"Helping educators and students reduce and manage performance anxieties"

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Friday, 25 July 2025

9.00 a.m. to 5.00 p.m.

held at

Informatics Institute of Technology (IIT),

Spencer Building, Colombo 03

DEDICATION

Dedicated to the ever-reminiscent memory of Dr Shrinika Weerakoon

BSc, MSc, MBA (Perth), DBA (Bath, UK), SEDA Accredited Teacher, ASTHE

- an irreplaceable Higher Educational Developer
- a colleague, a friend, a guide, a change agent: who always found time to be there for you
- who epitomised a life that: “what you leave behind is not what is engraved in stone monuments, but what is woven into the lives of others" (Pericles)

and

- in whose memory SLAIHEE has instituted an annual Award:
  "Dr Shrinika Weerakoon Memorial Award for the Best Paper in *Helping educators and students reduce and manage performance anxieties*”

SLAIHEE Conference 2025

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SLAIHEE Conference, 25th July 2025 - Session Timetable (page #s refer to pages in Conference Proceedings Book)	
Session /venue:	Session I [Venue: **Floor 7,** Auditorium, IIT School of Computing]
Session Chair: Ms Shalini Kaduwela, Asia Pacific Institute of Information Technology	
Time	Paper #, Paper Title. author(s), page numbers
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11.00 – 11.15	Paper # 1.2: Reducing presumed mathematics performance anxiety in students using deliberate formative assessment practice: A quantitative study on examination-based practice - B.G.M.S. Sriyananda (pp. 6-9)
11.15 – 11.30	Paper # 1.3: Student perceptions on alleviating large-scale assignment anxiety through stepwise submissions with iterative formative feedback - Janani Harischandra, Asini Silva, U.I. Abeyasinghe & Sanjula Samarasekara (pp. 10-14)
11.30 – 11.45	Paper # 1.4: Use of content chunking and scaffolding in teaching to reduce learning anxieties in students: Students perception - Abarnah Kirupananda (pp. 15-20)
11.45– 12.00	Paper # 1.5: Scaffolding technique to reduce performance anxiety in learning python programming - Asini Silva & Torin Wirasingha (pp. 21-25)
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12.30 – 12.45	Paper # 1.8: Flipped classroom gamification for anxiety management and learning outcome improvement in Level 1 Ayurveda undergraduates - I.G.P.R. Kulanatha (pp. 36-40)

Flipped classroom gamification for anxiety management and learning outcome improvement in Level 1 Ayurveda undergraduates

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Abstract

Anxiety and stress are common where Constructive Alignment (CA) is lacking in education. CA is needed more when learning is driven by the complex concepts inherent in Ayurveda studies. Over-reliance on extrinsic motivators (e.g., reward focus, examination shortcuts) demotivates struggling students and undermines intrinsic motivation, leading to challenge avoidance, hindering participation and clinical performance. This study investigated whether specific Teaching Learning Activities (TLAs) could mitigate performance anxiety and enhance learning outcomes by addressing both extrinsic and intrinsic motivators, particularly for struggling learners. Therefore, this research sought to answer: If an Ayurveda curriculum integrates diverse teaching strategies catering to both extrinsic and intrinsic motivators and provides targeted support for students with learning difficulties, will it lead to (a) reduced self-reported performance anxiety and (b) increased student engagement in group activities, indicating a more inclusive learning environment? This study evaluated a flipped classroom approach incorporating video-based learning followed by an interactive classroom activity with 180 Level 1 Ayurveda students. Divided into 14 groups, students applied video content by enacting patient scenarios with targeted questioning to identify disease traits. Classroom time emphasized peer interaction and discussion. Cognitive performance and confidence were assessed via gamified testing with re-attempt options. Gamified testing significantly increased student confidence and reduced anxiety (in over 80%). Performance on 30 analytical MCQs showed 49.3% of students achieving a pass grade, indicating a positive impact on learning 'basic' knowledge. Re-attempts promoted a growth mindset. However, 14.1% non-attendance suggests a need to address access and engagement barriers. Gamified testing within a flipped classroom model enhanced undergraduate level I Ayurveda education by improving memory retention while reducing anxiety and supporting 'basic' conceptual learning. The positive impact on anxiety, along with a substantial portion demonstrating basic learning, supports the method's efficacy. However, the non-attendance rate highlights the need for further investigation to ensure equitable access and optimize benefits for all students.

