

DEVELOPMENT OF MANAGEMENT GUIDELINES FOR ENHANCING PRACTICAL ABILITY OF STUDENT LEADERSHIP IN SHANDONG HIGHWAY TECHNICIAN COLLEGE

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ABSTRACT

This research aims at enhancing practical ability of student leadership in Shandong Highway Technician College. The samples were of 279 students and 23 teachers in Shandong Highway Technician College. Simple random sampling method was used to distribute questionnaires to collect data, and set up focus groups. The result indicated that students still have much room for improvement in terms of planning, abilities, resources, evaluation and feedback. This study concludes with management guidelines to enhance practical ability of student leadership.

Keywords: Management Guidelines, Practical Ability, Student Leadership

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INTRODUCTION

Based on the existing leadership theory, practice ability of student leadership refers to the comprehensive ability of students to influence others to achieve common goals in specific situations through proactive initiation, organization and coordination, communication and collaboration, and problem-solving. Tran & Carey (2023, pp.191-200) explored how to further integrate theory and practice to conduct theoretical inquiry and guide teaching practice as organizational leadership educators. Dykhne et al. (2021, pp.659-664) explored differences in learning styles, critical thinking skills, and peer evaluations between students with and without leadership engagement, emphasizing the importance of leadership skills such as communication, critical thinking, teamwork, and professionalism in student development. Zhao et al. (2024, pp. 139-160) studied transactional leadership and concluded that leadership principles can be applied to cultivate students' innovative and practical leadership skills. Shandong Highway Technician College focuses on cultivating skilled and applied talents. Its education model and students' future career development scenarios determine the importance of students' practical leadership, which is reflected in its "practice-oriented" training goals and the demand for technical positions. At present, academic research on student leadership is mostly concentrated in general colleges and universities. There are many deficiencies in the research on practical leadership of technical school students, such as insufficient targeting of research subjects, unclear definition of core dimensions, and lack of empirical evidence on training paths. This study is expected to fill the gap in the research on practical leadership of technical school students, provide students with a practical and feasible leadership practice development plan, and enhance students' comprehensive abilities.

REVIEW OF RELATED LITERATURE

The Management Guidelines serves as a guidance tool. Wentworth (2018) pointed out that leadership management guidelines for students are essential for promoting learning, achievement, development, and well-being. Shakman et al. (2020) believed that structured reflection tools and guidelines support continuous improvement work, and the improvement model advocates reflection through specific questions, guiding the team to evaluate its work cycle and promoting iterative learning and improvement. Practical ability is the core approach to leadership development. Yong et al. (2021, p.134) explored the importance of cultivating the comprehensive abilities of college students through comprehensive practical teaching projects. Anuar et. al. (2021, pp.73-82) pointed out that effective communication is a key factor in developing leadership in management students and emphasized skills such as active listening, task execution, and clear thinking, which together promote the development of practical leadership. Yin et al. (2021, pp.430-434) emphasized the importance of cultivating practical skills among students majoring in construction engineering through measures such as improving practical courses, school-enterprise cooperation, and competitive learning. These measures aim to cultivate problem-solving ability, communication ability, cooperation ability, and adaptability of students, so that they can better meet the needs of society and enterprises. The development and influencing factors of student leadership. Ahn et al. (2024, pp.197-222) emphasized that confidence in teaching and classroom management skills is crucial for effective teacher leadership behaviors, which can be translated into student leadership development programs. Algethami (2022) stressed that Saudi universities provide ample resources and technical support for online teaching and promote key elements of leadership development among students. Yulianti (2021, pp. 199-206) focuses on individual leadership development, specifically self-leadership in career planning among students. The relationship between management guidelines, practical skills, and student leadership development is that management guidelines serve as a guiding tool, ultimately promoting student leadership development through the cultivation of practical skills. The

strengths and contributions of this literature lie in its systematic nature, practical orientation, and diverse perspectives; however, limitations include a lack of systematic integration, a weak empirical foundation, a neglect of student perspectives, and a lack of cultural and environmental adaptability. This study will integrate the framework into a comprehensive theoretical model; verify the significant differences among various factors through quantitative questionnaires and statistical analysis; directly capture students' perceptions of the real world; and focus on the educational context of technical colleges to fill the research gap on the mechanisms of student leadership development in different cultural contexts.

