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"Now You Can Stand on Your Own": Experiencing International Doctoral Students in Science Education through Autobiographical Research

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ABSTRACT
This paper is focused on the use of autobiography in science education that contains first-hand accounts of doctoral student narratives and the further step after graduation. The study utilized personal stories, incorporating telling one's story from the first author and sharing it to use difference productively. The story reflected his experiences pursuing a doctoral degree at a public university in Taiwan and returning to his home university in Indonesia. The space of the story is simplified into three themes: 'I am in the space of Taiwan' as the stage of exploration and engagement, 'I am part of East-Asian science education community' as the stage of consolidation, and 'I become a member of Indonesian science education community and my future progress' as the stage of entry. The study recommends best practices and features of a science education doctoral program that supplement doctoral student success. The study has also provided an overview to prospective doctoral students on making academic adjustments, especially for those from developing countries who plan to study abroad.

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Introduction

> *"Students often enter a doctoral program desirous of a research and teaching career, but with little "hands-on" understanding of the demands of such a program…. a stage model describes how students experience different challenges as they traverse the stages of exploration, consolidation, engagement and entry".* (Grover, 2007, p.9)

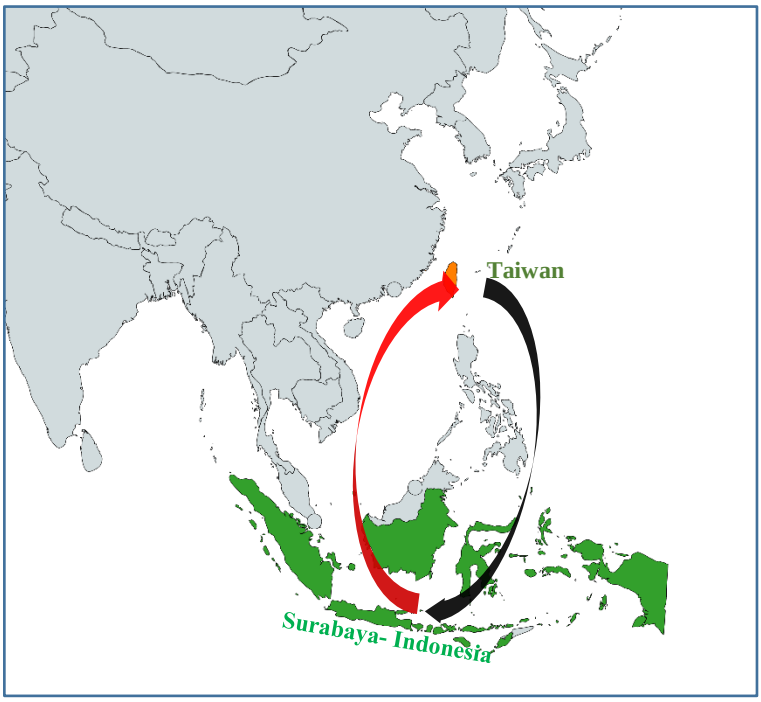
The first author is a physics lecturer in a pedagogical university in Indonesia and recently earned a doctoral degree in Taiwan. He started his career as a physics teacher in a middle school before becoming a physics department lecturer in a public university in Surabaya. During the doctoral study, he interacted and collaborated with numerous science teachers in Taiwan to adapt how Taiwanese teachers give students understanding throughout meaningful learning. With some international students, he studied their life adjustment in Eastern Taiwan to get the whole picture of how students succeed in dealing with Taiwan's academic, cultural, personal, and social environment (Suprapto et al., 2019).

He was the first doctoral science education student from Indonesia on his campus. With his supervisor (the second author), he learned many qualitative research methods, including

autobiographical research, to identify Indonesian students' experiences pursuing their doctoral degrees in Taiwan. He is also the first lecturer who holds a doctoral degree from Taiwan in the current department in Indonesia. After he returned to the home university to conduct the teaching and learning process at undergraduate and graduate levels, some colleagues wanted him to write some best practices and good experiences from Taiwan educational system. Therefore, this paper focused on academic mobility was manifested based on a personal story.

