

Translation and Psychometric Evaluation of the Vietnamese Clinical Learning Environment Inventory

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Background

Nursing in Vietnam is undergoing substantial change towards a baccalaureate educated profession, facilitated within a national strategy to improve the health workforce.¹ The clinical environment is where students integrate theory and skills to develop competence, and reliable tools that evaluate this learning environment are essential to inform planned change.

Aim

To evaluate the validity and reliability of the Vietnamese language version of the modified Clinical Learning Environment Inventory (V-CLEI)².

Methods

Sample size: A convenience sample of 1023 undergraduate nursing students completed the V-CLEI following a clinical practice placement. Demographic data were also collected.

Setting: Five universities and colleges across Vietnam.

Instrument: V-CLEI comprises 42 items measuring factors in the clinical learning environment that facilitate or are a barrier to learning using a 4 point Likert scale. There are 6 sub-scales and total scores range from 42 to 168. The V-CLEI is derived from an English instrument³ and was previously translated into Vietnamese in a rigorous process.²

Data analysis:

The sample was randomly split into two subsamples, A (n = 511) and B (n = 512) which were equivalent in age, gender, year of study and V-CLEI score. Exploratory factor analysis (EFA) was performed in group A (principle axis factoring, varimax rotation, eigenvalues ≥ 1 , item loading ≥ 0.4), then the EFA results were cross-validated in group B using Cronbach alpha and confirmatory factor analysis (CFA). Finally a new version of V-CLEI was tested for content validity with an expert panel of 21 Vietnamese nurse teachers.

Results

- Demographic characteristics are summarised in Table 1.
- EFA results revealed 5 new factors accounting for **41% of total variance**. 22 items were deleted due to low factor loading (< 0.4), cross loading or conceptual incongruence.
- Construct validity testing of the new factors demonstrated satisfactory fit indices (CFI = 0.90, RMSEA = 0.056 [90% CI 0.05, 0.06], PCLOSE = 0.062)
- Five factors were: Student Learning, Satisfaction, Teaching and Learning interaction, Individual Engagement and Student Centeredness. All had acceptable Cronbach alpha from 0.61 – 0.73. (Table 2, Figure 1)
- Expert panel (n = 21) content validity index score = 0.98.

Conclusion

The Vietnamese version of CLEI has been modified following a robust process of exploratory and confirmatory factor analysis. The revised instrument demonstrates acceptable reliability and validity to measure students' perceptions of clinical learning environment in the Vietnamese context. Expert panel results indicate this instrument has utility for use in the nursing clinical education context within Vietnam.

Table 1. Demographics & Mean V-CLEI score

Age (mean, sd)	20.9 yrs (0.8)
Gender (number,%)	
Male	254 (24.8%)
Female	769 (75.2%)
School Year (number,%)	
Year 2	530 (51.8%)
Year 3	375 (36.7%)
Year 4	118 (11.5%)
V.CLEI score (mean, sd)	138.3 (14.6)

Table 2. V-CLEI reliability and content validity of five new factors

Factors	Cronbach alpha	Mean inter-item correlation	Subscale CVI*
Student learning	0.69	0.43	1
Satisfaction with experience	0.68	0.30	0.99
Teaching and learning interaction	0.73	0.36	0.93
Student centeredness	0.71	0.38	1
Individual engagement	0.61	0.34	1

* Content validity index

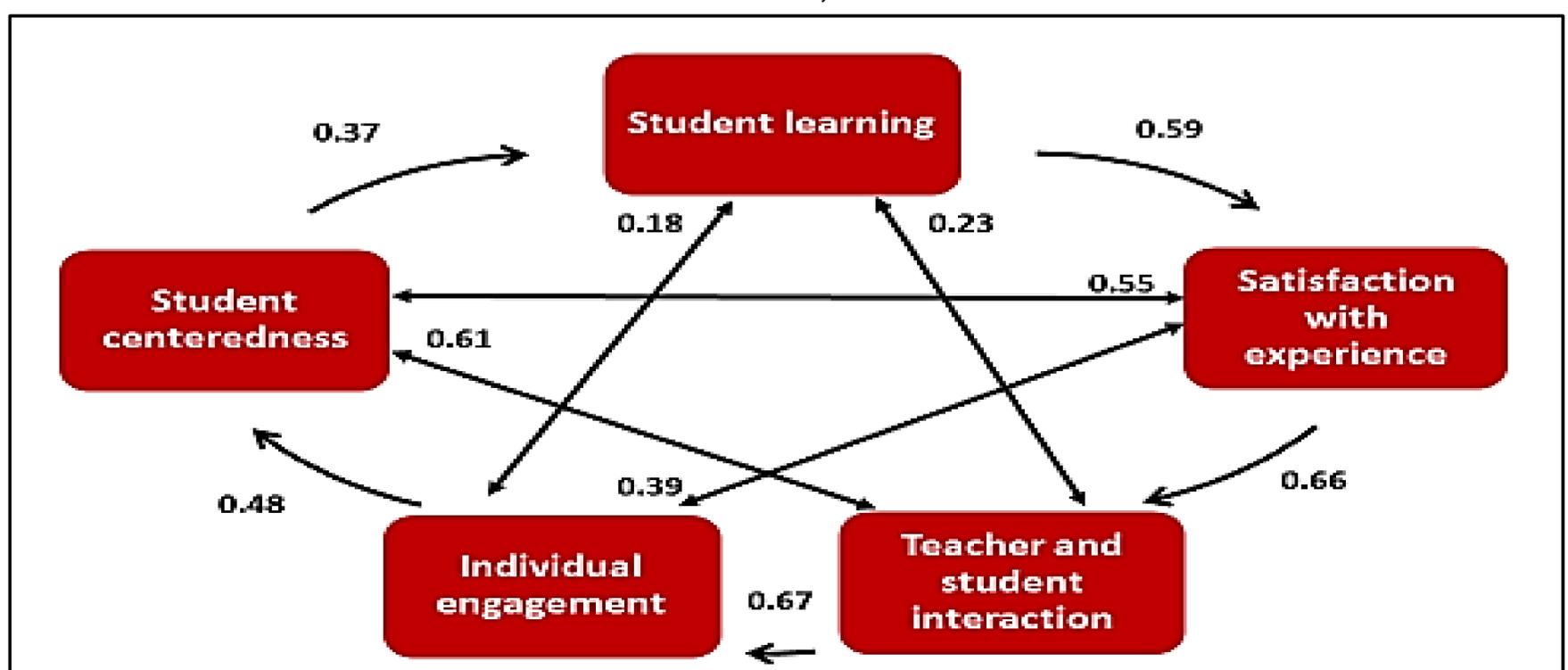


Figure 1. V-CLEI Model fit. Confirmatory factor analysis showed improved model fit (41% of variance). All relationships between factors and items were significant at $p < 0.001$.