

## Emotion-Driven Leadership Programme Curricular in TVET and Higher Education

Zaiha Ahmad<sup>1</sup>, Zuraeda Ibrahim<sup>2</sup>, Nur Nafishah Azmi<sup>3</sup>, Toshio Tsuchiya<sup>4</sup>, Anitawati Mohd Lokman<sup>5\*</sup>

<sup>1</sup> Faculty of Communication and Media Studies,  
Universiti Teknologi MARA, 40150 Shah Alam, MALAYSIA

<sup>2</sup> Faculty of Accountancy,  
Universiti Teknologi MARA Selangor, 42300 Puncak Alam, MALAYSIA

<sup>3</sup> Faculty of Film, Theatre & Animation, Puncak Perdana Campus,  
Universiti Teknologi MARA, 40150 Shah Alam, MALAYSIA

<sup>4</sup> Yasuda Women's University, Hiroshima, 731-0153, JAPAN

<sup>5</sup> Faculty of Computer and Mathematical Sciences,  
Universiti Teknologi MARA, 40450 Shah Alam, MALAYSIA

\*Corresponding Author: [anitawati@uitm.edu.my](mailto:anitawati@uitm.edu.my)  
DOI: <https://doi.org/10.30880/jtet.2025.17.03.009>

### Article Info

Received: 1<sup>st</sup> April 2025

Accepted: 5<sup>th</sup> September 2025

Available online: 14<sup>th</sup> October 2025

### Keywords

Emotional intelligence, emotion-driven leadership, higher education, Kansei Engineering (KE), leadership development, TVET

### Abstract

This study aims to redefine the curricula for leadership in Technical and Vocational Education and Training (TVET) and higher education as dynamic and emotionally engaging systems, utilizing the frameworks of Kansei Engineering and the LEIQ™ model. It explores how emotion-driven strategies can enhance leadership readiness, addresses implementation challenges such as cultural adaptability and resource allocation, and highlights opportunities for scalable, evidence-based curricular reforms. Using a mixed-methods approach, the research analyzed three leadership programmes involving 150 participants and utilized a 28-item Kansei checklist. Factor Analysis (FA) and Partial Least Squares (PLS) were employed to identify the key emotional factors involved. The results revealed two dominant emotional dimensions: Excitement and Confidence. Additionally, the researchers identified 15 programme components with 41 attributes that significantly impact these emotional responses. Through the LEIQ™ model, the researchers examined the challenges and motivations surrounding leadership development. This exploration led to five key implementation strategies: designing programmes around emotional clusters, optimizing programme management, enhancing motivation, developing a balanced curriculum, and focusing on student-centered development. The research culminated in developing a framework for designing Emotionally Evocative Leadership Programs. This framework offers practical guidelines for incorporating emotional elements into leadership programmes while addressing technical competencies and emotional intelligence development. It provides a systematic approach that can be applied across various leadership contexts. These findings deepen the research understanding of emotions' role in leadership development and equip educators with evidence-based strategies for creating more engaging and effective leadership programs. The study emphasizes the importance of balancing

---

emotional intelligence with traditional leadership development methods, ultimately supporting a more holistic approach to nurturing future leaders in educational settings. This work contributes to the transformation of education by establishing emotional intelligence as a foundational pillar of leadership development for the 21st century.

---

## 1. Introduction

The Higher Education Institutions (HEIs) system plays a crucial role in shaping the leaders of tomorrow. It is responsible for developing individuals with both technical skills and emotional intelligence and enabling them to navigate complex societal and organizational challenges. This mission aligns with global educational frameworks and local priorities, including the Malaysia Education Blueprint 2015–2025, emphasizing holistic development through soft skills such as emotional intelligence (Ministry of Higher Education, 2021). However, traditional curriculum designs often focus more on cognitive and technical competencies while relegating emotional development to a secondary role (McKay et al., 2024). Emerging research highlights the importance of emotions for effective learning, adaptable leadership, and long-term success, which are elements that are increasingly vital in the rapidly changing, interconnected world (Kremer et al., 2019; Shafait et al., 2021). Despite this understanding, leadership curricula in both Technical and Vocational Education and Training (TVET) and HEIs often fail to integrate emotion-driven strategies systematically. This oversight creates a gap between theoretical acknowledgment of emotional intelligence and its practical application in programme design (Ohiku, 2021).

This study specifically examines the emotional experiences associated with student leadership programmes through the lens of Kansei Engineering (KE), a methodology that focuses on understanding and incorporating users' emotional needs into product design and educational frameworks (Lokman et al., 2019). LEIQ™ refers to the Leadership Emotional Intelligence Quotient, which represents a critical framework for assessing emotional competencies in leadership contexts (Lokman et al., 2019). The study aims to address the gap in integrating emotional intelligence into leadership training by formulating specific research objectives: to identify key emotional experiences linked to effective leadership development and to explore how KE can enhance these programs.

## 2. Theoretical Background

### 2.1 Theoretical Foundations of Emotional Intelligence in Leadership Development

The evolution of leadership theory in Higher Education Institutions (HEIs) reflects a paradigm shift from individual-centric models to relational, process-oriented frameworks. Traditional definitions, such as Northouse's (2010) emphasis on influencing groups toward goals, have expanded to incorporate emotional and ethical dimensions. Crawford and Kelder (2019) argue that modern leadership demands accountability and holistic engagement with stakeholders, aligning with Malaysia's National Education Philosophy, which prioritizes intellectual, spiritual, emotional, and physical development. This shift mirrors broader theoretical advancements in emotional intelligence (EI), where Salovey and Mayer's (1990) foundational work on perceiving and regulating emotions intersects with Goleman's (1995) assertion that EI competencies, self-awareness, empathy, and relationship management are critical for adaptive leadership.

However, critiques persist: Fiedler (2006) and Iles and Preece (2006) highlight the limitations of static leadership models, which often neglect the dynamic nature of leadership interactions and the importance of context. These static models can hinder current practice by failing to account for the complexities of leader-environment interactions, ultimately limiting the effectiveness of leadership in rapidly changing educational landscapes. In response, the LEIQ™ framework proposes a more nuanced approach that integrates emotional competencies with relational dynamics, addressing the gaps identified in traditional models. By emphasizing emotional engagement and adaptability, LEIQ™ seeks to bridge EI theory with practical leadership curricula, particularly in HEIs and Technical and Vocational Education and Training (TVET) systems, where technical training often overshadows emotional development.

Empirical studies validate EI's role in enhancing leadership outcomes. For instance, Pascarella and Terenzini (2005) demonstrate that leadership programmes fostering emotional engagement improve students' self-efficacy and civic participation, while Li, Gow, and Zhou (2020) link positive emotions to cognitive growth and well-being. However, challenges such as cultural biases in measuring EI (Silva & Almeida, 2023) and institutional resistance to emotion-centered models (Crossman, 2007) indicate that current frameworks are incomplete. In the context of Malaysia and other diverse educational settings, these cultural biases can hinder the integration of EI into leadership training by failing to account for local values and practices. To address these gaps, tools like LEIQ™ categorize domain-specific emotions, such as resilience in crisis management, aligning theoretical EI constructs

with actionable curricular strategies (Lokman et al., 2019; Shuhidan et al., 2023). With these critiques and cultural considerations, this study aims to enhance the relevance and applicability of EI in leadership education.

