

A Transcendental Exploration of Induction Training: Professional Development of College Science Teachers in Punjab

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Abstract

Professional development is a continuous process that improves the working and learning skills of a person. This type of training and development should be started from the very initial stage of appointment of an employee. Teachers' Professional development includes training that contributes to the development of knowledge, professional development in the field of a teacher's expertise (Ramanan & Mohamad, 2021). Punjab Higher Education Commission engaged College teachers in a professional development program. The objective of the study was to explore the lived experience of the college science teachers who attended PHEC training. The study was conducted under the interpretivism paradigm and phenomenological design of qualitative research was used. Using the theoretical sampling method five participants with lived experience were selected to dig out the understudy phenomena. The method was transcendental phenomenology and data was collected using a semi-structured interview. N-Vivo-12 was used for data analysis with a thematic analysis approach. During initial coding, four (Essence of the PHEC Training, Properties of PHEC Training, Challenges for Implication and Recommendations by the Trainees) themes were noted. It is recommended for future researchers to conduct this mixed-method researches using a pragmatic paradigm.

Keywords: Punjab higher education commission, professional development science teachers, training, phenomenological exploration

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Introduction

In the modern global village, teachers have to face several challenges in the educational world, particularly in teaching and learning. So teachers need to be prepared for developing themselves to face the innovations and developments in the field of education in this ever-changing world. This concept of teacher professional development is in line with adult learning theory. Adult learning theory was proposed by Knowles based on his writing the *Modern Practice of Adult Education*. This theory focuses on that adults need continuous professional development for their self-improvement (Ramanan & Mohamad, 2021).

PD is characterized as efforts that build up a person's abilities, information, skill, and different attributes as a teacher. As pointed out by (Demir & Qureshi, 2019) PD is focused on somewhat delivering employees more instructed, improved, and acceptable exhibitions in their schools (Younas et al., 2019). Similarly, by and large, individuals consider the conventional cycle, for instance, instructional classes of teachers at school or college, inner and outer gatherings, various workshops acquainted learning of a workgroup, as the parts of utilized term PD (Sales, 1999).

Need is considered as the main stimulating factor for professional development. Teachers are more likely to go for professional development if the professional development addresses their needs, i.e. self-respect, assessment tools, student curriculum, and lesson planning. Gender differences have significant differences towards professional development relating to the incentive for participation, employer support, conflicts of work schedule, time management, family responsibilities and relevancy of professional development (Badri, Alnuaimi, Mohaidat, Yang, & Al Rashedi, 2016).

PD is the form of development of people in their professional job (Powell & Bodur, 2019). Teacher development is fundamentally a PD accomplished by teachers by going to a type of training (Ghosh, Krishnan, Rajguru, & Kapila, 2019). The employee's training and development have been reflected as the main type of PD presented for teachers (Farah, Fauzee, & Daud, 2016). These days, PD is seen as an activity that incorporates different experiences and coordinated efforts of experts to train people effectively. (Jahangir, Saheen, & Kazmi, 2012). Teachers in Higher Education usually like to join the training offered by the department (Shigri, 2009). There are several PD training sessions formal as well as non-formal (Khatoon, 2008).

Teacher professional development and student learning are dependent on each other as a reciprocal process. The more a teacher is involved with the students, the more students learn (Farah et al., 2016). The social gatherings, schools, and instructive quality affect the teacher's professional development (Memon, 2007).

Literature Review

If newly inducted teachers are to bring a positive change in teaching-learning for students, PD would help them a lot. A school strives for improvement in the learning of its students which has a direct link with the quality of its teachers (Malik, Danish, & Usman, 2010).

Science is applied knowledge. The practical implication of the theoretical knowledge by the science teacher in the classroom is a basic factor of students' achievement as well as teacher professional development. The teachers having the ability to give a practical demonstration of their theoretical knowledge can ensure more students' learning regardless of instructive materials, showing procedures, or program of perusing which is picked (Tahira & Ameen, 2016).

