Onofrei, R. R. (2025). A 14-week structured breathing program: An investigation into its impact on psychological health parameters in university students. *BMC Public Health*, 25(1). <https://doi.org/10.1186/s12889-025-22585-8>
- Czyżowska, N., & Gurba, E. (2021). Does reflection on everyday events enhance meaning in life and well-being among emerging adults? Self-efficacy as mediator between meaning in life and well-being. *International Journal of Environmental Research and Public Health*, 18(18). <https://doi.org/10.3390/ijerph18189714>
- Dağgöl, G. D. (2024). The reasons of lack of motivation from the students' and teachers' voices. *The Journal of Academic Social Science*, 1(1), 35-45. <https://doi.org/10.16992/ASOS.13>
- Dah, J., Hussin, N., Zaini, M. K., Helda, L. I., Ametefe, D. S., Aliu, A. A., ... & Caliskan, A. (2023). Gamification equilibrium: The fulcrum for balanced intrinsic motivation and extrinsic rewards in electronic learning systems. *International Journal of Serious Games*, 10(3), 83-116. <https://doi.org/10.17083/ijsg.v10i3.633>
- Damon, W. (2008). *The path to purpose: Helping children find their calling in life*. Free Press.
- Damon, W., Menon, J., & Cotton Bronk, K. (2003). The development of purpose during adolescence. *Applied Developmental Science*, 7(3), 119-128. https://doi.org/10.1207/S1532480XADS0703_2
- Deci, E. L., & Ryan, R. M. (2012). Self-determination theory. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of theories of social psychology* (pp. 416-436). Sage Publications Ltd. <https://doi.org/10.4135/9781446249215.n21>
- Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, 125(6), 627-668. <https://doi.org/10.1037/0033-2909.125.6.627>
- Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gamefulness: Defining "gamification." In *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments* (pp. 9-15). <https://doi.org/10.1145/2181037.2181040>
- Doan, S., MacDonald, S., & Swaminathan, K. (2023). The socialization of positive emotions: Implications for physical health and psychological adjustment. *Mental Health & Prevention*, 30. <https://doi.org/10.1016/j.mhp.2023.200272>
- Domínguez, A., Sáenz-de-Navarrete, J., de Marcos, L., Fernández-Sanz, L., Pagés, C., & Martínez-Herráiz, J. J. (2013). Gamifying learning experiences: Practical implications and outcomes. *Computers & Education*, 63, 380-392. <https://doi.org/10.1016/j.compedu.2012.12.020>
- Douwes, R., Metselaar, J., Pijnenborg, G. H. M., & Boonstra, N. (2023). Well-being of students in higher education: The importance of a student perspective. *Cogent Education*, 10(1). <https://doi.org/10.1080/2331186X.2023.2190697>
- Duke, N. N. (2020). Adolescent adversity, school attendance and academic achievement: School connection and the potential for mitigating risk. *Journal of School Health*, 90(8), 618-629. <https://doi.org/10.1111/josh.12910>
- Faz, F.F., & Obod, M.M. (2024). Exploring the impact of reflective practices on the attitude towards mathematics of grade 8 students in a public science high school. *Journal for the Mathematics Education and Teaching Practices*, 5(2), 101-109. <https://doi.org/10.5281/zenodo.14599905>
- Feng, Z., & Xiao, H. (2024). The impact of students' lack of learning motivation and teachers' teaching methods on innovation resistance in the context of big data. *Learning and Motivation*, 87. <https://doi.org/10.1016/j.lmot.2024.102020>
- Gelter, H. (2003). Why is reflective thinking uncommon. *Reflective Practice*, 4(3), 337-344. <https://doi.org/10.1080/1462394032000112237>
- Gini, F., Bassanelli, S., Bonetti, F., Mogavi, R. H., Bucchiarione, A., & Marconi, A. (2025). The role and scope of gamification in education: A scientometric literature review. *Acta Psychologica*, 259. <https://doi.org/10.1016/j.actpsy.2025.105418>
- Goodenow, C. (1993). Classroom belonging among early adolescent students: Relationships to motivation and achievement. *The Journal of Early Adolescence*, 13(1), 21-43. <https://doi.org/10.1177/0272431693013001002>

- Hamari, J., Shernoff, D. J., Rowe, E., Coller, B., Asbell-Clarke, J., & Edwards, T. (2016). Challenging games help students learn: An empirical study on engagement, flow and immersion in game-based learning. *Computers in Human Behavior*, 54, 170–179. <https://doi.org/10.1016/j.chb.2015.07.045>