Figure 1

Illustration of Academic Mobility



Research about doctoral students' journeys has been concerned among previous researchers such as Cian et al. (2017) and Kaukko (2018). However, no study is concerned about how doctoral study of science education at Taiwan University. Many of them focused on western countries like the US, UK, Germany, Netherlands, and alike (see Bagaka et al., 2015). Eastern countries, including Mainland China, Hong Kong, Japan, Korea, and Taiwan were rarely got attention. On the other hand, this Asia Pacific region has also attracted many international students, and their initiated policies to raise the global reputation as education hubs (Lee, 2014; Ma, 2014). Specifically, the number of international students in Taiwan increase dramatically (Ma, 2014; Ministry of Education [MOE], 2015). Indeed, "out of a total of 117,970 international students who studied in Taiwan in 2017, 37,999 were from countries that are part of Taiwan's New Southbound Policy, including 10 ASEAN countries (35,460), six South Asian countries (1,839), and Australia and New Zealand (700), according to MOE data" (Everington, 2018:1). Additionally, these countries are the top five according to large-scale assessment results, such as TIMSS and PISA (Driskell, 2014). Therefore, study about the student in East Asia should be considered that probably gives different perspectives with western countries.

In the discussion section, the authors initially reviewed the perspectives of autobiographical research in science education. By following the sequence of Grover (2007), they stepped the narration stories into the stage of exploration and engagement, consolidation, and entry. Through these highlights, the space of the story is simplified into three themes: 'I am in the space of Taiwan' as the stage of exploration and engagement, 'I am part of East-Asian science education community' as the stage of consolidation, and 'I become a member of Indonesian science education community and my future progress' as the stage of entry.

Autobiographical Research in Science Education

"Autobiographical research is concerned with studying one's own (auto) life-history (biography); as a form of self-study, it is very supportive of practitioner research".
(Taylor & Settelmaier, 2003, p.234)

During the last two decades, the trend of qualitative research in science education (SE) has grown tremendously (Devetak et al., 2010; Taylor & Settelmaier, 2003). Specifically, Devetak et al. (2010) have indicated that research approaches prevail in papers published in science education research; the qualitative research approach was used most frequently by the authors. Previously, Halai (2005) investigated teachers' experiences of learning science through an autobiographical reflection. Meanwhile, identity discourse and science teaching philosophies were also studied through an autobiography by Hsu et al. (2017). Avraamidou (2018) investigated female teachers' identities as live experiences through a life-history approach. Among qualitative research, autobiographical research in SE has become an alternative in giving critical inquiry of self-reflection research (Li, 2018; Lindsay et al., 2016; Maulucci, 2011). Autobiographical research is emerged from the biographical study, a form of narrative inquiry in which the researcher writes and records his or her experiences (Creswell, 2013). "Autobiographical researchers write in the narrative (first-person) voice." (Taylor & Settelmaier, 2003, p. 234). The authors used "I" for direct sentences and "he" for indirect sentences.

The practice of autobiographical research encompasses narrating in the first-person voice to shape his/her practice and opens a passageway between the situation of researcher and nature (de Caux et al., 2017). In other words, an autobiography ought to be reflected as telling of one's story based on memories to use difference productively (Barton & Darkside, 2000). It pronounces schemata that form the memorial basis of the self. It also advocates a memoir of one's life and serves to designate a specific type of knowledge. A sort of autobiography emphasizes greater objectivity in developing local scientific knowledge, and its practice is mediated by tacit knowledge to provide an opportunity for everyone to do reflective practice (Lake, 2015). By doing so, the personal story demonstrates a never-ending process since it routes the process of meaning-making of tacit knowledge as life experiences or memoirs (Leshem & Trafford, 2006).

The primary goals of autobiographical research in SE are to cultivate pedagogical thoughtfulness. Through a writing process, researchers can recognize how to increase their interactions with others (Çepni, 2021; Ormancı, 2020; Soong et al., 2015). Therefore, by revealing something of the first author's professional identities through writing as inquiry, the authors try to be consistent with autobiographical research ethos. In 'writing as inquiry,' the autobiographical researchers stimulate their critical self-reflective thinking (Richardson, 2000). Autobiographical writing produces narratives about our lives. It serves to enable SE researchers to put their interpretive paradigm to the context of their historical biography (Taylor & Settelmaier, 2003).

Methods

In this study, the authors emphasize that autobiography is a qualitative method. Qualitative research attempts to simplify the complexity of understanding social reality, use thick descriptions to understand life experiences, and pay special attention to the exploration of processes, perspectives, and meanings to propose new phenomena for research, argument, and reflection. Data were collected from the analysis of personal diaries and reflective journals (Leshem & Trafford, 2006). We used 'I' in scholarly writing to reflect on the experience matter (Lindsay et al., 2010).