Individuals in a society have diversified experiences. So the process directive and needs of the professional development may be different in the case of different persons. Senior teachers have more experience and it can be a source of professional development for themselves as well as for their peers. Such experiences are more meaningful than passive experiences. Secondly, professional development is also influenced by the need to learn. When someone needs to learn, they will be committed to meeting those needs. Therefore, systematic program planning in terms of providing a conducive environment, sufficient equipment to support their level of readiness (Ramanan & Mohamad, 2021).

Science education is expected to become a vehicle for students to learn about themselves and the environment, as well as prospects for further development to applying it in everyday life. Developing science literacy is important for personal satisfaction, pleasure, developing decision-making ability, and developing a world of work (Rubini, Ardianto, Pursitasari, & Permana, 2017).

Teachers who are energetic in researching in their classroom are more able to study, evaluate, and assess their teaching pedagogies and practices. By doing so, teachers would be able to change and improve their methods of teaching, which would have an impact on students' learning and success (Ulla, 2018).

The government of Punjab has allocated the obligation of preparing teachers of public colleges to the Punjab Higher Education Commission (PHEC). PHEC is aware of the preparation needs of our college teachers who have got no training in professional development before joining a college (Nasreen & Mirza, 2012).

The current examination was a qualitative procedure. A qualitative research structure that hopes to portray the lead encounters of individuals for a wonder (Creswell, 2013). The technique for this investigation was phenomenology the inspiration driving the phenomenological study was to portray the substance of encounters as a wonder. The preparation was a marvel for college teachers. There were various sorts of phenomenology yet the current examination planned to portray the experience of the individuals so it is supernatural which searches for the Spirit by changing and part of the wonder and a short time later survey the change. The perspective of this research study was interpretivism. The focal point of the examination was to investigate the normally lived encounters of male and female college teachers who got preparing from PHEC. The investigation additionally tried to see how the teachers feel previously, during, and after that instructional course. The investigation assists with comprehension in what ways the preparation improves the abilities of college teachers and how it impacts them.

Research Questions

Keeping in mind the stated debate of literature the question of this research was:

1. How do college Science teachers explain the essence of training and their lived experience during PHEC training?

Research Objective

The major aim of the study was:

1. Explore the lived experience of the college science teachers who attended PHEC training.

Methodology

To explore this phenomenon in-depth, the researcher used an interpretive paradigm and a qualitative approach was used. The use of transcendental phenomenology helps the researcher to explore

phenomena vertically through interviewing them while they were through to the phenomenon of professional development in all discipline under the department of higher education is usually carried out by Punjab Higher Education Commission. The study in hand was an attempt to explore the role of PHEC training in the PD of science teachers in Punjab. The study was conducted under the interpretivism paradigm and phenomenological design of qualitative research was used. Using the theoretical sampling method five participants with lived experience were selected to dig out the understudy phenomena. The method was transcendental phenomenology and data was collected using a semi-structured interview. N-Vivo-12 was used for data analysis with a thematic analysis approach. The researcher is considered the core research instrument (Lincoln & Guba, 1985) in qualitative studies, and the lived experience of science teachers who attended the training from PHEC was explored through in-depth interviews.

The qualitative research procedure is used for deciphering realities from data, where the realities depended upon the attributes that people adequately use in picking up experiences of the marvel. As Kafle (2011) clarified, "phenomenology is an umbrella term" (p. 181) that comprises various methodologies, yet besides has philosophical establishments. He stressed that a phenomenological approach better gets experiences, recognitions, implications, and "not clarifications or investigations" and "it doesn't anticipate or decide any causal connections". The phenomenological approach tries to improve cognizance of wonder from members who shared an indistinguishable encounter, for example, the regular experience of seeing a training place. The word wonder driven from the Greek word *phaenesthai*, which signifies "to erupt, to show itself, to show up" and "any marvel presents a commendable beginning stage for an examination" (Kafle, 2011). Phenomenologists are interested in having a tendency to, distinguishing, depicting, understanding, and deciphering the experiences people have in their regular daily existences. Edmund Husserl (1859 – 1938) gives the possibility of phenomenology in the qualitative research plan. Different thinkers were seen as establishing individuals from phenomenological thoughts, for instance, Kant, Hegel, however, Husserl is seen as a pioneer of 20th-century phenomenology. The researchers found two significant schools of phenomenology in this research: engaging and interpretive. The focal point of this research study was a supernatural phenomenological way to deal with qualitative research. It is based on the depth of the investigation alongside printed portrayals and basic depictions (Creswell, 2013) Supernatural phenomenology is essentially utilized for

characterizing the wonder by fusing the experiences voices, and impressions of the members.