- Hedges L. V. (2025). Interpretation of the standardized mean difference effect size when distributions are not normal or homoscedastic. *Educational and Psychological Measurement*, 85(2), 245–257. <https://doi.org/10.1177/00131644241278928>
- Heintalu, K., Saks, K., Edisherashvili, N., & Dekker, I. (2025). The conceptualisation of goal setting and goal orientation in higher education: A systematic literature review. *Educational Research Review*, 48. <https://doi.org/10.1016/j.edurev.2025.100709>
- Henriques, G. (2015, February 6). *What is mindfulness and how does it work?* Psychology Today. Retrieved from <https://www.psychologytoday.com/us/blog/theory-knowledge/201502/what-is-mindfulness-and-how-does-it-work>
- Hertz, M. F., Kilmer, G., Verlenden, J., Liddon, N., Rasberry, C. N., Barrios, L. C., & Ethier, K. A. (2022). Adolescent mental health, connectedness, and mode of school instruction during COVID-19. *Journal of Adolescent Health*, 70(1), 57–63. <https://doi.org/10.1016/j.jadohealth.2021.10.021>
- Hoang, A., Hepburn, S. J., Morawska, A., & Sanders, M. R. (2025). The effect of self-reflection on the outcomes of online clinical skills training: a comparative study. *Advances in Health Sciences Education*, 1-19. <https://doi.org/10.1007/s10459-025-10425-8>
- Huang, Y. T., & Wang, T. H. (2025). Effect of integrating gamified teaching activities on learning emotions of design students with different learning styles. *Interactive Learning Environments*, 33(5), 3614–3634. <https://doi.org/10.1080/10494820.2024.2446538>
- Johnson, D., Deterding, S., Kuhn, K. A., Staneva, A., Stoyanov, S., & Hides, L. (2016). Gamification for health and wellbeing: A systematic review of the literature. *Internet Interventions*, 6, 89–106. <https://doi.org/10.1016/j.invent.2016.10.002>
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice*, 10(2), 144–156. <https://doi.org/10.1093/clipsy.bpg016>
- Kern, M. L., Waters, L. E., Adler, A., & White, M. A. (2015). A multidimensional approach to measuring well-being in students: Application of the PERMA framework. *The Journal of Positive Psychology*, 10(3), 262–271. <https://doi.org/10.1080/17439760.2014.936962>
- Klassen, J. A., Stewart, S. L., & Lapshina, N. (2021). School disengagement and mental health service intensity need among clinically referred students utilizing the interRAI child and youth mental health assessment instrument. *Frontiers in Psychiatry*, 12. <https://doi.org/10.3389/fpsy.2021.690917>
- Kohn, P. (2024). Reflection and self-awareness: Cultivating effective leadership mindset. In *Elevating Leadership: Innovative Teaching Methods for Developing Future Leaders* (pp. 91–118). Emerald Publishing Limited. <https://doi.org/10.1108/978-1-83549-564-320241007>
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. Prentice Hall. <http://academic.regis.edu/ed205/Kolb.pdf>
- Komariah, M., Ibrahim, K., Pahria, T., Rahayuwati, L., & Somantri, I. (2022). Effect of mindfulness breathing meditation on depression, anxiety, and stress: A randomized controlled trial among university students. *Healthcare*, 11(1), 1–13. <https://doi.org/10.3390/healthcare11010026>
- Larrison, J. (2025). *The impact of mindfulness practices on enhancing focus and reducing behavioral challenges* (Master's Theses, Northwestern College). Retrieved from https://nwcommons.nwciowa.edu/cgi/viewcontent.cgi?article=1694&context=education_masters
- Libbey, H. P. (2004). Measuring student relationships to school: Attachment, bonding, connectedness, and engagement. *Journal of School Health*, 74(7), 274–283. <https://doi.org/10.1111/j.1746-1561.2004.tb08284.x>
- Lindenbach, D., Dimitropoulos, G., Wood, V., Bainbridge, C., Anderson, A., Hervey, V., ... Wang, E. Y. (2024). The impact of reflective practice on the wellbeing and competency of supervisors and frontline staff in a nonprofit community youth mental health provider. *Child & Youth Services*, 1–23. <https://doi.org/10.1080/0145935X.2024.2429656>

- Loukas, A., Ripperger-Suhler, K. G., & Horton, K. D. (2009). Examining temporal associations between school connectedness and early adolescent adjustment. *Journal of Youth and Adolescence*, 38(6), 804–812. <https://doi.org/10.1007/s10964-008-9312-9>
- Luo, Z. (2022). Gamification for educational purposes: What are the factors contributing to varied effectiveness?. *Education and Information Technologies*, 27(1), 891-915. <https://doi.org/10.1007/s10639-021-10642-9>
