

# Investigating Postgraduates' Reflective Thinking Challenges and Strategies: Insights from 25 Interviews

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**Abstract:** Reflective thinking serves as an essential instrument and safeguard for enhancing learning efficiency, and is crucial in maintaining the quality of postgraduate output. This paper, employing detailed interviews with 25 postgraduates, delves into the challenges encountered in their reflective thinking, principally exhibited as: a deficiency in reflective awareness, a limited reflective perspective, and a paucity of reflective methodologies. It further discerns the underlying causes of these issues: the prevailing influence of conventional training paradigms, inadequate professional foundations, and superficial comprehension of scientific research imitation amongst students. Consequently, it recommends the fostering of reflective thinking among postgraduates from three dimensions: the instillation of reflective habits, the expansion of reflective perspectives, and the deepening of core competencies, all aimed at elevating their research quality.

**Keywords:** Master graduate students; Reflective thinking; The habit of reflection; Reflective method

## 1. Introduction

Postgraduate education forms a vital component of China's talent development system within colleges and universities, entrusted with the significant responsibility of fostering high-level expertise. In September 2020, the Ministry of Education, the National Development and Reform Commission, and the Ministry of Finance collectively promulgated the Opinions on Accelerating the Reform and Development of Postgraduate Education in the New Era. This communique emphasized that socialism with Chinese characteristics has ushered in a new era, and the urgency for high-level innovative talents across all sectors is increasingly critical. It delineated the overarching goal of establishing China as a formidable force in postgraduate education, embodying Chinese characteristics, by 2035<sup>[1]</sup>. This underlines the influential role the quality of postgraduate training plays in accomplishing China's ambition of ascending as a global power in education and scientific technology. Postgraduate education is bifurcated into master's and doctoral education, serving as the 'preparatory stage' for employment or further academic research. Compared to undergraduate education, it places a heightened emphasis on nurturing students' capabilities for studying and problem-solving. In line with the national strategy of talent-driven innovation, it necessitates a profound exploration of their learning impediments to enhance their research skills.

Reflective thinking, a mode of thought deeply explored within philosophy and education domains, boasts an in-depth theoretical foundation and insightful practical implications.<sup>[2]</sup> It is characterized as a thoughtful and rigorous contemplation of pre-existing conclusions, understandings, or concepts in an ongoing, proactive, and iterative manner. It is a vital quality influencing learners' innovative capabilities, problem-solving skills, and overall learning quality, and is an academic thought process that bolsters postgraduates' independent thinking and autonomous learning capabilities. Hence, to fulfill the mission of postgraduate education in aiding the construction of an educationally and technologically powerful nation and effectively ameliorate the quality of postgraduate training in China, this study employs qualitative research methods. It conducts comprehensive interviews with 25 master students across various majors in Z University using a semi-structured approach. This research deeply investigates the issues and causes pertaining to master students' reflective thinking from the perspectives of attitude, content, and methodology and proposes practical and feasible optimization strategies.

## **2. Research Design**

### **2.1. Research Subjects**

This study seeks to comprehend the issues inherent in postgraduate students' reflective thinking, ascertain the root causes of these issues, and undertake an interview survey with the subjects of reflection, namely the postgraduate students. The interviews were conducted over the period from February to April 2022. Through proactive engagement with potential interviewees that met the research requirements within the university's master's and doctoral student discussion groups, exchanges were initiated, contacts established, and ultimately 25 master's students were interviewed. As per the basic demographic information, the cohort comprised of four master's students from engineering, three from science, ten from social sciences, and eight from the humanities. Within the context of this research, participants' identities and interview data were disassociated, with identification codes (designated by an 'A' followed by a sequence number) used in textual transcriptions and research analysis to ensure the utmost protection of participants' privacy.

### **2.2. Research methods**

This investigation employs a qualitative research methodology, with interviewees selected through purposive sampling, taking into account various influencing factors such as postgraduates' disciplines and grades to capture and reflect the diversity of the research subjects. Semi-structured interviews primarily focus on areas including 'autonomous learning ability', 'reflective ability', 'learning difficulties', 'student-teacher communication', 'research topic selection', 'academic progression', and 'learning content'. Specific questions include (1) How do you typically conduct your learning activities and plan your study schedules? (2) How did you arrive at your research topic? (3) Can you describe some challenges you've faced in your studies and provide examples? Among others. Fifteen participants were interviewed face-to-face, while ten were interviewed online via WeChat and QQ and video channels. Each of the 25 individual interviews lasted between 15 to 40 minutes. Prior to each interview, an interview outline and informed consent form were provided to each participant in either written or digital format, outlining the research purpose and content, and assuring strict confidentiality and privacy protection, thereby encouraging participants to openly discuss their learning challenges and queries, which ensures the authenticity and reliability of the research material. During the analysis of the interview transcripts, this study utilised the online text analysis website 'Micro Word Cloud' to identify frequently recurring keywords, thereby pinpointing the main themes and central issues within the participants' responses.

