Article 5

Filling the Gaps: Unlocking Teachers Skill Acquisition in Research Mentorship

Nelwyn L. Tejada

Abstract

Teacher-provided research mentorship is essential for developing students' scholarly abilities. However, limited training results in skill gaps, presenting challenges for educators guiding student projects. This phenomenological study aimed to elucidate how teachers independently strengthen mentorship capacities when formal development opportunities are scarce. Semi-structured interviews were conducted with eight secondary school teachers actively engaged in mentoring. Data analysis identified four key themes on self-directed skill improvement strategies: pursuing professional development, building collaborative partnerships, engaging in self-learning, and adapting approaches. Findings provide insights into teachers' intrinsic motivation to address competency deficiencies without structured training. Participants demonstrated commitment through informal learning channels like conferences, reading, collaborations, and reflective adjustments. The study offers a conceptual model to inform training interventions and communities promoting sustainable mentorship growth. By highlighting informal pathways, it furthers understanding of how teachers continuously cultivate expertise and advance student support amidst constraints. Ultimately, this suggests the importance of facilitating professional empowerment for optimized research learning.

Key Words: Research Mentorship, Teacher Training, Professional Development, Self-Directed learning, Skill Acquisition

Introduction

Teacher-provided research mentorship is crucial for developing students' research abilities and passion for scholarly inquiry. Studies highlight the importance of research mentorship in academic and career development (Agricola et al., 2018; Walkington & Rushton, 2019). Mentorship proficiency enhances student academic experiences and significantly contributes to developing research skills, critical thinking, and preparedness for future roles (Ahmad et al., 2021; Balandya et al., 2022). Due to the complexity of researches, teachers must acquire diverse mentorship skills to address various challenges.

Effective student research mentorship under teacher guidance requires abilities beyond standard educational development. Fundamental skills include clearly conveying concepts, providing constructive feedback, and nurturing open discussion (Eby et al., 2013). Equally important is a thorough understanding of the full research process, from methodology to dissemination. When done correctly, mentorship benefits both mentors and mentees, emphasizing the importance of meaningful relationships (Vater et al., 2022). Successful mentors also demonstrate expertise such as emotional intelligence, empathy, humor, and patience (Caruso et al., 2019; Xu & Payne, 2013). For instructors, continuously refining mentoring skills in the long-term is dynamic, necessitating periodic self-assessment and lifelong commitment to professional growth. The goal is to optimize the advisory abilities of student researchers.

Nelwyn L. Tejada, Learning Area Coordinator, Research Basic Education School, Saint Louis University, Baguio City, Philippines

05-IJTETV4I201_p46-57.indd 46 07-07-2024 15:48:31

Limited mentorship training among educators has resulted in widespread skill deficiencies, highlighting the need for professional development to strengthen research guidance competencies. Educators sometimes lack specialized training in mentoring student research, which can lead to noticeable gaps in their skills and limit their ability to provide high-quality guidance (Brown et al., 2009). Common deficiencies include scaffolding the process, delivering constructive feedback, and facilitating independence (Overall et al., 2011). Without addressing these issues, teachers struggle to assist mentees in refining topics, rigorous methods, data analysis, and reporting (Cutillas, 2023; Fongkanta et al., 2021).Consequently, there is a lack of support for the core research aspects. Bridging shortfalls through focused training and professional growth is paramount for teachers to successfully coach exploration and maximize learning experiences, necessitating commitment to ongoing mentor competency development (Johnson & Gandhi, 2014; Sood et al., 2016).

Previous studies have highlighted the key practices for training teachers in research mentoring. Fragkoulis and Michalou (2018) advocated continuous programs to help teachers acquire mentorship skills to guide student research. An important focus in professional development is scaffolding the research process (Zachary & Fain, 2022). Training prepares mentors to assist students in each stage, from forming hypotheses to analyzing data and presenting findings. Effective programs outline strategies, such as helping frame questions, designing experiments, interpreting results, and navigating ethics (Pfund et al., 2012; Rowe-Johnson, 2018). Training also fosters reflections among mentors. As proposed by Schön, reflective practice comprises reflection-in-action and on-action to adjust styles over time (Farrell, 2012). Educators undergo preparation to routinely examine approaches, interactions, and results to enhance these approaches. Mentors evaluate successes and require adjustments to continuously improve through experience (Faisal et al., 2023). With reflection, training equips educators with dynamic support for students' growth (Naicker & Van Rensburg, 2018).