The Trustworthiness

"A story's validity can be judged by whether it evokes in readers a feeling that the experience described is authentic and lifelike, believable and possible; the story's generalizability can be judged by whether it speaks to readers about their experience". (Ellis, 1997, p. 133)

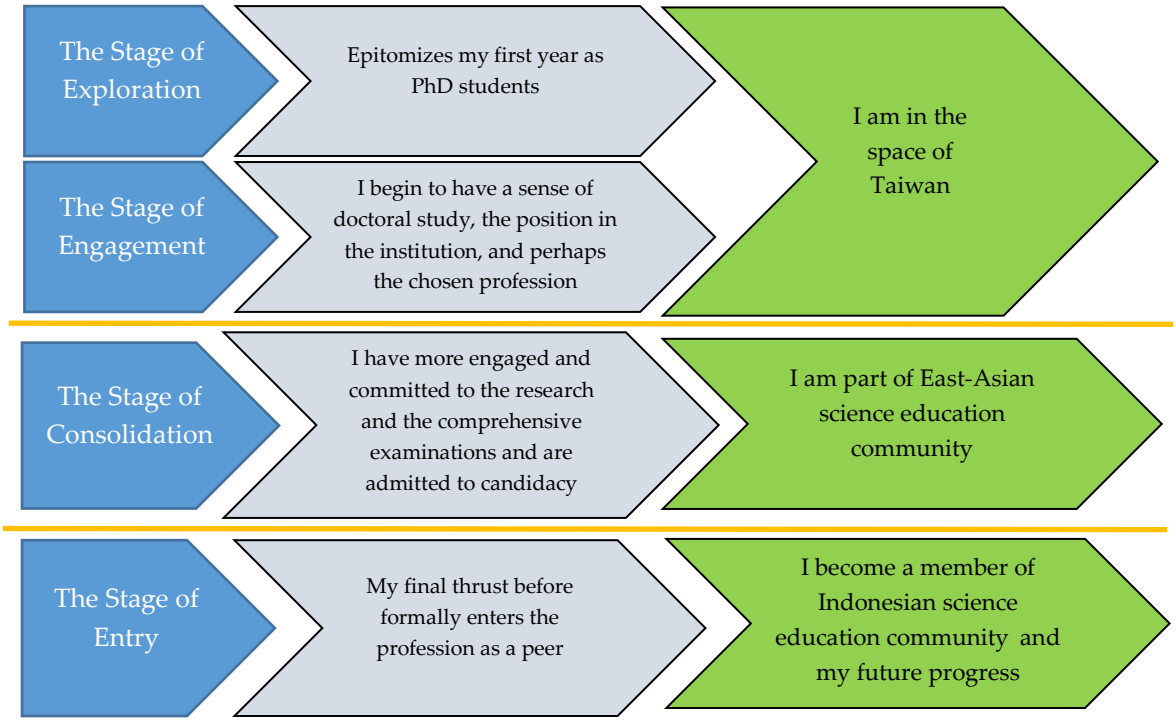
The trustworthiness of the research is raised from the role of memory and the 'truth' of autobiography, where I, as a person, recall my past. It is pinpointed that the idiosyncratic retrospective reflection in writing autobiography colors the story with hindsight, causing the first author to make sense of the past (Lindsay et al., 2016; Power et al., 2012). It is noted that the written words are not generally subject to further inquiry in autobiography even though it follows the process of elaboration of ideas and probing of concepts (May, 2008). Additionally, as part of the narrative study, the following aspects of a respectable study in autobiographical research to support the mark of trustworthiness: "collects stories about a significant issue related to this individual's life, develops a chronology that connects different phases or aspects of a story, tells a story that reports what was said (themes), how it was said (unfolding story), and how speakers interact or perform the narrative, and reflexively brings himself or herself into the study" (Creswell, 2013, p. 259).

Establishing Findings

For establishing the themes, the authors followed the steps of Grover (2007, p. 9). The conceptual framework is illustrated in Figure 2.

Figure 2

The Process of Establishing the Themes



Findings and Discussion

I am in the Space of Taiwan

Since September 2014, I was a doctoral student at a public university in Eastern Taiwan. The motto of the campus, "from the east to the best," inspired me to study faster in holding my degree and motivated me to become the best in my journey. My campus is the second-largest university in Taiwan and ranks about 20 out of 160 universities in Taiwan. In almost three years (971 days), I experienced life stories as a critical self-reflection that simplified into four (4) subthemes.

