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Content Validity of the Measurement Instrument on Environmental and Physical Facility Management Practices Among Headmasters for the Integrated Special Education Programme Using the Content Validity Index (CVI)

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ABSTRACT

This study aimed to evaluate the content validity of a newly developed measurement instrument designed to assess school headmasters' practices in managing the physical environment and facilities within Integrated Special Education Programmes (PPKI). Recognising the absence of validated tools tailored to the unique context of special education management, this study employed the Content Validity Index (CVI) method to ensure the instrument's relevance and clarity. A panel of seven experts with backgrounds in educational administration and special education evaluated 23 items distributed across four constructs: needs planning, procurement implementation, maintenance review, and improvement actions. The instrument development was guided by established quality management models and the Malaysian School Principal Competency Standards. Results showed that 19 items achieved acceptable I-CVI values (≥0.83), while four items were removed due to inadequate validity scores. These findings demonstrate the conceptual strength and methodological soundness of the instrument, highlighting its potential as a reliable tool for research, policy formulation, and leadership training in inclusive education. The study also underscores the importance of equipping school leaders with strategic competencies in managing disability-friendly and inclusive educational environments.

Keywords: Content Validity Index (CVI), School Leadership, Special Education Management, Instrument Development, Inclusive School Environment

INTRODUCTION

The environment and physical facilities of an organisation are fundamental aspects that require serious attention from management, including in the context of schools. School leaders play a crucial role in ensuring that the management of the environment and physical facilities is carried out systematically and effectively. This responsibility encompasses various elements such as building maintenance, management of the surrounding areas, provision of equipment, utilities, and safety measures (Nwaham, Obioma, 2023). Efficient management in this domain not only supports the continuity of school operations but also contributes to the creation of a conducive learning environment, which directly impacts teacher well-being and student academic performance. Accordingly, school leadership must implement strategic planning, effective resource allocation, and the adoption of best practices in maintaining and improving existing facilities (Pampana et al., 2022). Moreover, effective management practices should also include preparedness for emergencies and long-term improvement planning, where school leaders are accountable for ensuring that school

facilities remain safe and ready to address any eventualities, including natural disasters and security threats (Pakpahan & Hidayati, 2021).

In the context of special education in Malaysia, relevant policies and regulations have been outlined in the Education Act and the Education (Special Education) Regulations 2013, further reinforced by the Malaysia Education Blueprint (MEB) 2013–2025. These policies affirm that every student, including those with special educational needs (SEN), has the right to equitable access to education to enable them to reach their full potential. In line with this, the Integrated Special Education Programme (Program Pendidikan Khas Integrasi, PPKI) was established to provide appropriate educational services tailored to the capabilities and individual needs of SEN students. PPKI is implemented in government and government-aided schools, with an emphasis on inclusive approaches and suitable learning environments (Integrated Special Education Programme Operational Guidebook, 2015). The need to provide disability-friendly educational facilities is also highlighted in the MEB through the Ministry of Education Malaysia's commitment to upgrading existing infrastructure to meet the basic requirements of special education. This initiative aligns with Sustainable Development Goal 4 (SDG 4), which advocates for inclusive, gender-sensitive, and disability-friendly educational facilities, and the provision of safe, violence-free, and holistic learning environments for all.

Therefore, to ensure an optimal learning environment and sustain the well-being of the school community, the headteacher, as the primary leader and manager of the school, must play a pivotal role in managing the school's environment and physical facilities. The significance of this domain is also recognised in the Malaysian School Principal Competency Standards (Standard Kompetensi Kepengetuaan Sekolah Malaysia, SKKSM), which stipulate that headteachers must possess the competencies to plan, manage, and maintain school infrastructure and facilities efficiently and systematically. The objective is to establish a conducive, safe, calm, and engaging learning climate to ensure the effective implementation of teaching and learning processes (Nakiyaga et al., 2021)(Ministry of Education Malaysia, 2006;). Efficient management in this area also contributes to the development of a more organised and sustainable operational system for the benefit of the entire school community.

The integration of special education classes into mainstream schools has highlighted the importance of educational services for students with special needs (UNESCO, 2019). This inclusion poses unique challenges in managing school environments and facilities, requiring specific leadership competencies from principals (Gunersel et al., 2023; Zabeli et al., 2021; Husin et al., 2020). However, studies reveal that many schools and PPKI classrooms remain inadequate due to limited support and unclear roles among principals (Hj Nor & Rashed, 2018)

Although general management practices are outlined in SKKM (2006), there are no specific guidelines tailored to the needs of students with special educational needs (MBPK). Training for principals in this area also remains limited. Research shows that maintenance practices are often reactive and unstructured, with weak planning, lack of committees, and limited leader expertise (Wajdi et al., 2023). As a result, facilities are underutilised, affecting teaching quality (Kaweesi et al., 2023).

