Article

The Quest for Sustainable Graduate Education Development: Narrative Inquiry of Early Doctoral Students in China's World-Class Disciplines

Jian Li and Eryong Xue *

China Institute of Education Policy, Faculty of Education, Beijing Normal University, Beijing 100875, China

* Correspondence: eryongxue@bnu.edu.cn

Abstract: Early doctoral student sustainable development plays a pivotal role in promoting doctoral education quality contextually. However, there are few studies analyzing the challenges and strategies of early doctoral student sustainable development. Thus, this study explores how various elements might have affected early doctoral students' academic adaptation in a specific higher education institution context. The multiple data, including a narrative inquiry and a semi-structured interview, were examined to uncover 44 early doctoral students' academic and living experiences on campus. It was found that some early doctoral students are facing great pressure from social relations, daily life, study groups, and academic requirements. Due to a lack of understanding of the doctoral education system, early doctoral students are often isolated after entering the new environment. Their current situation does not meet their initial expectations, and it is difficult to balance academia, work, and life. As a result, they lack social contact and cannot integrate into the team, the community, and learning community. Along with findings, we suggested that students should also actively participate in various academic exchange activities and research projects to continuously learn interdisciplinary knowledge and improve interdisciplinary ability. In addition, the supervisor should create a healthy learning environment and to guide, and supervise doctoral students to participate in exchanges and scientific research; doctoral students should pay attention to the quality of learning and academic communication to stimulate their self-development. Lastly, we present the discussion and conclusion.

Keywords: doctoral student; early doctoral student; graduate education; higher education in China

1. Introduction

As one important component of the sustainable graduate education development, doctoral education as the highest level of education in China, at present, is an important driving force to improve national comprehensive strength and core competitiveness [1].

However, doctoral students face many problems in daily campus life, which are mainly manifested in a lack of ability, psychological problems, and academic performance. The research and countermeasures to these problems have become an important part of current doctoral education research. There are not abundant studies on early doctoral students' academic development, especially in China. Along with the above, this study aims to explore the early doctoral students' experience and attitudes towards doctoral education in China's world-class disciplines. It is divided into several parts: the first part explores the multiple studies on doctoral student development worldwide; the second part examines the doctoral student development in China's context; the third part discusses the methodology used in this study; and the fourth and fifth part present the findings and discussions in this study.

2. The Multiple Studies on Doctoral Student Development Worldwide

The doctoral students also have shortcomings in scientific research creativity. Restricted by academic tradition and political and economic factors, foreign doctoral students

lack the courage to break the thinking pattern and practice beyond the academic training plan [2,3]. They can only carry out scientific research activities under the established academic framework but cannot provide full play to their creativity and subjective initiative to make their own feedback and unique changes to the learning environment. Low participation in doctoral education is one of the typical educational problems faced by foreign doctoral students. In terms of improving the innovation ability, educators should support the innovation practice of doctoral students and help them to achieve constructive innovation results. Both the university and tutors should regard doctoral students as capable innovation subjects and provide them with intellectual support and academic guidance. They can broaden academic communication channels by learning paper writing through social media to make teaching more effective. Finally, it helps doctoral students to realize the unity of personal behavior and social expectations and encourages academic innovation and creativity in doctoral education [4,5].

There are many concrete and practical steps to increase PhD participation. The public should provide students emotional support, praise and affirm doctoral students through the communication of an academic ecological network and external verification, and enhance their sense of identity to the academic community [6,7]. Form a communication network that meets the special academic needs of doctoral students, change competition into cooperation, and improve the overall academic atmosphere of the society. The university should set up a part-time doctoral system to provide doctoral students with more understanding, more freedom of choice, and social welfare support; improve the supervision and assessment institutions, in terms of strict academic requirements, while providing flexible handling of life needs; and improve the organizational culture construction, activities, and lectures to enhance the ideological construction and professional quality of doctoral students. The supervisor should play the main role, carry out scientific research activities with doctoral students, provide suggestions for doctoral students to integrate into scientific and educational activities, encourage peer collaboration, and build a harmonious and progressive academic community. Doctoral students can also adjust their learning state and enhance their learning participation through simple and effective methods such as self-reflection, cycling, and social activities. In the teaching process, educators should promote doctoral education in five respects: improving project management efficiency; encouraging students to integrate into the discipline community; encouraging students to question, analyze, and develop critical thinking; encouraging students to open their minds and develop themselves; and developing a healthy teacher–student relationship, so that students are full of enthusiasm, are motivated, and care about their work [8–10].