I chose Taiwan as a place of study for several reasons. First, the education system in Taiwan is of high quality and implements the internationalization of higher education by accepting many international students. Second, Taiwan is one of the countries in Asia that offers scholarships for Indonesian students. The scholarships offered also vary, ranging from scholarships for language schools to undergraduate, master, and doctoral education levels. Every year, the Taiwan Government, through the MOE, offers the Taiwan Scholarship Program scheme to international applicants with scholarship coverage consisting of living expenses allowance and tuition fee subsidies. Third, Taiwan is located at the heart of the Asia-Pacific region, which links East and Southeast Asian countries. The first author participated in the 3 + 1 scholarship program scheme as part of the New Southbound Policy, which means three years financed by the Indonesian government and one year at the expense of the Taiwan government. However, the first author completed his doctoral program for approximately three years. Fourth, tuition and living costs in Taiwan are also relatively cheap compared to other countries. Fourth, Taiwan has high technology and a strong economy. As one of the "four tigers of Asia", Taiwan has witnessed exponential economic growth over the past 50 years and has established itself as a key country in the international market (TaiwanToday, 2020). Fifth, Taiwan is a safe country with a low crime rate.

The first author studied science education rather than pure science is related to the linearity policy by the Indonesian ministry of education and culture. The educational background when taking undergraduate is physics education and taking a master's in science education. Therefore, the choice of science education at the doctoral level is logical and linear. This linearity policy will also be beneficial in submitting professorship proposals in the future.

Adjusting to the Contents of the Curriculum Offered

With some prior knowledge from a master's degree in Indonesia, his first journey was about the curriculum contents offered. The following is the doctoral class details of the educational goals: (1) to cultivate advanced talents engaged in science academic research, (2) to cultivate professional leaders in science education with global vision and caring, (3) to cultivate professional leaders in science education innovation, (4) train all levels of school science teaching leaders, and (5) to cultivate the public science education and scientific communication of professionals [translation from Chinese] (Department of Education and Human Potentials Development [DEHPD], 2014). Meanwhile, to achieve these goals, I must perform at least five professional ability indicators:

- Have the ability of science education-professional theory development and practice.
- Have the independent research ability of science education.
- Have the science education-innovations and problem-solving abilities.
- Have the ability of international academic exchange.
- Have scientific teaching-professional knowledge.

The courses offered by doctoral Program of Education in Science Education in my university are categorized into obligatory courses and elective courses. For obligatory courses (at least 12 credits), I took Methodologies of Educational Research (3 credits), Research Seminar on Educational Reform (3 credits), Individual Study (4 x 1 credit), and Dissertation Guidance (2 x 1 credit). For elective courses (at least 16 credits), I chose 3-credits eight courses which are Questionnaire Design, Methodology of Qualitative Research, Study on Multiple Intelligences Curricula and Instructions, Methodology in Science Education, Social Cognition and Science Communication, Advanced Issues of Conceptual Change in Science Teaching, Measurement and Statistics in Science Education, and Advanced Research in Physics. Thus, I selected 24 credits for elective courses.

Meanwhile, the Dissertation credit was equal to the total credit of obligatory and elective courses (36 credits). Overall, I finished 72 credits in my doctoral degree in education with a specialty in science education, which is common. As reported by McBrayer et al. (2018), doctoral students must complete a minimum of 69 graduate credit hours that are offered in three tiers.

The external factor like the situation of higher education in my original country is also affected. As I mentioned previously, because of my position as a junior lecturer, absorbing many knowledge and information through the doctoral courses was mandatory. For matching the direction of my original university and my host university in Taiwan, I classified and carefully checked the description of the course. The following are examples of the description or the goal of the courses that I took in my doctoral degree.

#1 Questionnaire Design: The goals of this course are to enable students to (a) think critically about measurement issues in both research and applied settings, (b) read and understand published research that employs standard psychometric methodology, and (c) apply psychometric methods appropriately and make informed decisions about measurement issues in their research [#my reflective journal].

Course #1 matches the needs of my original university. The understanding of psychometric methods is substantially hoped by many Indonesian researchers. Some features were offered regarding this course: 1) it was designed to provide theoretical principles of measurement that apply to teaching and research. 2) Considerable attention will be directed toward understanding basic psychometric concepts, including the topic of scaling, classical test theory, and its approach to testing reliability. 3) The course was designed to learn generalizability theory and its approach to test reliability, principles, and procedures for investigating test validity, statistical issues of using tests for selection and classification, principles of test construction, and approaches to item analysis, including item response theory. All these features are relatively new and helpful in Indonesia. Additionally, part of the course was devoted to current measurement issues and practical applications to these practical principles. This course has also conducted a research project and resulted in some publications (see Suprapto, 2019 and Suprapto et al., 2019).

#2 Research Methodologies in Science Education: The course aims to understand the theories and practices of quantitative and qualitative studies in science education [#my reflective journal].