The lack of focus on financial planning for PPKI and low levels of facility management practices among principals further compound the issue (Hj Nor & Rashed, 2018). Headmasters often fail to conduct needs analyses, follow procurement procedures, or take responsibility for maintenance (Derese & Senapathy, 2022). PPKI classrooms frequently do not meet design standards, and facilities are rated as only moderate (Roslan & Tahar, 2022). Given these gaps, especially in measurement tools, this study aims to assess the content validity of an instrument measuring principals' practices in managing the school environment

and facilities using the Content Validity Index (CVI) method, guided by the following question:

1. What is the level of content validity of the instrument measuring the management practices of the physical environment and facilities by school headmaster, using the Content Validity Index (CVI) method?

LITERATURE REVIEW

MANAGEMENT PRACTICES OF THE PHYSICAL ENVIRONMENT AND FACILITIES

Shewhart, a pioneer in organisational quality management theory, as cited in the study by Koskela, Tezel, and Patel (2019), asserted that a quality management system (QMS) is a strategic decision made by an organisation to enhance its overall performance and that of its members in a sustainable and continuous manner. A QMS based on international standards plays a critical role in ensuring that products or services meet customer requirements, increasing customer satisfaction, assessing related risks and opportunities, and demonstrating the organisation's capability to comply with established quality management expectations.

This theory aligns with the expected practices of school principals, who serve as managers of the school's environment and facilities, particularly in classrooms. Principals must be proficient in ensuring that the school's physical environment is well-maintained and of high quality. To achieve a robust and continuous quality management system, international standards recommend the application of the PDCA cycle (Plan–Do–Check–Act), a framework for systematic improvement.

This approach is consistent with the environmental and physical facility management practices outlined in the Malaysian School Management Competency Standards (SKKM, 2006). According to SKKM, principals are expected to manage school environments and facilities in accordance with established principles and regulations, implement strategies to improve these conditions, maintain up-to-date inventory systems using current methods, instil a culture of maintenance among staff and students, and continuously evaluate and improve the performance of the school's environmental and facility management.

CONTENT VALIDITY INDEX

A crucial element in guaranteeing the calibre of a measurement tool is validity, which is the degree to which an instrument measures what it is intended to measure. DeVellis and Thorpe (2020) assert that even if an instrument has a high degree of reliability, its psychometric value is still low if its validity is poor. An instrument's accuracy, significance, and suitability for its intended use are all confirmed by validation (Furr, 2021; Zamanzadeh et al., 2015). Therefore, to create a reliable instrument, a comprehensive validation method is necessary. There are various categories of validity, including construct validity, criterion validity, face validity, and content validity (Taherdoost, 2016).

Before proceeding to other forms of validation, such as construct and criterion validity, content validity is frequently the initial stage in the process (Bond, Yan, and Heene, 2021; DeVellis and Thorpe, 2020). It entails verifying that every component of an instrument serves the intended purpose (Cohen, Schneider, and Tobin, 2022). Whether the items are adequate and accurately reflect the concept under study is the primary emphasis of content validity (Roebianto et al., 2023). Additionally, construct validity and other types of validity are supported by content validity (Koller et al., 2017). A test will perform poorly when compared to other similar measures if it lacks elements that completely address the goal notion. Accordingly, content validity is mostly determined by expert judgement (Fernández-Gómez

et al., 2020; Koller et al., 2017; Zamanzadeh et al., 2015). High dependability is crucial, but it does not ensure the validity of the instrument. In the specific study setting, content validity guarantees that the instrument measures what it is supposed to (Furr, 2021).

Therefore, while creating a tool to assess instructors' teaching quality, such the Six Sigma-based T^2Qi-6σ tool, it is crucial to demonstrate content validity. The creation of correct, pertinent, and quantifiable things is verified by the validation of new instruments (Furr, 2021). Content validity guarantees that an instrument measures precisely what it is supposed to measure (Zamanzadeh et al., 2015). Additionally, Bougie and Sekaran (2020) stress the importance of examining each item to ensure that it is appropriate for the setting of the study. To preserve an item's relevance to the construct being measured, experts must agree on whether it should be retained, changed, or eliminated (Finch and French, 2019).

