

Pedagogical Development of Teachers in Training through School- Based Teacher Development Strategies

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Abstract:- Over time, it appears there has been a mounting anxiety about the state of teacher education and the adequacy of teachers in the school system at all levels. Attempts have been made to improve on the quality of teacher education, with interventions ranging from various forms of pre-service provisions through distance learning strategies to short-term training packages in the course of improving teachers' development, yet no appreciable improvement has been made. This study therefore, investigated the effect of School Based Teacher Development Programme (SBTD) on the enhancement of pre-service teachers' pedagogical skills acquisition and performance during teaching practice exercise. Two research questions and two hypotheses guided the study. This study employed multi-stage sampling technique which involved the purposive and stratified sampling technique to select the respondents with a sample size of 120 from a population size of pre-service teachers in the faculty of education 2019/2020 academic session. The instrument used in the collection of data was Pre-Service Teachers' Skills Acquisition Questionnaire ($r = 0.83$). The teaching practice assessment scores of the respondents were obtained and adopted to ascertain the achievement level of pre-service teachers after being exposed to the SBTD. The study lasted for 12 weeks divided into two equal halves of six weeks training and six weeks of observation period of the enhancement of the school based teachers' development strategies on the teaching skills of pre-service teachers. Descriptive statistics (means and standard deviation) and Analysis of Covariance at 0.05 level of significance were employed in analyzing the data collected. Findings revealed that there was significant main effect of SBTD on pre-service teachers' skills acquisition ($(F(1, 111) = 74.147, p < .05, \eta_p^2 = .444)$). There was no significant main effect of gender on pre-service teachers' skills acquisition ($F(1, 111) = .283, p > .05, \eta_p^2 = .003$). Based on the findings, it was concluded that the students who used SBTD intervention performed better than their counterpart. It was recommended that SBTD programme should be introduced to teaching practice to raise a generation of qualitatively bred teachers in our educational institutions.

Keywords:- Pre-Service Teachers, Pedagogical Skills, School-Based Teacher Development Programme

I. INTRODUCTION

There has been an increasing recognition in recent years of the need for a teacher professional development strategy that goes beyond merely acquiring new subject information and talents. The adoption of a broader perspective on teacher learning and practice has resulted in this shift. Teacher professional development refers to actions aimed at enhancing a teacher's talents, knowledge, competence, and other characteristics (Tribble, 2017; Caena, 2011). As a result, according to Tribble (2017), increasing individual abilities, knowledge, and competence, among other characteristics, necessitates professional development that focuses on improving and assessing learning outcomes. Strong evidence and expertise, as well as collaboration and expert challenge, support this (Gretter & Yadav, 2018). This professional development program is designed to maintain and prioritize the school's teacher quality. In essence, professional development has been re-conceptualized with shifts in perspective from knowledge to teaching practice (Ambarita & Ridho, 2016; Nuralisa, Murniati, & Djailani, 2015), from one-time training to ongoing learning, and from individual to collaborative learning (Ambarita & Ridho, 2016; Nuralisa, Murniati, & Djailani, 2015). (Idris, 2016; Tesfaw & Hofman, 2014; Yunus, Yunus & Ishak, 2012)

Traditional training approaches and newer approaches have a clear difference and gap, with the former failing to meet the needs of teachers and the latter appearing to meet the demands in the teaching and learning process (Mudawali 2017, Darling-Hammond, Hyler, Gardner, and Espinoza 2017, Walker, Spencer, Claiborne-Payton, and Whiteman 2017). Furthermore, Gretter and Yadav (2018) distinguished between the conventional and modern skills of teaching, saying that the old method is based on "skills and knowledge," whilst the new approach is referred to as "professional development." The modern approach is more aware of the setting in which teachers operate and is founded on a shared concept of teacher learning and professionalism. Based on a thorough review of current research in the field of teacher professional development, Johnson and Fargo (2014) depicted teacher learning as a complex system with systems inside systems.

