CONTINUOUS PROFESSIONAL DEVELOPMENT AND ITS IMPACTS ON TEACHERS' PEDAGOGY

Naila
Secondary School Teacher,
Federal Government School Khuzdar,
Balochistan, Pakistan
Email: nailanisar2015@gmail.com

Zarina Waheed
Assistant Professor,
Department of Education, SBK Women's University Quetta,
Balochistan, Pakistan
Email: zarinarashid4@yahoo.com

Ruqia Mirwani
Lecturer,
Department of Education, University of Turbat,
Balochistan, Pakistan
Email: ruqia.mirwani@uot.edu.pk

ABSTRACT

This study aimed at investigating continuous professional development and its impacts on teachers' pedagogy among 103 (85 females and 18 males) elementary level teachers at private school of Turbat region Baluchistan. The researcher collected data from all the elements of population to explore teachers' perceived knowledge of pedagogy before conduction of the training and examined teachers' perceptions regarding the impacts of continuous professional development training on teachers' pedagogy after training. Data were collected through pre-survey and post-survey Questionnaires which included lesson planning, classroom management, classroom assessment, teaching methods, test development and continuous professional development. Through the statistical package for social sciences (SPSS) and partial least squares and structural equation modelling (PLS-SEM) were used to test hypotheses. The results of (PLS-SEM) revealed all the five hypotheses are accepted and supported each with significant value of (P=0.000). The study concludes teachers have positive perceptions about their knowledge of pedagogy after attending the training. Hence, the study suggests CPD training must be made compulsories for all the schoolteachers and recommends introducing training workshops in schools to withstand quality of school teaching and learning.

KEYWORDS
Continuous professional development; teachers' pedagogy; Structural Equation Modelling

INTRODUCTION

In the changing filed of education, the professional development is a serious challenge that can influence the performance of teachers, learners, and schools. Therefore, continuous professional development (CPD) is essential for the maintenance and enhancement of the standard of school teaching and learning (Kennedy, 2005). Moreover, continuing professional development also strives to bring out the best teaching approaches that can help students learn more effectively and achieve better academic results. Furthermore, Timsal, Awais, and Shoaib (2016) state that an instructor who is not professionally growing, cannot keep his/her profession thriving. Osamwonyi (2016) said that absence of continuous professional training will retard professional growth of instructors. Because CPD enrich the teachers with chances to obtain knowledge and skills and to perform more excellently on current job. Additionally, several studies have shown that continuing professional development courses increase the trust of teachers in teaching their subjects, encourage, boost teachers' confidence, promote a good attitude toward teaching and enhances teachers' content knowledge of their respective area or field (Radford, 1998; Stein, 1999; Supovitz, 2000). Besides, all over the world, the professional development of teachers has been prioritized. It has been established that in-service professional development (IPD) is needed by every teacher to professionally function in classroom teaching and learning (Lee, 2005; Sparks, 2002; Sywelem, & Witte, 2013). Therefore, learning can be enhanced by putting more concentration on teachers and their pedagogical expertise via continuing professional development. (Bashir &Long, 2015). Hence, teachers must be evaluated after participating in various professional development opportunities in order to measure the influence of the IPD programme on their teaching activities. But unfortunately, teachers in Baluchistan specifically in Turbat region after being inducted for teaching profession get no opportunity for their professional development. However, infrequently, or rarely teachers' training programs are organized by non-government organization (NGOs) which provide some exposure to private school teachers, but the workshops are of little values without follow-up and feedback and the activities have little connection with school practices and no serious efforts have ever been made to make teacher professional development (TPD) a regular feature in school level. In short, continuing professional development for teachers at school level is like a drop in an occasion. Hence, this study contributes s to minimize the knowledge gap in literature by investigating continuous professional development and its impacts on teacher's pedagogy. As continuing teacher professional development courses help teachers to use practical, logical, moral, structured, and systematic approaches in classrooms (Kazmi, Pervez & Mumtaz, 2011).

