

A Study on the Validation of a Developmental Model for Social Integration abilities Among Needy Students in Guangxi's Higher Vocational Colleges

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Abstract

This study focuses on the specific context of higher vocational colleges in Guangxi, employing empirical research to validate the effectiveness and feasibility of a social integration ability development model for needy students within these colleges. The sample comprised 381 needy students in 2023 across four higher vocational colleges in Guangxi (Group E) and three experts in educational research and vocational education management (Group F). Data analysis integrated descriptive and inferential statistical methods: Frequencies and percentages were employed to describe students' demographic characteristics. Data reliability and validity were assessed through Cronbach's α coefficient, KMO test, and Bartlett's sphericity test. Paired-sample t-tests analysed pre- and post-intervention ability differences. Pearson correlation analysis explored associations between programme participation, ability enhancement, and ability dimensions. Concurrently, expert evaluations were conducted using the Quality Index of Content (QIC) and Key Success Factors (KSF) assessment methodologies. Results indicate that following participation in the model, Group E students demonstrated significant improvements across seven abilities including economic integration and interpersonal interaction ($p < 0.001$). The most pronounced enhancement was observed in economic integration ability (mean score rising from 3.08 to 3.61). Participation frequency and duration showed a significant positive correlation with ability enhancement (e.g., participation frequency and economic integration ability: $r=0.37***$). Strong synergistic effects existed across the seven ability dimensions (e.g., psychological adaptation ability and self-identity ability: $r=0.90***$). Panel F experts achieved 100% consensus on all 14 intervention measures within the model, with all six key success factors scoring >4.4 and all seven ability dimensions scoring >4.5 . In summary, this model effectively

promotes the development of social integration abilities among needy students. Its intervention measures align with educational management practice requirements, providing empirical evidence for optimising and scaling up subsequent related intervention practices.

Keywords: Guangxi Vocational Colleges; Needy Students; Social Integration Abilities; Model validation; Empirical research

Introduction

With the expansion of enrolment and continuous growth in the scale of operations at China's higher vocational colleges, the number of needy students (here specifically referring to those from economically disadvantaged families) has also shown a marked upward trend. As a western frontier region with significant ethnic minority populations, Guangxi faces challenges including poor transport links and inadequate infrastructure. These factors contribute to lagging economic development and pronounced regional imbalances, resulting in a year-on-year increase in the number of needy students at Guangxi's higher vocational colleges. Consequently, issues surrounding their social integration and the associated educational management challenges have become increasingly prominent.

Data from the Annual Report on the Quality of Higher Vocational Education in Guangxi (2022) indicates that the unemployment rate among needy students at Guangxi's higher vocational colleges reached 13% in 2022, marking a record high for the period. Insufficient social integration abilities emerged as a key factor contributing to their employment challenges (Guangxi Zhuang Autonomous Region Department of Education, 2023). The Employment Blue Book: 2022 China Higher Vocational Students Employment Report indicates that although 2022 graduates demonstrated sound fundamental work competencies, needy students still possess considerable room for improvement in key social integration abilities such as communication and psychological adaptation (MyCOS Research Institute, 2022). This practical predicament demonstrates that the shortcomings in social integration abilities among needy students at Guangxi's higher vocational colleges have directly impacted their academic progression and employment prospects, making it imperative to cultivate their social integration abilities.

At present, both the State Council and the Guangxi local government have introduced policies explicitly emphasising the enhancement of abilities and the all-round development of needy students (State Council, 2007) Nevertheless, the funding models within Guangxi's higher vocational colleges still exhibit a widespread imbalance, with a tendency to prioritise financial

assistance over ability building. Vocational colleges prioritize financial aid while relying on a one-size-fits-all approach to guidance, lacking personalized support, psychological assistance, and practical skills training. This hinders the ability development of needy students (Zhou, 2025). Although previous research has established a comprehensive evaluation framework for migrant populations to address social integration issues such as services for ethnic minority groups in Guizhou Province (Cao et al., 2021), this approach focuses on migrant populations and is therefore unsuitable for the vocational education context and developmental needs of needy students in Guangxi's higher vocational colleges. A review of existing research reveals that academic studies on the social integration abilities of needy students in Guangxi's higher vocational colleges remain insufficient. There exists a significant gap in specialised competency model research, with a lack of targeted empirical assessment and intervention tools. This disparity hinders the alignment between policy requirements and educational practice, rendering the validation of this ability model both urgent and essential.