The process of enhancing staff skills and competencies in order to provide quality education to pupils is known as Professional Development (Adedeji & Syakirah, 2018). Though there is no previous evidence of this happening in resource-constrained environments, successful teacher education and training could happen in the framework of the school (Tufail & Malik, 2016). Teacher professional development should be school-based, and a strong policy underpinning for development is vital, given the importance of teacher education and training. It's no surprise that one of the most essential tasks in arranging the educational process, according to Madawali (2017), is to improve and sustain the quality of teacher education. Teachers as education agents are professionals who have an important role in designing and applying the learning practice, evaluating the outcome of learning, guiding students and conducting studies as well. Therefore, the guidance in improving the professionalism of teachers is constantly required and one way that this can be achieved is through pre-service teachers' skill acquisition using school-based teacher development programme. Training models for teachers is considered in many countries to strengthen the school-based "pre" and "in-service" training rather than rely on lengthy traditional, institutional pre-service training (Darling-Hammond, 2016; World Bank, 2015; Tanang, Djajadi, Abu & Mokhtar, 2014).

In an era of public accountability, publicized criteria of student achievement, national accreditation of teacher education, and national teaching standards, teachers and beginning teacher education preparation courses are never far from criticism. According to national and worldwide surveys of graduates, teachers, administrators, and educational institutions, initial teacher education coursework does not adequately prepare graduates for real-world teaching (Shieh & Wheijen, 2014). Lack of time for practicum; separation of theory from practice; transmissive teaching model; lack of accountability; fragmentation of coursework; and lack of collaboration and consultation between universities, schools, and in-service teachers (Taylor, Roth, Wilson, Stuhlsatz, 2017; Capps, Craven, Craven, Craven, Craven, Craven, Cra (El-Bassuony, 2017).

Furthermore, many pre-service teachers have stated that their practicum experience was the most influential in their learning to teach (Mista & Embir, 2016; Hill, Beisiegel & Jacob, 2013). According to pre-service teachers, in-school environments give immersion in practical, real, and urgent teaching situations, whereas academic settings are viewed as "theoretical and remote" (Allen, Hafen, Gregory, Mikami & Pianta, 2015). There is also a common misconception among the general public that the majority of educated people teach. Effective teaching, on the other hand, entails more than just knowing subject matter or theory, as well as possessing interpersonal teaching dispositions and a "bag of tricks." Researchers have described the phenomenon as a time-consuming, dynamic, and unique process (Darling-Hammond, 2016; Grossman, Hammerness & McDonald 2014). Because of the duties and obligations that instructors must fulfill, the structure of schools and classrooms, and the diversity of pupils, learning to teach is a difficult task.

Curiosity, drive, and fresh ways of thinking are all sparked by professional growth (Shaha & Ellsworth, 2013). It's most effective when it's part of a long-term strategy that includes thorough, well-designed training and personalized follow-up. It's all about rebirth and change. The emphasis must move from outside the school, where experts offer training, to within the school, where learning is integrated into the classroom, and from ad hoc skill development to content-specific skill and knowledge production (Fattah, 2015; Abu-Heran, Abukhayran, Domonigo, & Perez-Garcia, 2014). Professional development that is successful must be long-term and, over time, closely connected to classroom instruction. Following in the footsteps of school construction programs, school-based teacher professional development is now at the heart of efforts to expand, enhance, and reform the educational system. The only realistic path ahead is through school-based teacher development (also known as SBTD) through technology enhanced learning (May, Sirinides, Gray & Goldsworthy, 2016).

The School-Based Teacher Development program is at the heart of the Educational Reform Strategy. By designing interactive pedagogies that better engage students in their learning, the program attempts to improve classroom teaching and learning techniques. The curriculum lays the foundation for comprehensive in-service teacher education. It provides a thorough overview of a wide range of concepts and techniques for enhancing school teaching and learning. SBTD seeks to increase all students' learning, broaden instructors' topic knowledge, and improve pedagogical approaches while preserving quality, equity, and inclusivity (Powell, Diamond, Burchinal, & Koehler, 2010). SBTD provides professional development to teachers on a school-by-school basis. As a result, instructors will be able to explore various techniques and feedback on students' responses as soon as the program begins. "A mixed multimedia curriculum that consists of six main modules, each of which deals with a distinct element of active teaching and learning," according to SBTD. Admission processes into the pre-service program are the first step in the recruiting process for teachers.

