



The Development Guideline of Teacher Characteristics at Nanning Nanshan Art Vocational School, China

¹Wang Jiawei, ^{2,*}Nuttamon Puchatree, ³Wichian Intarasompun

^{1,2,3}Bansomdejchaopraya Rajabhat University, 10600, Thailand

Abstract- The objectives of this research are 1) to study the current situation of teacher characteristics, and 2) to propose development guidelines to enhance these characteristics at Nanning Nanshan Art Vocational School. The population for this research was 112 full-time teachers at Nanning Nanshan Art Vocational School, and the sample was 86 teachers selected by simple random sampling according to Krejcie and Morgan (1970). The research instrument was a teacher self-assessment questionnaire consisting of five core dimensions: teacher self-efficacy, teacher personality, teacher burnout, organizational support, and teacher digital literacy. The statistics were frequency, percentage, mean, standard deviation, and content analysis of the suggested guidelines. The questionnaire demonstrated excellent reliability (Cronbach's $\alpha = 0.974$) and high construct validity (KMO = 0.947, $p < 0.001$). The results were found that: 1) the overall levels of teacher self-efficacy ($M = 4.21$), teacher personality ($M = 4.05$), organizational support ($M = 3.53$), and teacher digital literacy ($M = 3.83$) were at a high level, while teacher burnout was at a medium level ($M = 3.48$); 2) based on the empirical results and literature review, practical development guidelines were synthesized for each dimension, focusing on relatively weaker aspects such as inspiring students' artistic learning, alleviating emotional exhaustion, enhancing recognition of art teachers' work, and strengthening digital ethics and privacy protection. These guidelines can support Nanning Nanshan Art Vocational School and similar institutions in planning systematic teacher development programs.

I. Introduction

According to the theory of teacher effectiveness in "Characteristics of Teachers" (1960) by David G. Ryans, teacher characteristics refer to the personal and professional traits of the teachers that affect their behavior and performance in the classroom. Ryans' research was primarily concerned with the identification of traits and behaviors that lead to teacher effectiveness, one of which was emotional maturity, along with instructional skill, and professional attitudes. Later on, McClelland (1973) argued that competencies conceal certain traits beneath the surface such as knowledge, skills, and motivation. Boyatzis's (1982) "onion model" of competency goes further by classifying teacher characteristics into the deepest layers of core motives, social roles, and surface-level skills.

Teacher characteristics are the determining factor that heavily influence educational quality. Studies have also demonstrated that the "dual-qualified" capabilities (theoretical instruction plus practical guidance) of vocational education teachers have a direct impact on students' skill acquisition efficiency (Xu, 2024). The concept of the "educator's spirit" within the framework of China's vocational education reform depicts that teachers should have three major qualities: ideal beliefs, a loving heart, and a diligent, hands-on attitude (Du, Zheng, Chen, & Lian, 2024). Through curriculum and interaction in the classroom, these traits become artistic creativity and vocational identity in the students. It goes without saying that in art-oriented vocational schools, the teachers' recognition of cultural heritage and their interdisciplinarity integration skills are two major factors that can propel the students' innovative thinking (Song, 2024).

However, an empirical gap remains as to characteristics of teachers in arts-focused vocational technical schools. Through a systematic survey of the teacher profile at Nanning Nanshan Art Vocational School, this study serves as a pivotal figure in the formation of regional professional standards that are specifically adjusted to the needs of art educators in vocational schools. Not only can these norms upgrade the level of teaching at this school, but they also can be a reference for the leading sector of the the Guangxi province and further regions, which can guarantee education that is appropriate to the particular requirements of the arts vocational education in China.

Research Objective:

1. To study the current situation of teacher characteristics at Nanning Nanshan Art Vocational School.
2. To propose the development guidelines to enhance teacher characteristics at Nanning Nanshan Art Vocational School.

II. Literature Review

This section examines existing literature on teacher characteristics, focusing on the key dimensions of self-efficacy, burnout, organizational support, and digital literacy, and their implications for teaching quality and



effectiveness, specifically within Nanning Nanshan Art Vocational School.

2.1 History of Development of Teacher Characteristics

Teacher characteristics refer to the personal and professional qualities that define a teacher's effectiveness in the classroom. These qualities include psychological traits, such as self-efficacy and emotional resilience, as well as professional attributes, like subject knowledge, classroom management skills, and teaching strategies. In the context of vocational education, teacher characteristics also encompass factors such as digital literacy and organizational support that contribute to overall teaching effectiveness and student success (Tschannen-Moran & Hoy, 2001; Eisenberger et al., 1986; Maslach & Leiter, 1997).