## 2.2 Curricular Design Strategies for Integrating Emotional Competencies

Effective leadership curricula in Higher Education Institutions (HEIs) and Technical and Vocational Education and Training (TVET) systems increasingly adopt modular, emotion-driven designs to balance technical rigor with holistic development. The Survival, Institutional, and Professional Management Modules exemplify this approach, scaffolding competencies like emotional resilience and ethical governance. These modules are designed to be flexible and applicable across various contexts, incorporating both established leadership theories and innovative practices tailored to the specific needs of students. For example, Harvey, Baumann, and Fredericks (2019) emphasize that programmes integrating emotional skills training, such as stress management in vocational contexts or empathy-building in institutional governance, enhance students' adaptability and creativity. Prioritizing emotional resilience and empathy is crucial as these competencies are linked to effective leadership outcomes, including enhanced decision-making, improved team dynamics, and greater capacity for innovation in complex environments (Goleman, 1995). Redzuan et al. (2011a) and Taharim et al. (2016) further advocate for emotionally supportive environments where students can safely navigate challenges like self-doubt, fostering resilience through structured risk-taking. These strategies align with Malaysia's Soft Skills agenda, prioritizing emotional intelligence and technical proficiency.

However, curricular integration faces challenges. Kezar, Carducci, and Contreras-McGavin (2006) note that HEIs often struggle to operationalize relational leadership theories into practical training, while TVET systems grapple with aligning emotional competencies with industry-specific demands (Ohiku, 2021). To adapt these strategies for different institutional contexts, such as urban versus rural TVET centers, it is essential to consider the unique challenges and resources available in each setting. For instance, rural centers may benefit from community-based projects that foster emotional engagement while addressing local needs. Case studies reveal that experiential learning, such as collaborative projects and reflective assessments (Gruicic & Benton, 2015), can bridge this gap by contextualizing emotional skills within real-world scenarios. Yip and Cote's (2013) research underscores the importance of emotional engagement in deepening critical thinking, suggesting that curricula should embed opportunities for students to process both positive emotions (e.g., pride in achievements) and negative ones (e.g., anxiety during decision-making). Such designs enhance leadership readiness and align with broader educational objectives of nurturing well-rounded, socially responsible leaders.

## 2.3 Assessment Frameworks for Emotion-Driven Learning Outcomes

Evaluating the efficacy of emotion-driven leadership programmes requires robust tools that quantify emotional engagement and its impact on learning. Traditional metrics, such as academic performance, often overlook emotional dimensions, necessitating frameworks like LEIQ™ and multivariate analysis to map emotional responses to curricular outcomes. For instance, Schutz et al. (2006) advocate for assessments that track emotions like enthusiasm and frustration, which influence students' motivation and problem-solving abilities. Similarly, Tekerek and Tekerek (2017) highlight the role of reflective journals and peer feedback in assessing resilience development, particularly in high-stakes TVET environments.

Despite these innovations, barriers persist. McEnrue, Groves, and Shen (2009) identify cultural biases in emotion assessment tools, while Crossman (2007) notes institutional resistance to subjective evaluation methods. LEIQ™ addresses these challenges by categorizing emotions into quadrants of intensity and importance, offering a standardized yet flexible diagnostic for diverse contexts. For example, a visual representation of the LEIQ™ quadrants could depict four areas: high intensity/high importance (e.g., joy in successful collaboration), high intensity/low importance (e.g., frustration during technical challenges), low intensity/high importance (e.g., calmness in ethical decision-making), and low intensity/low importance (e.g., indifference during routine tasks). Each quadrant translates emotional data into curriculum feedback by highlighting specific areas that require intervention or enhancement. In application, LEIQ™ could measure empathy's role in ethical leadership within HEIs, while in TVET, it might evaluate stress management in technical training. By linking emotional outcomes to modular design components, such as joy in collaborative projects or resilience in crisis simulations, this framework advances evidence-based reforms, ensuring leadership curricula remain responsive to both student needs and societal demands.

This paper addresses this disparity by proposing an emotion-driven leadership curricular framework tailored for TVET and higher education. Grounded in a mixed-methods approach, the study leverages three core pillars: (1) Domain-Specific Emotion Identification, classifying emotional competencies critical to leadership roles; (2) Modular Design, including Survival, Institutional, and Professional Management modules to scaffold emotional resilience and strategic decision-making; and (3) Emotional UX Evaluation, employing multivariate analysis, such as Partial Least Squares (PLS) path modeling, to map emotional responses to curricular outcomes. In this analysis, variables such as emotional engagement, leadership effectiveness, and student satisfaction are tested as

constructs, allowing for insights into how emotional factors correlate with learning and development outcomes. Central to this evaluation is the KE Methodology and Lokman's Emotion and Importance Quadrant (LEIQ™), a tool that quantifies the interplay between programme design parameters and emotional engagement. The study will incorporate established psychometric methods to ensure that measurement tools are both valid and. Qualitative feedback from stakeholders will further enhance the credibility of the emotional metrics employed.

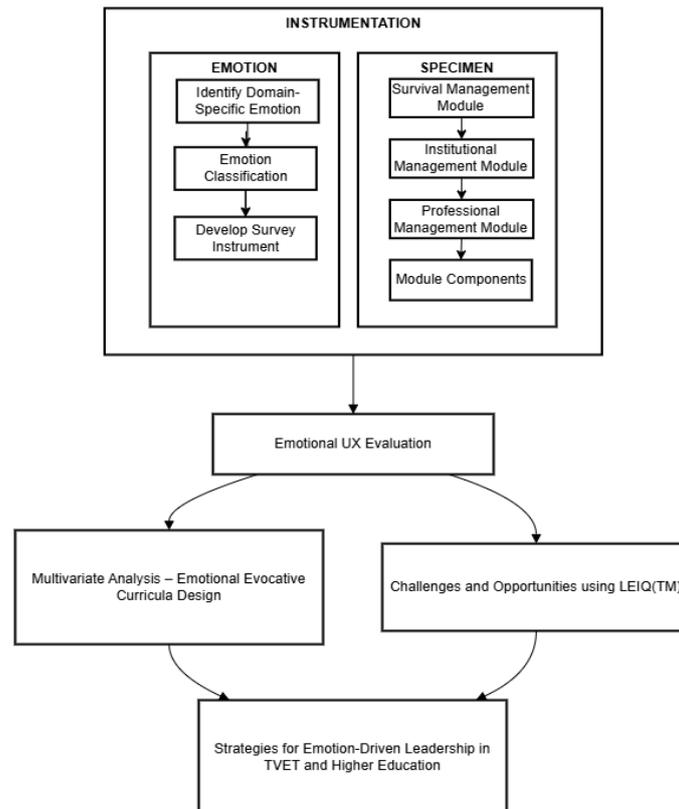
By synthesizing these components, the research aims to redefine leadership curricula as dynamic, emotionally evocative systems. It investigates how emotion-driven strategies can enhance leadership readiness, such as fostering empathy in institutional governance or stress resilience in vocational training. The study also confronts implementation challenges, including cultural adaptability and resource allocation, while highlighting opportunities for scalable, evidence-based curricular reforms. Ultimately, this work contributes to a paradigm shift in education, positioning emotional intelligence not as an ancillary skill but as a foundational pillar of 21st-century leadership development.

### 3. Methodology

This research investigates how students emotionally respond to leadership training programmes using a novel methodological approach. KE were utilized to inform the structuring and selection process of modules, ensuring that the content is aligned with identified emotional competencies critical for effective leadership. Specifically, the KE model by Lokman et al. (2019) and Redzuan et al. (2014) is referenced, highlighting the conversion of tacit knowledge into explicit knowledge, which guides the development of emotionally resonant training modules that cater to students' needs and contextual realities. A framework consisting of three distinct stages is designed to assess emotional responses to leadership training initiatives thoroughly. These stages are illustrated in Fig. 1.