Teaching practice is an important component of teacher preparation programs at teacher education institutes in general, as well as in Nigerian universities' faculties of education. It is the time when student teachers are assisted in putting the theories and concepts of education learned in the classroom into practice while teaching pupils in cooperating schools.

There are three stages of teacher education in Nigeria. The first and second levels of post-secondary education, which last two and three years, are meant to train teachers for primary and junior secondary schools, respectively. Nigerian colleges and universities provide a four-year Bachelor of Education degree program, which is necessary for employment as a senior secondary school teacher (Federal Republic of Nigeria, 1981, revised 1998 and 2004). Curriculum and teaching techniques courses, which were mostly offered in the second and third years of the Bachelor of Education degree, were intended to train student teachers in pedagogical skills and specialized subjects.

The education program emphasizes interconnections between theory and practice so that students may form tight professional connections between universities and secondary schools where they will be trained to teach. A twelve-week teaching practicum is a requirement of both the penultimate and final levels of the Bachelor of Education degree. Teaching practicum is a sort of pre-service training for undergraduate students that allows them to be exposed to the reality of teaching, performance, professional skills, and activities. As they come into touch for the first time with real-life circumstances, it is the sole opportunity for students to put theories learned and concepts formed in the classroom to the test. Under the continual observation of qualified and experienced teachers, trainees get the chance to use various teaching approaches in actual classroom/school circumstances. Student teachers are exposed to professional activities that are part of teachers' duties in schools in addition to teaching. During their teaching practice, student teachers have been encouraged to use a variety of instructional models. Applied Science and Reflective Teaching are two popular approaches.

Our educational system places a high value on teacher education. It entails the training of teachers who will be in charge of putting our educational ideas and policies into practice. The objective of teacher education, according to the National Policy on Education (2004), is to produce highly effective classroom instructors at all levels of our educational system. Teachers must be sufficiently exposed to both the academic (theoretical) and practical elements of teaching in order to teach professionally and efficiently. Teaching is a significant tool in today's culture. Teaching is the process through which a teacher uses his or her knowledge of the students, subject matter, and technique to assist a student in learning. According to existing literature, teaching is defined as the use of educational information, techniques, and space to educate anybody who want to be educated (Yaki & Babagana, 2016; McArdle, 2010). It entails direct interaction between the teacher and the student. It is a complicated set of mutually beneficial actions that both the instructor and the student engage in in order to enhance learning.

Teaching practice is a period of time when a student teacher is assigned to a specific institution, such as a primary or secondary school, for supervised teaching as part of their graduation requirements and to gain valuable teaching experience. Teaching practice is a phase during which student teachers learn about the teacher's actual work in the classroom as well as outside-of-class experience (Oparah, Nwoke & Ikwunusi, 2017; Yusuf & Afolabi, 2010). Teaching practice is a laboratory where a student may put what he or she has learned about successful teaching into practice. Students' teaching experience is crucial in preparing them for future teaching responsibilities. The general objectives of teaching practice, according to the National Teacher Institution's teaching practice manual (2005), are to enable student teachers to: (a) gain general experience-academic, professional, social, and physical related to teaching profession; and (b) acquire a wealth of practical experience from all staff they are likely to come into contact with through active participation in the school.

A student teacher typically has to complete a twelve-week teaching practicum in order to get the required skills to qualify as a competent professional teacher in order to achieve the aforementioned aims. The student teacher may face a number of challenges during this period, including classroom management, supervisory attitudes about student teachers, curriculum creation, instruction, and environmental concerns. Each student teacher is assigned a supervisor during this period to assist, lead, correct, and assess the students' classroom performance.

A teaching practice supervisor is a college representative (trained teacher) who oversees the organization of student teachers in the classroom. In order to attain educational goals, he is also considered as someone who leads and oversees the work of teachers and other school staff. To guarantee that teaching and learning processes are enhanced, he serves as a bridge between students and instructors, as well as school programs. Supervision is a critical action that aids instructors in enhancing their performance. Because it assists in the growth of teachers-in-training, supervision is an important part of teacher preparation. During a teaching practice exercise, supervisors' attitudes toward student-teachers can either increase the student-ability teacher's and competence or detract from the activity's goal. The entire practice will be ineffective if the student-teacher relationship is not adequately managed. During teaching practice, student-teachers should be supervised on a frequent basis. The supervisor should be qualified and experienced so that he or she can provide the needed assistance to the student instructors. The supervisor is anticipated to have extensive experience in properly monitoring the school-based teacher development program so that students can be directed appropriately. As a result, this study looks into how pre-service teachers acquire these abilities through a school-based teacher development program, with the goal of increasing and improving productivity.