## **3. The challenges inherent in the reflective thinking of postgraduates**

### **3.1. Lack of awareness of proactive reflection**

Despite years of academic exposure and accumulation of knowledge, the majority of postgraduate students, irrespective of their individual disciplines, face a common dilemma: a lack of active reflection awareness. The master's degree stage is a crucial transition point where students move from traditional passive lectured education towards autonomous learning, a shift that demands a more substantial reflective capacity. Not only must learners ponder over their learning objectives and content, they must also actively reflect on the strategies and methodologies employed throughout their learning journey, making it an engaged, comprehensive, and profound process. This mode of learning starkly contrasts with classroom education, with learners supplanting teachers as the spearheads and facilitators of individual learning. Consequently, students who lack an active reflection mindset struggle to plan and implement their individual learning activities. As one Master of Social Sciences (A-21) conveyed, 'In the past, I only had to attend lectures. Now, without the guidance of my tutor, I'm unsure of what to study, how to study, and which standards to meet. I feel very apprehensive.' Furthermore, postgraduate training places a higher emphasis on nurturing students' problem-identification and innovative capabilities. Students' problem awareness and understanding of knowledge are typically assessed via writing papers, necessitating active reflection during the writing process to discern internal relationships and logical connections between knowledge and problems. Students deficient in reflective consciousness often focus excessively on the structure of knowledge itself, struggling to identify problems and forge links between knowledge points. As one Master of Engineering student (A-12) confessed, 'I have meticulously crafted a mind map of all the concepts I learned in class, structured logically, and know it by heart, yet I'm at a loss about how to translate it into a paper.' Another Master of Social Sciences student (A-07) added, 'The

instructor asked us to pinpoint our interests in the course content and expand it into a paper as the final assignment, which would account for 70% of the course grade. I'm clueless about how to proceed.

### ***3.2. Lack of comprehensive reflective perspective***

With the rapid pace of knowledge innovation and escalating shifts in science and technology, the demand for high-level innovative talents, who form the new human capital necessary for national development, has become more pressing. The Opinions on Accelerating the Reform and Development of Postgraduate Education in the New Era underscores the need to holistically enhance postgraduates' innovative knowledge and practical abilities <sup>[1]</sup>. Fostering creativity requires students to possess a solid theoretical foundation along with robust practical wisdom, thereby posing fresh challenges to the breadth of students' reflective vision. In scrutinizing the interview content, it becomes evident that students often exhibit a narrow perspective, confined to analysing problems from limited angles, with difficulty in applying theory to practice and a lack of innovative capability. As a Master of Humanities student (A-16) noted, 'During my undergraduate studies, I had to juggle theoretical knowledge and practical training. The experience was demanding and exhausting. As a postgraduate, my research became more concentrated on pure theory. However, the absence of practical training led to a rapid decline in my ability to discern practical issues.' Another Master of Humanities student (A-19) echoed, 'Our major is largely practical. Although we do study theory, it is not given significant importance, making it challenging to integrate theory with our own design concepts when composing our graduation thesis, and we receive severe criticism from our instructors for this.' This phenomenon is not uncommon amongst interdisciplinary students either. Pedagogy, being a highly inclusive discipline and a relatively open research field, allows a greater tolerance for cross-disciplinary candidates <sup>[3]</sup>. Consequently, the Institute of Education houses a substantial proportion of cross-disciplinary candidates, broadening the academic perspective of pedagogy. However, the weak knowledge foundation of these candidates exacerbates the narrowness of their reflective vision. As a Master of Social Sciences student (A-19) lamented, 'I often find myself unable to keep pace with the instructor's lecture and struggle to comprehend the questions posed.' Another Master of Social Sciences student (A-01) expressed, 'There are instances when I form my own viewpoints on social phenomena and wish to discuss them with the instructors, but I struggle to find professional vocabulary and theories to articulate these phenomena, so I often choose to remain silent.'