To ensure the robustness of the findings, 28 experts were engaged, all of whom were external to the program, bringing diverse perspectives and domain expertise from academia, industry, and educational psychology. The experts were selected through purposive sampling, focusing on their extensive experience in leadership training and emotional intelligence assessments (Crawford & Kelder, 2019). The emotion assessment tool utilized in this study underwent pre-testing and validation through a pilot study, achieving a Cronbach's alpha of 0.87, which indicates high internal consistency. Additionally, factor loadings for the emotional response constructs exceeded the acceptable threshold of 0.60, confirming the validity of the measurement instrument (McEnrue, Groves, & Shen, 2009).

A 5-point scale was opted for rather than a 7-point or 10-point scale, particularly in alignment with KE methodologies. This choice was made to balance granularity with ease of interpretation and response burden, as it has been indicated in research that overly complex scales can lead to respondent fatigue and decreased reliability in emotional assessments (Goleman, 1995; Tekerek & Tekerek, 2017). The 5-point scale effectively captures the necessary emotional responses while remaining user-friendly for participants.



**Fig. 1** *The research process*

### 3.1 Instrumentation

The instrumentation phase is structured into two core components: Specimen and Emotion, aligned with Knowledge Engineering (KE) principles.

#### 3.1.1 Specimen

In KE, selecting domain-specific specimens is critical to capture design-aligned features. This study focuses on the Student Leadership Program, analyzing emotional dynamics within its framework. Three modules were selected as specimens:

- i. Survival Management Module (SMM): Focuses on resilience and adaptability.
- ii. Professional Management Module (PMM): Targets skill development and career readiness.
- iii. Institutional Management Module (IMM): This module addresses organizational and ethical leadership. Each module's design components (e.g., activities, and learning outcomes) were classified into a matrix to enable systematic analysis.

#### 3.1.2 Emotion

The research team employed a systematic approach to identify and categorize leadership-related emotions. Using affinity mapping techniques, they engaged a diverse panel of 28 experts to brainstorm and organize emotional descriptors into distinct categories. This comprehensive process helped create a detailed map of leadership-related emotional experiences. These emotional descriptors were then translated into a measurable format using a 5-point rating scale, where 1 indicated the absence of an emotion and 5 indicated its strong presence. The resulting 60-question assessment tool was implemented digitally to streamline the data collection process.

### 3.2 Emotional UX Evaluation

The study involved a comprehensive evaluation by undergraduate participants (n=150) who assessed the programme modules through a standardized 28-item Semantic Differential scale, as recommended for Kansei related studies (Lokman et al., 2009). Students evaluated each module sequentially, providing retrospective feedback on their experiences. The researchers aggregated and analyzed the response data to establish baseline metrics. This methodological approach enabled the research team to gather quantitative insights into participants' emotional responses, which proved valuable for future programme optimization.

### 3.3 Multivariate Analysis

The experimental data underwent comprehensive multivariate statistical analysis to examine patterns and relationships between variables. Two key analytical methods were employed: Factor Analysis (FA) and Partial Least Squares (PLS). The FA method focused on identifying underlying emotional dimensions, while PLS analysis examined the relationships between these dimensions and programme components. This methodological approach enabled the researchers to develop evidence-based recommendations for enhancing leadership curricula.

### 3.4 Challenges and Opportunities Using LEIQ™

The LEIQ™ quadrant framework was employed by 28 representative stakeholders (facilitators, students, institutional leaders) to evaluate challenges and opportunities systematically. Stakeholders mapped emotional data from the multivariate analysis onto the LEIQ™ matrix, identifying: i) Challenges: Balancing quantitative metrics with qualitative narratives, addressing emotional fatigue in high-pressure modules, ii) Opportunities: LEIQ™ as a tool for cross-institutional benchmarking, and leveraging emotional insights to personalize learning pathways.

### 3.5 Strategies for Emotion-Driven Leadership in TVET and Higher Education

The Factor Analysis (FA) and Partial Least Squares (PLS) results revealed key emotional drivers (e.g., resilience, ethical awareness, collaborative confidence) linked to the programme modules. These insights informed actionable strategies to enhance leadership training, namely, SMM Integration, for embedding scenario-based resilience challenges to amplify adaptability, PMM alignment to align skill-building tasks with career-readiness emotions (e.g., self-efficacy), and IMM refinement to incorporate ethics-driven case studies to strengthen organizational accountability.

## 4. Results and Discussion

This section provides the results of the analysis and discusses the findings. Subsequent subsections elaborate on the details. The data analysis began with two crucial statistical tests to ensure the validity and reliability of the research. First, the Shapiro-Wilk test was conducted to assess the normality of the emotion scale scores, verifying whether the data followed a normal distribution pattern. This test yielded a test statistic of 0.95 and a p-value of 0.08. Since the p-value exceeded the threshold of 0.05, it was concluded that the data exhibited normal distribution characteristics, making it suitable for subsequent parametric analyses. Following this, the reliability of the measurement instrument was assessed using Cronbach's Alpha coefficient, which measures the internal consistency of the items in the 60-item emotion checklist. This test produced an alpha value of 0.82, falling within the "good" range ( $0.8 \leq \alpha \leq 0.9$ ) of reliability scores. This result indicates strong internal consistency among the items, suggesting that the measurement instrument was reliable and produced consistent results across different respondents. The normal distribution and good reliability provided a solid foundation for the subsequent analyses.

### 4.1 Classification of Programme Design Components

Analysis revealed 15 distinct programme components which were further categorized into 41 specific design attributes. These components are summarized in Table 1, which presents a comparative analysis of three leadership modules (SMM, IMM, PMM) and their design attributes.

**Table 1** Excerpt from the programme components

	Theme			Indoor Activity		Affective Skill	
	Patriotic	Icon	Community	Bench Marking	Team Building	Self - Confidence	Creativity Trust
SMM	✓				✓		✓
IMM		✓		✓		✓	
PMM			✓		✓		✓

In table 1, each module is evaluated across multiple dimensions, including thematic elements (Patriotic, Icon, Community), activity types (Indoor: Benchmarking, Team Building), and affective skills development (Self-Confidence, Creativity, Trust). The presence of specific attributes within each module is indicated by checkmarks, allowing for clear visualization of module composition and focus areas. The components were originally derived through a combination of empirical induction and theoretical frameworks, ensuring that both existing literature

and practical insights contributed to their identification. Specifically, qualitative interviews and focus groups with programme participants and facilitators informed the development of the components, ensuring they were grounded in real-world experiences and needs. The checkmarks in Table 1 were based on objective programme content coding rather than subjective assessment. This coding process involved a systematic review of training materials and module outlines to ensure consistency and reliability in the classification of design attributes across the different modules.

This matrix serves as input data for subsequent Partial Least Squares (PLS) analysis, enabling the identification of correlations between module components and emotional outcomes. The systematic mapping of these relationships provides valuable insights for enhancing the emotional impact of leadership training through targeted programme design.

## 4.2 Significant Emotion

Through factor analysis, researchers developed the IKP Leadership Emotion Checklist, integrating KE methodology to evaluate emotional responses among student leaders. The study collected data from 150 programme participants, who assessed their experiences across different modules.