The teaching approaches in this course use project-based learning. As the lecturer-initiated lecture with a brief overview of the research philosophy, Professor Lin explained and modeled quantitative, qualitative, and mixed-method, then assigned students to analyze some papers (paper report), and finally, student conducted a mini-research. The result of this course was a journal paper. One was presented in East-Asian Association for Science Education (EASE) 2016 Tokyo (see Table 1).

Through course #2, I have also analyzed and discussed the various methodologies via reading the relevant academic articles in the important science education journals. Indeed, I (with a group of researchers) can develop my knowledge through a research project: "Mapping of publications of Indonesian science education researchers in Scopus indexed journal."

It was noted from my research diaries that the decision to select specific courses was due to the linearity and the needs of my dissertation research. All the courses fully supported the dissertation. Finally, the first author investigated Indonesian pre-service teachers' (PSTs') content knowledge (CK) and pedagogical content knowledge (PCK) based on their conception of physics learning and to predict their self-efficacy for physics teaching in his dissertation. A mixed-method with the explanatory sequential design was utilized in his study.

Understanding the Wishes of the Supervisor and Graduation Rules

One of the most dominant influences on doctoral students' persistence is their relationships with advisors (Barnes, 2009; Bayona-Oré, 2021; Ferrer de Valero, 2001; Phillips & Pugh, 2010). I have remembered at the end first semester of my doctoral study; the first supervisor called me about an important academic issue.

"I will join teacher sabbatical leave for one semester in the US this coming spring semester, so I delegate one person to accompany you, especially for working with advanced statistics. He is an expert in structural equation modeling. I guess he wishes to help you with your quantitative study'.

When my level was in the stage of exploration on the first-year study, my supervisor helped me walk on the right trajectory. He believed that the pendulum did not swing until it existed in the program. Meanwhile, the second supervisor kept me on track with physics education and qualitative research. As a student with two advisors, I recognize the duality of the relationship with advisors. However, I chose them by considering that they are most available, knowledgeable, responsive, and supportive to my needs (Grover, 2007). The academic capacity, knowledge, research experience of the supervisor is significant, and the supervisors understand the regulations and rules of the supervision process (Bayona-Oré, 2021).

Turning to the qualifying exam, each student in my department should take two subjects of obligatory courses and one subject of elective course. In each subject, the total marks are 100, and the minimum passing score is 70. Finally, I passed all three courses (methodologies of educational research, research seminar on educational reform, and questionnaire design). Regarding the graduation rules, I must finish and pass at least 28 credits, both obligatory and elective courses, before submitting for viva. Additionally, I must collect at least 12 points from the international conference as a presenter, journal publications as the first author, and awards.

Some information regarding the requirement of earning a doctoral degree was summarized in Table 1.

Table 1

List of Works as a Requirement of Completing the Doctoral Degree

Source of point	Country (Institution)	Category
Publication in *Journal of Baltic Science Education*, *16*(1), 7-19 (Suprapto et al., 2017)	Lithuania	Article (SSCI-WoS)
Publication in *Pedagogika*, 126(2), 214-227 (Suprapto et al., 2017).	Lithuania	Article (Scopus)
Publication in *Chemistry*, *25*(5) 718-731 (Suprapto et al., 2016)	Bulgaria	Article (Scopus)
Presentation of paper entitled "The implementation of MI in the classroom: From empirical into critical review", Int. Conf. on Learning and Teaching (ICLT) 2015	Singapore	International Conference
Best paper award of ICLT 2015		Award
Presentation of paper entitled "Learning profiles and physics' self-efficacy among Indonesian university student", Int. Conf. of East-Asian Assoc. for Science Education (EASE 2015)	Beijing Normal University, China; EASE committee	International Conference
Presentation of paper entitled "Unless you can explain it to your grandmother": Voices from graduate students and their professor regarding the course of science communication, EASE 2016	Tokyo University of Science, Japan; EASE committee	International Conference
Young Scholar Award 2016		Award
Presentation of paper entitled "College students' conceptions of Newtonian mechanics", the 31st Annual Int. Conf. of Assoc. of Science Education Taiwan (ASET) 2016	Pingtung, Taiwan	International Conference
Phi Tau Phi Scholastic Award 2017	Taiwan	Award