Background

Contemporary education presents students with significant anxiety and stress, notably in philosophy-based Ayurveda studies due to complex concepts. This intensifies when educational design lacks Constructive Alignment (CA) - a principle ensuring aligned learning outcomes, activities, and assessments for deep learning (Biggs, 1996). CA absence creates a fundamental disconnect, reducing effectiveness.

Over-reliance on extrinsic motivators (e.g., high grades, exam shortcuts) further exacerbates issues. This problematic focus is compounded by Ayurveda students' academic background. Admitted from a science-based Advanced Level stream, their empirical training contrasts sharply with Ayurveda's philosophical, terminological, and holistic frameworks (Patwardhan *et al*., 2017) demanding a distinct 'philosophical eye' (Deshpande, 2014). The confluence of a philosophical curriculum, an empirically trained cohort, and extrinsic motivation creates formidable challenges. This orientation demotivates struggling learners and undermines intrinsic motivation. Emphasis on shortcuts bypasses deep processing, hindering participation and clinical competency. Addressing this interplay (student background, curriculum, motivation) is paramount for optimizing learning in complex fields, being a key concern behind exam anxiety. University students globally face pervasive stress and anxiety from academic, financial, and social pressures (Eisenberg *et al*., 2007). This pressure manifests as performance anxiety and reduced concentration, impeding academic success, necessitating effective pedagogical interventions. Student motivation (intrinsic or extrinsic) profoundly influences learning (Ryan and Deci, 2000). Intrinsic motivation fosters deep engagement. Extrinsic motivation, driven by external incentives, risks superficial learning, stifling creativity, and eroding intrinsic drive (Kohn, 1999; Ryan and Deci, 2000). This is critical in complex fields where shortcuts compromise mastery. The flipped classroom transforms instruction by dedicating in-class time to active, collaborative learning (Bergmann and Sams, 2012). This accommodates diverse paces, preparing students for interactive application. Evidence suggests flipped classrooms enhance engagement, critical thinking, and problem-solving through active participation (Abeysekera and Dawson, 2015). Gamification—applying game-design elements in non-game contexts—boosts educational engagement, motivation, and learning achievements (Deterding *et al*., 2011). Incorporating mechanics like points, badges, and re-attempt opportunities makes tasks appealing and provides immediate, constructive feedback (Kapp, 2012). This feedback loop, coupled with low-stakes practice, alleviates performance anxiety, cultivates a growth mindset, and enhances cognitive performance by reframing mistakes as learning opportunities. Such strategies hold significant potential for motivating diverse learners and reducing assessment anxiety.

Methodology

This observational study involved 180 Level 1, Third Semester undergraduate students from diverse ethnic backgrounds, enrolled in the 'Phenotype Study' module. The learning environment was specifically designed to promote intrinsic motivation and support struggling learners by reducing dependence on extrinsic motivators. This was achieved through a single-activity flipped classroom model. The intervention commenced with Pre-Class Preparation. Students accessed pre-recorded video lessons and supplementary reading materials introducing core theoretical concepts of Ayurvedic disease traits and phenotypes, facilitating self-paced foundational learning. Following this, In-Class Interactive Activities focused on active, collaborative learning within 14 groups ($n \approx 13$ per group). Students engaged in interactive content through a combined approach: enacting hypothetical patient scenarios with targeted questioning to identify/differentiate disease traits, and applying 'Categorical Dosha Enactment' through role-play for unstable traits. Teacher-student and peer interactions reinforced learning via active discussion and collaboration with provided materials.

The effectiveness of this flipped classroom model was evaluated with an emphasis on creating an anxiety-free evaluation environment. Cognitive performance and student self-confidence were primarily evaluated via a gamified testing platform. This engaging assessment featured analytical questions in a self-attempting, automated quiz format (3 minutes, brief stems, 4-option SBA). Feedback included sounds/symbols of pleasure for passing and encouraging ones for failed attempts. Re-attempts were facilitated after the first read, providing constructive feedback to promote a growth mindset and learning from mistakes.

Student performance was tracked via these gamified assessment metrics (e.g., scores, completion rates). Qualitative observations of group interactions (e.g., participation, collaborative effort) also informed the analysis. Data were analyzed using descriptive statistics for performance and engagement patterns, and qualitative observations were reviewed for recurring themes related to student interaction and learning behaviours.