LITERATURE REVIEW

The study's theoretical background is based on the training evaluation model of Roland L. Kirkpatrick. The training evaluation model of Kirkpatrick comprises of four stages: reactions, learning, knowledge transfer, and results/outcomes. Moreover, the purpose of the model is to address diverse levels of outputs of the training. (Noe, 2013) Furthermore, evaluation procedure in level one, gauge the immediate reactions of trainees through a standard or quality technique. Whereas the level two gauge the knowledge, skills, and attitudes through post-workshop feedback after the training. Kirkpatrick and Kirkpatrick (2008) On the other hand, the level three gages the motor skills of the trainees that reflect on-job participants' level of attainment after sometimes of the training sessions. While the level four measures the changes in organizational outcomes after training sessions in terms of improved performance of trainees. In addition, Level four involves assessing results before and after the training sessions (Kirkpatrick & Kirkpatrick, 2005). However, this model is mostly used to evaluate the effectiveness of training (Bates, 2004). Thus, this study used the proposed steps of Kirkpatrick training evaluation model to determine the effects of ongoing professional development on the pedagogy of teachers as such: lesson planning, classroom management, classroom assessment, methods of teaching and test development.

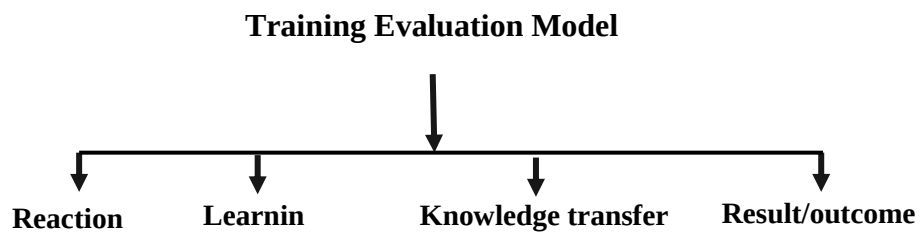

Figure 1: The training evaluation model of Kirkpatrick

Lesson planning, the heart of an effective teaching, is an artistic procedure which allows the educators to develop their comprehension regarding the knowledge of learners, curriculum, and background of teaching. Moreover, Spratt, Pulverness and Williams (2005)**,** states that lesson planning is a systematic arrangement of course that provides direction to the instructor that how the content of study to be taught. Additionally, the planning of the lesson is an essential procedure because it allows the teachers to focus on what should be taught, how should it be taught, and how to evaluate the learners effectively (Yildirim, 2003). However, according to Cicek & Tok (2017) many teachers believe in planning, but their focus of lesson planning differs in manners. Moreover, in a cross-cultural study of 25 Japanese instructors and 36 U.S. 5th to 8th grade instructors, Japanese instructors saw lesson planning as a more complicated process than the U.S. As Japanese instructors concentrated more on the student learning process, while U.S. instructors concentrated more on trying to

efficiently teach the content. (Fernandez 2010). However, the lessons that appeared more effective were those that were process-oriented and learners-oriented while those that were inflexible, procedurally ambiguous, and teacher-oriented seemed less effective (Cicek & Toc, 2017). Nevertheless, teachers must change their perceptions of lesson planning from 'What will I cover' to 'What will my students accomplish?" **(**Wilkerson and Scheffler, 1992). Accordingly, lesson planning is often neglected, but if done, the focus is on delivering the content rather than planning to meet the needs of the learners. (Ferguson & Sutphin, 2021)**.** Hence, an effective and well-planned lesson is crucial as it optimizes the outcomes of teaching and learning process (Dorovolomo, Phan & Maebuta, 2010). Therefore, it is said, ″well planned is half done″.

Classroom management is the procedure of organizing and arranging the physical, social, and learning environment of the classroom which includes rules and routines as well as it involves seating arrangement, time management and students' involvement. Moreover, Classroom management represents an important characteristic of the pedagogical knowledge of the instructor. (Evertson, 1989). Nevertheless, numerous instructors do not obtain suitable classroom management training before to and during their employment (Popescu, 2014). As a result, they feel unprepared and struggle to handle and manage students' behavior in the classroom (Macías, 2018 & Akar, 2007). Moreover, Mitchell, Hirn, and Lewis (2017), assert that a few instructors nationwide receive training on classroom management that are based on theories or incorporate theoretical beliefs. Therefore, teacher education programmes should focus on giving teacher candidates practical ways to classroom management through coursework and guided practice with feedback, as well as addressing the difficulties of new teachers to establish a positive atmosphere in the classroom (Stough, 2006). Thus, in-service professional development training should be formed or created in school to support educationalists with framework for managing effective or operative classroom.