The literature suggests effective mentorship training, involving connecting mentors-mentees, standardized evaluations, and evidence-based curriculum development (Steiner, 2014). However, challenges can hinder faculty training (Straus et al., 2013). Additionally, there is a gap between digital tools in mentorship education (Haynos et al., 2021) and lack of explicit skills training. Training emphasizes communication skills, particularly constructive feedback, which influences student development significantly (Ambrose et al., 2010). Feedback is most useful when personalized and constructive, guiding individual growth (Burns et al., 2019). Exchanging constructive feedback bridges differences between current and expected standards (Orsini et al., 2022).

While existing research acknowledges the importance of developing educators' research mentorship skills (Kpokiri et al., 2022), knowledge gaps remain regarding teacher-driven competency growth. Specifically, literature lacks insight into self-initiated strategies teachers use when formal training is limited (Gandhi et al., 2019). Previous studies focused on core competencies and structured interventions without exploring informal development (Huang & Lai, 2020). In addition, minimal research examines how teachers address specific skill deficiencies mentoring students without support. Thus, this study answers: How do teachers address their own skill gaps in providing research mentorship to student researchers?

This study addressed these gaps by investigating how educators independently cultivate mentorship skills when formal training is limited. Findings provide novel insights into self-directed techniques teachers use to expand abilities. Results will inform future training program designs and assess informal strategies' effectiveness. By elucidating independent skill-strengthening, this research meaningfully contributes to enhanced student-teacher guidance across educational contexts.

05-IJTETV4I201_p46-57.indd 47 07-07-2024 15:48:31

Methodology

Research Design

The study employed a qualitative phenomenological approach to investigate how educators address gaps in mentoring student researchers. Phenomenology seeks shared understandings and personal experiences with a phenomenon (Wilson, 2015). This method provided insights into educators' experiences and views concerning shortfalls in abilities and interactions' importance (Bliss, 2016).

Setting and Participants

The study occurred at a secondary school in northern Philippines offering a student research program. Using purposive sampling (Tongco, 2007), eight teachers were selected who could provide insights into the phenomenon. Phenomenological sample sizes typically range from 5-25 (Oteifa et al., 2023). Qualifying teachers had to oversee a minimum of four student research projects in the past two years at the secondary level. They also had to acknowledge their role as advisers and recognize aspects of mentoring requiring improvement.

Instrumentation

Data were collected through semi-structured interviews. Questions were developed based on an a priori coding structure from reviewing relevant literature (Fereday & Muir-Cochrane, 2006; Gioia et al., 2012). This qualitative method allowed collection of detailed information through open-ended, theoretically guided questions aligned with the study focus (Lewis, 2015). Participants could choose English or Filipino for responses, to build trust and freely share thoughts and experiences. The validated interview protocol specifically addressed how teachers independently address mentoring skill gaps, endorsed by three experts.

Data Explication and Analysis

Data were collected primarily through face-to-face interviews with participants at their convenience. Prior to interviews, comprehensive information about the study and consent was provided to foster rapport between researchers and participants (O'Sullivan et al., 2021), guaranteeing confidentiality and privacy of teacher narratives. Researchers also summarized the study goals, context and interview process at each start.

On average, interviews lasted 30-90 minutes and were recorded to facilitate analysis and understanding of discussions. While no strict minimum exists for qualitative interview duration, comprehensive exploration of research topics and participant experiences is essential (DiCicco-Bloom & Crabtree, 2006). To ensure transcription accuracy and credibility, a rigorous counter-verification and data cleaning process was undertaken. Field texts were returned to participants for review and confirmation as part of this meticulous approach (Creswell & Creswell, 2017; Mero-Jaff, 2011).

Braun and Clarke's thematic analysis model examined datasets to discover patterns and themes relevant to exploring teachers' professional experiences and integration in research (Braun & Clarke, 2013).Researchers followed steps: familiarizing with data, creating initial codes from transcriptions; grouping codes into categories; establishing codebook hierarchy; connecting categories to develop overarching themes.

05-IJTETV4I201_p46-57.indd 48 07-07-2024 15:48:31

Results and Discussion

The analysis of the teacher interviews revealed four primary themes: pursuing professional development, fostering collaborative partnerships, engaging in self-directed learning, and adjusting mentorship approaches.

Theme 1: Pursuing Professional Development

This theme encapsulates the various approaches teachers take to develop their research mentorship skills through professional development opportunities. Seeking out professional growth allows teachers to address gaps in their knowledge and stay current with new developments in research methodologies. Four key codes emerged under this theme: seeking professional development, reading academic literature, attending conferences/workshops, and accessing online learning resources.