Against this backdrop, prior research has developed a social integration ability development model encompassing seven dimensions: economic integration, interpersonal relations, cultural integration, academic integration, employment integration, psychological adjustment, and self-identity. Grounded in attribution theory and social integration ability theory, and tailored to the educational management needs of Guangxi's higher vocational colleges, this model specifically addresses the prominent challenges faced by needy students in accessing resources and navigating interpersonal interactions.

As a core component of the doctoral thesis entitled “Needy Students' Social Integration Ability Development in Higher Vocational Colleges in Guangxi, China”, this study aims to validate the model's efficacy and feasibility. It selected 381 needy students and three domain experts from four higher vocational colleges in Guangxi as subjects. Samples were determined through stratified and purposive sampling, with data collected via semi-structured questionnaires. Multidimensional validation was conducted using SPSS 26.0, the Quality Index of Content (QIC) test, and the Key Success Factors (KSF) evaluation method. The findings provide empirical evidence for enhancing the social integration abilities of needy students and improving educational management effectiveness in Guangxi's higher vocational colleges. This contributes to the transition of financial aid programmes from “material assistance” toward “ability development”.

Objectives of Research

1. Validate the effectiveness of the social integration ability model in enhancing the social integration abilities of needy students in Guangxi's higher vocational colleges, clarifying the correlation between participation frequency and duration with ability improvement, as well as the synergistic effects among various ability dimensions.
2. Evaluate the comprehensiveness and adaptability of the model's intervention measures, validate its feasibility in educational management practices, and identify key success factors and directions for application optimization.

Research Methodology

This study constructs a conceptual framework based on the “input–process–output” logic. It examines seven social integration abilities among needy students—including economic integration and interpersonal communication—as dependent variables. Resource inputs (human, material, and social support) and intervention processes (curriculum systems, practical platforms, and targeted assistance) serve as independent variables, while programme engagement metrics (level of understanding, duration of participation, and frequency) function as mediating variables. establishing a transmission pathway of ‘independent variables → mediating variable → dependent variables,’ with synergistic interaction among the seven dependent variable dimensions. This conceptual framework aligns with the policy orientation of ‘ability cultivation’ and addresses the multidimensional integration needs of needy students, thereby resolving the traditional funding approach's tendency to prioritise financial support over capacity development. Furthermore, by clarifying variable relationships, it provides a coherent logical foundation for quantitative analysis (such as correlation and difference testing) and expert evaluation, ensuring the systematic and targeted nature of the research design.

1. Research Subjects and Sample Population

Group E comprised 41,544 needy students identified in 2023 across four higher vocational colleges in Guangxi (data source: Guangxi Higher Education Student Financial Aid System). This group shared the same research subjects as Group A, with Group A representing the pre-intervention state and Group E the post-intervention state. The selection criteria for Group E participants are as follows: students formally recognised by the institution as being from economically disadvantaged backgrounds, who voluntarily participate and sign an informed consent form, and who are able to fully engage in the model intervention and pre- and post-intervention surveys.

For quantitative research sampling, stratified sampling within probability sampling was employed. Sample size was calculated using the Krejcie and Morgan (1970) formula:

$$n = P(1-P)/(e^2/Z^2 + P(1-P)/N)$$

where N = 41,544 (total needy students), Z = 1.96 (95% confidence level), e=0.05 (error value), P=0.5 (probability value). Substituting these values yields n≈381. The final sample allocation was distributed proportionally across institutions based on the proportion of needy students within each college's total student population.

Group F comprises the expert evaluator sample, selected through purposive sampling within non-probability sampling. The selection criteria for Group F participants are as follows: individuals possessing over five years' experience in educational research or vocational education management, familiarity with support initiatives for needy students in higher vocational colleges, and a willingness to provide professional assessment feedback. This approach aligns with the research objectives and educational management evaluation requirements, specifically selecting three evaluation experts (one from the field of educational research and two from the field of vocational education management) to cover the core professional dimensions required for model evaluation.