The assessment revealed two primary emotional dimensions in leadership development. Factor Analysis demonstrated that students' responses clustered around Excitement and Confidence. The Excitement dimension manifested through experiences of being tested, exciting, and occasionally overwhelmed while also feeling spirited and joyful. The Confidence dimension emerged through feelings such as determination, optimism, and motivation. Statistical analysis showed strong correlations between these emotions and programme elements, with factor loadings approaching 1.0 indicating robust relationships. These findings offer valuable direction for future programme development, suggesting ways to cultivate excitement and confidence in leadership training.

**Table 2** Emotional factors

Factor	Variables	Score	Factor	Variables	Score	
Excitement	Tested	0.99	Confidence	Confident	0.99	
	Exciting	0.99				
	Overwhelming	0.99		Determined	0.99	
	Happy	0.98		Optimistic	0.98	
	Joyful	0.96		Motivating	0.76	
	Spirited	0.91				

Factor analysis was conducted using the varimax rotation method to allow for potential correlations between factors. Retention of factors was determined based on the eigenvalue criterion, retaining factors with eigenvalues greater than 1.0. The emotional dimensions of Excitement and Confidence are closely linked to the participants' roles and learning tasks. As student leaders engage in various activities, they encounter challenges that invoke excitement, such as collaborative projects and leadership simulations. These experiences not only stimulate their emotional responses but also enhance their confidence as they navigate complex tasks. The interplay between excitement and confidence indicates that fostering an engaging and supportive learning environment can significantly impact participants' emotional development, ultimately leading to more effective leadership outcomes.

## 4.3 Emotional Evocative Programme Design

The research utilized Partial Least Square (PLS) analysis to examine the relationship between programme components (x) and emotion (y). Their analysis focused on identifying the influence of each programme component on specific emotional responses, examining both optimal and suboptimal fits for programme components and their impact on emotional responses. PLS analysis was selected for its capacity to process numerous x variables alongside multiple y variables. In the initial research phase, the study identified 15 programme components and 41 attributes, converting these into dummy variables for PLS analysis. Then, the researchers calculated and analyzed PLS coefficient scores to determine how different programme component combinations affected emotional responses.

The research calculated PLS ranges for each emotion to assess the programme components' influence. They identified both positive and negative design influences of each component through range calculations. The researchers determined these ranges by calculating the difference between maximum and minimum PLS scores and computing the mean range for each emotion. They established design influence based on the range score: components with mean PLS scores exceeding the average range were designated as having a positive design

influence. Components showing attribute ranges above the average were identified as best-fit attributes, indicating a significant influence on participants' emotional responses during leadership training.

**Table 2** Sample PLS score for programme components

Programme components	PLS score	Range
Patriotic Themes	0.0451	0.0839
Icon Themes	-0.0388	
Community Themes	-0.0063	
Outdoor Activity-Explorace	0.0451	0.0839
Outdoor Activity-Build Tower	-0.0388	
Outdoor Activity-Field Study	-0.0063	
Indoor Activity-Bench Marking	-0.0388	0.0776
Indoor Activity-Team Building	0.0388	
Time-Work Days	-0.0063	0.0126
Time-Weekends	0.0063	

Table 3 compares programme components based on their respective Partial Least Squares (PLS) scores and ranges. Each row signifies a different programme component. There are three columns: one for the programme component's name, one for its PLS score, and one for its range. The calculated average range is 0.07789. A programme component's range that exceeds this average is deemed significant. For instance, the programme component "Patriotic Themes" has a PLS score of 0.0451 and a range of 0.0839, suggesting moderate significance in the programme with some variability.

The PLS score signifies the weight or significance of that programme component within the overall program. In contrast, the range offers insight into the variability or difference in PLS scores for that specific component.

The PLS score thresholds were used to designate best-fit attributes by comparing the calculated PLS scores against the average range of 0.07789. Components with mean PLS scores exceeding this threshold were identified as best-fit attributes, indicating their significant influence on participants' emotional responses during leadership training. This systematic approach ensures that only those components that substantially affect emotional outcomes are prioritized in programme design.

**Table 3** Emotion-driven leadership programme design guide

Emotion cluster	Emotion	Curricular component	
Excitement	Tested	Themes	Patriotic
	Exciting	Syllabus	Patriotism Component
	Overwhelming	Outdoor Activity	Explorace
	Shy	Lecture	Patriotism
	Happy	Speaker	Alumni
	Motivating	Mindset	Leadership/ Nasionalism
	Joyful	Location	Training Camps
	Energetic	Participant	Student Leaders
Confidence	Confident	Affective Skill (Internal)	Trust
	Challenging	Cognitive Skill	Time Management
	Determined	Psychomotor	Surviving Skill
	Optimistic	Time	Weekends
	Pleasant	Indoor Activity	Team Building
		Affective Skill (External)	Persuasive Skill
		Public Relations	Yes

Table 4 presents an Emotion-driven Leadership Programme Design Guide that maps emotional clusters to specific curricular components, illustrating the interplay between various components of a leadership programme designed to evoke and manage emotions. Certain components, such as Patriotic Themes and Outdoor Activity - Explorace, correlate with Excitement due to their culturally contextual significance. Patriotic themes tend to evoke strong emotional responses related to national identity and pride, fostering excitement among participants as they engage in meaningful activities. Similarly, exploratory outdoor activities stimulate curiosity

and adventure, enhancing feelings of excitement and engagement. The guide is organized into two main emotion clusters:

### 1. Excitement Cluster

This cluster encompasses emotions like tested, exciting, overwhelming, shy, happy, motivating, joyful, and energetic. The identified programme components that evoke these emotions include:

- i. Patriotic themes in content delivery: This can be achieved by integrating national values, cultural heritage, and civic responsibility through curriculum materials, case studies, and interactive discussions that foster national identity and unity.
- ii. Patriotism Component Syllabus: The curriculum should be covering leadership principles, national values, and civic engagement, structured to build knowledge and skills through theoretical and practical modules progressively
- iii. Explorace outdoor activities: This can be done via adventure-based learning activities combining physical challenges with problem-solving tasks, designed to build teamwork, resilience, and strategic thinking while exploring local landmarks and historical sites.
- iv. Patriotism-focused lectures: Expert-led sessions exploring national history, constitutional principles, and current affairs can be used to emphasize the role of leadership in nation-building and community development.
- v. Alumni speaker sessions: Engaging presentations by successful graduates who share real-world leadership experiences, challenges overcome, and insights into applying programme lessons in professional settings.
- vi. Leadership and nationalism mindset training: This component suggests structured workshops focusing on developing a leadership mindset that balances national interests with global perspectives, including cultural sensitivity and ethical decision-making.
- vii. Training camp-based learning: This component suggests an immersive residential programme featuring intensive leadership development activities, team challenges, and practical exercises in a controlled environment away from usual comfort zones.
- viii. Target at student leaders: The programme should be specifically designed for emerging student leaders, focusing on developing their potential through practical experience in campus leadership roles and community engagement projects.

### 2. Confidence Cluster

This cluster encompasses confident, challenging, determined, optimistic, and pleasant emotions. The identified programme components that evoke these emotions include:

- i. Trust-building through internal affective skills: This component focuses on developing internal emotional capabilities that help build trust among team members and within oneself.
- ii. Time management cognitive development: This component helps develop cognitive skills specifically related to managing time effectively, which is crucial for leadership roles.
- iii. Survival skills training: This can be done via practical training in essential skills that help leaders navigate challenging situations.
- iv. Weekend-scheduled activities: This component suggests programme activities are scheduled during weekends to accommodate participants' schedules.
- v. Team-building exercises: Team-building activities should be designed to foster collaboration, cooperation, and group dynamics.
- vi. Persuasive skill development: This can be done via an external affective skill focusing on influencing and communicating with others effectively.
- vii. Public relations integration: This component incorporates public relations elements to develop communication and stakeholder management skills.