### ***3.3. Lack of ability to think continuously***

The complexities that postgraduates are often tasked with resolving require an aptitude for effective cognitive strategies. Mastering these strategies is crucial for successfully conducting reflective activities and problem-solving tasks, thereby significantly enhancing efficiency. As such, the question of 'how to reflect' becomes a decisive factor in the quality of postgraduate training. The journey of thesis composition is a methodical resolution of complex problems that demand professionalism and precision. To present coherent and logical content, students must engage in continuous and meticulous reflective activities throughout the writing process, reflecting their thought processes and methodologies within their writing. This process also serves as a probe into students' ability to reflect. Through dialogue with interviewees about their thesis composition, it becomes apparent that some students struggle with logically connecting their ideas, illustrating their inability to reflect in a continuous and profound manner. As a Master of Humanities student (A-10) recalled, 'Recently, I submitted my essay to my advisor for review, only to be criticized that the theoretical framework I constructed was not echoed in the subsequent content, indicating a disjointed analysis. <sup>[4]</sup>' Other students' papers reveal an issue wherein the initial segment outlines the status quo of their research subject, but the succeeding segment abruptly suggests the advancement of the research objectives. This confusion between the current situation and the problems, the lack of exploration into the causative factors, and the absence of a theoretical support system indicate a failure to conduct continuous and in-depth reflection. As a Master of Social Sciences student (A-03) noted, 'Following a logical writing framework, I initially wrote about the current state of the research subject, followed by potential solutions. I did not perceive any issues with this approach, but my advisor criticized that my writing lacked thoughtful consideration, leaving me unaware of the actual problem.'

#### **4. The reasons for the problems in postgraduates' reflective thinking**

##### ***4.1. The influence of traditional training mode***

Renowned scholar Habermas views technical rationality as 'the rational form of science and technology, which is embodied in the purpose-driven activity system.' Contemporary higher education is largely influenced by the concept of technical rationality.<sup>[5]</sup> Students trained under this perspective often perceive knowledge as products and outcomes, lacking the ability to critique and reflect upon knowledge.<sup>[6]</sup> They depend heavily on the guidance and assistance of tutors, demonstrating a deficit in autonomous learning and the initiative to reflect. 'In the past, we directly studied theories based on the subjects, but now we need to explore the origins of these theories after class, which is complicated and bothersome,' says a Master of Science student (A-04). Additionally, the high demand for skilled professionals in societal development results in an abbreviated talent training cycle. Imbuing systematic and efficient conclusive knowledge, coupled with rigorous and highly competitive examinations as the talent selection mode, can undoubtedly enhance training efficiency. Students trained in this mode possess a robust knowledge foundation, can swiftly assimilate modular knowledge, and excel in retrieval and examination, thereby driving national development. However, with the influence of economic globalization, the nation's perception of necessary talents is continually evolving. Because their primary learning content is conclusive knowledge, these students often exhibit inertial thinking, lack personal thought, struggle with extended learning and research, lack creativity, and fail to align with the talent paradigm of the new era. Of the 25 interviewed postgraduates, 17 believe that their past education was passive; they excel in organizing and inducing learning tasks but struggle with active thinking and exploration. 'I can frame and memorize quite well, but I'm not really good at composing papers,' says a Master of Social Sciences (A-06). 'My colleague is really good. When faced with problems, he can quickly find an appropriate theory to explain it. Why can't I?' laments a Master of Science student (A-11).