The study of teacher characteristics began with an emphasis on teachers' subject knowledge and pedagogical skills during the early 20th century. However, as the field of education evolved, attention shifted towards more psychological and behavioral traits. In the 1970s, Bandura's Social Cognitive Theory (1977) introduced the concept of self-efficacy and its influence on teaching practices, which became a cornerstone in understanding teacher behavior. By the 1980s, the Burnout Theory (Maslach & Leiter, 1997) expanded the field to include emotional and psychological resilience, emphasizing the impact of stress on teacher effectiveness.

In the 2000s, as technology began to play a larger role in education, digital literacy emerged as an important characteristic, with frameworks like TPACK (Mishra & Koehler, 2006) highlighting the integration of technology into teaching. The broader notion of organizational support (Eisenberger et al., 1986) also gained traction, acknowledging that external factors such as administrative support and available resources significantly influence a teacher's performance and job satisfaction.

2.2 Context of Nanning Nanshan Art Vocational School

The study is situated at the Nanning Nanshan Art Vocational Technical School, a large, full-time private art-focused secondary vocational school in Guangxi Zhuang Autonomous Region, established in 1995. The school has a current enrollment of approximately 2,600 students. Its 112 full-time faculty members are distinct in their focus on practice-oriented instruction and their requirement for dual competence (managing both college preparatory cultural classes and vocational skills training). Furthermore, the teaching team emphasizes innovative collaboration through industry-education integration models, making the school a relevant setting for examining contemporary teacher dimensions (Nanning Nanshan Art Vocational Technical School, 2025).

2.3 Current Situation of Teacher Characteristics in Vocational Schools in China

The characteristics of vocational teachers in China at present reveal marked policy-driven progress mixed with enduring challenges such as practical experience and shared professional standards.

The improvement has been grounded in changes of laws and policies, especially the 2022 revision of the Vocational Education Law which requires industry experience and technical skills for the specialization teachers (Standing Committee of the National People's Congress, 2022). Strategies of the government, as reported by the World Bank (2014) and the State Council of the People's Republic of China (2019), have been effective in increasing the number of vocational teachers through the expansion of teacher education programs in universities. Besides, there is a move to attract professionals and skilled technicians from enterprises to be instructors (Xie, 2024).

Nonetheless, studies reveal that three major areas are always pointed out for improvement. The first one is the insufficiency of practical industrial experience that has been going on for a long time which is still the main reason for the vocational teachers as most of them are on-the-spot newly graduated theoreticians having less practical skills (Zhao & Ko, 2024). The problem remains even if professionals in enterprises are encouraged to take up teaching roles because the criteria for their introduction and continued evaluation are still not at the same level (Xie, 2024). The second point is about professional standards in the sector which are fragmented; although there are standards set for secondary vocational education, higher vocational schools normally do not have a single set of standards for staff certification and professional development which results in different quality levels in these schools (Sirk, 2024). The third point is supported by several publications which indicate that the professional identity and practical skills of the vocational teaching staff are on the way of development (Antera & Teräs, 2024; Wu et al., 2024; Zhu et al., 2023). The continuous growth of this aspect has a direct connection with the quality of vocational education and its concordance with demands of the labor market (Xie, 2024).

To sum up, China's vocational teacher policy has a good environment. The problem is that it is still difficult to close the gap between the demand for highly skilled, dual-qualified teachers and the existing situation where there is an inconsistency in practical experience and fragmented standards.

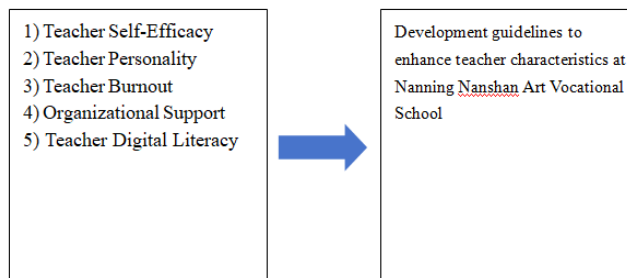


Figure 1. Conceptual Framework

II. Methodology

2.1 Research Design

This study employed a quantitative research design utilizing a cross-sectional survey method. A teacher self-assessment questionnaire was designed to provide a foundational analysis of the key variables.