Data Analysis Procedure

The analyses of transcriptions of interviews were done through the thematic analysis technique. The recorded interview was transcribed and files were prepared for initial coding through N-Vivo-12. Open coding was conducted and the categories were generated based on the similarity map test of N-Vivo. The final phase was the theme generation and four major themes were concluded.

Phases of Thematic Analysis

The analysis was conducted using a thematic analysis approach by (Braun & Clarke, 2006). N-Vivo-12 software used for analysis.

Following theses weee emerged.

The Essence of the Induction Training

This theme explored the essence of PHEC training. This topic contained five kid hubs for example authority conduct, home grown issues, feeling towards training, singular practices, and past encounters of participants. The discoveries of this topic showed that all the members were positive and feel good about this training activity. After the training, all the members feel that they learn new strategies and techniques which improved their instructing abilities. Members found a strong climate and saw that the master's conduct was amicable with them. Members were of the view that learning is a long-lasting cycle. Along these lines, the training of the teachers should direct on an ordinary premise.

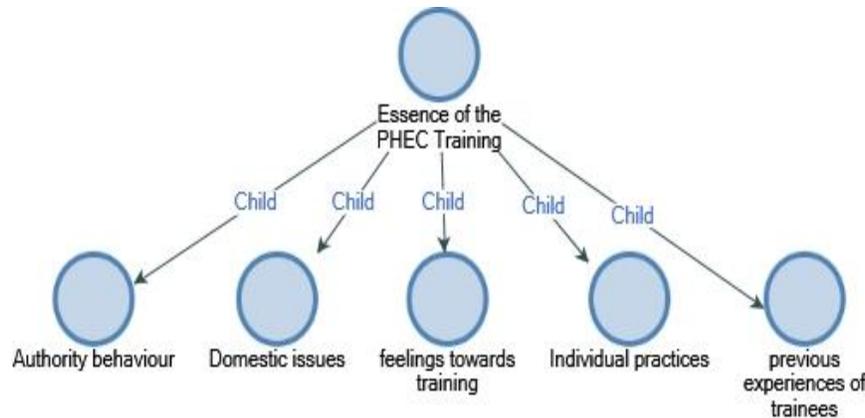


Fig. 1 Essence of PHEC training

"When we joined teaching as a profession and started teaching without any training, we used to teach differently. But after we attended training it provided us with the opportunity to learn from other's experiences. After the training, our attitude and style of teaching changed a lot. In the government teaching profession, you can learn more from other's experiences. Before joining the session, I felt that I would learn new things and I have learned many things from training".

(Respondent: 1)

"The schedule was very tough for me as I have to travel for 6 hours in a day. I feel that the training schedule should be flexible for females as compared to male teachers because males can manage and travel locally at any time and they can manage easily. AS a female teacher I have a family to look after them and managing that according to this schedule was impossible. So in the training sessions, my whole attention was on how to travel back home at the time. Due to this, I couldn't participate in training as I should".

(Respondent: 2)

Properties of PHEC Training

This topic outlines the various sentiments of the members towards training. The members depict productive angles just as inadequacies of the training. This topic included five youngster hubs for example accomplishment of objectives, idealistic conduct, closures of training, innovation use, and training insufficiencies. The outcomes uncover that

lion's share of the members were having an assessment that training causes them in improving study hall the board aptitudes and it gives the occasion to gain from others encounters. All the members complimented the substance about Micro educating and they said it was extremely useful for their instructing. Moreover, lion's share viewed as training helped them to think about PEEDA ACT which was extremely useful for them. All the members accepted that training is fundamental for familiar with present-day procedures and for a constant cycle of improvement. Every one of them concurred that they will go to such training in future. Then again, when the inquiries posed about the improvement in the aptitude of utilizing innovation, the dominant part reacted that training didn't improve those abilities. Not many of the members said that training improve their correspondence and introduction aptitudes yet the majority of them were of feeling that training doesn't give enough occasions to improve these abilities. The discoveries likewise show that the members felt that a lot of data is given in a brief timeframe of training which was not as compelling for them.