Classroom assessment is an ongoing process that collects or gather information about students' performance to check student's strength and weakness. Besides, classroom assessment refers to all activities undertaken by teachers to obtain information that can be utilized to enhance teaching and learning (Tekyiwa & Sekyi, 2016). However, Andrade and Brookhart (2020) claim that there is shortage of studies on professional development programs concerning classroom assessment. Moreover, Andersson and Palm (2018) testified from a study in which 22 Swedish mathematics teachers participated in a formative assessment programme on Professional Development and data were collected before and after the program. Thus, the educators expressed the need for more help and information on formative assessment. Hence, further empirical study is certainly required as challenges which teachers are facing are transform of

theoretical knowledge into classroom practice. On the other hand, the influential research review by Black and Wiliam (1998) on classroom assessment and learning from 250 studies, over the course of a 10-year from 1987- 1998 around the world, demonstrated that a variety of classroom evaluation procedures had the potential to improve students' performance and achievement. Moreover, Black and Wiliam (2018) outlined that the formative assessment theory must be integrated within a larger theoretical area, particularly pedagogical theory. As classroom assessment encourages, motivates, and provide constructive feedback to the teachers and students about strengths and weakness of teaching and learning process. (Tosuncuoglu, 2018).

Education is a turning process, therefore effective teaching strategies and methods to be adopted in accordance with students' needs to provide the appropriate direction (Mehmood & Rehman, 2011). According to Ayua (2017), effective and innovative teaching strategies make the learners able to develop their knowledge and skills by actively engaging in the teaching-learning process. According to researchers the learners' outcomes are dependent on the instructor's instructional planning, the choice of teaching methods and the variety of learning activities (Lund & Stains 2015; Pelch & McConnell, 2016). Moreover, Carpenter, (2011) conducted a study on effective teaching approaches for primary school level. The study's overall findings imply that instructors who teach primary level should incorporate proactive teaching approaches into their teaching, as active and collaborative teaching approaches appeal to many students. However, American Society of Engineering Education (2012) and National Research Council (2012) proclaim, the acceptance and implementation of operative instructional approaches, tactics and strategies into classroom practice is slow. Nevertheless, teachers are hesitant and unwilling to adopt change for numerous reasons (Tharayil, 2018). In addition, the adaption of operative instructional practices promotes extensive modification or change (Lund & Stains 2015; Pelch & McConnell, 2016). Hence, the teachers of 21st century need to change their teaching strategies by shifting the emphasis from the outdated textbook-based learning to exploration learning (Felder & Brent, 2010). Thus, it is vital to offer in-service training to teacher to adopt proper methods of teaching.

A test is an instrument that systematically measure the test takers ‘knowledge, skills, attitude, speed, accuracy, proficiency, intelligence and performance. Moreover, it is the most significant element of the education system that not only gauges students learning outcomes but also determines how effective the instructor is in teaching-learning procedure. Besides, Sharma and Sansanwal (2018) states that an instrument that gauge the attainment of the learners must be objective, reliable, and valid. Therefore, every classroom teacher is expected to have and execute necessary skills for constructing good items for achievement test (Gullickson, 1984). Unfortunately, lack of test construction skills is a major cause of negligence in schools. Moreover,

poorly construction of test in educational institutes is a foremost problem that needs special consideration (Osadebe, 2015). However, valid, and reliable test development is not given sufficient attention. Furthermore, Sharma and Gupta, (2017) affirm that utmost instructors in their own field are not good in development of effective tests. Hence, school administration and management should provide trainings to the teacher regarding the item's construction of test. However, a study conducted by Jayanthi (2014); the results recommend that training can improve teachers' tests development skills. Thus, teachers to be provided training on test development. Hence, those who have expertise in this field should provide training to instructors because the quality of test depends on the quality of the teacher which affect the quality of competence in students (Sharma & Sansanwat, 2018).