From the literature review, the conceptual framework can be drawn as shown in Figure 1.

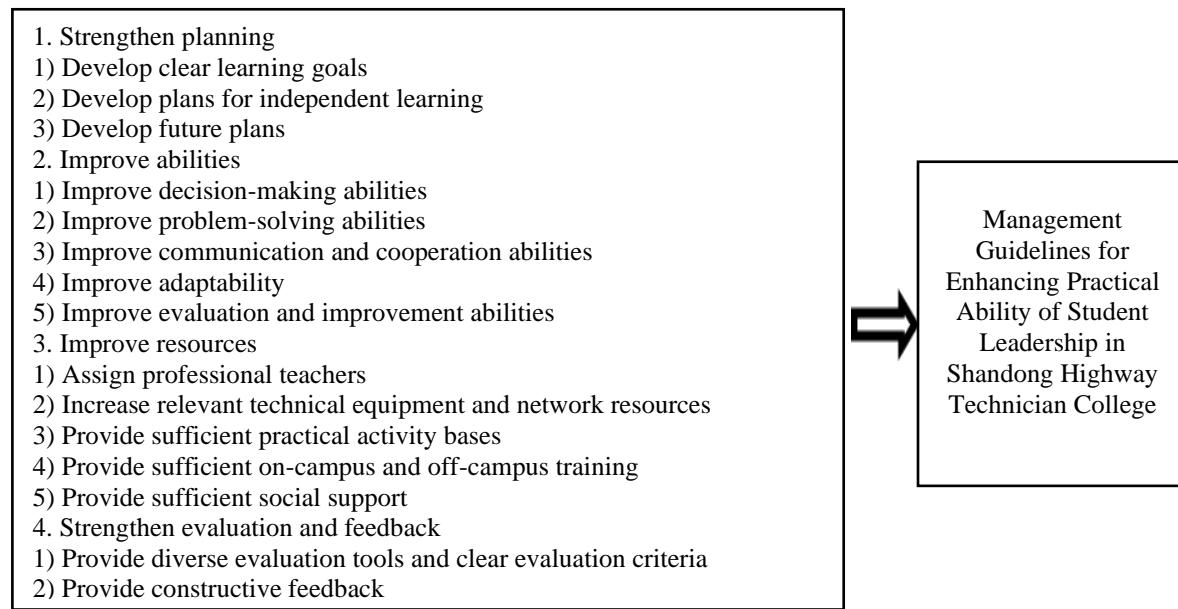


Figure 1 Conceptual Framework

RESEARCH METHODOLOGY

This study aimed to identify the needs in enhancing practical ability of student leadership in Shandong Highway Technician College and to develop management guidelines to address these issues. Simple random sampling was used, combining quantitative surveys of 279 students and 23 teachers (Yamane, 1967, p.887) Simple random sampling uses randomization mechanisms (such as random number generation and drawing lots) to ensure that each individual has an equal probability of being selected. The calculation logic for sampling error (standard error) is mature and highly interpretable, facilitating subsequent data analysis and generalization of conclusions. It is simple to use, widely applicable, and intuitive. However, its limitations are limited to large populations and high implementation costs. For this study, it is applicable to a population of study with qualitative focus group Rating reference table: (Srisa-ard, 2002). discussions involving 9 experts. Focus groups gather qualitative data through interactive discussions led by a moderator, conducted by nine education experts. Their core value lies in leveraging group interaction to stimulate deeper insights. They are suitable for exploring unknown issues, understanding behavioral motivations, and validating initial hypotheses. Experts are teachers with intermediate professional titles in teaching at Shandong Highway Technician College and have been engaged in teaching for more than 3 years. The questionnaire collected data from teachers and students through four parts: Strengthen planning, improve abilities, improve resources, strengthen evaluation and feedback. Questionnaires assessed students' needs, teachers' perspectives, and the applicability of management guidelines, with validity (IOC 0.50–1.00) and reliability (Cronbach's alpha 0.80) (Cronbach, 1951, pp. 297-334) confirmed. Data analysis included

frequencies, means, standard deviations, and Priority Needs Index (PNI), using a five-point Likert scale. Frequency Analysis classifies and counts the categories in the data, and then calculates the proportion of each category in the total sample. Mean reflects the average level of the data, SD reflects the average deviation of the data from the average, and PNI is used to quantify "which needs should be addressed first" and the gap between the problem and the needs (PNI value 0 means no gap. The closer the value is to 1, the higher the priority of the need; the closer the value is to 0, the lower the priority of the need).