This comprehensive framework serves as a blueprint for implementing leadership development initiatives that prioritise emotional engagement, specifically fostering excitement and confidence. The framework demonstrates the substantial impact of carefully selected programme elements on participants' emotional responses. Specific descriptive terms have been identified within each emotional category to capture the full range of student experiences. Furthermore, the framework suggests that programme designers should consider individual emotional targets and explore potential interactions between excitement-based and confidence-building components. This guide aligns with contemporary research showing that emotions are fundamental to learning and significantly impact leadership development outcomes. The programme addresses the identified gap

in incorporating emotional intelligence into leadership development curricula while balancing technical competencies and emotional intelligence.

### 4.4 Challenges and Motivations

To identify and address the critical challenges to effective leadership development, a thorough investigation was conducted using the LEIQ™ model as an instrument, culminating in the creation of a fishbone diagram. The fishbone diagram represents challenges identified by 28 participants using the LEIQ™ model. The participants were recruited among facilitators with leadership programme experience and students actively participating in such programs.

The scoring system for each node on the fishbone diagram ranged from 0 to 1, with scores reflecting the degree of consensus among participants regarding the significance of each identified challenge. This scoring was based on a Likert-type rating scale, where participants rated each challenge from 0 (no significance) to 1 (high significance). The scores were averaged across participant responses to ensure that the most critical challenges were highlighted based on collective input.

Interestingly, some components identified in the study, such as Time Management, emerged as both a motivator and a challenge. While effective time management was seen as a crucial skill that enhances leadership capabilities, many participants also noted that poor time management can hinder their ability to engage fully in leadership activities. This duality suggests that while addressing time management can empower participants, it also poses significant challenges that need to be navigated during leadership training.

The LEIQ™ model has been utilized in educational settings to assess and enhance leadership qualities among students. For instance, Ahmad et al. (2024) applied the LEIQ™ model to explore emotional intelligence as a framework for quality of life, emphasizing its relevance in leadership development programs. Their findings suggest that understanding emotional dynamics is critical for fostering effective leadership among students.

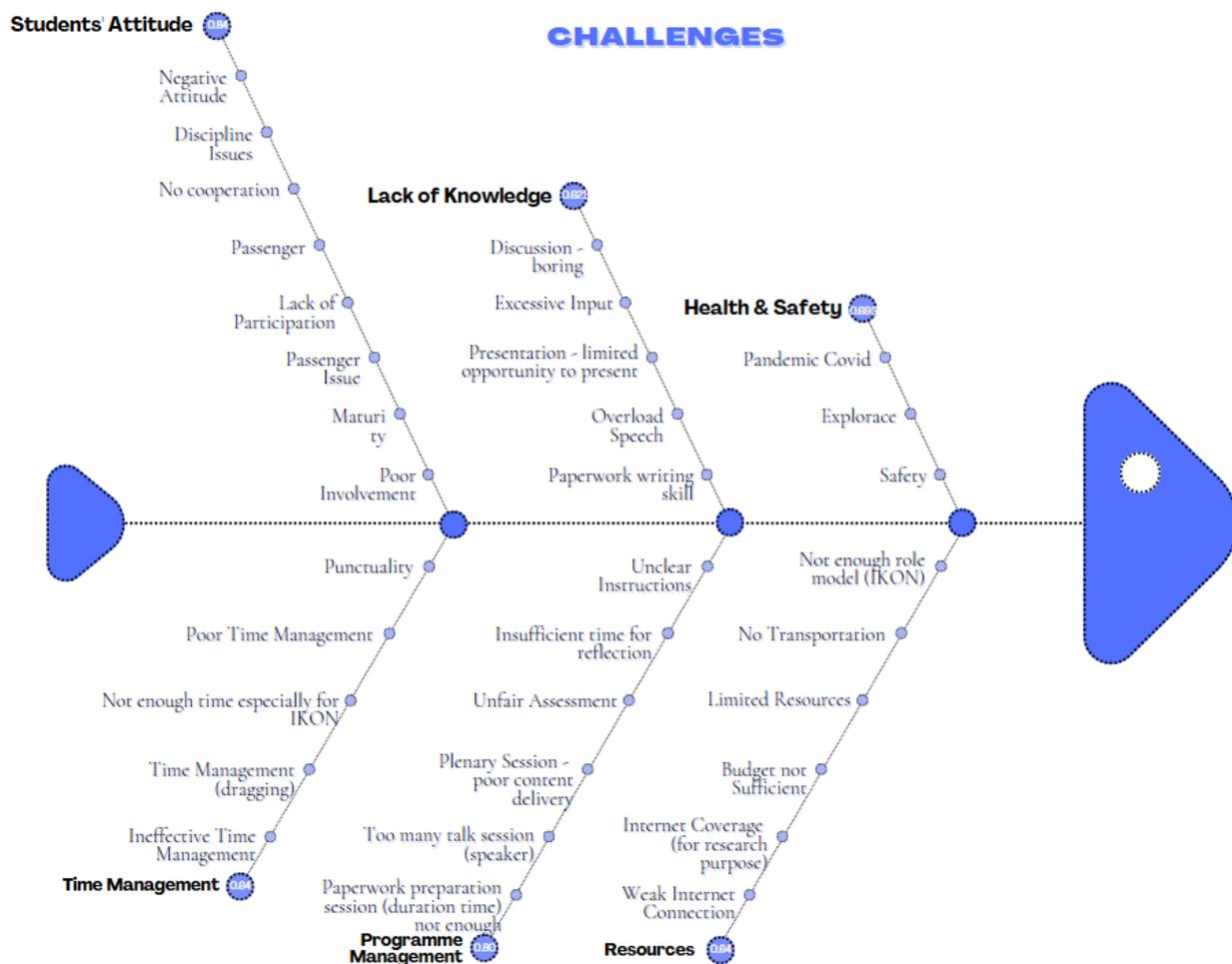


Fig. 1 Challenges faced in leadership program

Fig. 2 represents high-level themes of challenges, and sub-branches list specific challenges under each theme. Each challenge is accompanied by a rounded node with a score (0 to 1), indicating the magnitude of the challenge as perceived by the participants. The main themes identified in the diagram include students' attitude, lack of knowledge, health & safety, time management, programme management, and resources, aligning with previous findings on leadership development challenges (Crawford & Kelder, 2019).

Under Students' Attitude, challenges such as negative attitudes, lack of cooperation, and discipline issues were highlighted. These behavioral and motivational issues among students could hinder collaborative efforts in leadership programmes and affect their overall effectiveness. Similarly, the Lack of Knowledge theme emphasises gaps in understanding and skills, with challenges like insufficient paperwork skills, limited opportunities to present, and excessive input. These issues suggest a need for better training and support to equip participants with the necessary competencies. The health & safety theme reflects concerns related to the pandemic, transportation, and the absence of adequate role models. These challenges indicate the importance of robust safety protocols and the need for strong mentors to guide participants. Time management issues, such as poor punctuality, ineffective time use, and insufficient preparation time, suggest inefficiencies in programme scheduling and personal discipline, which could lead to delays and reduced programme effectiveness. Programme management challenges were also prominent, with issues like unclear instructions, insufficient time for reflection, and unfair assessments highlighting organisational and planning shortcomings. Addressing these gaps could significantly improve the overall experience for participants, as supported by research on student perceptions of learning and assessment (Crossman, 2007). Lastly, the resources' theme points to logistical difficulties, such as limited internet access, budget constraints, and insufficient resources, which may disproportionately affect participants from underprivileged backgrounds.