A structured method for evaluating content validity through expert judgement is provided by Lynn's 1986 introduction of the Content Validity Index (CVI). It assesses each item's relevance to the idea under study in an instrument. Each component is given a 4-point rating by experts, with 1 denoting "not relevant," 2 "somewhat relevant," 3 "quite relevant," and 4 "highly relevant." The number of experts who gave the item a rating of three or four is divided by the total number of experts to determine the Item-Level Content Validity Index (I-CVI). According to Lynn (1986), in situations involving six or more experts, an I-CVI of at least 0.78 is appropriate. A perfect I-CVI of 1.00 is required if fewer than six experts are used.

There are two methods for calculating the Scale-Level CVI (S-CVI), or overall content validity: S-CVI/UA (Universal Agreement) and S-CVI/Ave (Average). The percentage of items that all experts thought were relevant (ratings of 3 or 4) is measured by S-CVI/UA. The average of the I-CVI ratings for every item is S-CVI/Ave. According to Lynn, exceptional content validity is indicated by an S-CVI/Ave of 0.90 or above. This methodology is frequently used in education, psychology, and healthcare for content validation since it guarantees that the instrument is both theoretically valid and methodologically sound.

METHODOLOGY

This section will elaborate the six steps of content validation (Yusoff, 2019). The steps are preparing content validation form, selecting a review panel of experts, conducting content validation, reviewing domain and items, providing score on each item, and calculating CVI.

PREPARING CONTENT VALIDATION FORM

The initial step in content validation is to prepare a content validation form, which helps ensure that the panel of experts clearly understands their role and the expectations of the review process.

SELECTING A REVIEW OF EXPERTS

To provide reliable evaluations, experts' expertise and competence in the relevant sector should be carefully evaluated before selecting them for a study. Baker et al. (2006) states that specialists need to possess the necessary training and work experience. All the chosen school management specialists in this study have at least ten years of expertise in their fields. Lynn (1986) was used to establish the number of experts who participated in this investigation. The number of experts for content validation should be at least six and no more than ten, considering the author's experience and the suggestions (5–8). Five to ten specialists are the

only ones who can validate the content of a study, according to Lynn (1986). There are seven experts involved in validating the items for this study. The designated specialists have experience or training in the field of study. Expert information is displayed in Table 1.

TABLE 1: List of CVI review experts

Expert	Field of expert	Position	University
1	Education administration	Dr.	UNISZA
2	Education administration	Dr.	IAB
3	Education administration	Dr.	IAB
4	Education administration	Dr.	JNNK
5	Special education	Dr.	UPSI
6	Special education	Dr.	UPSI
7	Special education	Dr.	UPSI

Professional specialists with doctorates, more than 10 years of experience, and active publishing are included in this study. The expert have specific skills in educational administration and special education consist of lecturers at public universities which is UNISZA and UPSI, the Aminuddin Baki Institute (IAB), as well as officers at the Jemaah Nazir Negeri Kelantan (JNNK).

CONDUCTING CONTENT VALIDATION

Data gathering techniques might vary depending on the circumstances and preferences of the experts engaged, as noted by Brinkmann (2009). Both in-person and virtual strategies were employed in this investigation. To get their permission to participate as content validity experts, experts were initially approached via email with information about the study's goals and methods. Following their approval, the expert validity review form and operational definitions for each concept were sent to each expert via an online platform.

The items in this study were evaluated online by six experts. Furthermore, one expert engaged in an in-person Q&A session to acquire a more profound comprehension of the things that were developed. This combination strategy made sure that the questionnaire was thoroughly evaluated through both online and in-person means.

REVIEWING DOMAIN AND ITEMS

The experts are given a clear presentation of the domain definition and the items that represent it in the content validation form. Before assigning a score to each item, the experts are expected to thoroughly examine the domain and its contents. In order to enhance the items' relevance to the intended domain, they are also invited to provide written or spoken feedback. Every suggestion is carefully taken into account in order to improve the domain and its contents as needed.

There are three primary portions of the instrument utilised in this study: Section 1, Section 2, and Section 3. Section 1 gathers the demographic information of the expert panel and includes five items: (1) title, (2) full name, (3) years of service, (4) institution, and (5) field of expertise. Section 2 contains the expert validation form, where experts evaluate each item using a four-point scale: (1) the item is not relevant to the measured domain, (2) the item is somewhat relevant to the measured domain (3) the item is quite relevant to the measured domain, (4) the item is highly relevant to the measured domain. The Content Validity Index (CVI) approach was formalized by Mary R. Lynn in 1986.