The research population comprised all 112 full-time teachers employed at the Nanning Nanshan Art Vocational School. The sample size was determined using the table established by Krejcie and Morgan (1970). Accordingly, a target sample size of 86 teachers was selected from the total population using a simple random sampling technique.

2.2 Data Collection and Analysis

A systematic four-step data collection process was implemented to ensure rigor and validity. First, the primary data collection instrument was developed and administered through www.wjx.com, a widely-used online survey platform in China. The questionnaire was originally constructed in Chinese to ensure linguistic appropriateness and cultural relevance for the target population of teachers at Nanning Nanshan Art Vocational School. Second, responses were gathered from 86 participating teachers, followed by a comprehensive data cleaning procedure that involved identifying and removing invalid responses, incomplete submissions, and duplicated entries to maintain data integrity. Third, the electronic questionnaire data underwent preliminary analysis using the online SPSS Pro tool embedded within the survey platform, after which all data were translated into English to facilitate subsequent analysis and manuscript preparation. Fourth, the processed dataset was subjected to detailed statistical analysis to address the research questions and generate meaningful findings.

Descriptive statistics were employed to characterize the sample population. Demographic variables including gender and teaching experience were analyzed using frequency distributions and percentages to provide a comprehensive overview of participant characteristics.

Teacher self-assessments of various professional characteristics, including self-efficacy and burnout levels, were analyzed using measures of central tendency and variability. Specifically, mean scores (M) and standard deviations (S.D.) were calculated for each dimension based on responses from the 86 participating teachers. Data interpretation followed the five-point Likert scale framework established by Rensis Likert (1932), wherein mean scores were classified as follows: 4.50–5.00 (highest level), 3.50–4.49 (high level), 2.50–3.49 (medium level), 1.50–2.49 (low level), and 1.00–1.49 (lowest level). This interpretive framework enabled systematic evaluation of current teacher characteristics and identification of areas requiring institutional attention and support.

2.3 Reliability and Validity

Prior to full distribution, a pilot test was conducted with a sample of 30 respondents to assess the reliability of the questionnaire. Reliability was measured using Cronbach's Alpha (Cronbach, 1951), and the resulting alpha value of 0.974 exceeded the acceptable threshold of 0.80. Additionally, the Kaiser-Meyer-Olkin (KMO) value was 0.947, exceeding the recommended threshold of 0.9. This result indicates excellent sampling adequacy and strong intercorrelations among the variables, confirming the data's suitability for subsequent factor analysis (Hair et al., 2019; Kaiser, 1974).

Table 1. Reliability

Cronbach's α	Item	Sample
0.974	50	30

Table 1 presents reliability of the questionnaire through a pilot test with a sample of 30 respondents. The 50-item scale yielded a Cronbach's alpha coefficient of 0.974, indicating excellent internal consistency. This

high value suggests that the items are highly correlated and measure the same underlying constructs in a stable and coherent manner.

Table 2. Validity

KMO and Bartlett		
KMO		0.947***
Bartlett's Test of Sphericity	Approximate Chi-Square	8586.022***
	df	1176
	P	0.000***

Note: ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Table 2 presents the validity assessment through the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity. The KMO value of 0.947 exceeds the recommended threshold of 0.9, indicating excellent sampling adequacy and strong intercorrelations among variables, which confirms the data's suitability for factor analysis (Hair et al., 2019; Kaiser, 1974). Bartlett's Test of Sphericity yields a highly significant chi-square value of 8586.022 (df = 1176, p < 0.001), rejecting the null hypothesis that the correlation matrix is an identity matrix (Bartlett, 1954). These results collectively demonstrate that the dataset possesses sufficient common variance among variables and is appropriate for conducting exploratory factor analysis to identify underlying constructs (Field, 2018).

2.4 Ethical Consideration

Ethical approval for this research, particularly regarding the use of questionnaires with teacher participants, was obtained from the BSRU's Ethics Committee in Human Research. Permissions from the administration of Nanning Nanshan Art Vocational School were also secured prior to commencing the survey. Before data collection, informed consent was obtained from all participating teachers, clearly explaining the purpose of the study, the voluntary nature of participation, and their right to withdraw at any time without penalty. The collected data are used solely for academic research purposes in connection with the researcher's dissertation.