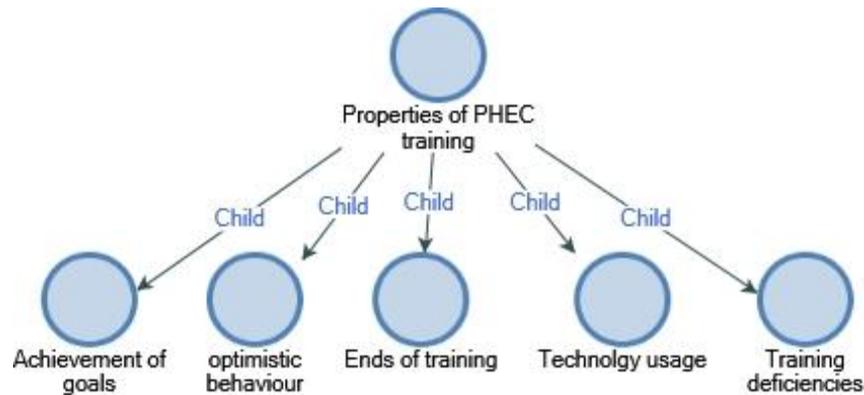


Fig. 2 Properties of PHEC training

"There were many things I have learned that I don't know before. For example, knowledge about the higher education department and its rules and regulations. Furthermore, some of the experts were as competent as I remembered Dr. Mubashir. In his sessions, I can't lose my concentration even for a second. Additionally, the micro-teaching presentations were also a good experience in which you can judge yourself and learn how to manage the content within the limited time".

(Respondent: 5)

"The experts are more experienced and they taught different tactics of how to manage the students. College students are comparatively more annoying than university students where teachers have the authority of assigning the grades so they give respect to them. But in colleges students know that the teachers can't do anything in their grades. They become more disturbing and annoying. So, I learned how to manage these cases and many other new things from the experiences of experts".

(Respondent: 2)

"I think it was a compulsion for them to cover the content of it. So, that they forcefully keep us to stay there and they don't have enough computers for the trainees. They just want us to stay in the computer lab and take photos and provide a report to higher authorities. Otherwise, they didn't tell or teach anything about computers and IT equipment. I think the session that was reserved for computer usage was not more than a formality. They conduct the computer class only for the sake of the photo session. It was a hundred percent fake session that we noticed".

(Respondent: 4)

"Trainees have different needs and problems and training experts dealt with other matters. The teachers of Persian Punjabi Sociology computer science and other pure Sciences are combined instead of making different sections of the same subject they combined different subject teachers in one section and trained them with the same design and procedure. This was the flaw in the training. That's why mostly the goals of training could not be achieved. Training should be conducted of the same subject teachers in different phases like they can make groups of language Social Sciences and Pure Sciences and then train them according to their subjects that would be more beneficial. They provide training of the same level and their medium of instruction was English. The teachers of Urdu Persian and Arabic could not comprehend the English language and there were a lot of things we don't understand. The text or module they gave us to read was also in English. It was difficult for us to understand, so how's it possible to achieve this goal".

(Respondent: 3)

Challenges for Implication

This subject speaks to that the teachers face challenges in the implications of the aptitudes that were found out during training. The majority of the members said that training was not given by keeping

ground real factors into thought. Instructing helps that were utilized by specialists during training, for example, interactive media, savvy sheets were not accessible in open schools even they don't have an essential foundation. The vast majority of public schools need more study halls, sheets, and furniture. The teachers couldn't have any significant bearing on those scholarly abilities in their study halls because of the absence of assets. In this way, the training was given in an ideal mode and didn't meet the genuine issues. A large portion of the training specialists had a place from various colleges, lion's share of members reacted that the specialists ought to have a place from school side so they know the genuine issues of school teachers and can give arrangements.