3. Doctoral Student Development: China's Context

There are many studies on doctoral student development in China, from multiple perspectives. Specifically, in terms of doctoral students' comprehensive ability, the innovation ability, interdisciplinary research ability, and transferability of Chinese doctoral students are considered hot topics in doctoral student development studies [11,12].

Regarding innovation ability and innovation thinking, at the macro level, the lack of originality of doctoral dissertations in China is particularly serious due to multiple factors, such as educational philosophy, faculty, the supervision mechanism, and the cultivation mode. On the individual level, due to the lack of an individual professional foundation of students and a lack of interest in learning, the original contribution of their papers is relatively lacking, which is reflected in the fact that it is difficult to break students' thinking patterns when discussing academic issues; a lack of execution ability to transform innovative thinking into innovative projects in academic practice; and when writing a paper, innovation is not promoted in topics, materials, research methods, research conclusions, and other aspects. Regarding interdisciplinary ability, the curriculum of doctoral students in China is still dominated by disciplinary and professional knowledge, and there is not enough interdisciplinary curriculum. However, the comprehensive application of interdisciplinary knowledge is indispensable in the actual paper-writing process. For example,

students need knowledge of psychology to better design questionnaires, and economics to analyze data results. However, the reality is that it is difficult for doctoral students to share interdisciplinary knowledge, and there is a lack of academic communication and a fragmentation of courses, which make it difficult for doctoral students to internalize knowledge of other disciplines, resulting in a lack of interdisciplinary research ability. In addition, China's doctoral education focuses too much on a single academic dimension and lacks diversified development and vocational ability training, resulting in weak transferability and tacit knowledge-acquisition ability. First, Chinese doctoral students do not pay enough attention to ideological and moral dimensions, a sense of responsibility, and other personal qualities, and thus they cannot meet the requirements of the labor market in terms of diverse development ability, social participation, social service ability, and professional quality. Secondly, the focus of training deviates from the needs of society. The transferable ability of doctoral students refers to academic ability and social comprehensive ability, which can be quickly transferred to different working and learning situations. Tacit knowledge refers to students' internal thinking mode; beliefs; and mind, which need to be acquired by attaching importance to comprehensive development, comprehensive quality improvement, and the whole process of cultivation [13–15].

However, this requirement is contrary to the development status quo of China's one-sided emphasis on academic achievement and neglect of comprehensive quality and vocational ability cultivation, which leads to the weak transferability and tacit knowledge acquisition ability of doctoral students in China. In psychology, there is a lack of edge psychology, low interest in scientific research, and knowledge anxiety among doctoral students in China. First, marginal psychological problems are serious. It is common for doctoral students to lack a sense of belonging and identity with regard to their own group, and there are deviations in self-cognition, such as unclear positioning, inadequate efficacy, self-doubt, and lack of interest, accompanied by excessive ego, contradiction and irritability, inferiority, and negativity. Second, knowledge anxiety is common. Knowledge anxiety refers to a sense of crisis regarding a lack of knowledge reserve, an inability to produce knowledge, and an inability to meet the needs of diverse talents in society. The fierce competition and great pressure of doctoral education led to students' psychological reactions such as an eagerness for success, and self-denial. At the micro level of individual doctoral students, as mentioned above, the problems and countermeasures faced by individual doctoral students in education are the common focus of doctoral student development. In terms of research topics with less overlap, domestic scholars pay more attention to research on the scale of doctoral training and the effect of doctoral education on the country, such as the effect of regional differences and the structural optimization of postgraduate education on economic growth rate, or the effect of the graduate education scale on national innovation capacity. In addition, domestic professional doctoral education research has gradually become a hot topic. Foreign scholars' research topics are more diverse, such as student supervision and the burnout of perception, the relationship between diversity measures to explore the cognitive theory, sex phobia in doctoral education, the promotion of global science discourses, the entrepreneurship education (by a Chilean doctoral student) of the potential impact of the non-commercial research environment, the political inequality of doctoral education, and a comparative study on the social experiences of high- and low-grade doctoral students. Both national and international research attaches great importance to the research of the doctoral student group, the supervisor group, the doctoral training system, and doctoral career training, and most of them use literature analysis, questionnaire surveys, interviews, and data analysis to carry out specific research. In terms of other topics, China focuses more on the relationship between doctoral education and the country and society at the macro level, but foreign research content is richer, focusing more on the micro level. In terms of research trends, the research topics of doctoral students tend to be diverse. The research focus has shifted to the whole process of doctoral training, doctoral training system, and educational reform. The reference of relevant foreign research has been strengthened; the number of research groups has increased, focusing on the cultivation of professional doctors