III. Result

Table 3. Demographic Characteristics

(n=86)

Item	Option	Frequency	Percentage(%)
Gender	Male	27	31.39
	Female	59	68.61
Total		86	100.00
Age	Under 25	1	1.16
	25-30	43	50.00
	31-35	26	30.23
	Above 35	16	18.61
Total		86	100.00
How many year have you been working in the school?	1-3	15	17.44
	4-6	46	53.49
	7 and above	25	29.07
Total		86	100.00

Table 3 shows that the majority of respondents were female (68.61%), while male teachers accounted for 31.39%. In terms of age, most participants were 25–30 years old (50.00%), followed by those aged 31–35 (30.23%), above 35 (18.61%), and a very small group under 25 (1.16%). Regarding teaching experience at the school, over half of the teachers had worked there for 4–6 years (53.49%), followed by those with 7 years and above (29.07%), while the smallest group had 1–3 years of experience (17.44%).

Table 4. Overall Ranking of Five Dimensions by Mean and S.D.

(n=86)

Variable	\bar{X}	S.D.	Level	Rank
Teacher Self-Efficacy	4.21	0.49	high	1
Teacher Personality	4.05	0.67	high	2
Teacher Burnout	3.48	0.74	medium	5
Organizational Support	3.53	0.60	high	4
Teacher Digital Literacy	3.83	0.62	high	3

Variable	\bar{X}	S.D.	Level	Rank
----------	-----------	------	-------	------

Rank first by the mean value. If the means are the same, then sort by the standard deviation in ascending order.

Table 4 presents the overall ranking of the five dimensions of teacher characteristics at Nanning Nanshan Art Vocational School (n = 86), ordered by descending mean scores, with ties broken by smaller standard deviations. Teacher self-efficacy ranks first (M = 4.21, S.D. = 0.49), indicating a high level, followed by teacher personality (M = 4.05, S.D. = 0.67, high) and teacher digital literacy (M = 3.83, S.D. = 0.62, high). Organizational support is also at a high level (M = 3.53, S.D. = 0.60) but ranks fourth due to its lower mean. Teacher burnout has the lowest mean score (M = 3.48, S.D. = 0.74) and is interpreted as a medium level. The interpretation of these average values follows the conventional use of five-point Likert-type scales originally proposed by Rensis Likert (1932).

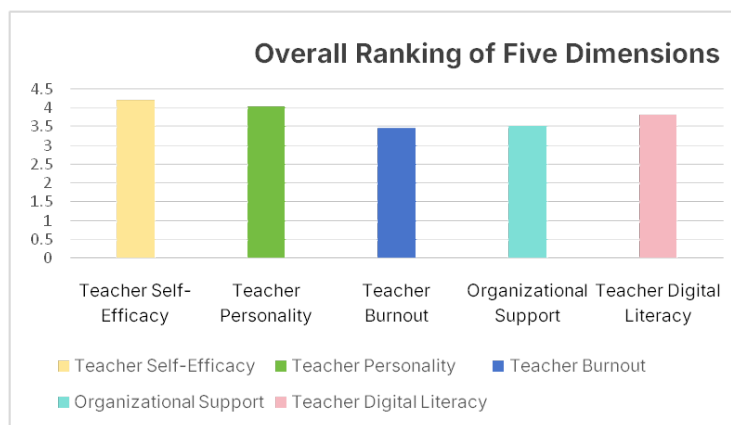


Figure 2. Overall Ranking of Five Dimensions

III. Discussion

The discussion is organized into five aspects corresponding to the main variables and analytical focuses of the study.

1) **Teacher Self-Efficacy:** The findings reveal a generally high level of Teacher Self-Efficacy (M = 4.21), particularly in the ability to design creative teaching plans. This finding is consistent with Bandura's theoretical framework, the concept of mastery experiences; the teachers' accomplishment of curriculum planning serves as a source of power for them. Teacher interventions, as mentioned in the literature, that focus on these mastery experiences are the major factors that drive teacher efficacy regardless of career stage (Täschner et al., 2024). The good planning performance reveals that the school has been successful in implementing the two concepts of "Dual Competence" and "Innovative Collaboration" which have, in turn, empowered teachers to be logisticians and theorists of art instruction confidently (Wu & Shen, 2024). However, some scholars caution that self-reported efficacy may be inflated and context-bound, and that overconfidence can mask skill gaps in complex tasks such as inclusive or technology-rich art teaching (Huang, Intarasompun, & Puchatree, 2023; Jiang et al., 2024), which implies that guidelines should also include external observation and evidence-based feedback mechanisms. This situation challenges the idea that knowledge of the content will naturally lead to student motivation. According to Paller & Quirap (2024), to convert teaching capability to actual student outcomes, the teacher must be highly resilient. The gap here suggests that although the teachers may be competent in "back-stage" preparation (Goffman, 1959), they might not have the necessary pedagogical skills or emotional resilience to "front-stage" student inspiration effectively, thereby creating a disconnect between administrative competence and instructional influence.