RESEARCH RESULTS

Needs of Enhancing Practical Ability of Student Leadership

There are needs in enhancing practical ability of student leadership: a case study of Shandong Highway Technician College, China.

Table 1 Needs of enhancing practical ability of student leadership in Shandong Highway Technician College in the opinions of students. (n = 279)

Topic	problems (D)			needs (I)			PNI
	\bar{X}	S	level	\bar{X}	S	level	
Strengthen Planning	3.35	1.13	moderate	4.00	1.14	High	0.19
1. Students need to set clear learning goals to improve their leadership practice ability.	3.38	1.13	moderate	4.00	1.09	High	0.18
2. Students need to make plans for independent learning.	3.38	1.13	moderate	3.98	1.20	High	0.18
3. Students need to make plans for their future studies.	3.30	1.12	moderate	4.01	1.12	High	0.22
Improve Abilities	3.12	1.14	moderate	4.11	1.05	High	0.32
4. Students need to improve their decision-making ability.	3.39	1.16	moderate	3.97	1.14	High	0.17
5. Students need to improve their problem-solving ability.	2.97	1.14	moderate	3.99	1.14	High	0.34
6. Students need to improve their communication and cooperation ability.	3.09	1.14	moderate	4.17	1.02	High	0.35
7. Students need to improve their adaptability.	3.01	1.15	moderate	4.20	0.95	High	0.40
8. Students need to improve their evaluation and improvement ability.	3.12	1.12	moderate	4.20	1.01	High	0.35
Improve Resources	3.04	1.12	moderate	4.11	1.05	High	0.35
9. Students need professional teachers to help them improve their leadership practice ability.	3.02	1.12	moderate	3.97	1.14	High	0.31
10. Students need to use relevant technical equipment and network resources to help them improve their leadership practice ability.	3.05	1.11	moderate	3.99	1.14	High	0.31
11. Students need sufficient practical activity bases to help them improve their leadership practice ability.	3.09	1.10	moderate	4.17	1.02	High	0.35
12. Students need sufficient on-campus and off-campus training to help them improve their leadership practice ability.	3.05	1.13	moderate	4.20	0.95	High	0.38

Topic	problems (D)			needs (I)			PNI
	\bar{X}	S	level	\bar{X}	S	level	
13. Students need sufficient social support to help them improve their leadership practice ability.	2.99	1.13	moderate	4.20	1.01	High	0.40
Strengthen Evaluation and Feedback	3.06	1.11	moderate	4.17	1.00	High	0.36
14. Students need diversified evaluation tools and clear evaluation criteria.	3.09	1.09	moderate	4.18	0.98	High	0.35
15. Students need constructive feedback to help them improve themselves.	3.03	1.13	moderate	4.16	1.02	High	0.37
Average	3.13	1.13		4.13	1.04		0.32

Table 1 Survey data from 279 students show a significant gap between the high demand (average 4.13, "very high") for enhancing practical ability of student leadership and the current situation (average 3.13, "medium"). Among these, the data shows that students' needs across all dimensions of planning, abilities, resources, evaluation and feedback (mean needs score of 4.00-4.17) are at a "high" level, while their current performance (mean problems score of 3.04-3.35) remains at a "moderate" level. It is worth noting that the standard deviations in this study were all around 1.00, which generally indicates that the dispersion (or volatility) of the data is moderate.

From the perspective of PNI, it shows that the highest PNI value is "Strengthen Evaluation and feedback", which is 0.36; followed by "Improve Resources", which is 0.35; and then "Improve Abilities", which is 0.32. The lowest PNI value is "Strengthen Planning", which is 0.19. All in all, it shows that students believe that there is a lot of room for improvement in terms of evaluation and feedback, resources, and abilities; but the gap in planning is smaller, which means that the current problems of students in this aspect is not much different from needs, but there is still room for improvement. Among these topics, the highest PNI values are "need to improve adaptability" and "need sufficient social support", both are 0.40, indicating that the needs in this area are the most prominent. The second is "need sufficient on-campus and off-campus training", which is 0.38, indicating that the needs in this area are relatively large. And follow by, "need constructive feedback", which is 0.37, indicating that the needs in this area are also very prominent.