and female doctors. At the same time, the research on the innovation ability and training quality of doctoral students has become a hot topic, and the research mode has gradually changed to the coexistence of countermeasure research and empirical research [16–18].

4. Methods

Narrative inquiry. Narrative inquiry was applied in this study to explore the detailed context in a real-world situation. It aimed to offer a more in-depth understanding of interviewees' perceptions and experiences in a real-life context. The narrative inquiry concentrated on exploring the cultures, interests, and experiences of participants through contacting scholars and interviewees. We conducted this study in a one of the "double first-class universities" in China. The selected university is a key and comprehensive university, which is directly under the Administration of the Ministry of Education.

Descriptive analysis. The gender of the interviewees in this study is 1:3, including 13 male and 31 female. The age of the respondents ranged from "Post 85" to "Post 95". The youngest student was only 24 years old, and the overall average age was 27.3 years old. Most of the students come from normal universities and comprehensive universities all over the country, and a few of them graduated from overseas universities. A total of 8 majors are enrolled in the select group, which are comparative education, teacher education, history of education, the principles of education, education policy and education law, special education, preschool education, and vocational and technical education. The communist Party of China (25) and the Communist Youth League (10) accounted for the overwhelming majority, along with members of the Jiu SAN Society and the Democratic League, and four people. There were two Hui students and one Tujia student among the participants. There were also three international students from Turkmenistan, Cameroon, and Vietnam.

The selected world-class disciplines. In this study, we have chosen education as one of world-class disciplines to explore the doctoral students' experience of their early doctoral campus life. The selected department has the national key disciplines of first-level education, 13 doctoral degree programs, 15 master's degree programs, and 5 undergraduate programs, among which special education and educational technology are featured by the Ministry of Education. It has a total enrollment of 2317 full-time students, including 530 undergraduates, 664 academic master's students, 148 full-time professional master's students, 304 doctoral students, and 85 international students.

5. Findings

Along with interviewees, we found that some early doctoral students are facing great pressure from social relations, daily life, study groups, and academic requirements, which results in the diversion or withdrawal of doctoral students. Due to the lack of understanding of the doctoral education system, early doctoral students are often isolated after entering the new environment. Their current situation does not meet their initial expectations, and it is difficult for them to balance academia, work, and life.

5.1. Social Contact in the Learning Community

As a result, they lack social contact and cannot integrate into the team, the community, and the learning community. Some interviewees pointed out that,

> "I graduated from S University with a master's degree. I am from L, H province. Now I have just come to Beijing Normal University to read doctor's degree, and I feel the pressure is quite big. I have chosen five courses in total this semester. I have been studying pedagogy for my master's degree. My goal this semester is to write two small papers, which I hope can be published. As far as I know, our doctoral students majoring in basic theory have postponed their graduation, and almost none of them graduate within 3 years. Many of my peers in the same major got their PHDS in 6 years, so I felt a lot of pressure. Worrying about whether I'll graduate on time." (THY-020).