2) **Teacher Personality:** The research shows that teachers at Nanning Nanshan are equipped with desirable and goodhearted personality characteristics toward education especially they keep a sense of humor (M = 4.14). This is consistent with the previous researches which acknowledge that positive interpersonal traits like humor and friendliness have a significant impact on raising student motivation level and building a friendly environment (Lascuna & Luzano, 2023). In an art vocational school, where the main focus is on creativity and expression, this high degree of extraversion and humor probably helps teachers to interact with students and thus carry out the "social role" part of Boyatzis's model, which means they use it to effectively manage the changing environment of art studios (Boyatzis, 1982). On the contrary, the statistics reveal the presence of a weak point in the personality dimension, particularly in "patience, kindness, and friendliness" which had relatively lower



scores ($M = 3.98$ to 4.00). This discovery cautions the assumption that teachers of art are emotionally limitless. The literature warns that personality traits like agreeableness may be lowered even more in situations of chronic stress (Ruggieri et al., 2020). The lower score in patience may be indicative of the teachers' nature only to the extent that it is a sign of the pressure exerted by the environment. This implies that if there is no person-specific "soft-skill development" and "socio-emotional learning" (Xu, 2024) targeted at teachers, the requirements of vocational instruction may be gradually taking away the traits that are necessary for long-term teaching effectively from them. Thus, guidelines should balance personality-focused strategies with systemic supports and avoid pathologizing different but effective teacher profiles.

3) **Teacher Burnout:** The figures in respect of the burnout of teachers indicate a "medium" level ($M = 3.48$) with the teachers showing an admirable capacity to prevent their frustration from the general pressure ($M = 3.56$). Their ability to bounce back is in line with the idea that "proactive coping mechanisms" can serve as a buffer against the state of being exhausted (Pyhältö et al., 2020). They seem to have established a professional armor to protect themselves from the high-stakes environment of vocational exams and art competitions. This is in agreement with the school's "Practice-Oriented" ethos, whereby the concrete nature of art making provides a shelter of personal accomplishment which, in turn, lessens the depersonalization aspects that Maslach's Burnout Theory describes (Maslach & Leiter, 1997). However, the data specifically concerning the finding that teachers have the most difficulty in "avoiding exhaustion from long-term lesson preparation" ($M = 3.37$) thus points to a crucial failure in operations. As it is, teachers are able to cope with acute pressure, yet the ongoing burden of administrative and preparatory work is the main cause of their burnout. This is in agreement with Dela Cruz and Macalisang's (2024) findings that academic demands and workload are the main reasons that lead to burnout. It is a case against the sustainability of the current model; that is, even if teachers are emotionally resilient, the physical and mental burden of continuous preparation is turning the school into a structurally weak place of which mindfulness alone is not capable of remedying (Tang, 2023). Hence, the guidelines must not only promote self-care but also advocate for institutional and policy-level reforms.

4) **Organizational Support:** The research has found that among all aspects of perceived Organizational Support, participation in school-organized training had the highest level as indicated by the mean value of 3.64. This finding matches the school's report of its commitment to "regular teaching and research activities" and the hiring of experts from the university. According to Eisenberger's Organizational Support Theory (1986), employees perceive support when they see that the organization provides them with the necessary resources. The literature confirms that when schools commit to the professional development of their teachers, it has a very positive effect on teacher engagement and outcomes (Tamang et al., 2024). The administration's effort to focus on external experts and training has definitely resulted in a professional atmosphere where teachers feel that they have gained the necessary competencies. On the other hand, the findings indicate that "timely feedback on teaching suggestions" and the "perceived importance of art teachers' work" are two areas where there is a significant lack of understanding, with mean values of 3.43 and 3.44 respectively. The discovery here is that these two variables are negatively correlated with the efficiency of training programs; that is, although the school is providing input (training), it is not validating teachers' output (feedback). The literature points out that "caring leadership" and "participatory decision-making" are the major factors that contribute to employees' well-being (Disilio & Callo, 2024; De La Torre Figueroa et al., 2024). The feeling of neglect of art teachers' specific role as the least recognized ones among the school staff is an indication of the gap between the school's slogan ("Art for Harmony") and the internal administrative culture where the singularity of the vocational art teacher is not sufficiently acknowledged (Chen, 2024). Some studies warn that training without genuine autonomy, career pathways, and participatory decision-making may not sustain motivation (Zhang, 2021), suggesting that the guidelines must strengthen deeper relational and career-oriented aspects of support, not just formal activities.