2. Data Collection Tools

Group E Questionnaire: A semi-structured questionnaire incorporating demographic statistics and social integration ability assessment. To facilitate pre-post comparison, it directly reuses the core dimensions and item framework from Group A. Rationale: Tailored to the characteristics of needy vocational college students in Guangxi, aligned with the core construct of social integration ability research, enabling precise collection of target data. Reusing Group A ensures consistent measurement standards across pre-post assessments, minimizing instrument variance error. Reliability and validity testing employed Cronbach's α coefficient ($\alpha \geq 0.7$ considered acceptable) combined with CITC (≥ 0.5) to assess internal consistency. Validity was verified using KMO (≥ 0.7) and Bartlett's test ($p < 0.05$). Given that Group A questionnaires met reliability and validity standards through content validity assessment by 7 experts (IOC ≥ 0.71) and preliminary reliability verification (Cronbach's α ranging from 0.87 to 0.91), no repeated testing is required.

Group F Questionnaire: A semi-structured questionnaire developed using the Delphi method (Okoli & Pawlowski, 2004) to construct the evaluation system. It includes expert basic information, assessments of model item comprehensiveness and systematicity, quantitative evaluations of six key success factors, and open-ended questions. Reason for selection: The Delphi method integrates consensus from multi-disciplinary experts, aligning with the specialized requirements of model evaluation. Reliability and validity were verified through Kappa coefficients (≥ 0.6) and content validity indices ($I-CVI \geq 0.78$, $S-CVI/Ave \geq 0.9$).

3. Data Collection Process

This study has received ethical approval from Payap University, Thailand, Thailand (Approval No.: COA No. 68/039). Group E questionnaires were distributed via the 'QuestionStar' platform by the recruitment advisory team of the sample colleges. Group F questionnaires were directly distributed to experts by the researchers. Both questionnaire types included an informed consent module, employed a double-blind approach, and supported withdrawal at any time. Subsequently, invalid sample data were excluded, while expert feedback on model improvements was concurrently collated.

4. Data Analysis

1) Evaluation of the Model's Implementation Effectiveness by Needy Students. Data were processed using SPSS 26.0 statistical software. First, descriptive statistics including frequency and percentage were conducted for demographic variables such as gender and age. Subsequently, reliability analysis was performed using Cronbach's α coefficient (≥ 0.7) combined with CITC (≥ 0.5). Validity was verified through KMO (≥ 0.7) and Bartlett's sphericity test ($p < 0.05$). As Group E and Group A comprised the same cohort of research subjects, their validated normality test results were reused. A paired samples t-test ($p < 0.05$) was employed to analyse differences in the social integration abilities of needy students before and after the programme implementation. Finally, Pearson's correlation analysis was conducted to examine the relationship between programme participation levels and ability improvement, as well as correlations among the various ability dimensions.

2) Expert Evaluation of Model Implementation Effectiveness. The Quality of Content Index (QIC) was employed to assess the comprehensiveness and systematic nature of the model's content. Content validity was evaluated through expert analysis of the percentage agreement on 14 intervention measures. The Key Success Factors (KSF) evaluation method was applied to quantitatively score the performance of seven key ability enhancements across six KSF dimensions

on a scale of 1 to 5. The mean and standard deviation of scores for each dimension were calculated to analyse model feasibility. Finally, core themes and key improvement directions were distilled from expert recommendations.

Research Results

This study systematically validated the effectiveness and feasibility of the social integration ability development model for needy students in Guangxi's higher vocational colleges through empirical testing with 381 needy students in Group E and professional assessment by 3 experts in Group F.

1. Empirical Test Results from Group E (Model Validity Verification)

1) Reliability and Validity Testing

Test results indicate that the overall Cronbach's α coefficient for Group E's questionnaire reached 0.99, with α coefficients for each dimension ranging between 0.92 and 0.96, all ≥ 0.7 , demonstrating good internal consistency of the data. The KMO value was 0.98, and Bartlett's sphericity test yielded $\chi^2=18903.93$, $df=861$, $p=0.00$, meeting the testing requirements. The data passed the validity test.