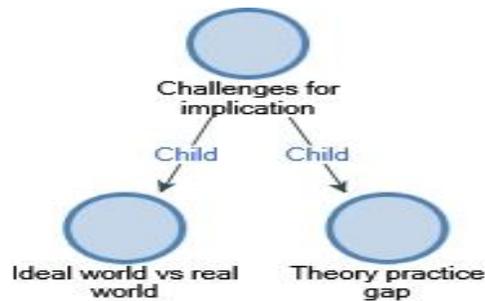


Fig.3 Challenges of implication

“Most of the teachers belong from universities. Resource person should belong from a senior college facility who knows better the 80% actual problems of colleges. We have admission problems in the hard areas that there is political pressure”.

(Respondent: 3)

“There was no problem with the content, the problem is with implementation. I give you an example, it is advised us to keep cleanliness in our colleges and told several ways to clean properly. But when you don't have any sweepers then how can you implement those instructions. The same is the case with the content. All colleges are differing in their available facilities. The content looks like only bookish material and we realized there we can't implement it in our colleges”.

(Respondent: 4)

“This training is only effective in telling the teacher that you can use this technique and you can do this and that and you can prepare your content

using the computer and by making slides and showing animated videos to your students. But after the training when we go back to our colleges we see that there are not enough facilities to utilize what experts told us to do. So, we can't utilize what we have learned. PHEC creates an ideal environment for example the things experts taught us are not applicable at all levels. They advise like don't be strict with students and treat politely with affection. The resource persons belong from higher-level Universities and they do not know about ground realities the hard areas where the students don't even come to colleges. The training should be focused on ground realities. The ground realities which I mean that training should be provided following the prevailing situations and facts".

(Respondent: 3)

Recommendations by the Trainees

This theme implies the necessities of the learners. It shows that what the members need to gain from training and which variables block the viability of PHEC training. Lion's share of the members was of the view that specialists are more engaged to educate about speculations and learned material and didn't show new things. Rather they should lead some conversation meetings wherein members share their issues with specialists and gain from their experiences. Moreover, the training span was additionally a factor that impacts the viability of training. Members give distinctive proposals to improve training. A couple of the members need that training ought to give at their nearby foundation. Particularly the females need to confront a lot of challenges to reach a training focus because the timetable was exceptionally extreme and training timings were likewise not reasonable for female day researchers. All the teachers were having sentiment that they need a subject astute training because at last, they need to show their specific subject in universities.

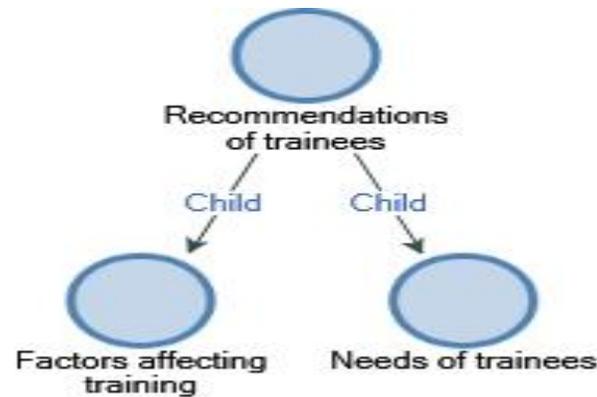


Fig.4 Recommendation of trainees

"To make the training effective, firstly the resource person should research about college environment so that they may now the actual issues I just heard ideal things from experts which cannot be happened. The resource persons should belong from such colleges where these problems have prevailed. No one can better teach about those problems except them. Only teaching the theory is not effective instead we need practical solutions for problems".

(Respondent: 5)

"Schedule was very tough. It started from 8:30 and ends at 5 p.m. and that was too much difficult to sit there for such a long time (R 9)". "There should some flexibility in the schedule that would be most feasible for teachers. It will be providing on their station or at least on district level that would be more convenient for teachers. Because if we feel comfortable then we can learn and enjoy more without facing a lot of difficulties".

(Respondent: 3)

The Hierarchy graph portrays the hugeness and estimation of each theme of the examination. It gives an examination of coding references for every territory of the theme.

