MANAGEMENT OF HOLISTIC STUDENT LEARNING AND MENTAL HEALTH AT GUANGXI TRAFFIC TECHNICIAN COLLEGE

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ABSTRACT
This research aims: (1) To investigate the status and desired state of holistic student-learning and mental-health development among students at Guangxi Traffic Technician College; (2) To construct an empirically-grounded, feasible integrated management framework for holistic student learning and mental health for the college. Stratified random sampling selected 200 students and 45 teachers; purposive sampling recruited three senior college administrative experts. Research instruments included student-teacher questionnaires for holistic learning and mental health, plus an expert evaluation scale for framework appropriateness and feasibility. Data analysis adopted frequency, percentage, mean, standard deviation, Modified Priority Need Index (PNI-modified), and content analysis. Results show that the overall current level of students' holistic learning and mental-health status was moderate-to-high, while the desired state reached a high level. Professional-ability development and social-ability development turned out to be the two core-urgent improvement dimensions according to the descending order of PNI-modified values, followed by personal-ability development, emotional management, self-awareness, and interpersonal relationships. The six-step closed-loop integrated management framework generated in this study includes: (1) joint diagnosis of holistic-learning competence and mental-health status; (2) formulation of tiered unified cultivation standards; (3) design of tiered development task packages; (4) implementation of thematic education and guidance programmes; (5) establishment of multi-stakeholder collaborative feedback mechanism; (6) continuous optimisation via closed-loop improvement. Expert evaluation verified that this framework possesses high appropriateness and practical feasibility for on-campus implementation.
Keywords: Holistic Student Learning, Mental-Health Management, Integrated Management Framework, Technical College, Modified Priority Need Index (PNI-modified)

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INTRODUCTION

Research Background

With the rapid advance of vocational education in China, technical-college students face compound challenges covering academic learning, vocational skill training and psychological adaptation (Wang, 2021). Existing studies indicate that many vocational students show gaps in social adaptation, emotion regulation and professional competence, which restrain individual growth and post-employment performance (Ruan, 2020). Holistic student-learning advocates coordinated progress of cognition, practice, innovation and personality; meanwhile mental-health support focuses on emotion management, self-awareness and interpersonal competence (Xu, L., 2022). Joint management of holistic learning and mental health becomes a critical practical requirement for high-skilled talent cultivation in technical colleges.

Guangxi Traffic Technician College is a national-key public technical college focusing on transportation-related majors. Although the college has launched mental-health courses and routine student management work, gaps still exist between actual student developmental needs and existing intervention measures. Quantitative assessment of developmental gaps and construction of targeted management system are urgently required.

Research Questions

1) What are the current status and desired state of holistic-student-learning and mental-health development for students at Guangxi Traffic Technician College?

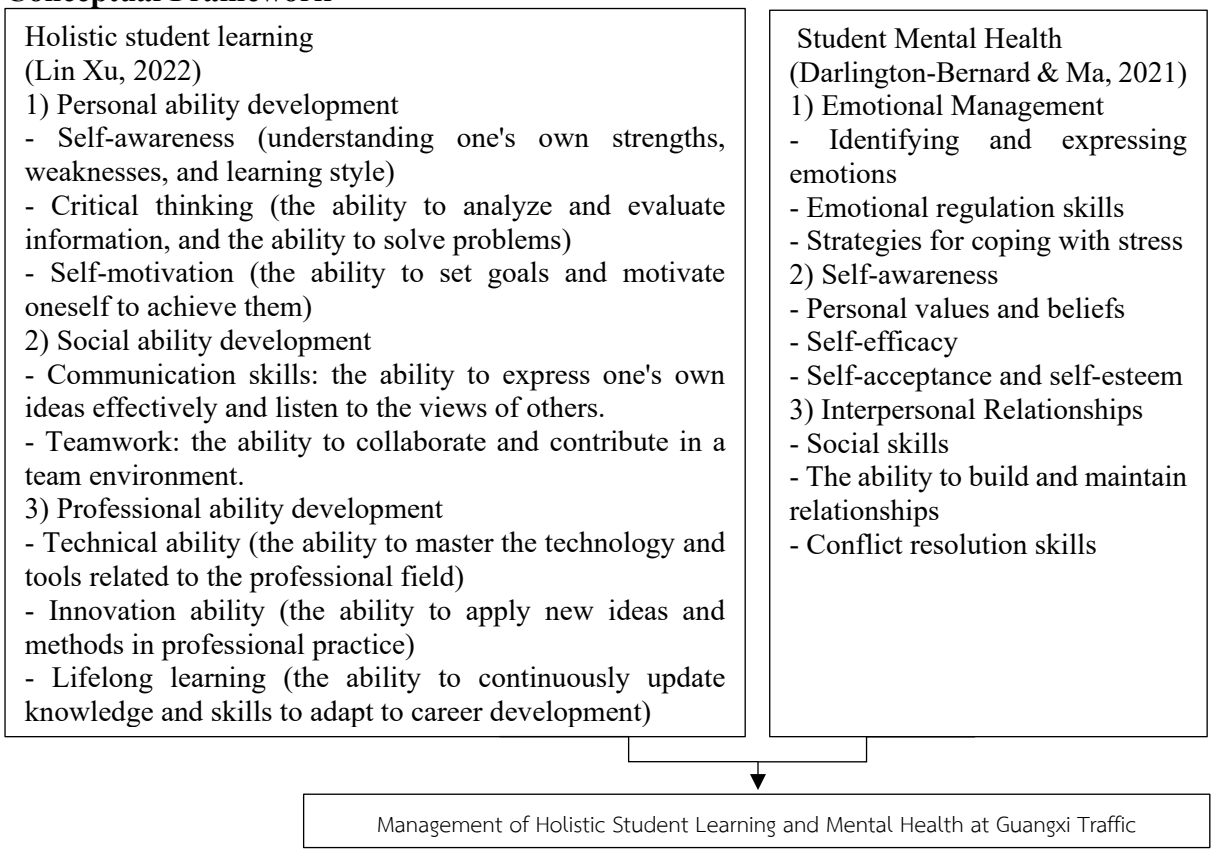
2) How can we build an empirically-derived integrated management framework for holistic-student-learning and mental-health management for this college?