Fig. 2 Motivations experienced in leadership program

Fig. 3 highlights the key motivations of participants in leadership programs, categorized into six primary themes: Resources, Programme Management, Activities, Students' Attitude, Time Management, and Health & Safety. Each theme represents factors that inspire and encourage participants to actively engage and perform in these programs, aligning with research on motivation in educational leadership (Kezar, 2023). One of the main motivators is Resources. Participants are encouraged by the availability of strategic locations, comfortable accommodations, sufficient budgets, and well-equipped facilities such as suitable halls and good food. These factors create a conducive environment for learning and collaboration, which motivates participants to stay engaged and focused. Programme Management is another critical motivator. Effective management, characterized

by skilled facilitators, good organizers, and clear feedback mechanisms, significantly boosts participants' motivation (Crawford & Kelder, 2019).

Face-to-face interactions are preferred over online sessions, as they foster personal connections and deeper engagement. Additionally, opportunities for reflection, roleplay, and interactive sessions further enhance participants' experiences and inspire them to contribute actively. The inclusion of meaningful and engaging Activities also plays a pivotal role in fostering motivation. Fieldwork, explorations, outdoor team-building exercises, and other interactive activities create opportunities for networking and learning. These activities allow participants to express their ideas, collaborate in teams, and enjoy attractive and dynamic sessions, which drive their enthusiasm and commitment, as supported by Li et al. (2020) in their research on positive emotions in education. A positive Students' Attitude is a strong motivator within the program. Factors such as willpower, commitment, teamwork, and a willingness to learn, unlearn, and relearn contribute to a motivating environment. Critical thinking, confident communication, and the collective spirit of students further enhance their engagement and drive to succeed (Crossman, 2007). Proper Time Management ensures that participants remain motivated by allocating sufficient time for preparation, reflection, and activities. Efficient scheduling prevents burnout and promotes a balanced and enjoyable programme experience. Lastly, Health & Safety is a vital motivator, as participants feel encouraged when their well-being is prioritized. Ensuring safety and addressing health concerns, especially during challenging times like a pandemic, builds trust and confidence among participants.

### 4.5 Strategies for Emotion-Driven Leadership in TVET and Higher Education

Based on a systematic analysis of challenges and motivations identified through the LEIQ™ model, fishbone diagrams, and participant feedback, the research recommends five key strategies (refer Fig. 3) for implementing Emotion-Driven Leadership in TVET and Higher Education.

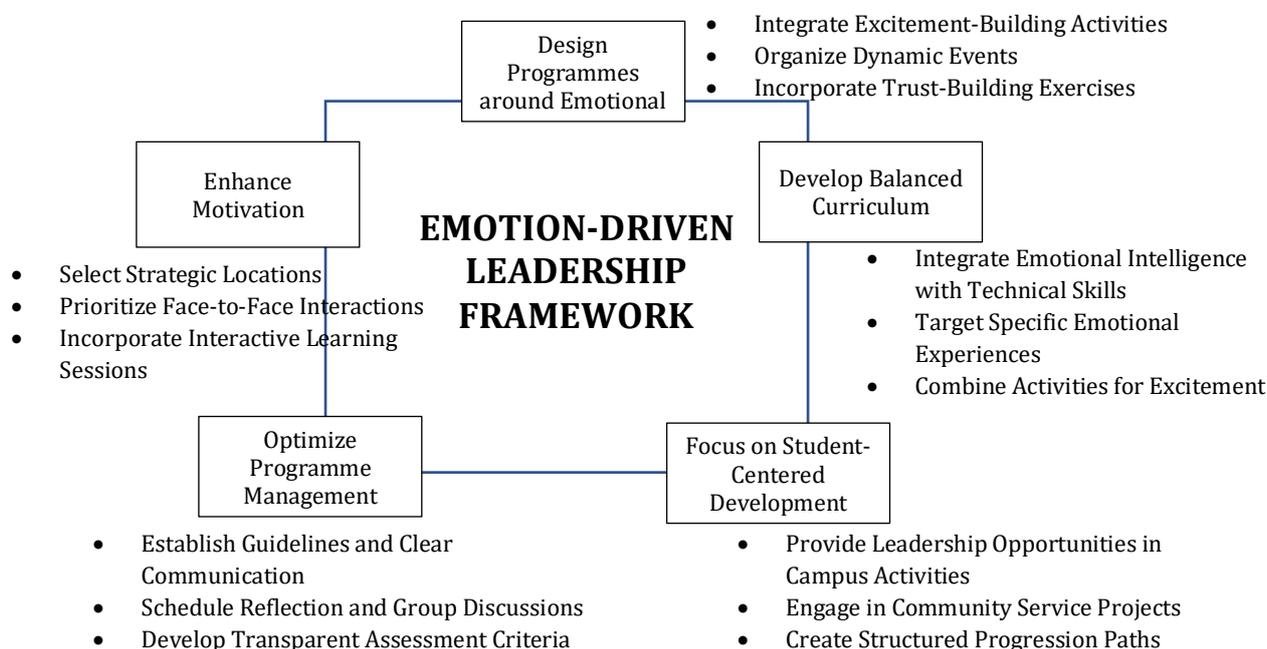


Fig. 3 Emotion-driveb leadership framework

### 1. Design Programmes Around Emotional Clusters

Leadership programmes should integrate excitement-building activities that include patriotic-themed content for strengthening national identity, which aligns with previous findings on the importance of national values in leadership development (Ministry of Education Malaysia, 2006). The data from the fishbone analysis indicated that participants felt a strong emotional connection to national themes, supporting the inclusion of dynamic outdoor activities and Explorace programs. These should feature alumni speaker sessions and immersive training camps, as supported by research on experiential learning in leadership development (Gruicic & Benton, 2015). For confidence development, programmes should incorporate trust-building exercises, time management training, survival skills development, and team-building activities, which have been shown to enhance leadership competencies (McEnrue et al., 2009).

## 2. Optimize Programme Management

To optimize programme management, institutions should establish comprehensive guidelines and clear communication channels that ensure a full understanding of all participants' requirements and expectations, as highlighted by the LEIQ™ model findings on the importance of emotional clarity in leadership (Crawford and Kelder, 2019). Regular intervals should be scheduled for self-reflection and group discussions to enhance learning outcomes and emotional development, building on research by Harvey et al. (2019) that emphasizes the role of reflection in personal growth. The programme should develop transparent and objective assessment criteria that evaluate both technical competencies and emotional intelligence growth (Ohiku, 2021), while maintaining an efficient resource management system to ensure equitable distribution of materials, facilities, and learning opportunities across all participants.

## 3. Enhance Motivation

To enhance motivation, institutions should carefully select strategic locations that provide an optimal learning environment, equipped with comprehensive facilities to support various programme activities (Li et al., 2020). Findings from the PLS analysis indicated that learning environments significantly affect participant engagement, thus prioritizing face-to-face interactions can foster better relationship building among participants, as supported by research on educational leadership (Kezar, 2023). The programme should incorporate interactive learning sessions encouraging active participation and knowledge sharing (Crossman, 2007). Additionally, practical fieldwork opportunities should be integrated into the curriculum to provide hands-on experience and real-world application of leadership skills (Mohamad et al., 2021).

