Preliminary Validation and Feasibility Testing of Malay-Adapted Instruments Measuring Student-Centred Learning among Nurse Educators

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ABSTRACT

Student-centred learning (SCL) plays a critical role in contemporary nursing education. Accurate assessment of SCL implementation requires instruments that are linguistically clear and psychometrically sound within the local context. A preliminary evaluation is essential before the large-scale deployment of adapted tools. This pilot study aimed to examine the content validity, feasibility, and internal consistency reliability of three Malay-adapted instruments measuring SCL application, instructors' perceptions, and perceived barriers among nurse educators. A cross-sectional pilot study was conducted among 16 nurse educators recruited through random outreach across nursing education settings in Malaysia. The instruments underwent forward translation, followed by expert review involving two subject-matter experts and one language expert. Content validity was assessed using the Content Validity Index (CVI). Internal consistency reliability was evaluated using Cronbach's alpha. The instrument set achieved a CVI of 1.0, indicating full expert agreement on item relevance and clarity. Reliability analysis demonstrated moderate internal consistency for the refined Application of SCL Scale (α = 0.618), moderate consistency for the Perceptions Scale (α = 0.609), and good internal consistency for the Barriers Scale (α = 0.839). No missing data were recorded. The questionnaire was considered feasible, with an acceptable completion time and minimal wording adjustments. The Malay-adapted SCL instruments demonstrated acceptable preliminary reliability and strong content validity. These findings support their use in a subsequent full-scale study for further psychometric evaluation.

Keywords: student-centred learning, nurse educators, pilot study, reliability, content validity

INTRODUCTION

Teaching and learning in nursing education are undergoing a significant transformation from traditional teacher-centred approaches toward more dynamic student-centred learning (SCL) models. This shift reflects the growing need to produce independent, reflective, and lifelong learners capable of functioning effectively in complex healthcare environments (Visiers-jiménez et al., 2021). In health sciences education, SCL emphasises active participation, collaborative learning, problem-solving, and self-directed learning rather than passive content delivery through lecture-based methods (Metsälä & Törnroos, 2021).

The implementation of SCL has been associated with improved learner engagement, deeper understanding, and enhanced professional competencies among healthcare students (Halasa et al., 2020; Martin-Alguacil et al., 2024). Instructional strategies such as problem-based learning and simulation-based education are increasingly adopted to strengthen clinical reasoning and decision-making skills in nursing education. Evidence indicates that simulation, combined with problem-based learning, significantly improves nursing students' clinical reasoning and learning satisfaction (Son, 2023). These approaches align with contemporary educational reforms aimed at enhancing graduate readiness and competency development in health professions education.

Despite its recognised benefits, the transition to SCL presents several challenges. Moving away from conventional teacher-centred instruction requires pedagogical adjustment, institutional support, and sustained

professional development for educators. Previous studies have identified barriers such as limited training, time constraints, insufficient teaching resources, and structural limitations within health education institutions (Martin-Alguacil et al., 2024). Additionally, psychosocial and cultural factors may influence educators' readiness and perceptions regarding the adoption of student-centred approaches (Dursun & Aykan, 2025).

Given these considerations, systematic measurement of SCL application, educators' perceptions, and perceived barriers is essential to inform evidence-based improvements in teaching practice. In this study, three instruments were adapted and translated into Malay to assess these constructs. Prior to full-scale implementation, preliminary evaluation of content validity and internal consistency reliability is necessary to ensure linguistic clarity, contextual suitability, and measurement stability. Therefore, this pilot study aimed to examine the content validity, feasibility, and internal consistency reliability of the adapted SCL instruments prior to large-scale psychometric evaluation.

METHODOLOGY

Study Design

This study employed a quantitative cross-sectional pilot design to evaluate the preliminary psychometric properties of three adapted instruments measuring the application of Student-Centred Learning (SCL), instructors' perceptions, and perceived barriers to SCL implementation. The pilot study was conducted prior to the main data collection to assess linguistic clarity, content validity, feasibility of administration, and internal consistency reliability within the local educational context.

Instruments

Three previously validated instruments were adapted for use in this study. The first instrument, the Application of Student-Centred Learning Scale, was adapted from El-auoty and Hasanin, (2018). This scale consists of 11 items designed to measure the extent to which educators implement student-centred strategies, including learner engagement, instructional adaptation, and facilitation practices. Responses are recorded on a three-point Likert scale ranging from Never to Always. The original study reported excellent internal consistency reliability, with a Cronbach's alpha coefficient of 0.96, indicating high internal coherence of the instrument. During pilot testing, one item was removed following item analysis because of its weak contribution to internal consistency. The final pilot version of the scale retained 10 items.