CONCEPTUAL FRAMEWORK

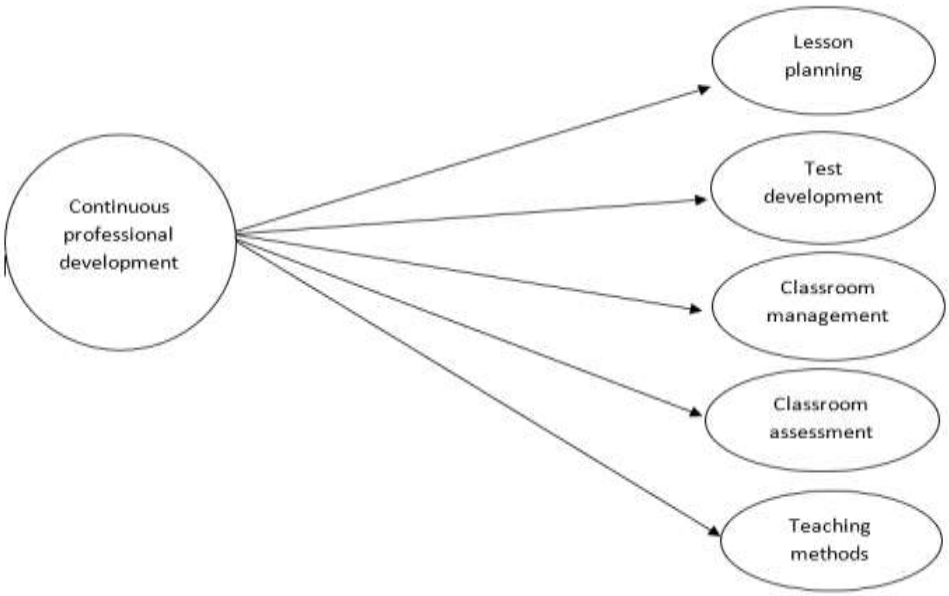

Figure 2: Conceptual Framework

RESEARCH OBJECTIVES

1. To explore teachers' perceived knowledge of pedagogy before and after the training
2. To examine teachers' perception about the continuous professional development and its impacts on teachers' pedagogy after the training

RESEARCH HYPOTHESES

1. Continuous professional development has a significant impact on teachers' lesson

Plan development skills.
2. Effective continuous professional development positively and significantly effects teachers' classroom management skills
3. Continuous professional development positively effects teachers 'classroom assessment skills.
4. Effective continuous professional development has a positive and significant impact on development of teachers' teaching strategies.
5. There is a relationship between continuous professional development and teachers' test development skills.

RESEARCH METHODOLOGY

The scrutiny followed the methodology of quantitative studies. A self-administered closed- ended Questionnaires were developed for use as survey instruments to record the respondents' experiences regarding continuous professional development and its impacts on teachers' pedagogy before and after professional development training. For this purpose, a series of training sessions were organized over a period of 2 weeks with the help of master's trainers. Moreover, the whole program was administered in 3 hours training workshops in 5 sessions: (1) lesson planning; (2) classroom management; (3) teaching strategies; (4) classroom assessment; and (5) test development. Furthermore, the research data were collected in two phases; (1) pre-workshop survey; (2) post-workshop feedback. The data was acquired in the first phase via a pre-training survey to explore teachers' perceived knowledge of pedagogy before the training. The instrument for the pre-survey contained of dual parts. The first portion comprised of demographic details on applicants, such as gender, age, teaching experience, academic and professional qualifications, and training experience. Whereas the 2nd section was designed to address teachers' perceptions regarding teachers' pedagogy which included lesson planning, classroom management, classroom assessment, teaching methods and test development. Moreover, the portion two of the pre-survey contained of 15 Likert-type items that vary from "Strongly Disagree" (1) to "Strongly Agree" (5). Moreover, Lesson planning was assessed by three items, Classroom management was measured via 3 items, teaching strategies or methods was measured by three items, Classroom assessment was measured via 3 items (5) and test development was assessed by 3 items.

In the 2nd phase, the data was collected after each session from participants by completing the post- training survey to examine teachers' perception about the continuous professional development and its impacts on teachers' pedagogy after the training. Therefore, the post-training survey was divided into six parts; (1) Lesson planning; (2) Classroom management, (3) Teaching Methods; (4) Classroom assessment (5) test development (6) and continuous professional development. Moreover, a total of 103 questionnaires were sent on Google forms (www.google.com/

forms) to the participants. The survey was hence given twice; prior to the professional development program and after the professional development program was completed. However, the total elements of the population were 103 due to which census method was employed to give a chance to all participate to participate in the study. Table 1 shows the demographics of the respondents.