5) **Teacher Digital Literacy :** Teacher Digital Literacy assessment indicates a high level of proficiency in technology-related activities, for instance, "editing art works using digital software" ($M = 3.93$). This is a logical major strength for a contemporary art vocational school and goes well with the TPACK framework, showing that teachers have successfully combined "Technological Knowledge" with their subject matter (Mishra & Koehler, 2006). Use of digital means for creation is a "front-stage" skill that these teachers have, most probably, mastered due to the industry-driven nature of the curriculum where digital design is a core competency (Chen & Che Din, 2025). But the conversation has to highlight the difference in "guiding students in the use of digital devices" and "protecting digital privacy" ($M = 3.70$). Even though technical skills are at a high level, the pedagogical and ethical use of technology is behind. This finding is in line with Suriansyah's (2025) research, where he observed that educators face difficulties in information retrieval and selection skills. It indicates that teachers being "Digital Creatives" is not enough, they have to become "Digital Mentors" as well. The research warns that in the absence of structured training in digital ethics and privacy (Jung et al., 2024), technical skills alone are not enough for a safe and responsible educational environment, which is a considerable challenge for the school's modernization plan. Therefore, the guidelines should move beyond software skills to sustained, curriculum-embedded digital pedagogy and ongoing support for keeping pace with rapid



technological change.

IV. Conclusion and Implication

Using a quantitative questionnaire survey with 86 art teachers and descriptive statistical analysis, the study found an overall high level of organizational support ($M = 3.53$, $S.D. = 0.60$) and teacher digital literacy ($M = 3.83$, $S.D. = 0.62$). Teachers reported particularly strong participation in school-organized training and skills in editing artworks with digital software, while relatively weaker, but still positive aspects included timely feedback, perceived importance of art teachers' work, and guiding students in safe and effective digital use.

Based on the research results and the specific context of Nanning Nanshan Art Vocational School, the implications of this study are outlined below.

1) Teachers should get involved in heightening their self-efficacy, developing positive professional personality traits, such as responsibility and openness, and implementing effective strategies to overcome burnout, which may include peer collaboration and reflective practice. Besides, they should be continually engaged in upgrading their digital literacy skills, progressing from simple technical use to more pedagogically oriented integration of digital tools in art teaching.

2) Educational institutions, including schools, must be committed to enhancing organizational support through the provision of planned professional development, mentoring programs, timely and constructive feedback, and recognition of art teachers' contributions. Simultaneously, schools should be reallocating workloads more efficiently, promoting a supportive campus culture, and establishing reliable digital infrastructures and resources to empower teachers in effectively integrating technology into their teaching.

3) Government departments are expected to draft and modify policies that focus on the development of teachers in art-oriented secondary vocational education, allocate more funds for teacher training and school digitalization, and facilitate the starting of innovative pilot programs. Moreover, they should sponsor the implementation of initiatives for the mental health and well-being of teachers, set up clear standards and evaluation systems for teacher competencies including digital literacy, and encourage the practice of sharing the most excellent works across the regions and institutions.

V. Limitation and Future Research

This study has three limitations that should be acknowledged. First, the research surveyed only 86 full-time art teachers from a single institution, limiting the generalizability of findings to other art-oriented vocational schools or different geographical regions. Second, reliance on self-reported questionnaires may have introduced social desirability bias and common method bias, potentially affecting the accuracy of measurements for variables such as teacher burnout and self-efficacy. Third, the cross-sectional design and predominantly quantitative approach constrained the ability to examine dynamic changes, establish causal relationships, or capture the nuanced experiences of teachers in their authentic contexts.

Future research should address these limitations through several strategic approaches. First, expanding the sample to include multiple vocational art schools across diverse regions using stratified or cluster sampling would enhance representativeness and external validity. Second, incorporating multiple data sources—including student evaluations, peer assessments, classroom observations, and qualitative methods such as semi-structured interviews—would reduce single-source bias and provide deeper insights into the contextual mechanisms underlying teacher characteristics. Third, adopting longitudinal designs or intervention studies would enable examination of how organizational support and professional development programs influence teacher self-efficacy, burnout, and instructional practices over time, thereby validating the practical effectiveness of the proposed development guidelines.