Research Objectives

1) Analyse current status and desired state of students' holistic-learning and mental-health development, identify priority improvement dimensions via Modified PNI.

2) Develop and validate an integrated closed-loop management framework rooted in questionnaire PNI-modified quantitative outputs.

Conceptual Framework



LITERATURE REVIEWS

Holistic Student Learning

Holistic student-learning emphasises all-round coordinated development of knowledge, competence, morality and psychological quality for vocational-college students (Xu, L., 2022). It consists of three sub-dimensions:

1) Personal-ability development: critical thinking, self-awareness, self-motivation and time-management (Chaiyama & Kaewpila, 2022).

2) Social-ability development: communication skills, teamwork, cross-situation adaptation (Roudlotul et al., 2021; Chaudhry et al., 2024).

3) Professional-ability development: vocational technical skills, innovation competence and lifelong-learning awareness (Nakypova et al., 2024; Jin, 2023).

Student Mental Health

Student mental-health for vocational learners contains three core dimensions (Darlington-Bernard & Ma, 2021):

1) Emotional management: emotion identification & expression, emotion-regulation skills and stress-coping strategies (Li, 2022; Aldrup, Carstensen & Klusmann, 2024).

2) Self-awareness: personal values, self-efficacy, self-acceptance and self-esteem (Svoen et al., 2021; Bishoge et al., 2023).

3) Interpersonal relationships: social skills, relationship-maintenance and conflict-resolution capacity (Liu & Wang, 2024; Guo, 2023).

Research Gap

Prior local research has separately discussed holistic talent cultivation or mental-health education in vocational schools. Few studies quantitatively measure developmental priority gaps using Modified-PNI and further explicitly link quantitative need-assessment outputs to each component of a closed-loop management framework. This paper fills this gap.

Research Methodology

This study adopts two-phase mixed-method research design: Phase-one quantitative questionnaire survey to measure current-desired gaps and calculate Modified-PNI; Phase-two framework drafting plus expert qualitative-quantitative validation.

Population and Samples

Population: 400 students and 50 teachers of Guangxi Traffic Technician College.

Sample: 200 students, 45 teachers (stratified random sampling). Three middle-senior administrative experts with ≥10-year vocational-student-management experience were selected via purposive sampling for framework validation.

Research Instruments

1) Student & Teacher Questionnaire on Holistic-Learning and Mental Health: 5-point Likert scale. Item-Objective Congruence (IOC＞0.5) guaranteed content validity. Cronbach's α for all dimensions＞0.80, showing good internal consistency.

2) Expert Evaluation Form: evaluates framework's appropriateness and feasibility on five-point Likert scale.

Data-processing Formula: Modified Priority Need Index

$$PNI_{modified} = \frac{I - D}{D}$$

Where：

I = Desired-state mean score； D = Current-state mean score.

Larger PNI-modified value = higher priority of developmental need. Dimensions are strictly ranked in descending numerical order of PNI-modified values.

Analytical Bridge: From PNI Quantitative Results to Framework Components

This subsection explicitly demonstrates the analytical bridge between PNI-modified quantitative demand outputs and every component of the six-step closed-loop integrated management framework, avoiding theoretical superimposition without empirical grounding.