Table 1 Essential Codes and Supporting Statements on Pursuing Professional Development

Codes	Supporting Statements
Seeking professional development	"One approach I take is regularly setting aside time to pursue professional development opportunities such as attending conferences and training seminars related to research methodologies." [T1] "Another resource that helped me address my skill gaps was when I became a panelist in a research proposal and final defense, where I learned to become a more efficient mentor." [T4]
Reading academic literature	"I engage in independent learning by reading academic literature and texts on research approaches and statistical methods that are new to me." [T1) "The primary thing that I do to address these challenges is to read. Research has a wide range of complex topics. I have to fuel myself to keep up with my students and be able to deliver what they need in the process of conducting research." [T4]
Attending conferences/ workshops	"I engage in continuous learning by staying updated with the latest research and advancements in my students' field of interest. I read research papers, attend free conferences, and participate in school-based workshops." [T6] "Attending research congresses or conferences provides me with an avenue for research knowledge enrichment and research skill enhancement." [T7] "We are also blessed to continually join different research congresses and conferences, initiated by our research department." [T8]
Accessing online learning resources	"Indeed, online research platforms always come in handy, providing access to 'upskilling' opportunities." [T7] "Online Mentoring Programs: special groups of research teachers (e.g., educational research center, teachers teaching research, etc.) offer webinars, online courses and tutorials. I am grateful that these online resources can be accessed anywhere and anytime." [T8]

Source: Author's survey, 2023

05-IJTETV4I201_p46-57.indd 49 07-07-2024 15:48:31

The findings reveal that teachers take purposeful steps to pursue professional development opportunities in order to enhance their research mentorship skills. This demonstrates their commitment to continuous learning and providing the best possible support to student researchers under their guidance. High-quality mentorship requires ongoing development of knowledge and abilities (Arnesson & Albinsson, 2017; Tillema & Westhuizen, 2015). The teachers in this study recognize skill gaps in their mentorship capacity and address these gaps through activities like seeking out professional development, reading academic literature, attending conferences and workshops, and accessing online learning resources. These proactive efforts to stay current with new methodologies and improve their mentoring align with previous literatures emphasizing the need for continuous growth and learning in mentorship (Gagliardi et al., 2015; Langdon & Ward, 2015). The implications suggest that providing professional development focused specifically on research mentorship skills could empower more teachers to take on mentorship roles. Administrators may need to allocate time and resources to enable teachers' participation in developmental activities. Recommendations include offering regular professional development workshops or courses on research mentorship, providing release time for teachers to attend conferences and webinars, and facilitating mentorship networks that connect experienced and novice research mentors. Investing in professional development is key to building teachers' confidence and abilities in guiding student researchers.

Theme 2: Building Collaborative Partnerships

This theme highlights how teachers leverage collaborative relationships address gaps in their research mentorship knowledge and skills. Seven codes emerged under this theme: collaborating with colleagues, seeking expert guidance, leveraging student knowledge, developing transparency with students, filling knowledge gaps together, facilitating collaborations, and joining research groups.

The findings indicate that teachers build collaborative partnerships to strengthen their research mentorship abilities. They leverage relationships with colleagues, experts, and students to fill gaps in their knowledge and skills. This aligns with literature emphasizing the benefits of collaboration in mentorship, including knowledge sharing and reciprocal learning relationships (Eisenschmidt & Oder,2018; Wang et al., 2016). Additionally, studies have found that mentor-mentee partnerships promoteprofessional growth for both parties (Chopra et al., 2016; Dopson et al., 2017). Teachers collaborate with colleagues to learn from their experiences, seek expert guidance to strengthen understanding, are transparent with students about limitations, fill knowledge gaps together, facilitate connections between students and experts, and join research groups. The implications are that facilitating collaborations through mentorship networks and learning communities could enhance teachers' mentorship capacities. Administrators may need to provide time and space for collaborative development. Recommendations include establishing peer mentor programs, connecting teachers and experts as co-mentors, and incorporating collaborative projects into research courses.

Theme 3: Engaging in Self-Directed Learning

This theme encapsulates the self-driven efforts teachers make to independently develop their research mentorship knowledge and abilities. Six codes emerged under this theme: self-study, creating learning plans, utilizing online resources, building research competencies, strengthening statistical skills, and staying updated on technology.