## 4. Develop Balanced Curriculum

The curriculum should effectively integrate emotional intelligence alongside technical competencies, ensuring a holistic approach to leadership development (Omar et al., 2019). This strategy directly responds to the findings from the fishbone diagram, which highlighted emotional intelligence as a critical area for improvement. Programmes should strategically combine excitement-generating activities with confidence-building exercises to create a well-rounded learning experience (Iles & Preece, 2006). Furthermore, emotional awareness should be deeply embedded throughout the leadership training process, allowing students to develop a strong foundation in understanding and managing emotions in leadership contexts (McKay et al., 2024).

## 5. Focus on Student-Centered Development

To support student-centered development, institutions should provide diverse opportunities for students to take on leadership roles within campus organizations and activities, as recommended by Pascarella and Terenzini (2005). This approach aligns with the PLS results, which emphasized the significance of active student engagement in leadership roles. Engagement in community service projects should allow for the practical application of leadership skills, building on Fiedler's (2006) contingency model of leadership effectiveness. The strategy should also include carefully designed activities that target specific leadership competencies, with clear progression paths that enable students to advance their leadership capabilities in a structured manner (Northouse, 2010). This approach ensures systematic development while providing real-world experience, aligning with current educational blueprints (Ministry of Higher Education, 2021).

While these strategies are tailored to the Malaysian TVET context, their generalizability to other educational systems may be limited. Cultural, institutional, and systemic differences in leadership development approaches should be considered when applying these strategies in diverse educational environments.

## 5. Conclusion

This study illuminates the pivotal role of emotional experiences in leadership development programmes within TVET and higher education contexts. The identification of 'excitement' and 'confidence' as key emotional factors builds upon previous research on emotional intelligence in leadership development (McKay et al., 2024; Bidin & Lokman, 2018; Harvey et al., 2019). These findings are particularly significant given the current emphasis on developing emotionally intelligent leaders in educational settings (Crossman, 2007; Iles & Preece, 2006). The research demonstrates that effective leadership programmes must balance technical competencies with emotional intelligence development (Kremer et al., 2019; McEnrue et al., 2009). By employing KE principles, the study offers a novel and structured approach to programme design, which is distinct from traditional leadership models by focusing on how emotional factors can be systematically integrated into educational practices. This approach enables the creation of emotionally evocative leadership programmes that resonate with students' needs and expectations (Noor et al., 2008; Redzuan et al., 2011b; Lokman & Hussin, 2011; Redzuan et al., 2014). Unlike prior models, this study bridges the gap between emotional intelligence theories (e.g., Goleman's EI

framework) and practical programme design, emphasizing the actionable integration of emotional clusters into learning environments. The identified emotional clusters and their corresponding programme components offer practical guidelines for creating supportive and engaging learning environments (Kezar, 2023; Northouse, 2010).

The comprehensive analysis of challenges and motivations using the LEIQ™ model has yielded valuable insights into programme design considerations. These findings align with contemporary research on the importance of emotional intelligence in educational leadership (Mohamad et al., 2021; Omar et al., 2019). The five key strategies proposed for implementing emotion-driven leadership provide a robust framework that addresses both leadership development's technical and emotional aspects. This study's originality lies in its application of KE to educational contexts, offering a new lens to examine how programme design can evoke specific emotional responses that enhance leadership growth. This pioneering methodology distinguishes it from traditional frameworks by providing practical guidance on how emotional factors can directly impact programme effectiveness. Building on these insights, the study contributes to the broader understanding of leadership development by offering a practical guide for designing emotionally evocative leadership programs. This guide integrates emotional intelligence principles with traditional leadership development approaches, providing a foundation for future research into the relationship between emotional responses and programme effectiveness.

The comprehensive analysis of challenges and motivations using the LEIQ™ model has yielded valuable insights into programme design considerations. These findings align with contemporary research on the importance of emotional intelligence in educational leadership (Mohamad et al., 2021; Omar et al., 2019). The five key strategies proposed for implementing emotion-driven leadership provide a robust framework that addresses both the technical and emotional dimensions of leadership development. Building on these insights, the study contributes to the broader understanding of leadership development by offering a practical guide for designing programmes that effectively integrate emotional intelligence principles with traditional leadership approaches. This integration ensures a balanced focus on both the cognitive and emotional aspects of leadership training, making it more impactful and relevant to current educational needs.

Future research should explore two key areas: (1) longitudinal evaluation of the sustained emotional impacts of leadership programmes on participants' behaviors and decision-making, and (2) cross-cultural validation of the identified emotional clusters to determine their applicability and relevance in non-Malaysian or non-TVET contexts. These directions will help refine the proposed framework and broaden its applicability across diverse educational and cultural settings. *By addressing these areas*, the findings provide a steppingstone for further exploration into how emotional factors influence leadership development outcomes in TVET and higher education environments.

## Acknowledgement

The authors acknowledge the Universiti Teknologi MARA for supporting the research. The authors would also like to acknowledge the Malaysia Association of Kansei Engineering (MAKE), and RIG Kansei and Design Engineering (RIG EKDE) for the support of the research activities.

## Conflict of Interest

Authors declare that there is no conflict of interest regarding the publication of the paper.

## Author Contribution

*Author 1 designed study structure and technique, analysed primary data, and wrote initial manuscript. Author 2 reviewed statistical analyses, verified data, and wrote the results section. Author 3 critiqued text drafts and examined the research strategy and survey instrument. Author 4 assisted with reviewing the literature for the study. Author 5 managed the project timeline, coordinated co-author contact, and edited and formatted the final publication to convey the research findings clearly.*

## References

- Ahmad, Z., Ibrahim, Z., Ibrahim, N., Azmi, N. N., Zakir, S., & Lokman, A. M. (2024). Emotion Framework in Leadership Programs for TVET and Higher Education Students. *Journal of Technical Education and Training*, 16(3), 1-15.
- Bidin, S. A. H., & Lokman, A. M. (2018). Enriching the comfortability emotion on website interface design using Kansei engineering approach. In Lokman, A., Yamanaka, T., Lévy, P., Chen, K., & Koyama, S. (Eds.), *Proceedings of the 7th International Conference on Kansei Engineering and Emotion Research 2018: KEER 2018 Advances in Intelligent Systems and Computing* (pp. 792-800). Springer.