5.2. Academic and Life Troubles during Doctoral Education Period

During the interview, many early doctoral students encountered different kinds of academic and life troubles during their doctoral education period. We found that, at the same time, their relationship with their supervisor; a lack of communication, interest, and motivation; and difficulty in finding meaning among early doctoral students also led to depression and other negative feelings. One early doctoral student indicated that,

> "I am not accustomed to the life of being a doctoral student. I learned from the reunion that most of doctoral students have been doctors for six years and hardly graduated on time. So, I want to graduate early and as late as possible. I also contacted my tutor, who advised me to read more books and not worry about writing my thesis and graduation. But I am still anxious about graduation, after all, I hope I can graduate early. Although I am in the first year of my doctorate, I have already begun to consider the topic of my doctoral thesis. I hope to study Japanese universities for my doctoral thesis, especially the history of Japanese education development after the Meiji Restoration. But all our students study the United States and Britain. My advisor also studied the history of American education. Therefore, I still worry about the support and guidance of my supervisor for my doctoral thesis. I also have a twin brother who is also a PhD student. So, my family pressure is relatively big. That's a big factor in why I want to graduate early." (YED-32).

This kind of low participation is manifested as self-inefficiency, cynicism, and study fatigue. At the same time, the excessive control or alienation of the academic community increases the negative experience of doctoral students and weakens their enthusiasm for learning. When the interaction with the academic community becomes a destructive friction or personal sacrifice is necessary, the doctoral student loses a sense of belonging and is forced to conduct research on his own, which leads to the doctoral student's lack of academic guidance and funding, difficulty in completing their thesis, and difficulty in starting their career, all of which constitute a vicious cycle. In the training program, foreign doctoral students also have the disadvantage of overemphasizing academic achievements. Blindly pursuing academic achievement reduces doctoral students' happiness and social welfare, leading to their psychological burnout and their loss of interest in scientific research. In addition, some interviewees discussed the student–tutor relationship as follows:

> "I feel under a lot of pressure. At the same time, I feel that it is very difficult to meet the requirements of teachers, because I am a cross-major, not pedagogy, so I feel it is difficult to learn pedagogy content. I plan to take more courses and read some classic books on pedagogy in the first year of my doctoral degree, to lay a solid foundation for my pedagogy research in the next semester. At the same time, I feel that the classmates around me are excellent, compared with them, MY academic pressure is greater. My heart wants to graduate on time, preferably in 3 years. At the same time, I am an only child, now 28 years old, and I feel even more anxious when my family starts pushing me to get married. All my college friends already have kids, and many of them have second kids. I felt a greater sense of urgency to finish my studies." (FRT-329).

5.3. Pressures from Doctoral Academic Performance

Along with the interview, many early doctoral students mentioned that for their doctoral academic performance, the status of their doctoral thesis publication is not optimistic, and the postponement of graduation is common. In environments where there is an emphasis on academic research, early doctoral students are also eager to achieve results, excessively pursue the quantity of academic publication rather than quality, and pursue publication speed rather than accuracy, which compromises academic integrity. In addition, publishing academic work is an inevitable task for PhD students who lack interdisciplinary academic backgrounds, international education, and research experience. For example, in

selected world-class disciplines, we found that the postponement rate for doctoral students in China's world-class universities is close to 40%, and more than 10% of them delay for more than two years, which has a negative impact on doctoral academic development, career choice, mental health, and financial support. One early doctoral student argued that,

> "My PhD is in teacher education. In general, I feel that my PhD life is only about study, besides study and study. Compared with the doctoral life, I feel the postgraduate life is more abundant. I started to attend the academic conference of my tutor in July today and do projects with my tutor. The task of scientific research is quite heavy. Especially since living in changing dormitory, I feel particularly tired and bumpy on the road. I feel more comfortable living out of the house. I live near the school now. My short-term academic plan is to complete small papers and apply for interdisciplinary projects. Although I have failed to apply for scientific research projects twice in the postgraduate stage, I am still applying for projects in the doctoral stage. I hope I can graduate on time, because my tutor is not in Beijing, but in Zhuhai all the year round. We organize a biweekly reading group on the methodological learning and qualitative research of doctoral research. However, I seldom interact with other students and attend private parties. I didn't think about graduating in 3 years. Don't put too much pressure on yourself. Oneself want step by step oneself go, oneself good depression. 4 years to 4.5 years of graduation is ok. There is only one student in our major who graduated in 3 years. The influence of master tutor on me. I have a boyfriend, 4 years younger than me. I am from Shandong. All my friends are married, and my boyfriend is studying for a master's degree. He was going to study Comparative education in England. My family and mother are urging me to get married soon. I am now facing the dual problems of study pressure and emotional pressure." (QER-321).