The second instrument, the Instructors' Perceptions of SCL Scale, was adapted from (Tawalbeh & Alasmari, 2015). This instrument comprises 10 items that assess educators' beliefs, attitudes, readiness, and openness to adopting student-centred teaching approaches. Items are rated on a four-point Likert scale ranging from Strongly Agree to Strongly Disagree. In its original validation, the scale demonstrated strong internal consistency (Cronbach's alpha = 0.86) and high test–retest reliability (r = 0.90 over a two-week interval), indicating measurement stability.

The third instrument, the Barriers to SCL Implementation Scale, was also adapted from Tawalbeh and Alasmari (2015). It consists of eight items measuring structural, pedagogical, institutional, and learner-related challenges that may hinder the effective implementation of SCL. The scale uses the same four-point Likert response format as the perception scale. Previous validation studies reported acceptable reliability coefficients, supporting its suitability for assessing perceived implementation barriers. Permission to adapt and use all three instruments was obtained directly from the original authors through formal email correspondence.

Translation and Content Validation

The instruments were translated from English into Malay using a forward translation approach to ensure semantic and conceptual equivalence with the original versions. The translation process prioritised clarity, cultural appropriateness, and contextual alignment with nursing education settings.

Content validation was conducted by two subject-matter experts holding Master's degrees in research methodology and experienced in educational research, together with one Malay language expert specialising in

academic linguistic review. The experts independently evaluated each item for relevance, representativeness, clarity, and conceptual alignment with the intended constructs of SCL application, perception, and barriers. Minor revisions were made to improve wording precision and conceptual coherence prior to pilot administration

Pilot Participants and Procedure

The pilot study involved 16 nurse educators who were not included in the intended main study sample. Participants were actively engaged in academic and clinical teaching. The purpose of the pilot was to assess item clarity, response flow, administrative feasibility, and preliminary internal consistency reliability.

The questionnaire was administered in a self-administered format. Participants were invited to complete the instrument and provide feedback regarding comprehensibility and readability. Completion time was recorded to evaluate feasibility. Adjustments were made based on participant feedback prior to finalisation of the questionnaire.

Statistical Analysis

Data were analysed using the Statistical Package for the Social Sciences (SPSS). Internal consistency reliability for each scale was evaluated using Cronbach's alpha coefficient. Given the pilot study's preliminary nature and the small sample size, factor analysis was not performed. Descriptive statistics were used to assess response completeness and feasibility indicators.

RESULTS

Socio-Demographic Characteristics of Respondents

Table 1 presents the demographic characteristics of the 16 nurse educators who participated in the pilot study. Participants had a mean age of 45.88 years (SD = 8.02), with ages ranging from 36 to 59 years. The majority were married (81.3%) and held the U9 academic grade (56.3%). Most respondents were teaching in post-basic or advanced diploma programmes (68.8%). The mean teaching experience in education was 7.19 years (SD = 5.80), while clinical experience averaged 16.56 years (SD = 4.50). Experience in Outcome-Based Education (OBE) implementation averaged 3.87 years (SD = 3.36). Additionally, 75% of participants had attended formal OBE training courses.

Table 1: Sociodemographic Background (N=16)

Variable	**n**	**%**	**Mean ± SD**	**Range**
Age (years)	–	–	45.88 ± 8.02	36–59
Marital Status				
Single	2	12.5	–	–
Married	13	81.3	–	–
Divorced / Others	1	6.3	–	–
Grade Position				
U9	9	56.3	–	–
U10	7	43.8	–	–
Programme Taught				

Diploma	5	31.3	–	–
Post-basic / Advanced Diploma	11	68.8	–	–
Teaching Experience (years)	–	–	7.19 ± 5.80	1–16
Clinical Experience (years)	–	–	16.56 ± 4.50	11-30
Experience in OBE (years)	–	–	3.87 ± 3.36	0-5
Attendance OBE Course				
Yes	12	75.0	–	–
No	4	25.0	–	–

Reliability Analysis

Internal consistency reliability was assessed using Cronbach's alpha. Cronbach's alpha values should be interpreted with caution, as they are influenced by the number of items, sample size, and construct dimensionality (Taber, 2018).

For the Application of Student-Centred Learning Scale, the initial 11-item version yielded a Cronbach's alpha of 0.519. Item analysis indicated that Item 11 demonstrated a low corrected item–total correlation ($r < 0.30$), suggesting a weak contribution to the overall construct. Following its removal, Cronbach's alpha improved to 0.618. Therefore, the final pilot version of the scale retained 10 items and demonstrated moderate internal consistency.