- Macnamara, B. N., & Burgoyne, A. P. (2023). Do growth mindset interventions impact students' academic achievement? A systematic review and meta-analysis with recommendations for best practices. *Psychological Bulletin*, 149(3-4), 1-134. <https://doi.org/10.31234/osf.io/ba7pe>
- Martínez-Jiménez, R., Pedrosa-Ortega, C., Licerán-Gutiérrez, A., Ruiz-Jiménez, M. C., & García-Martí, E. (2021). Kahoot! as a tool to improve student academic performance in business management subjects. *Sustainability*, 13(5), 1-13. <https://doi.org/10.3390/su13052969>
- McGuire, L., & McGuire, R. (2009). Reflective journaling to enhance student learning. *College Teaching*, 57(1), 1–7. <https://doi.org/10.1080/87567550903222903>
- Meiklejohn, J., Phillips, C., Freedman, M. L., Griffin, M. L., Biegel, G., Roach, A., ... & Saltzman, A. (2012). Integrating mindfulness training into K-12 education: Fostering the resilience of teachers and students. *Mindfulness*, 3(4), 291–307. <https://doi.org/10.1007/s12671-012-0094-5>
- Meşe, C., & Dursun, Ö. (2018). Influence of gamification elements on emotion, interest and online participation. *Education and Science*, 43(196). <https://doi.org/10.15390/EB.2018.7726>
- Mohanty, S., & Christopher, B. P. (2023). A study on role of gamification elements in training outcomes: Comparing the mediating effect of intrinsic and extrinsic motivation. *The Learning Organization*, 30(4), 480-500. <https://doi.org/10.1108/TLO-08-2022-0098>
- Moon, J. A. (2004). *A handbook of reflective and experiential learning: Theory and practice*. Routledge.
- Napoli, M., Krech, P. R., & Holley, L. C. (2005). Mindfulness training for elementary school students: The attention academy. *Journal of Applied School Psychology*, 21(1), 99–125. https://psycnet.apa.org/doi/10.1300/J370v21n01_05
- Niehaus, K., Rudasill, K. M., & Rakes, C. R. (2012). A longitudinal study of school connectedness and academic outcomes across sixth grade. *Journal of School Psychology*, 50(4), 443-460. <https://doi.org/10.1016/j.jsp.2012.03.002>
- Oliveira, W., Hamari, J., Joaquim, S., Toda, A. M., Palomino, P. T., Vassileva, J., & Isotani, S. (2022). The effects of personalized gamification on students' flow experience, motivation, and enjoyment. *Smart Learning Environments*, 9(1), 1-26. <https://doi.org/10.1186/s40561-022-00194-x>
- Özhan, Ş. Ç., & Kocadere, S. A. (2019). The effects of flow, emotional engagement, and motivation on success in a gamified online learning environment. *Journal of Educational Computing Research*, 57(8), 2006-2031. <https://doi.org/10.1177/0735633118823159>
- Perels, F., Gürtler, T., & Schmitz, B. (2005). Training of self-regulatory and problem-solving competence. *Learning and Instruction*, 15(2), 123-139. <https://doi.org/10.1016/j.learninstruc.2005.04.010>
- Pérez-Jorge, D., Boutaba-Alehyan, M., González-Contreras, A. I., & Pérez-Pérez, I. (2025). Examining the effects of academic stress on student well-being in higher education. *Humanities and Social Sciences Communications*, 12(1), 1-13. <https://doi.org/10.1057/s41599-025-04698-y>
- Pum, M. (2025). Examining the predictive role of weekly game-based online quiz performance on academic achievement and engagement. *Asian Journal of Distance Education*, 20(2), 25-38. Retrieved from <https://www.asianjde.com/ojs/index.php/AsianJDE/article/view/825>
- Pum, M., Mey, D., Van, S., & Seung, S. (2025). Gamification for developing 21st-century skills in education: A review of current practices and impacts. *Interdisciplinary Educational Technology*, 1(1), 1-12. <https://doi.org/10.71176/interedtech/17569>
- Ratnayake, A., Bansal, A., Wong, N., Saseetharan, T., Prompiengchai, S., Jenne, A., ... & Ashok, A. (2024). All “wrapped” up in reflection: Supporting metacognitive awareness to promote students' self-regulated learning. *Journal of Microbiology and Biology Education*, 25(1), 1-16. <https://doi.org/10.1128/jmbe.00103-23>
- Renshaw, T. L. (2024). *Student Subjective Wellbeing Questionnaire (SSWQ)*. Publicly available measure. Retrieved from <https://osf.io/48av7>

- Renshaw, T. L. (2025). *User guide for the Student Subjective Wellbeing Questionnaire (SSWQ)*. Retrieved from <https://www.tyrenshaw.org/sswq>