Filling the Gap between Initial Knowledge and Knowledge to be Learned

In the first year of my doctoral study, I stood at the stage of exploration (Grover, 2007). The biggest obstacle in this stage is adjusting myself within a new context. I still remember when three professors in the methodology of educational research (philosophy) allowed me to present my master thesis. I used Research and Development (R and D) design [a universal research design in a master thesis in Indonesia] to develop learning materials of senior high school students with problem-based learning models in my thesis. Surprisingly, one professor said that "your design is not enough for categorized into educational research; you should explore more what is going on after the

development of learning materials. Taking, for example, you can research the results of the implementation of those learning materials" [my diaries]. This short comment implied I to take more methodology of research courses to reduce the gap between my initial knowledge and the basic knowledge of the doctoral student in education. Accordingly, with supervisors' guidance, I took two more courses concerning the methodology of research, namely research methodology in science education and methods of qualitative research. I took nine credits for the methodology of research to make a balance between prior and new knowledge. The decision is one of critical reflection (reflexivity) in adaptations of my academic adjustment by assimilation (adjusting the old knowledge to new information) and modification (modify of new knowledge and further develop for better understanding).

Having almost three years in Taiwan as Research Assistant (RA) and Teaching Assistant (TA), I gained experience as a leader in a group meeting. Additionally, I helped the department in some events (i.e., giving a speech to the new international student, hosting a city educational exchange: Cambria junior high school –the UK and Hualien junior high school-Taiwan). Moreover, I have also taught the Indonesian language as part of the general education curriculum at my university. All those activities are part of the value-added axis in the stage of engagement. It means doctoral students initiate to have a sense of position in the university and conceivably start their chosen career. These efforts are the stage where doctoral students settle on pedagogical ideas (Grover, 2007).

Fascinating All New Information from Faculty Members, Staff, International Students, and Local Students

Previous researchers indicated the importance of making a good relationship with all colleagues on the campus. Taking, for example, Grover (2007) suggested that "it is useful for students to have a breadth of knowledge in the field and create their own 'schema' or understanding of key areas and their relationships, it is just as important to start building depth in a particular area." Therefore, doctoral students should strive to create synergies between them choosing the areas of research they are interested in. These could be in individual coursework projects, research projects, and teaching experiences with colleagues or faculty members, or reviews of articles and topics. For instance, from international and local students with the same research area, creating synergies between course projects that require research papers can facilitate the creation of better products; improve in-depth literature studies in an area (Soong et al., 2015). Additionally, the benefit of making a good relationship is controlling the timetable and possibly getting students to keep going on a dissertation topic. In my experiences, the new information through email from faculty members and staff, social media grouping via Line and Facebook, joining the international students, and local student's association were very helpful in academic success.

Supervisors and faculty members need to be aware of the problems involved in English writing for all doctoral candidates and support them in developing transformative research (Sala-Bubaré et al., 2018). In dealing with academic success, the university should compromise with doctoral students in upholding their writing development (Çepni, 2021; de Caux et al., 2017; Sala-Bubaré et al., 2018). Therefore, the department also invited an expert in academic writing.

> "I still remember, at that time, the department invited an expert of academic writing from Taipei to trigger all students for better writing, especially for dissertation, thesis, and journal publication" [#my diary].

Moreover, I also optimized the existence of students' associations on the campus for sharing ideas and knowledge regarding the needs for improving academic writing. Every Friday afternoon, we have English corner activities in which one of the missions is peer-proofreading of proposal, thesis, dissertation, or journal manuscript.

I am Part of the East-Asian Science Education Community

Visiting Some Schools and Academic Field Trips as Ways of Data Collection for Science Education Research

Based on my diary, I exemplify how an academic field trip and attending Taiwanese school during my study allow me to do a small research project. I raised two elective courses, 'Study on Multiple Intelligences Curricula and Instructions' and 'Social Cognition and Science Communication' for illustration. The first course discussed and explored the theory of multiple intelligences by Howard Gardner and its application in educational practice. The course discarded the traditional perspective on intelligence and defined an intelligence theory as the capability to solve problems and to generate solutions that are valued within some cultural settings. The theory has a significant impact on teachers and education implementation. It backs up the fact of individual differences and asks for innovative teaching and evaluation of diverse learners. After completing the course, students should apply this theory and the comprehensive school education in the curriculum, teaching, assessment. Also, looking forward to this understanding helps students make relevant teaching and research. Finally, I published an article with multiple intelligence themes in (a science) classroom in collaboration with the supervisor. This paper explained how I joined an academic field trip and visited a school (Binmao elementary and junior high school in Taitung County) to collect data (Suprapto et al., 2017).