Table 2 Needs of Enhancing Practical Ability of Student Leadership in Shandong Highway Technician College in the Opinions of Teachers. (n = 23)

Topic	problems (D)			needs (I)			PNI
	\bar{X}	S	level	\bar{X}	S	level	
Strengthen Planning	2.86	1.28	moderate	4.06	0.91	High	0.42
1. Students need to set clear learning goals to improve their leadership practice ability.	2.87	1.29	moderate	4.17	0.89	High	0.45
2. Students need to make plans for independent learning.	3.00	1.09	moderate	4.00	1.00	High	0.33
3. Students need to make plans for their future studies.	2.70	1.46	moderate	4.00	0.85	High	0.48
Improve Abilities	2.83	1.38	moderate	4.17	1.00	High	0.47
4. Students need to improve their decision-	2.96	1.61	moderate	4.09	1.04	High	0.38

Topic	problems (D)			needs (I)			PNI
	\bar{X}	S	level	\bar{X}	S	level	
making ability.							
5. Students need to improve their problem-solving ability.	2.65	1.37	moderate	4.17	1.03	High	0.57
6. Students need to improve their communication and cooperation ability.	2.43	1.24	moderate	3.78	1.04	High	0.56
7. Students need to improve their adaptability.	3.17	1.44	moderate	4.87	1.01	Highest	0.54
8. Students need to improve their evaluation and improvement ability.	2.96	1.26	moderate	3.96	0.88	High	0.34
Improve Resources	3.01	1.38	moderate	4.06	1.02	High	0.35
9. Students need professional teachers to help them improve their leadership practice ability.	2.87	1.52	moderate	4.22	0.90	High	0.47
10. Students need to use relevant technical equipment and network resources to help them improve their leadership practice ability.	3.17	1.37	moderate	4.09	0.90	High	0.29
11. Students need sufficient practical activity bases to help them improve their leadership practice ability.	3.13	1.25	moderate	4.04	1.02	High	0.29
12. Students need sufficient on-campus and off-campus training to help them improve their leadership practice ability.	2.78	1.24	moderate	3.87	1.14	High	0.39
13. Students need sufficient social support to help them improve their leadership practice ability.	3.09	1.53	moderate	4.09	1.12	High	0.32
Strengthen Evaluation and Feedback	3.13	1.35	moderate	4.09	0.95	High	0.31
14. Students need diversified evaluation tools and clear evaluation criteria.	2.87	1.36	moderate	4.00	1.00	High	0.39
15. Students need constructive feedback to help them improve themselves.	3.39	1.34	moderate	4.17	0.89	High	0.23
Average	2.94	1.36		4.03	0.98		0.37

Table 2 Survey data from 23 teachers show a significant gap between the high demand (average 4.03, "very high") for enhancing practical ability of student leadership and the current situation (average 2.94, "medium"). Among these, the data shows that students' needs across all dimensions of planning, abilities, resources, evaluation and feedback (mean needs score of 4.06-4.17) are at a "high" level, while their current performance (mean problems score of 2.83-3.13) remains at a "moderate" level. It is worth noting that the standard deviations in this study were all around 1.00, which generally indicates that the dispersion (or volatility) of the data is moderate.

From the perspective of PNI, it shows that the highest PNI value is "Improve Abilities", which is 0.47; followed by "Strengthen Planning", which is 0.42; and then "Improve Resources", which is 0.35. Finally, "Strengthen Evaluation and feedback", which is 0.31. All in all, this suggests that teachers believe there is a significant gap between students' problems and needs in terms of abilities, planning, resources, and evaluation and feedback, and that there is significant room for improvement. Among these topics, the highest PNI value is "need to improve problem-solving ability", which is 0.57, indicating that the demand in this area is the most prominent. The second is "need to improve communication and cooperation ability", which is 0.56, indicating that the demand in this area is relatively large. The third is "need to improve adaptability", which is 0.54, indicating that the demand in this area is also

relatively prominent. The fourth, “need to make plans for future”, which is 0.48, indicating that the demand in this area is also relatively large. Followed by “need professional teachers”, which is 0.47, followed by “need to set clear learning goals”, which is 0.45.