VI. Acknowledgement

This article is derived from the author's dissertation completed at Degree of Master of Education Program in Educational Management and Learning Management Innovation, Bansomdejchaopraya Rajabhat University. The author gratefully acknowledges the guidance and support of the advisor, Assistant Professor Dr. Nuttamon Puchatree, whose insightful supervision was essential to the development of this work.

Reference

1. Antera, S., & Teräs, M. (2024). Discovering and developing the vocational teacher identity. *Education + Training*. <https://doi.org/10.1108/et-09-2023-0363>
2. Bartlett, M. S. (1954). A note on the multiplying factors for various chi-square approximations. *Journal of the Royal Statistical Society: Series B (Methodological)*, 16(2), 296–298. <https://doi.org/10.1111/j.2517-6161.1954.tb00174.x>



3. Boyatzis, R. E. (1982). *The competent manager: A model for effective performance*. John Wiley & Sons.
4. Chen, F. (2024). Research on collaborative educational mechanism of school-enterprise cooperation in higher vocational colleges and universities based on deep learning. *Applied Mathematics and Nonlinear Sciences*. <https://doi.org/10.2478/amns-2024-1889>
5. Cronbach, L. J. (1990). *Essentials of psychological testing* (5th ed.). Harper & Row.
6. De La Torre Figueroa, E. M., Bolaños Rodríguez, N. G., Calderón Pita, M. M., & Viteri-Chiriboga, E. (2024). Transformation of educational practice: The role of organizational learning in teacher professional development. *South Eastern European Journal of Public Health*. <https://doi.org/10.70135/seejph.vi.2015>
7. Dela Cruz, J. L., & Macalisang, D. S. (2024). The phenomenon of teachers' burnout: Its implication for job satisfaction. *Journal of Interdisciplinary Perspectives*, 2(8), 84–91. <https://doi.org/10.69569/jip.2024.0203>
8. Disilio, A. M., & Callo, R. S. (2024). The role of organizational support and teachers' workload to the school head's caring leadership and teachers' well-being. *International Journal of Research Publications*. <https://doi.org/10.47119/ijrp1001501620246646>
9. Du, X., Zheng, M., Chen, J., & Lian, Y. (2024). An exploration on the path to improve the teaching practice ability of "dual-qualified and dual-capable" teachers in applied colleges and universities under the background of the integration of production and teaching. *Region - Educational Research and Reviews*. <https://doi.org/10.32629/rerr.v6i7.2462>
10. Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology*, 71(3), 500–507. <https://doi.org/10.1037/0021-9010.71.3.500>
11. Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). SAGE Publications.
12. Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Cengage Learning.
13. Huang, R., Intarasompun, W., & Puchatree, N. (2023). Identity development: Analyzing the professional identity of after-school tutors in China's competitive private education sector. *Journal of Advances in Humanities Research*, 2(4), 30–38. <https://doi.org/10.56868/jadhur.v2i4.193>
14. Jung, J., Choi, S., & Fanguy, M. (2024). Exploring teachers' digital literacy experiences. *The International Review of Research in Open and Distributed Learning*. <https://doi.org/10.19173/irrodl.v25i2.7572>
15. Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika*, 39(1), 31–36. <https://doi.org/10.1007/BF02291575>
16. Likert, R. (1932). A technique for the measurement of attitudes. *Archives of Psychology*, 22(140), 1–55.
17. Maslach, C., & Leiter, M. P. (1997). *The truth about burnout: How organizations cause personal stress and what to do about it*. Jossey-Bass.
18. McClelland, D. C. (1973). Testing for competence rather than for "intelligence." *American Psychologist*, 28(1), 1–14. <https://doi.org/10.1037/h0034092>
19. Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record*, 108(6), 1017–1054. <https://doi.org/10.1111/j.1467-9620.2006.00684.x>
20. Nanning Nanshan Art Vocational Technical School. (n.d.). *Nanning Nanshan Art Vocational Technical School homepage*. Retrieved November 20, 2025, from <https://www.nnnsyx.com/>
21. Rovinelli, R. J., & Hambleton, R. K. (1977). On the use of content specialists in the assessment of criterion-referenced test item validity. *Dutch Journal of Educational Research (Tijdschrift Voor Onderwijs Research)*, 2, 49–60.
22. Ryans, D. G. (1960). *Characteristics of teachers: Their description, comparison, and appraisal*. American Council on Education.
23. Sirk, M. (2024). Professionalism model for vocational teachers: Based on the example of Estonian vocational teachers in the changing VET context. *Interchange*. <https://doi.org/10.1007/s10780-024-09519-w>
24. Song, Y. (2024). Construction and development trends of "dual-qualified" teachers in vocational colleges under the new "Vocational Education Law". *International Journal of New Developments in Education*. <https://doi.org/10.25236/ijnde.2024.060734>
25. Standing Committee of the National People's Congress. (2022, April 20). *Vocational education law of the People's Republic of China* [Chinese law, English translation]. China Justice Observer. <https://www.chinajusticeobserver.com/law/x/vocational-education-law-20220420/chn>
26. State Council of the People's Republic of China. (2019, February 13). *Notice of the State Council on issuing the national vocational education reform implementation plan* [English translation]. http://www.gov.cn/zhengce/content/2019-02/13/content_5365341.htm
27. Suriansyah, A. (2025). Empowering future educators: Analyzing digital literacy skills in elementary teaching assistants (TAs). *The Innovation of Social Studies Journal*, 6(2), 14778. <https://doi.org/10.20527/issj.v6i2.14778>
28. Tamang, S., Mishra, A., Ghosh, A., & Bhaumik, A. (2024). Organisational support and teachers' engagement for professional development in secondary schools of Nepal. *Jurnal Ilmiah Ilmu Terapan Universitas Jambi*, 8(2). <https://doi.org/10.22437/jiituj.v8i2.32414>
29. Tang, Y. (2023). Overburdened Chinese compulsory education teachers. *Science Insights Education Frontiers*, 19(2), 3089–3102. <https://doi.org/10.15354/sief.23.re312>
30. Täschner, J., Dicke, T., Reinhold, S., & Holzberger, D. (2024). "Yes, I can!" A systematic review and meta-analysis of intervention studies promoting teacher self-efficacy. *Review of Educational Research*, 94(2), 1–25. <https://doi.org/10.3102/00346543231221499>
31. Tschannen-Moran, M., & Hoy, A. W. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17(7), 783–805. [https://doi.org/10.1016/S0742-051X\(01\)00036-1](https://doi.org/10.1016/S0742-051X(01)00036-1)
32. World Bank. (2014, June). *Modern vocational education system construction plan (2014–2020)*.