- Renshaw, T. L., Long, A. C. J., & Cook, C. R. (2015). Assessing adolescents' positive psychological functioning at school: Development and validation of the Student Subjective Wellbeing Questionnaire. *School Psychology Quarterly*, 30(4), 534–552. <https://doi.org/10.1037/spq0000088>
- Rone, N. , Guao, N. , Jariol Jr, M. , Acedillo, N. , Balinton, K. & Francisco, J. (2023). Students' lack of interest, motivation in learning, and classroom participation: How to motivate them?. *Psychology and Education: A Multidisciplinary Journal*, 7(8), 636-645. <https://doi.org/10.5281/zenodo.7749977>
- Ruiz, J. J. R., Sanchez, A. D. V., & Figueredo, O. R. B. (2024). Impact of gamification on school engagement: A systematic review. *Frontiers in Education*, 9. <https://doi.org/10.3389/feduc.2024.1466926>
- Ryan, M. (2011). Improving reflective writing in higher education: A social semiotic perspective. *Teaching in Higher Education*, 16(1), 99–111. <https://doi.org/10.1080/13562517.2010.507311>
- Ryan, R. M., & Deci, E. L. (2000a). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25(1), 54–67. <https://doi.org/10.1006/ceps.1999.1020>
- Ryan, R. M., & Deci, E. L. (2000b). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68–78. <https://doi.org/10.1037/0003-066X.55.1.68>
- Salem, G. M. M., Hashimi, W., & El-Ashry, A. M. (2025). Reflective mindfulness and emotional regulation training to enhance nursing students' self-awareness, understanding, and regulation: a mixed method randomized controlled trial. *BMC Nursing*, 24(1), 478. <https://doi.org/10.1186/s12912-025-03086-w>
- Schonert-Reichl, K. A., & Lawlor, M. S. (2010). The effects of a mindfulness-based education program on pre- and early adolescents' well-being and social and emotional competence. *Mindfulness*, 1(3), 137–151. <https://doi.org/10.1007/s12671-010-0011-8>
- Seligman, M. E. P. (2011). *Flourish: A visionary new understanding of happiness and well-being*. Free Press.
- Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and quasi-experimental designs for generalized causal inference*. Houghton Mifflin and Company.
- Shochet, I. M., Dadds, M. R., Ham, D., & Montague, R. (2006). School connectedness is an underemphasized parameter in adolescent mental health: Results of a community prediction study. *Journal of Clinical Child & Adolescent Psychology*, 35(2), 170–179. https://doi.org/10.1207/s15374424jccp3502_1
- Steger, M. F., O'Donnell, M. B., & Morse, J. L. (2021). Helping students find their way to meaning: Meaning and purpose in education. In *The Palgrave handbook of positive education* (pp. 551-579). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-030-64537-3_22
- Triantafyllou, S. A., Georgiadis, C., & Sapounidis, T. (2025). Gamification in education and training: A literature review. *International Review of Education*, 71, 483-517. <https://doi.org/10.1007/s11159-024-10111-8>
- Tsujimoto, M., Saito, T., Matsuzaki, Y., & Kawashima, R. (2024). Role of positive and negative emotion regulation in well-being and health: The interplay between positive and negative emotion regulation abilities is linked to mental and physical health. *Journal of Happiness Studies*, 25(1). <https://doi.org/10.1007/s10902-024-00714-1>
- University of Hull Library. (2025). *What is reflection? Why do it?* Hull University Reflective Writing LibGuide. Retrieved from <https://libguides.hull.ac.uk/reflectivewriting/reflection1a>
- Wentzel, K. R. (1998). Social relationships and motivation in middle school: The role of parents, teachers, and peers. *Journal of Educational Psychology*, 90(2), 202–209. <https://doi.org/10.1037/0022-0663.90.2.202>
- Zenner, C., Herrnleben-Kurz, S., & Walach, H. (2014). Mindfulness-based interventions in schools—a systematic review and meta-analysis. *Frontiers in Psychology*, 5. <https://doi.org/10.3389/fpsyg.2014.00603>
- Zhang, J., Meng, J., & Wen, X. (2025). The relationship between stress and academic burnout in college students: evidence from longitudinal data on indirect effects. *Frontiers in Psychology*, 16. <https://doi.org/10.3389/fpsyg.2025.1517920>
- Zimmer, S. J. (2021). *Mindfulness and well-being*. EBSCO Research Starters. Retrieved from <https://www.ebsco.com/research-starters/social-sciences-and-humanities/mindfulness-and-well-being>
- Zimmerman, B. J. (2002). Becoming a self-regulated learner: An overview. *Theory Into Practice*, 41(2), 64–70. https://doi.org/10.1207/s15430421tip4102_2