FINDINGS AND RESULTS

The data was analyzed using various techniques and at various stages, such as descriptive analysis, which was used to examine the demographic characteristics of respondents in order to produce frequencies, means, percentages, and ranges. Moreover, Cronbach's alpha was used to establish the validity and reliability of each of the LVs used in the measurement model. To test the hypothesized relationship among the latent variables PLS-SEM was employed using IBM SPSS and Smart PLS software.

Table 1: Descriptive analysis

Gender of participants		
Gender	**Frequency**	**valid Percent**
Male	18	17.4
Female	85	82.5
Age of participants		
20-25	19	18.4
26-30	70	68.0
31-40	14	13.6
Education level of participants		
B.A/B.Sc.	39	37.9
Masters	55	53.4
MPhil	08	7.8
Ph.D.	01	1.0
Professional Qualification		
ADE	22	21.4
M.Ed.	42	40.8
B.Ed.	36	35.0
PTC	3	2.9
Work Experience of Teachers		
1-3 years	39	37.9
4-6 years	45	43.7
7-9 years	04	3.9
Less than 1 year	15	14.6
Attended Teacher Professional Development Training		
4-5 times	12	11.7

Not attended	24	23.3
Once	40	38.8
Twice	21	20.4
Thrice	06	5.8
Total	103	100

Table 2. Results indicate that factor loadings of all constructs were higher or above the permissible range of 0.70. more than acceptable range of 0.70. According to Hair et al., (2017), factor loading between 0.60 and 0.70 is acceptable for exploratory research. Only one item CPD5 was deleted due to low factor loading. The following were the AVE values for all constructs: CA (0.648), CM (0.645), CPD (0.588), LP (0.630), TD (0.643) and TM (0.641) were above the recommended value of 0.5 which showed that all constructs have no convergent validity issues. (Hair et al., 2017). Moreover, table 2 shows that composite reliability values are larger than 0.70. (Hair et al., 2011). Since the value of CA is 0.846, it is 0.844 for CM, 0.850 for CPD, 0.834 for LP, 0.843 for TD and 0.842 for TM. Consequently, all latent variables display higher internal consistency. The composite reliability values of all the variables are higher than the minimum agreed value, i.e., 0.70, and indicate the reliability of the respondents' scale (Hair et al., 2017). The stability of the latent variables used in the analysis is demonstrated by Cronbach alpha. Any latent variable of Cronbach alpha should be at least 0.70, as per the recommendations provided by Nunnally (1967). From the table 4.12 given below, you can see that the Cronbach alpha values for CA were 0.731, CM was 0.735, CPD was 0.766, LP was 0.710, TD was 0.722 and TM was 0.718. It was observed that all values are above 0.60. According to Hair et al., (2017), Cronbach alpha values above 0.70 is considered satisfactory. As a result, all Cronbach alpha values were within the allowed range.

Table 2: ***Factor loadings, AVE, Composite reliability, Cronbach Alpha***

Variables	**Items**	**Factor Loading**	**Cronbach Alpha**
			0.731
Classroom	CA1	0.842	
Assessment	CA2	0.820	
	CA3	0.750	
			0.735
Classroom	CM1	0.693	
Management	CM2	0.877	
	CM3	0.829	
Class			0.766
Professional	CPD1	0.752	
Development	CPD2	0.819	

	CPD3	0.685		
	CPD4	0.803		
			0.710	
Lesson	LP1	0.669		
Planning	LP2	0.829		
	LP3	0.868		
			0.722	
Test	TD1	0.790		
Development	TD2	0.743		
	TD3	0.868		
			0.718	
Teaching	TM1	0.874		
Methods	TM2	0.731		
	TM3	0.790		

Table 3: ***Discriminant Validity***

	CA	CM	CPD	LP	TD	TM
CA	0.805					
CM	0.779	0.803				
CPD	0.632	0.533	0.767			
LP	0.583	0.543	0.623	0.794		
TD	0.604	0.554	0.654	0.542	0.802	
TM	0.788	0.724	0.713	0.590	0.672	0.800

Table 4. Reflects the coefficients of the direct relationships among the constructs. Therefore, continuous professional development (CPD) has a positive and significant impact on Classroom Assessment (CA) (**β** = 0.632; p= 0.000). So, H1 has been accepted. There is also a positive and significant influence of continuous professional development on Class Management (CM) (**β** = 0.533; p= 0.000), H2 is supported. Continuous professional development also has a positive and significant effect on Lesson planning (LP) (**β** = 0.623; p= 0.000), H3 has been accepted. Continuous professional development has a positive impact on test development (TD) (**β** = 0.654; p= 0.000). So, H4 has been accepted. There is again a positive and significant influence of continuous professional development on teaching methods (TM) (**β** = 0.713; p= 0.000), therefore H5 is also supported.