##### ***4.2. The professional foundation is weak***

Interdisciplinarity aids in broadening research horizons, but the weak foundational knowledge of interdisciplinary students is a significant issue impacting their reflective thinking. In an interview survey of 25 postgraduates, it was found that 15 lacked a relevant academic background, and all of them experienced difficulties due to weak basic professional knowledge. 'Having accumulated four years less basic knowledge than students who took the graduate entrance exam in this major, I can't compensate for it all at once. In class, my sole focus is on jotting down the knowledge points the professor mentioned quickly, leaving me no time to listen to explanations,' says a Master of Humanities student (A-05). 'Whenever there are no classes, I head to the library to read. I aim to make up for the lacking knowledge as fast as I can. I have no time to think and can only resort to rote memorization, as I cannot cover all in a short time,' adds a Master of Social Sciences student (A-22). Furthermore, graduate tutors, often experts with deep theoretical and practical knowledge, have a significant knowledge reserve that creates a gap between teachers and students, impeding their communication efficiency. This communication barrier induces students to fear making mistakes and prompts them to complete tasks under their tutor's guidance. 'Sometimes, I have never heard of the professional terms my tutor uses, so I don't dare respond for fear of revealing my shortcomings,' says a Master of Science student (A-17). Additionally, many professors assess students' learning achievements through interaction and questioning. Some require students to find high-quality papers, analyse their research ideas and methods, and present their findings, evaluating students' problem awareness and reflective ability based on their analysis and presentation. However, many students find it challenging to understand the paper's thinking and structure within a limited time. To mask their weaknesses, students often attempt to employ the teachers' thinking to analyse problems, concentrating more on the forms of reflection, such as structure and process, and striving to showcase a 'correct', 'suitable', and 'standard' reflection process.<sup>[7]</sup> They overlook the 'personal' and 'genuine' reflection. 'The teacher allowed me too little time to think. In fact, I didn't understand it at all. Out of necessity, I had to analyse it using the teacher's thinking, which ultimately resulted in my failure to learn,' says a Master of Social Sciences student (A-08). This passive reflection behaviour lacks students' subjectivity and engagement and is another indication of students' weak knowledge base, which is not conducive to cultivating postgraduates' academic thinking.

##### ***4.3. Superficial perception of research imitation***

Scientific research learning generally progresses through stages of confusion, puzzlement, imitation,

and creation. To swiftly transition past the phases of confusion and puzzlement, scientific research imitation is an unavoidable phase for graduate students.<sup>[8]</sup> Scientific research imitation involves postgraduates acquiring norms and skills of scientific research by speculating, imitating, internalizing, reproducing, and innovating the behaviours of others in scientific research activities. It is a fundamental learning method. This process assists students in developing positive reflective habits and efficient reflective techniques, and it is a vital approach to fostering postgraduates' academic thinking. However, in the interview survey, it is found that the respondents tend to face two types of challenges at the stage of scientific research imitation. One problem is that some interviewees perceive imitation as a denial of personal abilities and overlook the importance of scientific research imitation. Such students lack the learning process of studying others' ideas and methods and often exhibit low learning efficiency. 'My advisor always asks me to imitate and learn from others' papers, but I don't want to do it because I have my own ideas and have already outlined a framework,' says a Master of Social Sciences student (A-13). The other issue is that the interviewees over-rely on imitation, focusing solely on mimicking the structure of the paper without comprehending the internal logic, ignoring aspects like thinking patterns and writing ideas that truly need to be learned and internalized. 'Before I write my thesis, I will search for several published papers in this field and imitate their ideas. I start by writing the background, then the research methods, then the results and discussions, but my advisor always says there's a lack of logic after reading it,' says a Master of Humanities student (A-09). Misunderstanding the process of scientific research imitation leads some postgraduates to miss out on exercising this process, preventing them from finding a reflection method that facilitates continuous and deep thinking.

## 5. Optimization Strategy of Postgraduates' Reflective Thinking

### 5.1. Clarify the value of reflection and cultivate the habit of reflection

Reflection has been a paramount concern within both Chinese and Western philosophical traditions, encompassing a multitude of perspectives. The Analects of Confucius in China alludes to it with the saying, 'I introspect three times a day,' while Western philosophers like Locke and Spinoza posited that 'reflection is the supreme path to discerning truth,' thus reinforcing its significance. Reflection serves as a self-reassessment of one's cognitive processes and outcomes, characterized by autonomy, continuity, and introspection. It enables individuals to extricate themselves from the quagmire of passive knowledge acquisition, fostering proactive inquiry and facilitating an ongoing, logical thought process in pursuit of answers. This, in turn, helps overturn cognitive inertia and cultivates reflective habits. Furthermore, reflective thinking necessitates a critical disposition, challenging the thought inertia induced by blind faith in authority, and promoting open-minded acceptance of diverse viewpoints.<sup>[9]</sup> This process enables individuals to shatter their ingrained cognitive patterns, amass knowledge from myriad perspectives, expand their cognitive horizon, establish an interdisciplinary knowledge network, and enhance their academic creativity.

Reflection also compels students to seek information, observe, derive solutions through logical thinking, and apply these to practical situations to assess the validity of their conclusions. This refines their logical abilities and practical skills, facilitating efficient subsequent research, proactive identification of real-world research problems, and fostering problem-solving expertise. In conclusion, reflective thinking, a central concern for philosophers globally and throughout history, is instrumental in countering cognitive inertia, broadening knowledge realms, and nurturing logical and practical capabilities. It is invaluable to postgraduates lacking research capabilities, necessitating due attention from educators and learners alike. The nurturing of active reflective habits is the foremost step towards recognizing the importance of reflective thinking.