For the second course, I have succeeded in-print article highlighting the importance of science communication courses in graduate school, which had already been published in a reputable journal (Suprapto et al., 2021). This paper is also about how an academic field trip followed by a semi-structured interview can manifest a qualitative research paper. Here, we can see my reflective journals and highlight that design-based research (from the course) is an effective methodological approach in doctoral research beyond data collection, and it has the perspective to escort future research direction (Goff & Getenet, 2017).

Having some experiences in visiting school inspired the first author to visit the school while researching and writing for publication, including what is currently being done, a lot of physics education research is spawned from visits to schools; for example, what is currently being carried out is the exploration of high school physics laboratories in Indonesia using the photovoice technique. The doctoral by publication is much needed at this time (Peacock, 2017).

Joining in the Association of Science Education Community

As part of the science education community in East-Asia and Taiwan, I was automatically a member of the East-Asian Association for Science Education (EASE) and Association of Science Education in Taiwan (ASET). The EASE aids a robust platform for science education researchers in East Asia to share and exchange ideas and practices. The mission of EASE, including: "fostering networks among researchers, being a platform of collaboration and cooperation, contributing to policies and practices through research, and enhancing research relevant to our culture and heritage" (EASE, 2018).

During almost three years in Taiwan's academic climate, I participated in six international conferences and one doctoral student forum in different countries (four times in 2015 and two times in 2016). Starting from International Conference on Learning and Teaching (ICLT 2015) at the end of March in Singapore, the journey continued to the International Conference of East-Asian Association for Science Education (EASE 2015) in Mainland China. At the end of the year, I joined the 31st Annual International Conference of Association of Science Education Taiwan (ASET 2015) in Southern Taiwan. In the following year, I participated in the 3rd Graduate Students Forum at my university in Taiwan in May 2016. Finally, the International Conference of East-Asian Association for Science Education (EASE 2016) on August 26-28 in Japan ended my adventure while studying.

I realized that the doctoral is considered the highpoint of academic study – decidedly precious and brimming with considerably held beliefs (Peacock, 2017). Therefore, all the efforts were aimed at collecting points as requirements for viva and graduation. I also realized that the design-based research approach could bring me as a researcher and practitioner together regarding a common purpose to design context-based solutions to educational problems (Goff & Getenet, 2017). Before I returned to my home country, I also represented Southeast Asian students in an international forum organized by National Association for Research in Science Teaching (NARST), namely Sandra K Abell Institute for Doctoral Students (SKAIDS 2017) in Taipei on June 24-28.

Participating in Several Competitions which had the Opportunity to Get an Award as A Contribution to the University and Country

A series of international conference activities provided a chance for me to win several awards as follows which greatly inspired and motivated the next student candidate and gave self-criticism to me: (1) The 2017 'Phi Tau Phi' Scholastic Honor Society of ROC (Chinese: 中華民國斐陶斐榮譽學會); (2) Young Scholar Awards of EASE 2016, Tokyo University of Science (TUS) Japan; and (3) Best Paper Awards on International Conference on Learning and Teaching (ICLT) 2015 Singapore.

I Become a Member of the Indonesian Science Education Community, and My Future Progress

Finally, the stage of entry is the final step before the doctoral students formally enter the profession as part of the community. They must deal with tenure enter of job and broader notions of career, job satisfaction, and research stream. Before I returned to my home country, my second supervisor said that "After much hard work, you finally got the campaign off the ground, you learn everything perfectly, you got it down to a fine art, now you can stand on your own feet!". He believed that I could think on my feet and adapt to a new situation quickly. Accordingly, I should manage the transition from the home institution to the real world. In other words, the doctoral is in the era of 'productivity' or doctoral concerning its success in its practical conduction (Grimm, 2018) and shifts in self-identity (Woolhouse & Cochrane, 2010). As part of the practical conduction, the following are the impacts of my doctoral experiences in my academic career.

Developing Research Group of Philosophy and Physics Education Curriculum

I maximize my doctoral experiences to propel my career. When I returned to my original campus, I found that the program of physics education is specialized into four groups of expertise: philosophy and physics education curriculum, theory and innovation of physics learning, assessment of physics learning, and physics learning media. I decided to be part of a research group of philosophy and physics education curriculum. The decision reflects 'my identity in my career' (Woolhouse & Cochrane, 2010). By doing so, I develop my skills with mixed-method study in balancing between quantitative and qualitative philosophy. I use my doctoral research knowledge to use philosophical thinking, epistemological perspectives, and analytical models to explore the real world through a quantitative and an interpretive standpoint.