Through statistical analysis, comparing and contrasting the results of the student and teacher surveys, it was found that both believed that there was a need for improvement in planning, abilities, resources, evaluation and feedback, but teachers believed that there was more room for improvement in planning, while students believed that there was less room for improvement.

Focus group discussion

Integrating the qualitative data from the focus groups, we found that there was room for improvement in planning, abilities, resources, evaluation and feedback, which was consistent with the findings from our questionnaires. Therefore, the focus group results for constructing the management guidelines.

DISCUSSION & CONCLUSION

Hasan et al. (2022, pp.34-54) conducted efforts to improve overall educational quality and student outcomes through systematic planning, and the planning process is critical to educational improvement. Azlan et al. (2024, pp.50-73) explored how school leaders' leadership practices affect their ability to resolve crises and make decisions, emphasizing that effective leadership is essential for developing problem-solving skills among staff and students. Wang et al. (2022, p.817968) further confirmed that collaborative online platforms can improve problem-solving skills, and cultivate motivation and engagement, which are essential for leadership growth. Baafi et al. (2021, pp.765-782) explored the role of resource provision, which is a key resource that enables leadership to promote innovation and proactive behavior, and innovation and proactive behavior are important components of leadership development. Zhu et. al. (2021, pp.2475-2495) demonstrated that conducting structured assessment can be a promising approach to leadership development, and that systematic assessment and feedback embedded in leadership courses can have a positive impact on students' learning outcomes. Irulkulla et al. (2020, p.53) emphasized that formal teaching training, including providing constructive feedback, can significantly improve students' teaching skills and participation in leadership roles, and structured feedback training can become a catalyst for cultivating students' leadership. These studies are consistent with our research conclusions. The results of this discussion suggest that improving practical ability of student leadership requires improvements in abilities, planning, resources, evaluation, and feedback, which aligns with our research findings. Existing literature provides multifaceted support for research on educational leadership development, but it also suffers from theoretical fragmentation, insufficient data, and weak contextual adaptability. Therefore, future research is recommended to deepen and expand this research from three perspectives: an integrated perspective, localized approaches, and individual incentive mechanisms.

Fjordkvist et al. (2024, p.871) noted that clear management guidelines help provide leaders with clear direction. This structured approach ensures greater consistency in decision-making within the organization, which helps enhance leaders' trust and execution. Lin et al. (2025) emphasized that structured management practices establish institutional safeguards for leadership development and can systematically enhance leaders' capabilities and qualities over the long term. This highlights the advantages of management guidelines, which provide clarity and consistency and promote the systematic development of leadership. However, Fjordkvist et al. (2024, p.871) also caution that while structure can contribute to stability, over-reliance on it can lead to slow organizational response and a lack of flexibility. Lin et al. (2025) note that management practices that fail to consider diverse organizational contexts, industry characteristics, or cultural differences can lead to incompatibility. This highlights the

disadvantages of management guidelines, which can limit flexibility and innovation and overlook the nuances of situational leadership.

However, these studies also have limitations, including regional applicability, methodological design, theoretical extension, and practical recommendations. Therefore, future research and practical applications require further improvement in cross-cultural applicability, the integration of multiple methods, enhanced causal reasoning, and attention to the impact of educational technology and societal changes on leadership development. In order to improve the leadership practice ability of students at Shandong Highway Technician College, it is suggested that the theory can be integrated into practice through a four-in-one approach of curriculum construction, practice platform, culture creation and digital management, and students can be provided with ample trial and error opportunities and a support environment. Overall, Shandong Highway Technician College students have room for improvement in areas such as abilities, planning, resources, and evaluation and feedback. This study developed management guidelines to provide a reference for promoting the improvement of students' practical leadership skills. Furthermore, this study offers practical insights for other institutions, aiming to help students enhance their practical leadership skills and promote their all-round development.

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