2) Analysis of Pre- and Post-Intervention ability Gaps

Results from the paired sample t-test (see Table 1) indicate that after participating in the intervention model, the overall social integration ability and all seven dimensional abilities of needy students significantly improved ($p < 0.01$ for all). Post-intervention, the mean scores for each dimension reached 3.6 or higher, indicating a high level. The mean difference in ability across dimensions ranged from -0.34 to -0.53 , with the most pronounced improvement observed in economic integration ability (-0.53 mean difference). This clearly demonstrates that the intervention model significantly and statistically significantly enhances the social integration abilities of needy students.

Table 1 Analysis of Social Integration ability Gaps in Group E

Dimension of ability	Current ability (M±SD)	Expected ability (M±SD)	Mean difference	t	p
Economic integration ability	3.08±0.83	3.61±0.84	-0.53	-8.63	0.000**
interpersonal communication	3.41±0.89	3.75±0.84	-0.34	-5.16	0.000**
cultural integration	3.34±0.87	3.72±0.81	-0.38	-6.27	0.000**
academic integration	3.39±0.85	3.74±0.79	-0.35	-5.81	0.000**
employment integration	3.26±0.86	3.70±0.82	-0.44	-6.97	0.000**
psychological adjustment	3.41±0.89	3.81±0.84	-0.39	-6.11	0.000**
self-identification	3.44±0.87	3.84±0.80	-0.41	-6.45	0.000**

Note: ** denotes $p < 0.01$; M represents the mean, SD denotes the standard deviation. The data in this table reflects the changes in quantitative scores across various dimensions of social integration ability, along with their statistical significance, for needy students in Guangxi's higher vocational colleges before and after participation in the intervention model.

3) Correlation Analysis

Pearson correlation analysis revealed that model participation exhibited significant positive correlations ($p < 0.01$) with all seven ability improvements. Specifically, participation frequency correlated strongly with economic integration ability ($r = 0.37^{**}$) and interpersonal communication ability ($r = 0.37^{**}$), while participation duration showed the strongest correlations with economic integration ability ($r = 0.34^{**}$) and interpersonal communication ability ($r = 0.32^{**}$). This indicates that deep and frequent engagement in model activities is crucial for enhancing social integration abilities. All seven abilities showed significant positive correlations among themselves, with psychological adjustment ability exhibiting the strongest correlation with self-identification ability ($r = 0.90^{***}$). This demonstrates synergistic effects among competencies, validating the scientific rationale behind the model's "multidimensional linkage" design. Among demographic variables, school type showed weak correlations with ability development, while grade level exhibited a weak negative correlation with participation duration ($r = -0.14^{**}$), suggesting older students may engage for relatively shorter periods.

2. Group F Expert Evaluation Results (Model Feasibility Validation)

1) Comprehensive Model Content Assessment

Following QIC verification, three experts reached 100% consensus on 14 key intervention measures—including “establishing specialized scholarships and grants” and “designating personalized support programs”—unanimously confirming the model's comprehensive, systematic content and satisfactory content validity.

2) Assessment of Key Success Factors

Using a 1–5 point quantitative scoring method for key success factors, results show: all six factors averaged >4.4 points. Accountability implementation (4.71) scored highest, while cost-effectiveness (4.43) was relatively lower, indicating resource optimization should be prioritized for implementation. All seven ability dimensions scored above 4.5, with interpersonal communication ability (4.71) receiving the highest rating. This indicates strong expert endorsement of the model's effectiveness across all dimensions, confirming its alignment with educational management practice requirements.

Through empirical testing involving 381 needy students from Guangxi's higher vocational colleges and validation by three domain experts, the following conclusions were drawn:

1. Model Validity Fully Validated

After participating in the model, Group E students demonstrated significant improvements in social integration ability and all sub-dimensions ($p < 0.01$), with the most pronounced enhancement observed in economic integration ability (mean 3.08 → 3.61). Participation frequency and duration showed significant positive correlations with ability improvement, with the strongest associations observed for economic integration ability ($r = 0.37^{**}$, $r = 0.34^{**}$) and interpersonal communication ability ($r = 0.37^{**}$, $r = 0.32^{**}$). Significant positive correlations existed among all seven ability dimensions, with the most pronounced synergistic effect observed between psychological adjustment ability and self-identification ability ($r = 0.90^{**}$), confirming the model's substantial enhancement effects and scientific design.