5.4. Inbalances in Work, Study and Social Life

In addition, the difficulties faced by early doctoral students in terms of balancing work; study and social life; the tension between teachers and students; the lack of external academic support; their own weak academic foundation; the lack of diverse development ability; and their own psychological problems hinder the progress of thesis writing and aggravate the phenomenon of postponement. One interviewee indicated that,

> "When I just got the doctor's admission notice, I was under great pressure and wanted to do something in this field. I felt even more pressure at the beginning of my doctorate term because my roommate worked hard, which brought me invisible great pressure. Sometimes peer pressure can be overwhelming. My doctoral research direction is to do the interdisciplinary of vocational education and educational informatization. However, my doctoral supervisor does not understand vocational education and information technology, so I am worried about whether he can guide me to graduate successfully in the doctoral thesis stage. Now I really hope to graduate on time in 3 years. In addition, I found that the circle was very small. There was no one to communicate with me at ordinary times. Most of the time, I was wandering alone in the library, dormitory, and classroom. I seldom communicate with others about my study and life problems. Overall, my PhD life so far has been depressing." (WHT-231).

6. Discussion and Conclusions

Along with the above findings, we found that in the Chinese context, cultural factors play an important role in influencing early doctoral students' attitudes towards the challenges and strategies of their early doctoral sustainable development, especially compared with those of Western countries [19,20]. Compared with Western countries, and due to thousands of years of development, China has created a rich and splendid culture. The Chinese culture is the spiritual pillar for continuous development. In the process of the

formation and development of the "common culture" and "common psychology" of the Chinese nation, it is the great thinker and educator Confucius who played the most important and influential role. China's traditional culture emphasizes authority and learning. From school to family, "supervision education", "obedience education", and "teaching and receiving education" only require rote memorization and passive acceptance. In the process of seeking knowledge, the conclusion of predecessors is often repeated more than one's own thinking, which negates the initiative of human beings as cognitive subjects with regard to objective existence. Along with the above, it is not easy to understand the challenges and strategies of early doctoral student sustainable development [21,22].

Based on the results of the interview, we found that, to improve the ability of innovation, early doctoral students should understand the history of the subject and the method of academic questioning, provide full play to the spirit of innovation, broaden the breadth of their answers to established research questions through brainstorming and peer collaboration, clarify the accuracy of their answers through mind mapping, and then carry out innovation practice. At the same time, faculty members also need to match doctoral students' academic needs and emotional needs and increase their positive emotions regarding innovation and exploration. In terms of the improvement of doctoral students' interdisciplinary ability, the higher education institutions should create a healthy interdisciplinary learning environment, optimize the interdisciplinary curriculum of doctoral students, carry out teaching guided by scientific research practice, promote communication and cooperation between disciplinary departments, build an interdisciplinary academic exchange platform, and realize the mutual sharing of knowledge of different disciplines [23].

Regarding the impact of psychological problems, such as anxiety and the demotivation of PhD students, students' psychological and spiritual problems have been of concern [24] but no solution has been found. As a hot topic, students' psychological problems "have been widely paid attention to in the field of higher education in recent years [25]. Many PhD students complain that it is difficult to write dissertations and find jobs and feel their life has lost its meaning. As a special group in term of higher knowledge, when facing a variety of pressures, some doctoral students are anxious; some are depressed; some are unable to bear the burden and drop out of school; and some even want to end their lives to free themselves, like trapped animals. Apparently, PhD students are in a mental health crisis [26].

Compared with previous published studies regarding doctoral education development and reform, this study offers a specific lens through which to explore early doctoral students' academic and living experiences on campus. It was found that some early doctoral students are facing great pressure from social relations, daily life, study groups, and academic requirements. Based on the literature review and results above, we found some key similar findings, such as the lack of understanding of the doctoral education system; the difficulty of balancing academia, work, and life; and a lack of social contact with the team, the community, and learning community [27,28].