Section 2 includes four dimensions, and 23 items developed from several foundational theories and models, namely the Management Theory by Stoner, Freeman, and Gilbert (1995), Deming's Theory of Organizational Quality Management (1950), Oakland's Total Quality Management Model (2012), as well as the Malaysian Principal Leadership Competency Standards (2006). The practices of school principals will be evaluated based on four key constructs: needs planning, procurement implementation, maintenance review, and action for improvement. Lastly, Section 3 provides space for experts to suggest improvements to the items.

PROVIDING SCORE ON EACH ITEM

Following their examination of the domains and items, the experts are requested to use the given relevance scale to independently score each item. They must send their answers to the researcher after grading every item.

CALCULATING CVI

The Item-Content Validity Index (I-CVI) was calculated by dividing the number of experts who rated an item as either 3 or 4 by the total number of experts. Based on Lynn's(1986) guideline, an I-CVI score of 0.83 or above is considered acceptable for retaining an item. In addition, the overall validity of the scale was assessed using I-CVIs (S-CVI/Ave). Lynn (1986) highlighted that researchers typically use two types of Content Validity Indices (CVI) when evaluating measurement tools. The first is the Item-CVI (I-CVI), which reflects the proportion of experts who rated each item as 3 or 4 (Polit & Beck, 2006). The second is the Scale-CVI (S-CVI), which shows the percentage of items that received a relevance rating of 3 or 4 from all experts (Polit et al., 2007). According to Lynn (1986), the acceptable CVI value for six to eight experts is 0.83. Therefore, in this study involving seven experts, only items with I-CVI of 0.83 were retained, while those scoring below this threshold were removed from the instrument.

RESULTS

Outcomes of the Content Validity Index (CVI) Assessment

The purpose of the CVI analysis was to evaluate the content validity of the survey items about management practices of the physical environment and facilities by school headmaster. A group of seven experts reviewed each item based on its relevance and clarity, which enabled the calculation of both the Item-Level Content Validity Index (I-CVI).

Table 2 : Content Validity Index Results

ITEM	CONSTRUCT	EXPERT 1	EXPERT 2	EXPERT 3	EXPERT 4	EXPERT 5	EXPERT 6	EXPERT 7	I-CVI
1	The Role of Headmasters in Planning the Physical Environment and Facilities for Special Education	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
3		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
4		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
5		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
6		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
7	The Role of Headmasters in	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
8		0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.86
9		0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.86

10	Implementing Environmental and Physical Facilities Management for Special Education Settings	0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.86
11		1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.86
12		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
13	The Role of Headmasters in the Maintenance of the Physical Environment and Facilities for Special Education	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
14		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
15		**0.00**	**1.00**	**1.00**	**1.00**	**0.00**	**1.00**	**1.00**	**0.60**
16		1.00	1.00	1.00	0.00	1.00	1.00	1.00	0.86
17		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
18	The Role of Headmasters in Improving the Physical Environment and Facilities for Special Education Settings	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
19		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
20		**1.00**	**0.00**	**1.00**	**1.00**	**0.00**	**1.00**	**1.00**	**0.6**
21		**1.00**	**1.00**	**1.00**	**0.00**	**0.00**	**1.00**	**1.00**	**0.6**
22		0.00	1.00	1.00	1.00	1.00	1.00	1.00	0.86
23		**0.00**	**1.00**	**1.00**	**1.00**	**0.00**	**1.00**	**1.00**	**0.6**

The validation questionnaire employed a 4-point ordinal scale to assess the Item-Level Content Validity Index (I-CVI) for each item. Table 2 presents the score definitions used by the experts in assessing the I-CVI within the validation rubric. To calculate the I-CVI, the researcher averaged the scale scores by summing the scores provided by each expert and dividing by the total number of experts. According to Lynn (1986), an I-CVI value of 0.83 and above is considered acceptable, while a value of 1.00 indicates excellent validity. Based on the analysis, four items were removed from the instrument as their I-CVI values were below 0.80. The item been removed is item 15, 20, 21 and 23.