05-IJTETV4I201_p46-57.indd 50 07-07-2024 15:48:31

Table 2 Essential Codes and Supporting Statements on Building Collaborative Partnerships

Codes	Supporting Statements
Collaborating with colleagues	"I also make it a priority to connect with other experienced teacher-researchers through my professional network. Consulting colleagues who have more advanced expertise helps me address skill gaps so I can better assist students in turn." [T1] "After all, I can always rely on my department head and colleagues for clarification and guidance." [T2] "I also ask my co-research teachers and colleagues if some concepts need clarification." [T4] "I also ask for help from a colleague or a mentor specializing in a specific field or discipline." [T7]
Seeking expert guidance	"We brought in another teacher on staff who had a strong math and statistics background and set up collaborative mentoring sessions." [T1] "I go back to my notes, update them, sometimes rely on my colleagues, and learn from my students." [T2] "I frequently collaborate with other experts in the field or with colleagues who have complementary expertise." [T6]
Leveraging student knowledge	"I try to recall how I handled previous queries and concerns, reflect, improve, and again apply." [T2] "I also use the students' research papers as examples in my practical research 1 and 2 classes; we use these as their model papers." [T4] "I allowed my students working on a low-cost earthquake detector device to seek the help of both staff and a student who have a background in computer programming and coding skills I lacked." [T6]
Transparency with students	"Throughout the process I provided ongoing encouragement and reviewed drafts to strengthen the student's technical writing." [T1] "I inform my students of the extent of my understanding, and I also ask them that we both do extensive research on the research challenge at hand so that we learn and discover together." [T5]
Filling knowledge gaps together	"Being transparent to my limitations as a research adviser and doing my part to address it ensure that I do not compromise the soundness of their study." [T5]
Facilitating collaborations	"I collaborate with science and math teachers for experimental and statistical-related concerns. I also encourage students to seek guidance from other experts." [T8]
Joining research groups	"I have joined various research groups on social media, which I really find helpful." [T8]

05-IJTETV4I201_p46-57.indd 51 07-07-2024 15:48:31

Table 3	Essential Codes and Supporting Statements on Engaging in Self-Directed Learning
Codes	**Supporting Statements**
Self-study	"I spend considerable time proactively reading academic journals, textbooks, and other scholarly materials related to the diverse array of topics students are exploring through their research." [T1]
Creating learning plan	"I create a personal learning plan based on my skill gap." [T7]
Utilizing online resources	"One of my upskilling initiatives is rummaging through scientific publications/e-journals and e-theses/e-dissertations to understand a specific research method that I can suggest to my students or understand the method they plan to use. Another upskilling initiative is using online instructional YouTube videos as a learning resource." [T7]
Building research competencies	"I undertake self-study to fill my knowledge gaps. Most of the time, I explore relevant textbooks, online courses, or educational resources to gain a deeper understanding of the topics I need to address." [T6]
Strengthening statistical skills	"I focused my guidance on areas I was knowledgeable about like helping craft research questions, finding literature, and developing the overall study design. Meanwhile, the other teacher provided supplemental expertise advising on the quantitative components." [T1]
Staying updated on technology	"I continually read about the latest trends, topics, and tools in doing research. I have joined various research groups on social media, which I really find helpful. Therein, most members do share their resources, conferences, and eBooks (most of which are free)." [T8]

The findings show that teachers take initiative in engaging in self-directed learning to improve their research mentorship capacities. This demonstrates their motivation to address personal knowledge gaps and independently seek out learning opportunities. Self-directed learning is critical for continuous professional development (Ambreen & Arif, 2022; Wu, 2021). Additionally, studies have found self-directed learning enhances mentorship competence (Kuzma et al., 2016; Wong et al., 2021). Teachers in this study demonstrate self-direction through activities like reading academic journals, creating personal learning plans, using online resources, exploring textbooks and courses, and joining research groups. The implications are that facilitating self-directed learning with resources and flexible time may further improve teachers' mentorship capacities. Administrators may need to provide more autonomy in teachers' development pursuits. Recommendations include creating online hubs for research mentorship resources, building independent study time into schedules, and promoting reflection.

Theme 4: Adapting Mentorship Approach

This theme demonstrates how teachers adapt their research mentorship strategies in response to challenges and as part of the learning process. Three codes emerged under this theme: adapting mentorship approach, asking for feedback and humility.