II. STATEMENT OF THE PROBLEM

No educational system can rise above the level of its teaching staff (The National Policy on Education, 2014). If education remains the bedrock of development, then, something urgent and potent has to be done to the continuing falling standard of education in Nigeria that has reached an alarming stage. Over time, there has been a mounting anxiety about the state of teacher education and the adequacy of teachers in the school system at all levels. The Universal Basic Education, (UBE) stated in 1999, when it was floated stated that "only well trained teachers should be employed to successfully translate the objectives of the body to reality" (Oparah, Nwoke, & Ikwunusi, 2017). Traditional teacher professional development has been provided in various ways such as pre-service training and orientation for new staff, in-service training, work-based training seminars, mentoring programme and others.

Interventions have ranged from various forms of pre-service provisions through distance learning strategies to short-term training packages in the course of improving

teachers' development, yet no appreciable improvement has been made. The quality of both in-service and pre-service teachers' falls short of the expected standard for actualization of converting objectives to reality in the educational sector (Oparah, Nwoke, & Ikwuanusi, 2017) hence, the debilitating effect of this development stares at the nation worrisomely in the face. The traditional method of teacher-training which is aimed at skill acquisition and enhancing student's performance is focused on skills and knowledge approach only. The faculties of Education in various institutions organize orientation programs to cater for information dissemination to the students prior to the teaching practice exercise. In an attempt to bridge the gap in knowledge acquisition and practice of pre-service teachers, a study that is interested in addressing education and training for pre-service teachers that will bring about quality and efficiency as a major part of their professional development is needed. According to Nwaboku (2016), it has been observed over the years that the skills shown by the teaching practice students and also the performance based on results derived from Teaching Practice by the students are on the average. Therefore, this study is to investigate the effect of School Based Teacher Development Programme (SBTD) on the enhancement of pre-service teachers' skills acquisition and performance during teaching practice exercise.

III. RESEARCH QUESTIONS

1. Is there a difference in the teaching practice achievement score of SBTD trainees and those who did not?
2. Is there a difference in the achievement score of male and female trainees on SBTD?

IV. NULL HYPOTHESES

H_{01} : There is no significant main effect of SBTD on pre-service teachers skills acquisition

H_{02} : There is no significant main effect of gender on pre-service teachers skills acquisition.

V. METHODOLOGY

The study adopted quasi experimental pre-test, post-test, non-equivalent control group (2x2) factorial design consisting of the two levels of treatment (School-Based Teacher Development Strategies and Control), two levels of gender (Male and Female). The population for this study consists of all pre-service teachers in their final year of 2019/2020 academic session in the Faculty of Education, Lagos State University. The sample of the study comprised of 120 final year pre-service teachers from the department of Science and Technology Education, faculty of Education, Lagos State University. The study employed multi-stage sampling techniques by which they were stratified into all the subject units in the department. Probability proportionate to size sampling technique was used to select the participants. Purposive Sampling technique was also adopted to select the participants from each of the units of the department because they were in their final year and was officially allowed to embark on Teaching Practice. The instrument used for the study was Pre-Service Teachers' Skills Acquisition Questionnaire (PTSAQ). PTSAQ was developed by the

researcher, it is a four-Likert scale format with "Not at all, A little, More than a little, A lot" responses. It consists of two sections A and B. Section A consists of Bio-data of the pre-service teachers like Gender, Age, Department, while section B consists of items on features of the SBTD such as the extent to which pre-service teachers perform activities like teaching a whole class, teaching small groups and teaching an individual; and the extent to which students perform activities such as observing natural phenomena and describe what they see, watching the teacher while demonstrating an investigation and formulating their own questions for investigations; during the instructional process in their teaching practice. The instruments were given to experts in educational technology and counseling Psychology for some adjustments, structural corrections, and suggestions to enhance the final construction ahead of administration. The instrument PTSAQ was subjected to reliability test using Cronbach's Alpha with the coefficient of reliability found to be 0.83. This score indicated that the instrument was found to be useful and consistent for the purpose for which they were prepared. The data collected was subjected to statistical tool of Mean, Standard Deviation and Analysis of Covariance (ANCOVA) using SPSS to test the efficacy of experimental group over control group. An alpha level of 0.05 was used to test the hypotheses