The Instructors' Perceptions of SCL Scale ($\alpha = 0.609$) demonstrated moderate internal consistency, while the Barriers to SCL Implementation Scale showed good internal consistency ($\alpha = 0.839$), indicating strong inter-item coherence.

As noted by Taber, (2018), alpha values should not be treated as rigid cut-off indicators of instrument adequacy, particularly in exploratory or preliminary phases of instrument adaptation. Given the small pilot sample and the contextual adaptation of the scales, these coefficients were considered acceptable for preliminary evaluation.

Table 2 Internal Consistency Reliability of the Malay-Adapted SCL Instruments (n = 16)

Scale	**Number of Items**	**Cronbach's Alpha (α)**
Application of the Student-Centred Learning Scale	10	0.618
Instructors' Perceptions of SCL Scale	10	0.609
Barriers to SCL Implementation Scale	8	0.839

Content Validity Results

Table 3 presents the scale-level content validity indices for the three Malay-adapted SCL instruments. All items across the three scales achieved an Item-Level Content Validity Index (I-CVI) of 1.00, indicating unanimous agreement among experts regarding item relevance. The Scale-Level Content Validity Index calculated using both the average method (S-CVI/Ave) and the universal agreement method (S-CVI/UA) was 1.00 for all three instruments. These values exceed the recommended minimum thresholds of 0.78 for I-CVI (for panels of three experts) and 0.90 for S-CVI/Ave, as proposed by Polit and Beck, (2006) and Polit et al. (2007). The findings

therefore demonstrate excellent content validity and strong expert consensus regarding the clarity, representativeness, and conceptual alignment of all items within the adapted instruments.

Table 3 Scale-Level Content Validity Indices of the Malay-Adapted SCL Instruments (n = 3 Experts)

Scale	**S-CVI/Ave**	**S-CVI/UA**
Application of the Student-Centred Learning Scale	1.00	1.00
Instructors' Perceptions of Student-Centred Learning Scale	1.00	1.00
Barriers to Student-Centred Learning Implementation Scale	1.00	1.00

DISCUSSION

This pilot study was conducted to evaluate the preliminary psychometric properties of three Malay-adapted instruments measuring the application of Student-Centred Learning (SCL), instructors' perceptions of SCL, and perceived barriers to its implementation. The findings provide initial evidence supporting strong content validity, acceptable internal consistency, and satisfactory feasibility within the context of nursing education.

With respect to content validity, all three instruments achieved an Item-Level Content Validity Index (I-CVI) of 1.00 and a Scale-Level Content Validity Index based on the average method (S-CVI/Ave) of 1.00. These values exceed the recommended minimum thresholds of 0.78 for I-CVI when evaluated by three experts and 0.90 for S-CVI/Ave, as proposed by Polit and Beck (2006) and further supported by Polit, Beck, and Owen (2007). According to these authors, I-CVI represents the proportion of experts rating an item as relevant (typically 3 or 4 on a four-point relevance scale), and values approaching 1.00 reflect strong agreement regarding the adequacy and representativeness of the item. The perfect agreement observed in the present study, therefore, indicates unanimous expert endorsement of item clarity, relevance, and conceptual alignment.

Furthermore, Polit et al. (2007) emphasised that the S-CVI/Ave method is generally preferred over the universal agreement method, as the latter may underestimate agreement when multiple experts are involved. In this study, both S-CVI/Ave and S-CVI/UA were 1.00 across all three instruments, providing robust evidence that the adapted items retained their conceptual integrity following translation. These findings suggest that the forward translation and expert validation processes were rigorously conducted, and that the Malay version successfully preserved semantic and contextual equivalence with the original instruments.

In contrast to the strong evidence for content validity, internal consistency reliability demonstrated variation across the three scales. The refined Application of SCL Scale ($\alpha = 0.618$) and the Instructors' Perceptions of SCL Scale ($\alpha = 0.609$) yielded moderate Cronbach's alpha coefficients, whereas the Barriers to SCL Implementation Scale demonstrated good internal consistency ($\alpha = 0.839$). During item analysis, one item in the Application scale (Item 11) demonstrated weak corrected item–total correlation and was therefore removed in the pilot phase. The exclusion of this item may reflect contextual or conceptual misalignment within the Malaysian nursing education setting, warranting further examination in the main study.