Table 4: ***Hypothesis Testing through Path Coefficients (Direct Effects)***

Hypothesis	Relationships	B	SD	t-value	p-value	Decision
H1	CPD -> CA	0.632	0.068	9.339	0.000	Accepted
H2	CPD -> CM	0.533	0.077	6.884	0.000	Accepted
H3	CPD -> LP	0.623	0.064	9.728	0.000	Accepted
H4	CPD -> TD	0.654	0.069	9.529	0.000	Accepted
H5	CPD -> TM	0.713	0.049	14.612	0.000	Accepted

DISCUSSION

In the changing filed of education, continuing professional development of teachers is important because learning which takes place in classroom is closely linked to teachers and their teaching practices. It is widely assumed that the standard of education can be increased by placing more emphasis on the professional development of teachers. Therefore, this paper investigated the impacts of continuing professional development on teachers' pedagogy. Moreover, it aimed to explore teachers' perceived knowledge of pedagogy before the training and examine teachers' perceptions regarding the impacts of continuous professional development training on teachers' pedagogy after the training. Besides, data were collected through pre-survey and post-survey Questionnaires to determine the effect of continuous professional development training on teachers' pedagogy including lesson planning skills, classroom managements, classroom assessment skills, teaching methods and test development skills. Therefore, results further revealed that all the five (5) hypotheses are accepted and supported each with significant value of (p=0.000). Results therefore confirmed that Cronbach alpha values of all constructs were within the acceptable range of above 0. 70. Henceforth, the study concludes teachers have positive perceptions about their knowledge of pedagogy after attending the training. Therefore, the study suggests CPD training must be made compulsories for all the schoolteachers and recommends introducing training workshops in schools to withstand quality of school teaching and learning.

There are several limitations that would give exceptional opportunities for future research to this important stream of research. This study focused on exploring the teacher's perceived knowledge of pedagogy before the training and focused on examining continuous professional development and its impacts on teachers' pedagogy after the training. Hence, the following are some directions for future studies:

Hence, the future studies should focus on the impacts of transfer of training skills on students' academic performance and school outcomes. Moreover, researchers have room for progress to increase reliability, validity and generalizability of the outcomes for conducting research in future. This study was restricted to the variables like teachers' pedagogical knowledge and researchers in future studies may add more

insights by taking some additional variables such as Technological and content knowledge to the model. This study was limited to cross-sectional research design further researchers can use longitudinal study design. The sample size used in this study was too small due to time and resource constrains. The sample size can be increased for future studies to increase the generalizability. Besides, this research was quantitative in nature and researchers in future studies should analyze research on qualitative to obtain information that directly reflects the dynamics of research.

The researcher, in this study adopted the theoretical framework of Roland L. Kirkpatrick which comprises of four stages such as reactions, learning, knowledge transfer, and outcomes/ results. Thus, the researcher could use only (reaction and learning level). Therefore, in future studies, the researchers can use (knowledge transfer and outcomes) stages of Kirkpatrick training evaluation model. Hence, this study focused on continuous professional development and its impacts on teachers' pedagogy. Thus, future studies can add the moderating variable e.g., transfer of training skills in classroom and their effects on school outcomes.

RECOMMENDATIONS

This study concludes that teachers have positive perceptions about their knowledge of pedagogy after attending the professional development training. Henceforth, the results suggest the following recommendations that all the schools need to engage their teachers in learner-centered continuing professional development to improve the quality of their teaching and learning. Hence, the study also suggests organizing CPD training according to the teachers' professional needs. This research also recommends that school administrators and educational experts and policy makers to increase their efforts to encourage and introduce school training workshops to enhance the efficacy of teaching in the classroom because continuing professional development sustain and strengthen the quality of school teaching and learning. Thus, it should be made compulsories for all the schoolteachers.