To address the above problems and challenges of early doctoral students, we propose several effective solutions to deal with relevant concerns and questions. Students should also actively participate in various academic exchange activities and research projects to continuously acquire interdisciplinary knowledge and improve their interdisciplinary ability. In terms of the diversified ability of cultivation, the university should broaden the way by which doctoral students participate in school governance, improve their political consciousness and professional quality through party-building activities, and enhance their academic ability through project participation. Doctoral students themselves should also actively participate in social practice and volunteer activities to enhance their awareness and ability to contribute to society [29]. In terms of transferable ability and tacit knowledge-acquisition ability, schools should perfect additional and integrated curriculum design and evaluation systems [30].

In addition, the supervisor should create a good learning environment and guide and supervise doctoral students to participate in exchanges and scientific research, and doctoral

students should pay attention to the quality of learning and academic communication, to stimulate their self-development. In terms of psychology, schools and tutors should reasonably arrange the difficulty and content of courses; pay attention to academic training; and provide humanistic care to doctoral students to help them establish correct self-recognition, cultivate healthy psychology, and stimulate their academic interest and enthusiasm. Tutors and students should also cultivate a positive interactive relationship, so that students can receive social support in a positive academic community and establish their own academic goals and aspirations through the improvement of transferable abilities [31–33].

Regarding publication, the higher education institutions should build a diversified academic evaluation system; not make excessive, rigid requirements in terms of the number of papers, consulting reports, projects, patent inventions, and other forms of assessment; at the same time establish a diversion mechanism to improve the quality of doctoral students' work. The supervisor should clarify the main position of education and provide doctoral students with more comprehensive scientific research guidance. Doctoral students themselves should also establish correct cognition, focus on improving the quality of their research papers, and improve their research and writing abilities through interdisciplinary learning and academic exchanges. To prevent delay, the four aspects of society, school, supervisor, and funding are indispensable. The society should construct a macro environment and a system supporting doctoral education in the whole process of enrollment, teaching, and graduation examination. The school and the supervisor should improve the academic level of the doctoral students through a personalized guidance and tracking support system, provide them with financial subsidies, guarantee their welfare, and devise courses according to the characteristics of the discipline and students. At the same time, the school should improve the accountability and incentive mechanism of the supervisor and establish a benign interaction between subjects [34,35].

In addition, this study also provides future implications and is significant with regard to the doctoral sustainable education development context [36–40]. This study offers both a narrative inquiry and a semi-structured interview to explore early doctoral students' academic and living experiences on campus [41–43]. This study offers practical implications on how various elements might have affected early doctoral students' academic adaptation in a specific higher education institution context. Effective strategies and suggestions have been provided to enrich the field of doctoral educational sustainability practically [44–46].

Author Contributions: Conceptualization, J.L. and E.X.; data curation, E.X.; formal analysis, J.L. and E.X.; investigation, J.L. and E.X.; methodology, J.L.; project administration, J.L. and E.X.; resources, E.X.; supervision, J.L.; visualization, J.L.; writing—original draft, J.L.; and writing—review and editing, J.L. All authors have read and agreed to the published version of the manuscript.

Institutional Review Board Statement: Ethnical approval was received.

Informed Consent Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board of Faculty of Education of Beijing Normal University.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Anderson, G.L. Reflecting on research for doctoral students in education. *Educ. Res.* **2002**, *31*, 22–25. [CrossRef]
2. Alcock, L.; Inglis, M. Doctoral students' use of examples in evaluating and proving conjectures. *Educ. Stud. Math.* **2008**, *69*, 111–129. [CrossRef]
3. Appel, M.L.; Dahlgren, L.G. Swedish doctoral students' experiences on their journey towards a PhD: Obstacles and opportunities inside and outside the academic building. *Scand. J. Educ. Res.* **2003**, *47*, 89–110. [CrossRef]