Properties of PHEC training			Recommendations of trainees	
Ends of training	Technology usage	Achievement of g...	Needs of trainees	Factors af...
optimistic behaviour	Training deficiencies		Challenges for implication Theory practice gap	
Essence of the PHEC Training				
feelings towards training	previous experie...		Ideal world vs real world	
Domestic issues				

Fig.5 Properties of PHEC training

Conclusion and Discussions

The outcome of this research shows that teachers learned a lot from their experience. But as this professional development was general and focussed specifically on methodologies of teaching in general, so far its utilization in teaching science subjects was concerned it could not help to the maximum. But sessions on personality development, financial and conduct matters were helpful for them a lot. Investigation of the information from this study drove the analyst to reason that the members

of PHEC training feel good for this training activity and it helps the members in improving their educating abilities. Additionally, the training doesn't give enough occasions to improve the correspondence and introduction abilities of the members. The training situation was very surprising from the real climate of public colleges. The training didn't address the issues of the learners. However, the members saw that PHEC should direct in-administration proficient advancement training for college teachers in the future to improve their professionalism. PHEC was managing the training of recently enlisted college teachers under the Faculty Training Academy. It gave training to 7 groups in the principal stage and trained just about 100 teachers in each group. The targets of PHEC training were to prepare the individuals in the present day showing procedures, empower the teachers to become compelling moderators by improving their introduction and correspondence capacities, Some of the objectives of this training were to improve personality bearing, andrological skills, awareness about conduct rule and assessment procedures for college students. It was the new activity of PHEC to prepare the college teachers. Before this, college teachers used to join their colleges without any proper training. The primary motivation behind this exploration study was to investigate training wonder and how it used to affect college teachers. PHEC gave an enhanced learning climate and a stage where the teachers can improve their aptitudes. The writing which manages proficient advancement demonstrated that it upgrades the attributes of teachers and at last improved the learning. The discoveries of the examination show that this training gives occasions to gain from specialists' experiences and thus improve their skills. The discoveries likewise show that teachers feel that training is essential to improve the execution of teachers particularly if the authority gives training as per their specific subjects. Also, the specialists should consider the real state of public colleges and consequently give training appropriately. The discoveries will give data to higher education authorities about the members feeling or pondering this professional development activity and in what manner can the specialists improve the training courses to accomplish the greatest objectives. The science teachers build professional skills gradually, by engaging in training and gain experience in teaching and professional learning. They experience training and take advantage of PD offerings. Science teachers learn from their efforts and those of their colleagues during induction training.

Direction for Future Research & Recommendations

The conducted study was limited to a specific group of teachers. As we know the generalizability of qualitative researches is very limited yet, for the sake of policymaking the researchers would suggest a mixed-method qualitative-quantitative design. As the limitation of the qualitative study, the result is contextually biased. The accompanying suggestions were made after doing an exhaustive investigation of the information. There is a dire need to revenue a genuine activity to set out on the course of the in-administration training and PD. Almost certainly this training helped the teachers in different manners, still, PHEC needs to re-examine the substance of the training and development to encounter the greatest objectives. The substance of training projects ought to have lined up with the necessities and experiences of teachers in the homerooms.

A subject insightful training can similarly be more compelling to improve teachers' exhibition. In this way, PHEC should direct subject-based training, especially for science teachers. The focal point of the training ought not to be on showing the speculations and academic material in address style, rather it ought to permit the greatest interest for the students and advance movement-based learning. As the analyst in this investigation investigates the normal lived experiences of members of the PHEC training, future specialists can utilize quantitative philosophy to gauge the viability of the training. The phenomenology is primarily inspired by the lived experiences of the subject of the examination. The objective of phenomenology is to respond to a particular examination question about the experiences of the members. To all the more unbiasedly comprehension of the subject of study, the future specialists can utilize Grounded hypothesis as examination strategy. The examination can likewise be reproduced by utilizing a mixed strategy plan. This investigation just spotlights on the teachers' experience of the training, the future analyst can contemplate the impacts of the prepared teacher of PHEC on students' achievements in science subjects. Future researchers can duplicate this investigation with the greatest variety of inspecting. The govt. of Punjab should take an action research approach while conducting induction training for college teachers in this way the core objectives of the training can be ensured. The colleges must take this as the professional development process and take some returns for those teachers who attend PHEC training. There must be an incentive for the science teachers as well.