REFERENCES

Ahmad Timsal, A., Awais, M. & Shoaib, O. (2016) On job Training and Its Effectiveness: An Employee Perspective. South Asian Journal of Banking and Social Sciences, 02(1), 2410-2067. https://www.researchgate.net/publication/305699923

Ahmad, K.Z., & Bakar, R.A. (2003). The Association Between Training and Organizational Commitment Among White-Collar Workers in Malaysia. International Journal of Training and Development, 7, 166-185.https://doi.org/10.1111/1468-2419.00179

Akar, H. (2007). Development and learning in classroom management. Academic Exchange Quarterly, 11(4), pp. 45-50. https://www.researchgate.net/publication/262004510

Andersson, C., & Palm, T. (2018). Reasons for teachers' successful development of a formative assessment practice through professional development – A motivation perspective. Assessment in Education: Principles, Policy & Practice,1 – 22.https://doi.org/10.1080/0969594X.2018.1430685

Andrade, L.H. & Brookhart,M.S. (2020) Classroom assessment as the co-regulation of learning, Assessment in Education: Principles, Policy & Practice, 27(4), 350-372,https://doi.org/10.1080/0969594X.2019.1571992

Ayua, G.A. (2017). Effective teaching strategies. Workshop Paper of Benue State University, Makurdi.A national study". Retrospective Theses and Dissertations. 12244. https://lib.dr.iastate.edu/rtd/12244

Bashir, N., & Long, C.S. (2015). The relationship between training and organizational commitment among academicians in Malaysia. Journal of Management Development, 34, 1227-1245.https://doi.org/10.1108/JMD-01-2015-0008

Black, P. & William, D. (1998) Assessment and Classroom Learning, Assessment in Education: Principles, Policy & Practice, 5(1), 7-74,https://doi.org/10.1080/0969595980050102

Council, N. R (2012). Discipline-based educational research: understanding and improving learning in undergraduate science and engineering. Washington, DC: National Academies Press.

Education, A. S. O. E. (2012). Innovation with impact: creating a culture for scholarly and systematic innovation in engineering education. Retrieved from Washington, DC:

Evertson, C. M. (1989). Improving Elementary Classroom Management: A School-Based Training Program for Beginning the Year. The Journal of Educational Research, 83(2), 82–90. http://www.jstor.org/stable/27540373

Felder, RM, & Brent, R. (2010). The National Effective Teaching Institute: assessment of impact and implications for faculty development. Journal of College Science Teaching, 99(2), 121–134. https://doi.org/10.1002/j.2168-9830.2010.tb01049.x

Gullickson, A. R. (1984). Teacher Perspectives of Their Instructional Use of Tests. The Journal of Educational Research, 77(4), 244–248. http://www.jstor.org/stable/27540052

Hair, J.F., Hult, G.T.M., Ringle, C.M. and Sarstedt, M. (2017) A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). 2nd Edition, Sage Publications Inc., Thousand Oaks, CA.

Hopfenbeck, T.N. (2018). Classroom assessment, pedagogy, and learning – twenty years after Black and Wiliam 1998. Assessment in Education: Principles, Policy & Practice, 25, 545-550. https://doi.org/10.1080/0969594X.2018.1553695

Jayanthi, J. (2014). Development and Validation of an Achievement Test in Mathematics. International Journal of Mathematics and Statistics Invention (IJMSI), 2(4),40-46. www.ijmsi.org

Kennedy, A. (2005). Models of Continuing Professional Development: a framework for analysis. Journal of In-Service Education, 31(2), 235-250. https://doi.org/10.1080/13674580500200277

Lee H.J. (2005). "Developing a professional development program model based on teacher's needs", The Professional Educator, 27(1-2),39-49.http://education.auburn.edu/resourcesservices/trumanpierceinstitute/theprofessionaleducator/.

Lund, T.J., Stains, M. The importance of context: an exploration of factors influencing the adoption of student-centered teaching among chemistry, biology, and physics faculty. IJ STEM Ed 2(13),1-21. https://doi.org/10.1186/s40594-015-0026-8

Macías, F.D. (2018) Classroom Management in Foreign Language Education: An Exploratory Review. Issues in Teachers´ Professional Development, 20(1)153—166 http://dx.doi.org/10.15446/profile.v20n1.60001

Mehmood, T., & Rehman, Z. (2011). Effective Use of Teaching Methodologies at Secondary Level in Pakistan. Journal of American Science. 7(2),313-320]. (ISSN: 1545-1003). http://www.americanscience.org.