4. Lee, A. How are doctoral students supervised? Concepts of doctoral research supervision. *Stud. High. Educ.* **2008**, *33*, 267–281. [CrossRef]
5. Pallas, A.M. Preparing education doctoral students for epistemological diversity. *Educ. Res.* **2001**, *30*, 6–11. [CrossRef]
6. Weidman, J.C.; Stein, E.L. Socialization of doctoral students to academic norms. *Res. High. Educ.* **2003**, *44*, 641–656. [CrossRef]
7. Schmidt, M.; Hansson, E. Doctoral students' well-being: A literature review. *Int. J. Qual. Stud. Health Well-Being* **2018**, *13*, 1508171. [CrossRef]
8. Cotterall, S. Doctoral students writing: Where's the pedagogy? *Teach. High. Educ.* **2011**, *16*, 413–425. [CrossRef]
9. Maher, M.A.; Ford, M.E.; Thompson, C.M. Degree progress of women doctoral students: Factors that constrain, facilitate, and differentiate. *Rev. High. Educ.* **2004**, *27*, 385–408. [CrossRef]
10. Gardner, S.K. The Development of Doctoral Students—Phases of Challenge and Support. *ASHE High. Educ. Rep.* **2009**, *34*, 1–127.
11. Brown, L.; Watson, P. Understanding the experiences of female doctoral students. *J. Furth. High. Educ.* **2010**, *34*, 385–404. [CrossRef]
12. Hopwood, N. A sociocultural view of doctoral students' relationships and agency. *Stud. Contin. Educ.* **2010**, *32*, 103–117. [CrossRef]
13. Lindsay, S. What works for doctoral students in completing their thesis? *Teach. High. Educ.* **2015**, *20*, 183–196. [CrossRef]
14. Carpenter, J. Researchers of Tomorrow: The research behaviour of Generation Y doctoral students. *Inf. Serv. Use* **2012**, *32*, 3–17. [CrossRef]
15. Wang, T.; Li, L.Y. 'Tell me what to do' vs. 'guide me through it': Feedback experiences of international doctoral students. *Act. Learn. High. Educ.* **2011**, *12*, 101–112. [CrossRef]
16. Caffarella, R.S.; Barnett, B.G. Teaching doctoral students to become scholarly writers: The importance of giving and receiving critiques. *Stud. High. Educ.* **2000**, *25*, 39–52. [CrossRef]
17. Bell-Ellison, B.A.; Dedrick, R.F. What do doctoral students value in their ideal mentor? *Res. High. Educ.* **2008**, *49*, 555. [CrossRef]
18. Thune, T. Doctoral students on the university–industry interface: A review of the literature. *High. Educ.* **2009**, *58*, 637. [CrossRef]
19. Sverdlik, A.; Hall, N.C.; McAlpine, L.; Hubbard, K. The PhD experience: A review of the factors influencing doctoral students' completion, achievement, and well-being. *Int. J. Dr. Stud.* **2018**, *13*, 361–388. [CrossRef]
20. Hopwood, N.; Paulson, J. Bodies in narratives of doctoral students' learning and experience. *Stud. High. Educ.* **2012**, *37*, 667–681. [CrossRef]
21. Deem, R.; Brehony, K.J. Doctoral Students' Access to Research Cultures-are some more unequal than others? *Stud. High. Educ.* **2000**, *25*, 149–165. [CrossRef]
22. Ku, H.Y.; Lahman, M.K.; Yeh, H.T.; Cheng, Y.C. Into the academy: Preparing and mentoring international doctoral students. *Educ. Technol. Res. Dev.* **2008**, *56*, 365–377. [CrossRef]
23. Wikeley, F.; Muschamp, Y. Pedagogical implications of working with doctoral students at a distance. *Distance Educ.* **2004**, *25*, 125–142. [CrossRef]
24. Pyhältö, K.; Stubb, J.; Lonka, K. Developing scholarly communities as learning environments for doctoral students. *Int. J. Acad. Dev.* **2009**, *14*, 221–232. [CrossRef]
25. Turner, C.S.V.; Thompson, J.R. Socializing women doctoral students: Minority and majority experiences. *Rev. High. Educ.* **1993**, *16*, 355–370. [CrossRef]
26. Franke, A.; Arvidsson, B. Research supervisors' different ways of experiencing supervision of doctoral students. *Stud. High. Educ.* **2011**, *36*, 7–19. [CrossRef]
27. Jazvac-Martek, M. Oscillating role identities: The academic experiences of education doctoral students. *Innov. Educ. Teach. Int.* **2009**, *46*, 253–264. [CrossRef]
28. Moyer, A.; Salovey, P.; Casey-Cannon, S. Challenges facing female doctoral students and recent graduates. *Psychol. Women Q.* **1999**, *23*, 607–630. [CrossRef]
29. Barnes, B.J.; Williams, E.A.; Archer, S.A. Characteristics that matter most: Doctoral students' perceptions of positive and negative advisor attributes. *Nacada J.* **2010**, *30*, 34–46. [CrossRef]
30. Gardner, S.K. The challenges of first-generation doctoral students. *New Dir. High. Educ.* **2013**, *2013*, 43–54. [CrossRef]
31. Pole, C.J.; Sprokkereef, A.; Burgess, R.G.; Lakin, E. Supervision of doctoral students in the natural sciences: Expectations and experiences. *Assess. Eval. High. Educ.* **1997**, *22*, 49–63. [CrossRef]
32. Spezi, V. Is information-seeking behavior of doctoral students changing? A review of the literature (2010–2015). *New Rev. Acad. Librariansh.* **2016**, *22*, 78–106. [CrossRef]
33. Li, L.; Li, W. Enrollment expansion and limitation: Measurement of doctoral talent cultivation scale. *Grad. Educ. Res.* **2019**, *20*, 8–14.
34. Li, Y. The driving force, influence, and development strategy of the expansion of postgraduate education in China. *Res. High. Educ. China* **2020**, *20*, 77–83.
35. Li, L.; Du, F. Regional differences and layout structure optimization of graduate education's contribution rate to economic growth. *Educ. Dev. Res.* **2020**, *20*, 28–36.
36. Li, F.; Wang, Y. The Influence of the scale of postgraduate education on national innovation ability: A Comparative analysis with the scale of undergraduate education. *Res. High. Educ. China* **2021**, *20*, 75–81.