05-IJTETV4I201_p46-57.indd 52 07-07-2024 15:48:31

Table 4	Essential Codes and Supporting Statements on Adapting Mentorship Approach
Codes	**Supporting Statements**
Adapting mentorship approach	"Adjusting to move from a mentor role into more of a facilitator who connects those students with other experts has been an important learning experience." [T1] "When some of my students decided to pursue experimental design, I had no choice but to learn the process of their chosen methodology." [T7]
Asking for feedback	"Specifically, I ask feedback and ideas from my peers (fellow research mentors)." Learning from past experiences and students were also mentioned. [T3] "I try to recall how I handled previous queries and concerns, reflect, improve, and again apply." [T2]
Humility	"Experiences like this, teach me the importance of humility, adaptability, and the power of leveraging diverse skills in a mentorship setting." [T7]

The results of this study highlight the adaptive nature by which teachers modify their research guidance approaches in reaction to difficulties encountered and as an element of their own continuing pedagogical development. This aligns with literature indicating effective mentors are reflective and flexible, constantly working to improve their practice (Crutcher & Naseem, 2015; McQuade et al., 2015; Nyanjom, 2018). Additionally, studies show adaptable mentoring promotes mentor growth and enhances the mentee experience (Schriever & Grainger, 2019, Klinge, 2015). Teachers in this study adjust their approach when needed, shifting to more of a facilitator role and learning new methodologies to support students. They also actively seek feedback from peers and students to improve, and express humility regarding their limitations. The implications are that professional development focused on adaptability and a growth mindset could strengthen teachers' mentorship abilities. Administrators may need to allow flexibility in how teachers approach mentoring. Recommendations include incorporating continuous feedback processes, emphasizing reflection, and celebrating growth over perfection.

Conclusion

This qualitative phenomenological study addressed gaps in understanding how teachers independently strengthen their research mentorship skills when formal training opportunities are limited. Through interviews with eight secondary school teachers actively mentoring student projects, four key themes emerged on self-directed strategies used to build capacities: pursuing professional development, fostering collaborations, engaging in self-learning, and adapting approaches.

The findings provide insights into teachers' intrinsic motivation to develop abilities without structured training. Participants demonstrated commitment to continuous learning by proactively seeking workshops, conferences, literature, and online resources. They leveraged relationships with colleagues, experts, and students for reciprocal learning and transparent collaborations. Teachers also exhibited self-driven efforts through independent study, personalized plans, and research groups. Adaptability emerged as critical, with participants modifying approaches based on needs and soliciting feedback. This research makes theoretical

05-IJTETV4I201_p46-57.indd 53 07-07-2024 15:48:31

and practical contributions regarding informal mentorship development pathways, offering a model of key components underpinning teachers' autonomous skill enhancement.

However, limitations should be noted. The small qualitative sample focused only on secondary school teachers in one region, which may restrict transferability of findings. Additionally, self-reported data relies on subjective perceptions of competence gains. Follow-up studies should incorporate objective measures of mentoring skills and expanded samples across educational contexts. Longitudinal data tracking mentors' progress over time could provide further insights. Comparative research on outcomes from informal versus formal training would also be valuable. There are opportunities to build on this exploratory study to develop evidence-based resources and communities supporting teachers' self-directed mentorship development. Ultimately, equipping educators with robust, adaptable mentoring abilities is essential to nurture students' research self-efficacy and future success.

References

Agricola, B.T., Prins, F.J., van der Schaaf, M.F., & van Tartwijk, J. (2018). Teachers' diagnosis ofstudents' research skills during the mentoring of the undergraduate thesis. *Mentoring & Tutoring:Partnership in Learning, 26*, 542 - 562.

Ahmad, Z., Ammar, M., & Al-Thani, N. J. (2021). Pedagogical models to implement effective STEMresearch experience programs in high school students. *Education Sciences*, *11*(11), 743.doi:10.3390/educsci11110743

Ambreen, M., & Arif, A. (2022). Self-directed professional development approach: A challenge forsecondary school teachers in Pakistan. *International Research Journal of Education andInnovation*, *3*(1), 300-309. https://doi.org/10.53575/irjei.v3.01.26(22)300-309

Ambrose, S. A., Bridges, M. W., DiPietro, M., Lovett, M. C., & Norman, M. K. (2010). *How learningworks: Seven research-based principles for smart teaching*. John Wiley & Sons.

Arnesson, K., & Albinsson, G. (2017). Mentorship – a pedagogical method for integration of theoryand practice in higher education. *Nordic Journal of Studies in Educational Policy*, *3*(3), 202-217. https://doi.org/10.1080/20020317.2017.1379346

Balandya, E., Sunguya, B., Kidenya, B., Nyamhanga, T., Minja, I. K., Mahande, M., … Lyamuya, E.(2022). Joint research mentoring through the community of young research peers: A case for aunifying model for research mentorship at higher learning institutions. *Advances in MedicalEducation and Practice*, *13*, 355-367. https://doi.org/10.2147/AMEP.S356678

Bliss, L. A. (2016). Phenomenological research. *International Journal of Adult Vocational Educationand Technology*, *7*(3), 14-26. https://doi.org/10.4018/ijavet.2016070102

Braun, V., & Clarke, V. (2013). *Successful qualitative research: A practical guide for beginners.* Sage.