- <https://documents1.worldbank.org/curated/en/216651508745207540/pdf/120583-WP-P150980-PUBLIC-China-NQF-summary.pdf>
33. Wu, F., Jabor, M., Ahmad, M. F. B., & Hu, S. (2024). Identity integration dilemmas and strategies for enterprise practice among vocational teachers. *International Journal of Academic Research in Business and Social Sciences*. <https://doi.org/10.6007/ijarbss/v14-i11/23610>
 34. Wu, J., & Shen, P. (2024). Facilitating teachers' professional learning in open class: A qualitative case study in China. *Humanities and Social Sciences Communications*, *11*, Article 1752. <https://doi.org/10.1057/s41599-024-04348-9>
 35. Xu, L. (2024). Historical trends in teacher personality from human language. *Proceedings of the National Academy of Sciences of the United States of America*, *121*(15), e2413253121. <https://doi.org/10.1073/pnas.2413253121>
 36. Xu, S. (2024). A study on the cultivation of core qualities of higher vocational English teachers under the background of course on ideological and political theory education. *Advances in Vocational and Technical Education*. <https://doi.org/10.23977/avte.2024.060523>
 37. Zhang, X. (2021). Teachers' motivation to participate in continuous professional learning: The roles of personal and school-level factors. *International Journal of Educational Research*, *110*, 101887. <https://doi.org/10.1080/02607476.2021.1942804>
 38. Zhao, Y., & Ko, J. (2024). Vocational teachers' perceptions on workplace learning in facilitating students' professional engagement in the context of industry-university collaboration in China. *Journal of Workplace Learning*. <https://doi.org/10.1108/jwl-12-2023-0197>
 39. Zhu, G., Shen, L., Jiang, L., Yang, B., Shi, K., & Mena, J. (2023). "I need to continually study and broaden my horizons": A narrative inquiry of a novice teacher's induction experience in China. *Journal of Professional Capital and Community*. <https://doi.org/10.1108/jpcc-10-2022-0056>