37. Li, X.; Luo, Y. "Swamp" or "highland": An Analysis of the Misunderstanding of the development of Doctoral education for professional degree. *Fudan Educ. Forum* **2020**, *20*, 53–58.
38. Greener, S.L. Non-supervisory support for doctoral students in business and management: A critical friend. *Int. J. Manag. Educ.* **2021**, *19*, 100463. [CrossRef]
39. Kaur, A.; Kumar, V.; Noman, M. Partnering with doctoral students in research supervision: Opportunities and challenges. *High. Educ. Res. Dev.* **2022**, *41*, 789–803. [CrossRef]
40. Tuma, T.T.; Adams, J.D.; Hultquist, B.C.; Dolan, E.L. The dark side of development: A systems characterization of the negative mentoring experiences of doctoral students. *CBE Life Sci. Educ.* **2021**, *20*, ar16. [CrossRef]
41. McGee, E.O.; Botchway, P.K.; Naphan-Kingery, D.E.; Brockman, A.J.; Houston, S.; White, D.T. Racism camouflaged as impostorism and the impact on black STEM doctoral students. *Race Ethn. Educ.* **2022**, *25*, 487–507. [CrossRef]
42. Rao, N.; Hosein, A.; Raaper, R. Doctoral students navigating the borderlands of academic teaching in an era of precarity. *Teach. High. Educ.* **2021**, *26*, 454–470. [CrossRef]
43. Bishop-Monroe, R.; Di Paolo Harrison, B.M.; Knight, M.E.; Corritore, C.; York, A.S.; Rybarczyk, B. Preparing doctoral students to teach in an increasingly virtual world: A response to COVID-19 and beyond. *Online Learn.* **2021**, *25*, 166–181. [CrossRef]
44. Xu, X.; Sit, H.; Chen, S. International education through a bioecological development lens—A case study of Chinese doctoral students in Australia. *High. Educ. Res. Dev.* **2021**, *40*, 1342–1357. [CrossRef]
45. Santos, P.; Veloso, L.; Urze, P. Students matter: The role of doctoral students in university–industry collaborations. *High. Educ. Res. Dev.* **2021**, *40*, 1530–1545. [CrossRef]
46. Jackman, P.C.; Slater, M.J.; Carter, E.E.; Sisson, K.; Bird, M.D. Social support, social identification, mental wellbeing, and psychological distress in doctoral students: A person-centred analysis. *J. Furth. High. Educ.* **2022**, *30*, 1–14. [CrossRef]