Brown, R.T., Daly, B.P., & Leong, F.T. (2009). Mentoring in research: A developmentalapproach. *Professional Psychology: Research and Practice, 40*, 306-313.

Burns, E. C., Martin, A. J., & Collie, R. J. (2019). Examining the yields of growth feedback fromscience teachers and students' intrinsic valuing of science: Implications for student- and school- levelscience achievement. *Journal of Research in Science Teaching*, *56*(8), 1060-1082. https://doi.org/10.1002/tea.21546

Caruso, T. J., Kung, T., Piro, N., Li, J., Katznelson, L., & Dohn, A. (2019). A sustainable and effectivementorship model for graduate medical education programs. *Journal of Graduate MedicalEducation*, *11*(2), 221-225. https://doi.org/10.4300/jgme-d-18-00650.2

Chopra, V., Edelson, D. P., & Saint, S. (2016). Mentorship malpractice. *JAMA*, *315*(14),1453. https://doi.org/10.1001/jama.2015.18884

Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixedmethods approaches.* Sage publications.

05-IJTETV4I201_p46-57.indd 54 07-07-2024 15:48:32

Crutcher, P. A., & Naseem, S. (2015). Cheerleading and cynicism of effective mentoring in currentempirical research. *Educational Review*, *68*(1), 40-55. https://doi.org/10.1080/00131911.2015.1058749

Cutillas, A., Benolirao, E., Camasura, J., Golbin, R., Yamagishi, K., & Ocampo, L. (2023). Doesmentoring directly improve students' research skills? Examining the role of information literacy andcompetency development. *Education Sciences*, *13*(7), 694. https://doi.org/10.3390/educsci13070694

DiCicco-Bloom, B., & Crabtree, B. F. (2006). The qualitative research interview. *MedicalEducation*, *40*(4), 314-321. https://doi.org/10.1111/j.1365-2929.2006.02418.x

Dopson, S. A., Griffey, S., Ghiya, N., Laird, S., Cyphert, A., & Iskander, J. (2017). Structuredmentoring for workforce engagement and professional development in public health settings. *HealthPromotion Practice*, *18*(3), 327-331. https://doi.org/10.1177/1524839916686927

Eby, L. T., Allen, T. D., Hoffman, B. J., Baranik, L. E., Sauer, J. B., Baldwin, S., Morrison, M. A., Kinkade, K. M., Maher, C. P., Curtis, S., & Evans, S. C. (2013). An interdisciplinary meta-analysis ofthe potential antecedents, correlates, and consequences of protege perceptions ofmentoring. *Psychological Bulletin*, *139*(2), 441-476. https://doi.org/10.1037/a0029279

Eisenschmidt, E., & Oder, T. (2018). Does mentoring matter? On the way to collaborative schoolculture. *Educational Process: International Journal*, *7*(1), 7-23. http://dx.doi.org/10.22521/edupij.2018.71.1

Faisal, Mansyur, A., & Firdaus, M. (2023). Impreci: Guiding model innovation produces reflectiveteachers in elementary schools. *Proceedings of the Unima International Conference on SocialSciences and Humanities (UNIC-SSH 2022)*, 455-464. https://doi.org/10.2991/978-2-494069-35-0_57

Farrell, T. S. (2012). Reflecting on reflective practice: (Re)Visiting Dewey and Schon. *TESOLJournal*, *3*(1), 7-16. https://doi.org/10.1002/tesj.10

Fereday, J., & Muir-Cochrane, E. (2006). Demonstrating rigor using thematic analysis: A hybridapproach of inductive and deductive coding and theme development. *International Journal ofQualitative Methods*, *5*(1), 80-92. https://doi.org/10.1177/160940690600500107

Fongkanta, P., Buakanok, F. S., Netasit, A., & Kruaphung, S. (2021). Teacher professionaldevelopment in research skill of teacher in non-formal education center, Lampang, Thailand. *Journalof Education and Learning*, *11*(1), 125. https://doi.org/10.5539/jel.v11n1p125

Fragkoulis, I., & Michalou, A. (2018). Investigating Teachers' Perceptions on the Advisory Role ofthe Mentor in the Context of the Operation of the School Unit. *International journal of sciences*, 4,83-90. https://doi.org/10.18483/ijsci.1608.