Mitchell, S.B., Hirn, G.R. & Lewis, J.T. (2017) Enhancing Effective Classroom Management in Schools: Structures for Changing Teacher Behavior. Teacher Education and Special Education, 40(2) 140–153.http://dx.doi.org/10.1177/0888406417700961

Nagler, S.K. (2016). Effective Classroom-Management & Positive Teaching. English Language Teaching; 9(1).: http://dx.doi.org/10.5539/elt.v9n1p163

Nunnally, J.D. (1978). Psychometric Theory (2nd ed), New York: McGraw-Hill.

Osadebe, P. U. (2015). Construction of valid and reliable test for assessment of students. Journal of Education and Practice, 6(1), 51-56 http://www.iiste.org

Osamwonyi, E. F. (2016). In-Service Education of Teachers: Overview, Problems and the Way Forward. Journal of Education and Practice, 7(26), 2222-1735

Pelch, M.A., McConnell, D.A. (2016). Challenging instructors to change: a mixed methods investigation on the effects of material development on the pedagogical beliefs of geoscience instructors. IJ STEM Ed 3(5),1-18. https://doi.org/10.1186/s40594-016-0039-y

Popescu, T. (2014) CLASSROOM MANAGEMENT STRATEGIES AND TECHNIQUES: A PERSPECTIVE OF ENGLISH TEACHER TRAINEES. t: https://www.researchgate.net/publication/303119548

Radford, L.D (1998). Transferring theory into practice: a model for professional development for science education reform. Journal of Research in Science Teaching, 35(1), 73-88.https://doi.org/10.1002/(SICI)1098-2736(199801)35:1<73::AID-TEA5>3.0.CO;2-K

Sharma, H.L. & Gupta, P. (2017) Construction & Standardization of an achievement test in English Grammar. International Journal of Advanced Educational Research. 2(5), 230-235. https://www.researchgate.net/publication/323185432

Sharma,H.L. & Sansanwal, S. (2018) Construction and standardization of an achievement test in science. IJRAR- International Journal of Research and Analytical Reviews. 5(1), http://ijrar.com/

Sparks, D. (2002) Designing powerful professional development for teachers and principals. Oxford, OH: National Staff Development Council. Https://www.nsdc.org/sparksbook.html.

Stein, M. K., Smith, M. S., & Silver, E. A. (1999). The development of professional developers: Learning to assist teachers in new settings in new ways. Harvard Educational Review, 69, 237-270.https://doi.org/10.17763/haer.69.3.h2267130727v6878

Stough, L. M. (2006). The place of classroom management and standards in teacher education. In C. Evertson & C. Weinstein, (Eds.). Handbook of classroom management: Research, practice, and contemporary issues, 909-923. Mahwah, NJ: Erlbaum.

https://www.researchgate.net/publication/268523067

Supovitz, J. A., Mayer, D. P., & Kahle, J. B. (2000). Promoting Inquiry-Based Instructional Practice: The Longitudinal Impact of Professional Development in the Context of Systemic Reform. Educational Policy, 14(3), 331–356. https://doi.org/10.1177/0895904800014003001

Sywelem, G.M. & Witte, J.E. (2013) "Continuing Professional Development: Perceptions of Elementary School Teachers in Saudi Arabia", Journal of Modern Education Review,3(12), 881–898. http://www.academicstar.us

Tekyiwa, E. & Sekyi, A. (2016). Assessment, Student Learning and Classroom Practice: A Review. Journal of Education and Practice, 7(.21), 1-6. http://iiste.org/Journals/index.php/JEP

Tharayil, S., Borrego, M., Prince, M. et al (2018). Strategies to mitigate student resistance to active learning. IJ STEM Ed 5(7). https://doi.org/10.1186/s40594-018-0102-y

Tosuncuoglu, I. (2018). Importance of Assessment in ELT. Journal of Education and Training Studies, 6(9). URL: https://doi.org/10.11114/jets.v6i9.3443