Compared with the original validation studies, the alpha coefficients observed in this pilot were lower than previously reported values (0.96 for the Application scale and 0.86 for the Perceptions scale). However, such differences are not unexpected in pilot validation studies involving cross-cultural adaptation and small sample sizes.

As argued by Taber (2018), Cronbach's alpha should not be interpreted as a rigid indicator of instrument quality based solely on conventional cut-off thresholds. Alpha values are influenced by multiple factors, including the number of items, construct dimensionality, response variability, and sample size. In small pilot samples, reliability estimates may be unstable and may underestimate true internal consistency. This interpretation is further supported by Bonett and Wright, (2015), who demonstrated that reliability estimates derived from small samples are associated with wider confidence intervals and greater sampling variability. Given that this study

involved only 16 participants, the moderate alpha values observed for two of the scales should therefore be interpreted as preliminary rather than definitive psychometric evidence.

In addition to sample size considerations, cross-cultural adaptation may contribute to variations in reliability. Beaton et al. (2000) highlighted that even when semantic equivalence is preserved during translation, contextual and cultural differences may influence how respondents interpret and respond to items. Differences in institutional structures, educational policies, and pedagogical expectations may affect inter-item correlations. Therefore, some reduction in internal consistency during the adaptation phase is methodologically acceptable.

Moreover, heterogeneity among respondents may have contributed to variability in responses. Participants differed in teaching experience, clinical exposure, and engagement with Outcome-Based Education (OBE) initiatives. Such diversity may influence perceptions and reported practices related to SCL implementation, thereby affecting inter-item consistency. As noted by Taber (2018), lower alpha coefficients do not necessarily indicate poor instrument quality but may reflect multidimensionality or genuine diversity within the construct being measured.

Importantly, the Barriers to SCL Implementation Scale demonstrated good internal consistency ($\alpha = 0.839$), suggesting that perceived structural and institutional challenges were more homogeneously conceptualised within this sample. This may indicate that perceived barriers are more consistently experienced compared to application behaviours or personal perceptions, which may be influenced by contextual teaching practices.

Feasibility findings further support the suitability of the adapted instruments for larger-scale implementation. No missing data were recorded, and all respondents completed the questionnaire in full. Completion time was acceptable, and only minor wording refinements were suggested. These findings indicate that the instruments are linguistically clear, practical to administer, and appropriate for self-administration in nursing education settings.

Overall, this pilot study provides preliminary evidence supporting the strong content validity and acceptable internal consistency of the Malay-adapted SCL instruments. Although moderate alpha coefficients were observed for two scales, these findings are consistent with methodological expectations in early-stage validation studies involving small samples and cross-cultural adaptation. Further validation with a larger sample is recommended to obtain more reliable estimates and to conduct structural analyses. The present findings therefore support progression to full-scale psychometric evaluation within the Malaysian nursing education context.

Implications For Nursing Education

The findings of this pilot study provide important implications for nursing education, particularly in the context of pedagogical transformation toward Student-Centred Learning (SCL). The availability of Malay-adapted instruments with strong content validity enables nursing education institutions to systematically evaluate the extent of SCL implementation, educators' perceptions, and perceived barriers within their programmes. Such structured assessment supports evidence-based curriculum refinement and quality assurance initiatives.

The preliminary reliability findings further highlight the necessity of contextual validation before adopting international instruments into local educational environments. By identifying variations in teaching practices and educator readiness, institutions can design targeted faculty development strategies to strengthen SCL adoption. Ultimately, validated measurement tools contribute to more consistent and effective implementation of student-centred approaches, supporting competency-based nursing education and enhancing graduate preparedness for complex healthcare settings.

CONCLUSION

This pilot study provides preliminary evidence supporting the psychometric adequacy and practical feasibility of the Malay-adapted Student-Centred Learning (SCL) instruments within the nursing education context. The findings demonstrated excellent content validity, with full expert agreement across all items, indicating strong conceptual alignment and contextual suitability following translation and adaptation. Internal consistency

reliability ranged from moderate to good across the three scales, reflecting acceptable preliminary stability given the small pilot sample and cross-cultural adaptation process.

Although the reliability coefficients for two of the scales were moderate, these findings are consistent with methodological expectations in early-stage validation studies. The absence of missing data and positive feasibility indicators further support the instruments' clarity and usability.

Overall, the results justify progression to a larger-scale validation study to obtain more reliable estimates and conduct structural analyses. The present study, therefore, establishes a foundational step toward the development of contextually appropriate tools for evaluating student-centred pedagogical practices in nursing education.

Conflict Of Interest

The authors declare that there are no conflicts of interest related to this study.

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