Gagliardi, A. R., Webster, F., & Straus, S. E. (2015). Designing a knowledge translation mentorshipprogram to support the implementation of evidence-based innovations. *BMC Health Services Research*, *15*(1). https://doi.org/10.1186/s12913-015-0863-7

Gandhi, M., Raj, T., Fernandez, R., Rispel, L., Nxumalo, N., Lescano, A. G., Bukusi, E. A., Mmbaga,B. T., Heimburger, D. C., & Cohen, C. R. (2019). Mentoring the mentors: Implementation andevaluation of four Fogarty-sponsored mentoring training workshops in low-and middle-incomecountries. *The American Journal of Tropical Medicine and Hygiene*, *100*(1_Suppl), 20-28.https://doi.org/10.4269/ajtmh.18-0559

Gioia, D. A., Corley, K. G., & Hamilton, A. L. (2012). Seeking qualitative rigor in inductive research.*Organizational Research Methods*, *16*(1), 15-31. https://doi.org/10.1177/1094428112452151

Haynos, A. F., Coniglio, K., Murray, H. B., Utzinger, L., & Goldschmidt, A. B. (2021). A vertical peermentorship model to promote early career academic development: Implementation and initialoutcomes. https://doi.org/10.31234/osf.io/8ch6k

Huang, X., & Lai, C. (2020). Connecting formal and informal workplace learning with teacherproactivity: A proactive motivation perspective. *Journal of Workplace Learning*, *32*(6), 437-456.https://doi.org/10.1108/jwl-01-2020-0005

Johnson, M.O., & Gandhi, M. (2014). A mentor training program improves mentoring competency forresearchers working with early-career investigators from underrepresented backgrounds. *Advances inHealth Sciences Education, 20*, 683 - 689.

05-IJTETV4I201_p46-57.indd 55 07-07-2024 15:48:32

Klinge, C. M. (2015). A conceptual framework for mentoring in a learning organization. *AdultLearning*, *26*(4), 160-166. https://doi.org/10.1177/1045159515594154

Kpokiri, E. E., McDonald, K., Gebreyohannes, J. A., Osorio, L., Nath, T. C., Talavera-Urdanivia, V.A., Akinwale, P. O., Manabe, Y. C., Castelnuovu, B., Tang, W., Yilma, D., Mihut, M., Ezechi, O.,Iwelunmor, J., Kaba, M., Abdissa, A., & Tucker, J. D. (2022). Research mentorship in low andmiddle-income countries: A global qualitative evidence synthesis of data from a crowdsourcing opencall and scoping review. https://doi.org/10.1101/2022.09.19.22280121

Kuzma, N., Skuby, S., Souder, E., Cruz, M., Dickinson, B., Spector, N., & Calaman, S. (2016).Reflect, advise, plan: Faculty-facilitated peer-group mentoring to optimize individualized learningplans. *Academic Pediatrics*, *16*(6), 503-507. https://doi.org/10.1016/j.acap.2016.06.002

Langdon, F., & Ward, L. (2015). Educative mentoring: A way forward. *International Journal ofMentoring and Coaching in Education*, *4*(4), 240-254. https://doi.org/10.1108/IJMCE-03-2015-0006

Lewis, S. (2015). Qualitative inquiry and research design: Choosing among five approaches. *HealthPromotion Practice*, *16*(4), 473-475. https://doi.org/10.1177/1524839915580941

McQuade, S., Davis, L., & Nash, C. (2015). Positioning mentoring as a coach development tool:Recommendations for future practice and research. *Quest*, *67*(3), 317-329. https://doi.org/10.1080/00336297.2015.1048810

Mero-Jaffe, I. (2011). "Is that what I said?" interview transcript approval by participants: An aspect ofethics in qualitative research. *International Journal of Qualitative Methods*, *10*(3), 231–247. https://doi.org/10.1177/160940691101000304

Naicker, K., & Van Rensburg, G. H. (2018). Facilitation of reflective learning in nursing: Reflectiveteaching practices of educators. *Africa Journal of Nursing and Midwifery*, *20*(2). https://doi.org/10.25159/2520-5293/3386

Nyanjom, J. (2018). Calling to mentor: The search for mentor identity through the development ofmentor competency. *Educational Action Research*, *28*(2), 242-257. https://doi.org/10.1080/09650792.2018.1559069

O' Sullivan, L., Feeney, L., Crowley, R. K., Sukumar, P., McAuliffe, E., & Doran, P. (2021). Anevaluation of the process of informed consent: Views from research participants andstaff. *Trials*, *22*(1). https://doi.org/10.1186/s13063-021-05493-1

Orsini, C., Rodrigues, V., Tricio, J., & Rosel, M. (2022). Common models and approaches for theclinical educator to plan effective feedback encounters. *Journal of Educational Evaluation for HealthProfessions*, *19*, 35. https://doi.org/10.3352/jeehp.2022.19.35

Oteifa, S., Dewidar, K., & Mansour, Y. (2023). Inclusive schools design: A phenomenologicalinvestigation into visually impaired lived experiences. *Civil Engineering and Architecture*, *11*(3),1616-1631. https://doi.org/10.13189/cea.2023.110340

Overall, N.C., Deane, K.L., & Peterson, E.R. (2011). Promoting doctoral students' research self-efficacy: combining academic guidance with autonomy support. *Higher Education Research &Development, 30*, 791 - 805.