References

- Badri, M., Alnuaimi, A., Mohaidat, J., Yang, G., & Al Rashedi, A. (2016). Perception of teachers' professional development needs, impacts, and barriers. *SAGE Open*, 6(3). doi:10.1177/2158244016662901
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
- Creswell, J. W. (2013). *Steps in conducting a scholarly mixed methods study. DBER Speaker Series.48.*
- Demir, K., & Qureshi, A. M. (2019). Pakistani science teachers' experiences of professional development: A phenomenological case study. *Journal of Science Teacher Education*, 30(8), 838-855.
- Farah, A., Fauzee, O., & Daud, Y. (2016). A cursory review of the importance of teacher training: A case study of Pakistan. *Middle Eastern Journal of Scientific Research*, 21(6), 912-917.
- Ghosh, S., Krishnan, V. J., Rajguru, S. B., & Kapila, V. (2019). *Middle school teacher professional development in creating a NGSS-plus-5E robotics curriculum (Fundamental)*. Paper presented at the 2019 ASEE Annual Conference & Exposition.
- Jahangir, S. F., Saheen, N., & Kazmi, S. F. (2012). In-service training: A contributory factor influencing teachers' performance. *International Journal of Academic Research in Progressive Education and Development*, 1(1), 31-38.
- Kafle, N. P. (2011). Hermeneutic phenomenological research method simplified. *Bodhi: An interdisciplinary journal*, 5(1), 181-200.
- Khatoon, A. (2008). *Impact of ADB assisted teacher training project on the quality of teacher education in Pakistan*. [Ph.D. dissertation] International Islamic University Islamabad, Pakistan.
- Malik, M. E., Danish, R. Q., & Usman, A. (2010). The impact of service quality on students' satisfaction in higher education institutes of Punjab. *Journal of Management Research*, 2(2), 1-11.

- Memon, G. R. (2007). Education in Pakistan: The key issues, problems and the new challenges. *Journal of Management and Social Sciences*, 3(1), 47-55.
- Nasreen, A., & Mirza, M. S. (2012). Faculty training and development in the public sector universities of Punjab. *International Journal of Business and Social Science*, 3(3), 229-241.
- Powell, C. G., & Bodur, Y. (2019). Teachers' perceptions of an online professional development experience: Implications for a design and implementation framework. *Teaching and Teacher Education*, 77, 19-30.
- Ramanan, B., & Mohamad, M. a. B. (2021). How does teacher continues professional development practices help teachers to become competent? validating models: a structural equation modeling approach. *Journal of Physics: Conference Series*, 1793(1). doi:10.1088/1742-6596/1793/1/012003
- Rubini, B., Ardianto, D., Pursitasari, I. D., & Permana, I. (2017). Professional development model for science teachers based on scientific literacy. *IOP Conference Series: Materials Science and Engineering*, 166. doi:10.1088/1757-899x/166/1/012037
- Sales, V. (1999). Women teachers and professional development: gender issues in the training programmes of the Aga Khan Education Service, Northern Areas, Pakistan. *International Journal of Educational Development*, 19(6), 409-422.
- Shigri, S. (2009). Inquiry into induction support for ELT faculty at Pakistani higher education institute. *INTED2009 Proceedings*.
- Tahira, M., & Ameen, K. (2016). Information needs and seeking behavior of science & technology teachers of the university of the Punjab, Lahore. *Pakistan Journal of Information Management and Libraries*, 10.
- Ulla, M. B. (2018). Benefits and challenges of doing research: Experiences from Philippine public school teachers. *Issues in Educational Research*, 28, 797 - 810.

Younas, A., Zeb, H., Aziz, S. B., Sana, S., Albert, J. S., Khan, I. U., Inayat, S., Khan, F.H., & Rasheed, S. P. (2019). Perceived challenges of nurse educators while teaching undergraduate nursing students in Pakistan: An exploratory mixed-methods study. *Nurse Education Today, 81*, 39-48.

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