1) Joint diagnosis (Step-1 of framework) ： Derived directly from PNI-modified ranking results. Before designing any intervention, the college must diagnose each student group's actual gap magnitude across six dimensions, so that we can distinguish high-priority dimensions (professional ability, social ability) versus low-priority dimensions (personal ability, interpersonal relationships). Without diagnosis, tiered support cannot target real student needs reflected in PNI outputs.

2) Tiered unified cultivation standards (Step-2) ： PNI-modified shows heterogeneous gap sizes for different dimensions. High-PNI dimensions (professional-ability, social-ability) demand stricter, resource-intensive cultivation standards; low-PNI dimensions adopt maintenance-level standards. The differentiation of standard requirement level directly comes from comparing PNI-modified values among six cultivation dimensions.

3) Tiered development task packages (Step-3) ： Task difficulty and task focus are designed according to PNI-based priority. Task packages for professional-ability and social-ability embed more practical-training modules to respond to their higher need priority; task packages for emotional-management add stress-coping modules; low-priority dimensions adopt routine lightweight tasks. Guided / Standard / Advanced three pathways correspond to different gap severity levels calculated from questionnaire raw scores.

4) Thematic education and guidance programmes (Step-4)： The selection of thematic-activity themes is guided by PNI-modified ranking. Major annual thematic education cycles centre on high-priority dimension improvement; periodic auxiliary themes cover secondary dimensions according to their descending PNI-modified order.

5) Multi-stakeholder collaborative feedback mechanism (Step-5) ： Teachers, counsellors and peer mentors collect periodic student feedback covering all six dimensions. Feedback data updates the PNI-like gap estimation for each cohort, to check whether high-priority needs are being effectively reduced after intervention.

6) Closed-loop continuous improvement (Step-6) ： Re-calculate gap indicators (similar to PNI-modified) after one implementation cycle. If PNI values of core-urgent dimensions no longer stay at high levels, adjust resource allocation and shift partial resources to secondary-priority dimensions. This forms the empirical closed-loop logic.

Literature review results were used for auxiliary reference only; the core logical source for every framework component is the quantitative PNI-modified demand-assessment outputs from student-teacher samples of Guangxi Traffic Technician College. After drafting the framework according to above logical derivation, three experts further reviewed and optimised the draft version.

Expert Validation Procedure

1) Deliver draft framework, questionnaire summary and PNI analysis report to experts three working-days ahead.

2) Independent scale scoring by experts.

3) 1-hour online seminar collecting qualitative suggestions.

4) Synthesise quantitative scores + qualitative feedback to finalise framework.

RESEARCH RESULTS

Sample Basic Information

Student sample(N=200): 48.00% male, 52.00% female; freshmen account for 67.50%, sophomores 21.00%, juniors11.50%; majority age 17-19 (70.50%).

Teacher sample(N=45):53.33% male,46.67% female; title distribution covers assistant lecturer, lecturer, associate professor and professor; 40.00% under-30-years-old; professional courses and practical-training courses each account for 35.56%.

PNI-modified Ranking of Six Cultivation Dimensions

Table 1 Current-state, desired-state and Modified-PNI of six holistic-learning & mental-health dimensions

Dimension	Current Mean	Desired Mean	PNI-modified	Priority Rank
Professional-ability development	3.467	3.716	0.072	1 (Core-Urgent)
Social-ability development	3.464	3.691	0.066	2 (Core-Urgent)
Personal-ability development	3.463	3.647	0.053	3 (Secondary-Optimisation)
Emotional management	3.510	3.672	0.046	4 (Secondary-Optimisation)
Self-awareness	3.534	3.604	0.020	5 (Maintenance)
Interpersonal relationships	3.583	3.625	0.012	6 (Maintenance)

Note: Rank strictly follows descending order of PNI-modified numerical value. Format error of merged rows in original table is fully corrected in this revised manuscript.

Interpretation of Table 1:

1) Core-Urgent priority (Rank1-2): Professional-ability development (PNI=0.072), social-ability development (PNI=0.066). These two dimensions show the largest gap between actual status and expected status; they should receive the highest resource priority in student cultivation practice.

2) Secondary-Optimisation priority (Rank 3-4): Personal-ability development, emotional management. Improvement work should be carried out after satisfying core-urgent needs.

3) Maintenance priority (Rank 5-6): Self-awareness, interpersonal relationships. Current level is comparatively close to desired state; major work focuses on maintenance rather than large-scale reconstruction

Revision notes responding to reviewer comment: In the initial manuscript emotional management was incorrectly claimed as rank-2 core-urgent priority, which created mathematical-logical contradiction because social-ability's PNI-modified value 0.066 and personal-ability's PNI-modified value 0.053 are numerically higher than emotional-management's 0.046) In this revised paper we have fully audited data processing workflow and revised all ranking statements, discussion and conclusion to strictly match PNI-modified numerical hierarchy.