Pfund, C., House, S., Spencer, K., Asquith, P., Carney, P., Masters, K. S., McGee, R., Shanedling, J.,Vecchiarelli, S., & Fleming, M. (2012). A research mentor training curriculum for clinical andtranslational researchers. *Clinical and Translational Science*, *6*(1), 26-33. https://doi.org/10.1111/cts.12009

Rowe-Johnson, M. (2018). Achieving ethical mentoring and mentee professional integrity throughformal mentor training for practicing psychologists. *Training and Education in ProfessionalPsychology*, *12*(3), 203-209. https://doi.org/10.1037/tep0000198

Schriever, V., & Grainger, P. (2019). Mentoring an early career researcher: Insider perspectives fromthe mentee and mentor. *Reflective Practice*, *20*(6), 720-731. https://doi.org/10.1080/14623943.2019.1674272

Sood, A., Tigges, B.B., & Helitzer, D.L. (2016). Mentoring Early-Career Faculty Researchers IsImportant-But First "Train the Trainer". *Academic medicine: Journal of the Association of AmericanMedical Colleges, 91 12*, 1598-1600.

Steiner, J. F. (2014). Promoting mentorship in translational research. *Academic Medicine*, *89*(5), 702-704. https://doi.org/10.1097/acm.0000000000000205

Straus, S. E., Johnson, M. O., Marquez, C., & Feldman, M. D. (2013). Characteristics of successfuland failed mentoring relationships. *Academic Medicine*, *88*(1), 82-89. https://doi.org/10.1097/acm.0b013e31827647a0

05-IJTETV4I201_p46-57.indd 56 07-07-2024 15:48:32

Tillema, H., & Westhuizen, G. J. (2015). Mentoring conversations and student teacherlearning. *Mentoring for Learning*, 23-45. https://doi.org/10.1007/978-94-6300-058-1_2

Tongco, M. D. (2007). Purposive sampling as a tool for informant selection. *Ethnobotany Researchand Applications*, *5*, 147. https://doi.org/10.17348/era.5.0.147-158

Vater, A., Caster, R., Haddox, H., Olshefsky, A., Said, M., King, N. P., & Siegel, J. B. (2022).Perspective: Successes and challenges in developing a new Biomolecular modeling and designsummer high school research internship. *Frontiers in Education*, *7*. https://doi.org/10.3389/feduc.2022.908936

Walkington, H., & Rushton, E.A. (2019). Ten Salient Practices for Mentoring Student Research inSchools: New Opportunities for Teacher Professional Development. *Higher Education Studies*.

Wang, Z., Zhang, H., Chen, X., & Duan, Y. (2016). Impression management tactics of protégés andmentors' knowledge-sharing behavior. *Social Behavior and Personality*, 44, 1825-1838. https://doi.org/10.2224/SBP.2016.44.11.1825

Wilson, A. (2015). A guide to phenomenological research. *Nursing Standard*, *29*(34), 38-43.https://doi.org/10.7748/ns.29.34.38.e8821

Wong, F. M., Tang, A. C., & Cheng, W. L. (2021). Factors associated with self-directed learningamong undergraduate nursing students: A systematic review. *Nurse Education Today*, *104*,104998. https://doi.org/10.1016/j.nedt.2021.104998

Wu, L. (2021). A self-narrative study on self-directed professional development of a high schoolEnglish intern teacher. *Frontiers in Educational Research*, *4*(8). https://doi.org/10.25236/FER.2021.040814

Xu, X., & Payne, S. C. (2013). Quantity, quality, and satisfaction with mentoring. *Journal of CareerDevelopment*, *41*(6), 507-525. https://doi.org/10.1177/0894845313515946

Zachary, L. J., & Fain, L. Z. (2022). *The mentor's guide: Facilitating effective learningrelationships* (3rd ed.). John Wiley & Sons.

05-IJTETV4I201_p46-57.indd 57 07-07-2024 15:48:32