- Crawford, J. A., & Kelder, J.-A. (2019). Do we measure leadership effectively? Articulating and evaluating scale development psychometrics for best practice. *The Leadership Quarterly*, 30(1), 133–144. <https://doi.org/10.1016/j.leaqua.2018.07.001>.
- Crossman, J. (2007). The role of relationships and emotions in student perceptions of learning and assessment. *Higher Education Research & Development*, 26(3), 313–327. <https://doi.org/10.1080/07294360701494328>.
- Fiedler, F. E. (2006). The contingency model: A theory of leadership effectiveness. In J. M. Levine & R. L. Moreland (Eds.), *Small groups* (pp. 369–381). Psychology Press.
- Goleman, D. P. (1995). *Emotional intelligence: Why it can matter more than IQ for character, health and lifelong achievement*. Bantam Books.
- Gruicic, D., & Benton, S. (2015). Development of managers' emotional competencies: Mind-body training implication. *European Journal of Training and Development*, 39(9), 798–814. <https://doi.org/10.1108/EJTD-04-2015-0026>.
- Harvey, M., Baumann, C., & Fredericks, V. (2019). A taxonomy of emotion and cognition for student reflection: Introducing emo-cog. *Higher Education Research & Development*, 38(6), 1138–1153. <https://doi.org/10.1080/07294360.2019.1629879>.
- Iles, P., & Preece, D. (2006). Developing leaders or developing leadership? The Academy of Chief Executives' programmes in the North East of England. *Leadership*, 2(3), 317–340. <https://doi.org/10.1177/1742715006066>.
- Kezar, A. J. (Ed.). (2023). *Rethinking leadership in a complex, multicultural, and global environment: New concepts and models for higher education*. Taylor & Francis.
- Kremer, T., Mamede, S., Martins, M. A., Tempski, P., & van den Broek, W. W. (2019). Investigating the impact of emotions on medical students' learning. *Health Professions Education*, 5(2), 111–119. <https://doi.org/10.1016/j.hpe.2018.12.003>.
- Li, L., Gow, A. D. I., & Zhou, J. (2020). The role of positive emotions in education: A neuroscience perspective. *Mind, Brain, and Education*, 14(3), 220–234. <https://doi.org/10.1111/mbe.12244>.
- Lokman, A. M., Harun, A. F., Md. Noor, N. L., & Nagamachi, M. (2009). Website affective evaluation: Analysis of differences in evaluations result by data population. In Kurosu, M. (Ed.), *Human Centered Design: HCD 2009 Lecture Notes in Computer Science* (pp. 643–652). Springer. [https://doi.org/10.1007/978-3-642-02806-9\\_75](https://doi.org/10.1007/978-3-642-02806-9_75)
- Lokman, A. M., & Hussin, S. N. (2011). Kansei website interface design: Practicality and accuracy of Kansei Web Design Guideline. *2nd International Conference on User Science and Engineering (i-USER)*, 30–35. <https://doi.org/10.1109/IUSER.2011.6150531>
- Lokman, A. M., Kadir, S. A., Hamidi, S. R., & Shuhidan, S. M. (2019). LEIQ™ as an emotion and importance model for QoL: fundamentals and case studies. *Jurnal Komunikasi: Malaysian Journal of Communication*, 35(2), 412–430.
- McEnrue, M. P., Groves, K. S., & Shen, W. (2009). Emotional intelligence development: Leveraging individual characteristics. *Journal of Management Development*, 28(2), 150–174. <https://doi.org/10.1108/02621710910932106>.
- McKay, A., MacDonald, K., & Longmuir, F. (2024). The emotional intensity of educational leadership: A scoping review. *International Journal of Leadership in Education*, 1–23. <https://doi.org/10.1080/13603124.2022.2042856>.
- Ministry of Education Malaysia. (2006). *Malaysia national education philosophy: Principles of education*.
- Ministry of Higher Education. (2021). *Malaysia education blueprint 2015-2025*.
- Mohamad, N. H., Ibrahim, B., Selamat, A., Ismail, A., & Kadir, Z. B. (2021). A protocol for development of holistic-entrepreneur graduates: Emotional intelligence perspectives. *Journal of Technical Education and Training (JTET)*, 13(1), 35–43. <https://doi.org/10.30880/jtet.2021.13.01.004>
- Noor, N. L. M., Anitwati, M. L., & Nagamachi, M. (2008). Applying Kansei Engineering to determine emotional signature of online clothing websites. *Proceedings of the Tenth International Conference on Enterprise Information Systems – HCI*, 142–147. <https://doi.org/10.5220/0001680101420147>
- Northouse, P. G. (2010). *Leadership: Theory and practice* (6th ed.). Sage Publications.

- Ohiku, P. A. (2021). *The impact of emotional intelligence on leadership styles and leadership outcomes in college and university students in leadership roles: A quantitative study* (Publication No. 2634871735) [Doctoral dissertation, The Chicago School]. ProQuest.  
<https://www.proquest.com/docview/2634871735/previewPDF/5927014AB695463FPQ/1?sourcetype=Dissertations%20&%20Theses>
- Omar, N., Mohamad, M. M., Mukhtar, M. I., & Paimin, A. N. (2019). Influence of cognitive affective and conative elements in promoting engineering problem-solving skills. *Journal of Technical Education and Training (JTET)*, 11(2), 23-31. <https://doi.org/10.30880/jtet.2019.11.02.003>
- Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students: A third decade of research* (Vol. 2). Jossey-Bass.
- Redzuan, F., Lokman, A. M., & Othman, Z. A. (2014). Kansei semantic space for emotion in online learning. *2014 3rd International Conference on User Science and Engineering (i-USER)* 168-173.  
<https://doi.org/10.1109/IUSER.2014.7002697>
- Redzuan, F., Lokman, A. M., Othman, Z. A., & Abdullah, S. (2011a). Kansei design model for e-learning: A preliminary finding. In *Proceedings of the 10th European Conference on e-Learning (ECEL-2011)* (pp. 685-696).
- Redzuan, F., Mohd. Lokman, A., Ali Othman, Z., & Abdullah, S. (2011b). Kansei design model for engagement in online learning: A proposed model. In Abd Manaf, A., Zeki, A., Zamani, M., Chuprat, S., El-Qawasmeh, E. (Eds.), *Informatics Engineering and Information Science: ICIEIS 2011* (pp. 64-78). Springer.  
[https://doi.org/10.1007/978-3-642-25327-0\\_7](https://doi.org/10.1007/978-3-642-25327-0_7)
- Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination Cognition and Personality*, 9(3), 185-211.  
<https://doi.org/10.2190/dugg-p24e-52wk-6cdg>
- Schutz, P. A., Hong, J. Y., Cross, D. I., & Osbon, J. N. (2006). Reflections on investigating emotion in educational activity settings. *Educational Psychology Review*, 18(4), 343-360. <https://doi.org/10.1007/s10648-006-9030-3>
- Shafait, Z., Khan, M. A., Sahibzada, U. F., Dacko-Pikiewicz, Z., & Popp, J. (2021). An assessment of students' emotional intelligence, learning outcomes, and academic efficacy: A correlational study in higher education. *PLOS ONE*, 16(8), e0255428. <https://doi.org/10.1371/journal.pone.025542>
- Shuhidan, S. M., Lokman, A. M., Hamidi, S. R., Kadir, S. A., Syahirah, S., & Alam, M. M. (2023). Unfolding emotions for creating happiness and quality of life in Malaysia's low-income community using text mining. *Journal of Community & Applied Social Psychology*, 33(5), 1078-1098.
- Silva, A. J., & Almeida, N. (2023). Can engagement and performance be improved through online training on emotional intelligence? A quasi-experimental approach. *International Journal of Educational Management*, 37(2), 449-464. <https://doi.org/10.1108/IJEM-03-2022-0092>
- Taharim, N. F., Lokman, A. M., Hanesh, A., & Aziz, A. A. (2016). Feasibility study on the readiness, suitability and acceptance of M-learning AR in learning history. *AIP Conference Proceedings*, 1705(1), 02009.  
<https://doi.org/10.1063/1.4940257>
- Tekerek, M., & Tekerek, B. (2017). Emotional intelligence in engineering education. *Turkish Journal of Education*, 6(2), 88-95. <https://doi.org/10.19128/turje.306499>
- Yip, J. A., & Côté, S. (2013). The emotionally intelligent decision maker: Emotion-understanding ability reduces the effect of incidental anxiety on risk taking. *Psychological Science*, 24(1), 48-55.  
<https://doi.org/10.1177/0956797612450031>