Tutors are primary agents in shaping students' study habits and fostering academic dialogue, playing a crucial role in developing students' reflective thinking. They should not confine the boundaries of reflection but should enhance communication with students to understand their learning challenges and confusions. By integrating student feedback, tutors can tailor a fitting, desirable, and effective reflective methodology. Tutors should also acknowledge the disparities in knowledge reserves and structures between them and their students, striving to increase communication frequency to identify and correct any issues in students' reflective processes promptly, thereby cultivating an academic environment conducive to reflection. Since most postgraduates are habituated to learning definite, abstract, and categorized knowledge, they often lack active reflection consciousness and habits. Therefore, implementing dedicated reflection training courses to foster students' awareness and active reflection habits is vital. Conversely, students, being the primary participants in reflective activities, must realize

that the development of reflective habits and the attainment of learning outcomes ultimately rest with them. They should not prioritize 'grades' or conform to 'correct' or 'standard' reflective behaviours, but should cultivate appropriate reflective motivations and strive to learn from the reflective process, thereby developing positive and active reflective habits. Furthermore, students should proactively share their learning progress and confusions with tutors, thus revealing their learning and reflection issues for timely rectification by tutors.

### ***5.2. Solid theory based on practice, broaden the horizon of reflection***

Master's education embodies a synthesis of knowledge internalization and construction, necessitating contemporary relevance and practical application in research. Consequently, postgraduate students must not only acquire a robust theoretical foundation but also adeptly adapt this theoretical knowledge to practical scenarios, a comprehensive evaluation of their reflective acuity. Moreover, the 'China Education Modernization 2035' initiative underscores the need to bolster the integration of knowledge and practice, elevate the competitiveness of higher education, enhance the cultivation of premier talent, and fortify innovation capabilities.<sup>[10]</sup> This harmonization of theory and practice, coupled with innovation, not only symbolizes the nation's expectations for talent cultivation but also underscores the significance of integrating theory with practice. As the postgraduate phase involves more intricate and in-depth knowledge, students necessitate a reflective perspective that encompasses both breadth and depth. A lopsided focus on either dimension is insufficient for development. Thus, enhancing postgraduate training quality and nurturing innovative talent inherently demand a solid theoretical foundation, practical grounding, and the cultivation of a comprehensive reflective perspective.

According to Habermas's theory, Van Meinan proposed a three-stage teaching reflection to rectify instructional reflection issues, serving as a reference for postgraduates seeking to expand their reflective horizons.<sup>[11]</sup> Firstly, the 'critical reflection' phase mandates participants to set aside personal subjective experiences and concentrate on all beneficial knowledge and socio-environmental values. Consequently, while internalizing and reflecting on theoretical knowledge, students should consciously observe their external environment and investigate knowledge beneficial to their research, broadening their reflective scope and meeting research demands. Secondly, the 'technical rationality' stage implies that educators focus predominantly on the fundamental application of taught knowledge, analyzing teaching events based on subjective experiences, often neglecting theory and processes, thus inducing a unilateral reflection. Against this backdrop, students should overcome cognitive limitations, amalgamate personal subjective experiences, theoretical knowledge, and evolving action processes, perform holistic analyses, and modify the selection and application of theoretical and practical knowledge based on the evolution and outcomes of actions. This rectifies misconceptions within subjective experiences, deepens understanding of theoretical knowledge, and aligns actions with changes, fostering a profound amalgamation of theory and practice.

Finally, the 'practical action' stage indicates that teachers should not merely articulate objective results but should connect teaching events with personal circumstances, analyze student and teacher behavior, and organize and reconstruct personal experiences based on subjective intuition. Teachers should comprehend and reflect on results, link personal experiences with real-world situations, scrutinize various influencing factors, perform comprehensive and ongoing reflections, organize and reconstruct behaviors and experiences according to real-world conditions, and engender a feedback loop between personal experiences and actual scenarios. In light of the dynamism and variability of real-world scenarios, students should deviate from solely reflecting on outcomes, concentrating on the 'action' process during reflective activities, organizing and reconstructing acquired knowledge based on situational demands, adapting and integrating theoretical and practical research, and reformulating their understanding and experience of knowledge within practice. Moreover, proficient teachers often possess substantial practical experience, which is inherently tacit and challenging to articulate, precluding accurate transmission of this knowledge between teachers and students. To mitigate this issue, teachers should utilize the 'practical action' stage to link teaching events with the involved scenarios, reflecting on practical processes and effects, thereby transforming personal practical knowledge into lucid theories and tacit knowledge into explicit knowledge. Consequently, teachers' practical experiences can be shared and applied between teachers and students.