Transferring Knowledge through Invitation as a Keynote Speaker, Hosting Seminars and Conferences, and Contributing as an Editorial Member of the Journal

As practical conduction, I experienced one time as an invited speaker and two times as a keynote speaker in an international conference after graduation. I gave a lecture about three decades of research in PCK in science (physics) education and the prospect. This topic is closed with my

dissertation topic. The second is a national seminar withheld by my university. The title that I spoke about was "demographic sources as local wisdom: the potency of Indonesian physics education researchers in conducting survey research." The last is an international education conference on science, technology, education, arts, culture, and humanity. The conference topic is "interdisciplinary challenges of humanity education in the digital era" (STEACH, 2018). At this conference, I gave a lecture entitled productivity of Indonesian science education researchers in Scopus-indexed journals: challenges and opportunities.

Having experience while studying at a public university in Taiwan, I experienced as a chairman of *Seminar Nasional Fisika* (SNF) 2017 and a steering committee and technical chairman of the 2nd Mathematics, Informatics, Science and Education International Conference (MISEIC) 2018, which is organized by the initial university, *Universitas Negeri Surabaya*, Indonesia. Moreover, I also became the editor-in-chief of the proceeding of the international conference on science and technology (ICST) 2018.

I used my dissertation as a steppingstone to a university faculty position. It is noted that based on my academic experiences, especially in publication, brings me as an editorial member of a national and international journal. The first is *Jurnal Penelitian Fisika dan Aplikasinya* (JPFA) – Journal of Physics Research and Its Application, *Jurnal Pendidikan MIPA* (JPMIPA) – Journal of Math and Science Education, Studies in Philosophy of Science and Education (SiPoSE), and Studies of Learning and Teaching (SiLET).

Figure 3

The Contribution as an Editorial Team of Scientific Journal

Engaging a Publication-Acceleration Team

I used the dissertation writing experiences as a vehicle for publishing. Accordingly, I joined a publication-acceleration team. The team was established to increase the capacity, ranking, and international publications of my university. My specialty in this team is giving a lecture about how to do Indonesian researchers in selecting mathematics, science, and education journals. As my experiences when published some articles in Scopus-indexed journals (i.e., Asia Pacific Forum on Science Learning and Teaching, International Journal of Emerging Technologies in Learning, International Journal of Instruction, Journal of Baltic Science Education, Journal of International

Students, Journal of Turkish Science Education, *Pedagogika*, and many more), I shared my understandings, experiences, and challenges.

Conclusion and Implications

This research journey comprises excavating my personal life history, identifying academic and educational issues together, representing them in story form, and sharing them through professional story writing. My research journey was empowering and insightful. In reflecting critically on this writing, I realized that I have my reflection as a personal identity. I apply how self-reflection brings into practical conduction. It helps me transfer some academic and educational values to new international students, new Indonesian students, to study abroad. I know that my reflection is not outstanding, and neither is my shared information through story writing. However, through these experiences, the essential goal of autobiographical research in developing pedagogical thoughtfulness is achieved.

The journey covers three insights: what was the excellent, good, or needs improvements. As part of an extraordinary journey, we learn how the first author as a doctoral student successfully adapt well academically and non-academically. He interacts with supervisors, overcomes language problems, joins communities, and implements knowledge of science education between countries as a form of academic mobility. Of course, post-doctoral independence is excellent and inspires new doctoral students. In addition, how a doctoral student completes his studies with extraordinary outcomes, publications, visits to various countries through international conferences, and obtaining several awards have also inspired a new generation.

Many things must be sacrificed to achieve all that has been stated. It can be said to give up some free time by focusing on the studies. However, the thing that needs attention in this journey is, of course, as a doctoral student, the first author went the extra mile compared to the other students.

This autobiography research gives only a brief story reflected the first author's experiences when pursuing a doctoral degree at a public university in Taiwan that simplified into three stages of the journey: when he parts of Taiwanese, when he parts of East-Asian community, and when he returns to the home country. This study will also strengthen specific "pull factors" of international students' decision-making process of studying abroad (in particular: Taiwan) in the domain of science education. On the other hand, Indonesian students will also be reinforced on their "push factor" of the educational journey. The Indonesian government will support internationalization and the foundation of the *glonacal* (global-national-local) approach in their higher education policy.

Some implications about getting a quality doctoral or becoming a doctoral student are proposed. Firstly, this study's theme should become a steppingstone for doctoral students' success. Secondly, this narrative study has provided an overview to prospective doctoral students or doctoral students on making academic adjustments, especially for those from developing countries who plan to study in a country with a more advanced level of education. To sum up, this study considers best practices and some features of a science education doctoral program that supplements doctoral student success.

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