DISCUSSION

The findings from this study underscore the robustness of the instrument in capturing the essential practices of school headmasters in managing the physical environment and facilities for special education settings. The use of the Content Validity Index (CVI) methodology, grounded in the work of Lynn (1986), facilitated a systematic and rigorous expert evaluation process. Out of 23 items developed across four core constructs—needs planning, procurement implementation, maintenance review, and improvement actions, 19 items met the acceptable threshold for content validity (I-CVI $\geq$ 0.83), while four items were removed due to low agreement among experts.

This outcome reinforces the importance of expert consensus in ensuring that measurement items are conceptually aligned with the constructs they intend to measure. The high I-CVI scores for most items indicate strong relevance and clarity, suggesting that the instrument effectively captures the multifaceted role of headmasters in managing inclusive school environments. In particular, the constructs related to planning and maintenance achieved perfect scores, highlighting a shared understanding among experts regarding the

critical functions of strategic infrastructure planning and sustained facility upkeep in special education contexts.

The removal of four items, which were scored below the 0.83 threshold, reflects the value of iterative refinement in instrument development. These items may have lacked conceptual clarity, overlapped with other items, or did not resonate with the practical experiences of the experts. Their exclusion enhances the overall focus and reliability of the instrument, ensuring that each retained item contributes meaningfully to the construct being measured.

Furthermore, the results reflect broader implications for educational leadership in special education. Despite existing policy frameworks such as the Malaysian Education Blueprint (2013–2025) and the Special Education Regulations (2013), the lack of specific instruments tailored to assess school leaders' practices in environmental and physical facility management has been a longstanding gap. This study addresses that gap by introducing a validated instrument that can be used for future research, training, and policy interventions.

Importantly, the findings also point to the urgent need for capacity-building initiatives. The literature highlights that many school leaders lack formal training in managing facilities for special education (Siti Muhibah & Zetty, 2018; Deresa & Senapathy, 2022). The validated instrument developed in this study can inform professional development programmes by identifying key areas of strength and weakness in current practice. It can also support monitoring and evaluation efforts by educational authorities aiming to enhance inclusivity and accessibility in school infrastructure.

Overall, this study contributes significantly to the empirical foundation for understanding and improving headmasters' roles in managing the school environment for special needs learners. The strong content validity of the instrument ensures that it is both conceptually rigorous and practically useful, paving the way for more targeted interventions to support inclusive education at the school leadership level.

CONCLUSION AND IMPLICATION

This study has contributed to the foundational groundwork in developing a valid and reliable instrument to assess headmasters' management practices concerning the physical environment and facilities within Integrated Special Education Programmes (PPKI). By employing the Content Validity Index (CVI) approach and engaging a panel of seven subject-matter experts in educational leadership and special education, the research achieved a rigorous validation process. The retention of 19 out of 23 items, based on acceptable I-CVI scores (≥0.83), signals strong agreement among experts regarding the conceptual relevance, clarity, and representativeness of the retained items. This affirms the methodological integrity and content alignment of the instrument, particularly within the four domains of needs planning, procurement implementation, maintenance review, and improvement actions.

The high content validity evidenced in this study suggests that the instrument is not only theoretically grounded but also contextually meaningful, addressing a critical gap in tools available for assessing inclusive leadership competencies in special education settings. In practice, this instrument can be adopted as a diagnostic and developmental tool by education authorities, researchers, and policymakers to identify strengths and areas for growth in school environmental management. More specifically, the tool holds potential for integration into training modules, leadership evaluation frameworks, and quality assurance systems for inclusive education.

Implications of this research are multifold. First, it reiterates the necessity for targeted professional development among school leaders in inclusive facility management, an area

often overlooked despite its direct impact on student well-being and access to learning. Second, the study reinforces the call for policy-level attention to infrastructural planning that explicitly accommodates the needs of students with disabilities, aligning with national goals and global commitments such as the Malaysia Education Blueprint and Sustainable Development Goal 4 (SDG 4).

Furthermore, the validated instrument provides a foundation for longitudinal research to track leadership practices over time and evaluate the effectiveness of strategic interventions aimed at improving the physical learning environments for special education. It also invites future research to extend the psychometric testing of the instrument such as exploring its construct validity, reliability, and predictive capacity across diverse school settings.

In conclusion, this study not only enriches the methodological landscape of instrument development in educational management but also advances the discourse on inclusive leadership. By equipping stakeholders with a valid measurement tool, it opens pathways for evidence-based improvements in special education provision, ensuring that no learner is left behind due to environmental and infrastructural barriers.

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