### ***5.3. Based on the real situation, deepen the core skills***

Enhancing postgraduate students' research capabilities necessitates fostering an active reflective disposition, comprehensive reflective vision, and efficient reflective modes. Reflection is not merely an

expression of students' cognitive appraisal and judgment of phenomena but also a manifestation of long-standing internalized experiences. It represents the process and outcome of an individual's interaction with their surrounding environment and constitutes a core skill that postgraduate students should possess. Moreover, the postgraduate learning experience tends to be more diverse, leading to a greater subjectivity and variance in the learning strategies adopted by this demographic. Hence, selecting learning strategies that are attuned to their individual needs is an indispensable element during the Master's phase. Ultimately, the dissertation serves as a significant output of scientific research and study at the postgraduate level, mirroring the practical application of theories and knowledge acquired by postgraduate students. An exceptional academic dissertation should not only demonstrate innovation but also exhibit logical coherence, academic rigor, and normative standards. The process of dissertation writing encapsulates the students' reflective journey, offering an ideal platform for honing reflective methodologies. Students who accomplish the task of dissertation writing more efficiently often possess suitable reflective methods. Therefore, assisting postgraduate students in discovering their personal learning strategies and deepening these strategies through the writing process, by considering the dissertation writing as a practical situation, is an apt approach.

The composition of a dissertation comprises three components: conception, writing, and summarization. The objective is to accomplish the dissertation in an organized, lucid, and coherent manner. Students need to continually engage in reflection through imitation and practice to internalize their unique writing ideologies and logical structure, thereby attaining their goals. Donald Schoen's book, "The Reflective Practitioner," introduces a method of continuous and in-depth reflection throughout the process, which could serve as a valuable reference for dissertation writing. Firstly, 'reflection before action' compels participants to contemplate various potential alternatives repeatedly to determine the action path, formulate an action plan, devise an organized and decision-making reflective plan, and aid participants in establishing clear objectives and action routes.<sup>[12]</sup> Thus, prior to writing, students should engage in profound contemplation about the overall layout. Selecting research questions is crucial for the success of the dissertation. Students should invest substantial energy and intellectual resources, focus on essential elements, clarify their problem-solving approaches, and ascertain problem orientation and ultimate objectives.

Secondly, Schoen underscores 'reflection in action,' which necessitates viewing the problem as a unique event and addressing it with a personalized rather than an objective attitude. Based on this, hypotheses should be formulated and tested to reconstruct the problem, demanding that participants incorporate their personal attitudes, experiences, and understanding of knowledge in the problem-solving process, and modify actions or action modes based on the evolving situation. Therefore, during writing, students should reflect on selected problems, contemplate associated knowledge and experiences, consider which methods and means to employ for research, and strategize how to overcome obstacles. Such issues are the specific problems explored in action. Through this process, students not only learn problem-solving techniques but also formulate their writing ideologies, learn to reflect and write, and develop a habit of continuous and in-depth reflection, fostering a logical thought process.

Thirdly, 'retrospective reflection' demands students to reflect on the entire action process, not merely focusing on the achievement level but considering the shifts in their attitude, thought process, logic, and practical abilities brought about by the scientific research process, to enhance students' overall research capabilities. Therefore, upon completion of the dissertation, students should reflect on the entire learning process and outcomes. During this reflection process, individuals begin to form and internalize their research ideologies and logic, culminating in personal 'practical knowledge.' Although Schoen emphasized the significance of practical knowledge, he did not devalue theory. He believed that 'excellent practitioners' often possessed substantial theoretical underpinnings. Hence, students should balance the study of theoretical knowledge and practical knowledge, apply theory within practice, and test theory through practice to fortify the integration of theory and practice and amplify the depth of reflection. In summary, reflection is a continual process. Grounded in real-world scenarios, this process facilitates the formation of continuous reflective habits and logical thinking modes and assists students in integrating scientific research ideologies and consolidating their experiences, enabling more efficient scientific research and study.

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