2. The model is feasible and has practical value for implementation

Panel F experts achieved 100% consensus on the model's 14 intervention measures, which demonstrated comprehensive and systematic content through QIC validation; Key success factors and ability dimension ratings both exceeded 4.4, aligning with educational

management practices in Guangxi's higher vocational colleges and meeting dissemination criteria. The findings also indicate that high-frequency, deep engagement is crucial for enhancing intervention effectiveness. However, the relatively low cost-effectiveness rating (4.43) and weak negative correlation between grade level and participation duration ($r=-0.14^{**}$) suggest that resource allocation and grade-level adaptability require further optimization.

Discussion

Based on the research findings, the following three key issues may be discussed:

1. The Relationship Between Model Participation and Enhanced Social Integration Abilities Research indicates that after participating in the model, needy students demonstrated significant improvements across all seven abilities, with the most pronounced enhancement observed in economic integration ability. Furthermore, both participation frequency and participation duration exhibited a significant positive correlation with ability development. This aligns with attribution theory (Heider, 1958), which posits that “individuals improve integration capacity through active participation,” and supports Zhou's (2025) conclusion that “targeted interventions are necessary to enhance the comprehensive abilities of vocational needy students.” Compared to Cao et al.'s (2021) study on ethnic minority migrant populations, this research demonstrates more pronounced improvements in economic integration ability. This is attributed to program measures such as “special scholarships and grants” and “work-study placement services,” which directly address the urgent need for economic autonomy among needy student in higher vocational colleges.

2. Synergistic Effects Among Social Integration Dimensions Research indicates significant positive correlations among all seven social integration ability dimensions, with psychological adjustment ability showing the strongest correlation with self-identification ability. This aligns with social integration ability theory (Durkheim, 1951), which posits that “individual social integration results from multidimensional synergistic effects,” and concurs with Cao et al. (2021)'s conclusion that “social integration dimensions exhibit holistic and interconnected characteristics.” It validates the systemic nature of needy students' social integration abilities, providing empirical support for the model's “multidimensional coordinated intervention” design.

3. Comprehensive Content and Feasibility of the Model The study indicates that the model's content is comprehensive and highly feasible. This aligns with the Delphi method's (Okoli

& Pawlowski, 2004), which emphasizes that “expert consensus ensures the scientific rigor of evaluations.” This confirms the model's comprehensiveness and feasibility. Compared to the employment support system for needy students proposed by Wang (2023), this study's model focuses more specifically on the needs of needy students in higher vocational colleges and has empirically validated the effectiveness of its intervention measures. However, the relatively low “cost-effectiveness” score indicates that resource allocation should be optimized during implementation.

Suggestions

1. Suggestions from Research

Based on the research findings, may incorporate the model into their student support framework. Given the characteristic of ‘most pronounced enhancement in economic integration abilities’, additional financial planning courses should be introduced alongside work-study placements. More over introductory training sessions on the model should be provided for first-year students to boost engagement rates. For senior students, flexible participation models such as weekend intensive courses and online modular learning should be designed to mitigate the negative correlation between year level and participation duration. Addressing the ‘relatively low cost-benefit scores’, existing scholarship resources should be consolidated and corporate donation funds introduced to reduce the institution's unilateral investment costs.

2. Suggestions for Future Research

Based on the research findings, future studies may expand the sample to encompass all higher vocational colleges across different regions and types, thereby enhancing the generalisability of conclusions and providing empirical support for model implementation. Conducting a 1-2year follow-up survey of the sample would assess post-graduation workplace integration abilities, validating the model's sustained effectiveness. Conduct an in-depth analysis of the causes behind the negative correlation between year group and participation duration and design personalised intervention programmes to further enhance the model's adaptability.

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