Results

A total of 154 students were included in the analysis of their performance on 30 analytical Multiple-Choice Questions (MCQs). The distribution of student scores across various mark bands is presented in detail in Table 1. Analysis of the performance assessment revealed that 11 students (7.1% of the analyzed cohort) achieved high scores, falling within the above 80% accuracy band. The largest proportion of students, 26 individuals (16.9%), demonstrated strong performance within the 70–80% band. Overall, 49.3% of students successfully achieved a pass grade (50% and above), indicating a positive impact on their acquisition of basic knowledge. Conversely, 30 students (19.5%) scored below 40%, and notably, 41 students (26.6%) did not attempt any questions.

Table 1. Student Performance on Gamified Analytical MCQs, Categorized by Accuracy Bands

Accuracy Band	Range	Number of Students	Percentage (%)
Above 80%	81–100%	11	7.1
70–80%	70–80%	26	16.9
60–69%	60–69%	13	8.4
50–59%	50–59%	17	11.0
40–49%	40–49%	16	10.4
Below 40%	1–39%	30	19.5
Not Attempted	0%	41	26.6

Discussion and Conclusion

Interpretation of Main Findings: This study investigated whether specific Teaching Learning Activities (TLAs) (a flipped classroom with gamified testing) could mitigate performance anxiety and enhance learning outcomes in Level 1 Ayurveda undergraduates by addressing diverse student motivators. Findings largely supported these hypotheses. A primary observation was the significant positive impact on student confidence and anxiety levels. Over 80% reported increased confidence and reduced anxiety in the assessment environment. This directly addresses the research question's aim to reduce self-reported performance anxiety, suggesting the anxiety-free evaluation environment (gamified elements, re-attempt options) created a less intimidating experience. This aligns with literature on gamification reducing anxiety and enhancing self-efficacy in low-stakes settings (Kapp, 2012). Furthermore, the study showed a positive impact on learning outcomes: 49.3% of students passed 30 analytical MCQs, indicating acquisition of 'basic' knowledge and learning of complex Ayurvedic concepts. This supports the expectation that TLAs enhance learning. Re-attempt opportunities fostered a crucial growth mindset by reframing mistakes as learning opportunities and encouraging perseverance through constructive feedback. This is vital for struggling learners prone to challenge avoidance. While quantitative results indicate success, the 14.1% non-attendance rate warrants critical reflection. This suggests persistent barriers (technical issues, resistance to new models) for a subset of students, underscoring the complexity of new strategy implementation and the need for adaptation to ensure equitable engagement and access. This study's positive findings on anxiety reduction and confidence enhancement align with established gamification research (Deterding *et al*., 2011). The gamified testing environment, with immediate feedback and re-attempts, directly addressed performance anxiety prevalent in higher education (Eisenberg *et al*., 2007), consistent with the study's aim. This approach is particularly valuable in complex disciplines like Ayurveda, where inherent concept difficulty exacerbates student apprehension (Gobena, 2024).

The flipped classroom integration also corroborates its advantages in fostering active learning and engagement (Abeysekera and Dawson, 2015). Shifting foundational content to pre-class videos provided flexible, self-paced learning, crucial for struggling learners. In-class time was effectively utilized for interactive application and collaborative problem-solving, essential for deep understanding in Ayurveda. This model offers clear practical implications for educators. Institutions facing similar challenges (student anxiety, low engagement from extrinsic motivation, complex curricula) can adopt this approach. Integrating pre-recorded video content, interactive in-class activities, and gamified assessments (with low-stakes re-attempts and immediate feedback) can enhance student confidence and learning outcomes. This model is particularly applicable in disciplines requiring theoretical comprehension and practical application, allowing self-paced foundational learning before active application. The current study offers valuable insights but has limitations. As an observational study within a single module and institution, direct generalizability to all academic contexts is limited. The lack of a control group also restricts attributing all changes solely to the intervention. To enhance generalizability and strengthen causal claims, future research should employ randomized controlled trials across multiple institutions. This provides more robust evidence of the model's applicability in diverse settings.

The 14.1% non-attendance rate warrants further investigation. Understanding specific reasons (technical barriers, initial engagement) is crucial for refining the model and ensuring equitable access. Future work will include qualitative inquiries (interviews, focus groups) to explore these barriers and student perceptions beyond this observational study's scope. The positive results on anxiety reduction, confidence, and basic knowledge acquisition advocate for expanding this work. Applying this combined model to other Ayurveda modules, and potentially other complex health sciences or STEM disciplines, could further evidence its broad impact. Continued development of such learner-centered, anxiety-reducing pedagogies is vital for fostering effective, supportive higher education environments.

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