Integrated Six-Step Closed-Loop Management Framework (Empirically Derived from PNI Results)

Core positioning: Adopt diversified education-management strategies, translate holistic-development theoretical outcomes into daily teaching practice, build tiered cultivation pathways for student learning competence and mental-health literacy, comprehensively improve talent-cultivation effectiveness and promote students' all-round development.

Six implementation steps (each logically derived from PNI-modified quantitative outputs as illustrated in Section 3.4):

1) Joint Diagnosis: Student-affairs department plus professional-teaching departments jointly diagnose students' holistic-learning competence and mental-health status, identify core

improvement dimensions and tiered-support demands according to PNI-modified-like gap results.
2) Tiered Unified Cultivation Standards: Formulate tiered core implementation standards. Assign higher resource-input standards for rank-1-2 core-urgent dimensions; adopt moderate-optimisation standards for rank 3-4; set maintenance-oriented standards for rank 5-6 dimensions.
3) Tiered Development Task Packages: Design three-pathway task packages: guided pathway, standard pathway, advanced pathway. Task weight and practical-training proportion are adjusted according to PNI-modified-based priority of each developmental dimension.
4) Thematic Education & Guidance Programmes: Set annual core thematic activities aiming at professional-ability and social-ability promotion; arrange periodic auxiliary themes for personal-ability and emotional-management; keep routine maintenance activities for self-awareness and interpersonal-relationship development.
5) Multi-stakeholder Collaborative Feedback Mechanism: Teachers, counsellors and peer mentors track student growth status, regularly collect competence-assessment and mental-health feedback data to refresh developmental-gap estimation.
6) Closed-Loop Continuous Improvement: Re-evaluate developmental gaps periodically. Adjust resource allocation and task-package content according to updated gap indicators, realising iterative optimization of talent-cultivation quality.

Expert Evaluation Results on Framework

Three experts' quantitative evaluation: overall appropriateness Mean=5.00, SD=0.00; overall feasibility Mean=5.00, SD=0.00. Every single implementation step obtains mean scores ≥4.67) Qualitative feedback confirms that the framework is strongly targeted, possesses complete closed-loop logic and fits the real-world context of Guangxi Traffic Technician College well. Minor suggestions include refining major-specific strategy templates and perfecting comprehensive-quality assessment supporting rules.

DISCUSSION & CONCLUSION

Conclusion

1) The holistic-student-learning and mental-health level of Guangxi Traffic Technician College students is moderate-to-high. According to Modified-PNI-modified descending ranking, professional-ability development and social-ability development constitute core-urgent improvement priorities, followed by personal-ability development and emotional management; self-awareness and interpersonal relationships stay at maintenance-level. This ranking replaces the erroneous statement in the initial manuscript which mis-positioned emotional-management as secondary-core-urgent dimension.
2) This study constructs a six-step closed-loop integrated management framework. Every component of this framework is logically derived from PNI-modified quantitative need-assessment outputs of local student-teacher samples rather than purely theoretical deduction. Expert validation proves its high appropriateness and feasibility for this college.

Discussion

Consistent with prior vocational-education research (Xu, L.,2022; Li,2022), vocational-college students still show prominent developmental gaps in professional competence and social adaptability even though basic quality-education work has been completed. Different from many existing studies which directly propose management measures from literature only, this paper builds an explicit analytical chain from questionnaire quantitative gap-measurement to each framework module, enhancing empirical grounding of intervention strategies.
The PNI-modified priority hierarchy suggests that the college should allocate more resources towards professional-ability and social-ability promotion, while emotional-management work should be treated as secondary-optimization content instead of the No.2 core priority as

incorrectly written in the first submission. The closed-loop mechanism enables dynamic adjustment of resource distribution when student developmental needs change over cohorts.

Practical Recommendations

1) Carry out joint diagnosis work before intervention implementation, strictly reference PNI-modified-like gap-priority to distribute educational resources.

2) Fully implement the six-step closed-loop integrated framework; optimise tiered-task packages for core-urgent dimensions of professional-ability and social-ability.

3) Establish regular feedback-and-re-evaluation cycles, dynamically adjust cultivation strategies according to updated student need data.

4) Formulate major-specific strategy templates and perfect supporting comprehensive-quality appraisal rules responding to expert suggestions.

Limitations & Future-research suggestion

This research sample comes only from Guangxi Traffic Technician College. Future research can expand samples across multiple vocational colleges to test generalisability of this framework; longitudinal tracking research can examine the real intervention effect of this framework on student development.

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Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

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