VI. FINDINGS

Research Question 1

Is there a difference in the performance score of SBTD trainees and those who did not?

Table 1: Performance scores of Pre-Service Teachers in SBTD and those in control groups

SBTD	Mean	N	Std. Deviation
Treatment	70.81	58	8.821
Control	58.87	62	5.500
Total	64.64	120	9.416

Table 1 show that Pre-Service Teachers in SBTD group outperformed their counterparts in the control group. There is a difference in the performance score of SBTD trainees and their counterparts with mean scores of 70.81 and 58.87 respectively, in favour of the Pre-Service teachers in the SBTD.

Research Question 2

Is there a difference in the performance score of male and female trainees on SBTD?

Table 2: Performance scores of Pre-Service Teachers in SBTD on the basis of their sex

Gender	Mean	N	Std. Deviation
Male	65.44	61	9.400
Female	63.81	59	9.442
Total	64.64	120	9.416

The male Pre-Service teachers had a better mean score of 65.44 than their female counterparts with a mean score of 63.81 as indicated in Table 2.

Test of Hypotheses

H0₁: There is no significant main effect of SBTD on pre-service teachers' skills acquisition.

To test the hypothesis, the data collected from the field were summarised and subjected to analysis of covariance (ANCOVA). The result of the ANCOVA is presented in Table 3

Table 3: Summary of ANCOVA of the effect of SBTD on pre-service teachers' skills acquisition

Source	Type III SS	Df	MS	F	Sig.	η_p^2
Corrected Model	4636.112 ^a	8	579.514	10.874	.000	.439
Intercept	7716.989	1	7716.989	144.804	.000	.566
Pre_Test	2.682	1	2.682	.050	.823	.000
SBTD	3951.469	1	3951.469	74.147	.000	.400
Error	5915.480	111	53.293			
Total	511977.000	120				
Corrected Total	10551.592	119				

Table 3 shows that there was significant main effect of SBTD on pre-service teachers' skills acquisition ($F(1, 111) = 74.147$, $p = .000$, $\eta_p^2 = .444$). Therefore, the null hypothesis which states that there is no significant main effect of SBTD on pre-service teachers' skills acquisition was rejected. This implies that there is a main effect of SBTD on pre-service teachers' skills acquisition.

H0₂: There is no significant main effect of gender on pre-service teachers' skills acquisition.

To test the hypothesis, the data collected from the field were summarised and subjected to analysis of covariance (ANCOVA). The result of the ANCOVA is presented in Table 4.

Table 4: Summary of ANCOVA of the effect of gender on pre-service teachers' skills acquisition

Source	Type III SS	Df	MS	F	Sig.	η_p^2
Corrected Model	4636.112 ^a	8	579.514	10.874	.000	.439
Gender	15.060	1	15.060	.283	.596	.003
Error	5915.480	111	53.293			
Total	511977.000	120				
Corrected Total	10551.592	119				

Table 4 reveals that there is no significant main effect of gender on pre-service teachers' skills acquisition ($F(1, 111) = .283$, $p = .596$, $\eta_p^2 = .003$). Therefore, the null hypothesis which states that there is no significant main effect of gender on pre-service teachers' skills acquisition was not rejected. This implies that gender has no influence on pre-service teachers' skills acquisition.

VII. DISCUSSIONS OF FINDINGS

The study discovered that pre-service teachers in the SBTD group, which was the experimental group, fared better than those in the control group, who were not given SBTD training. The result showed a mean of 70.81 for 58 pre-service teachers exposed to SBTD training and a standard deviation of 8.821, and a mean of 58.87 for 62 participants not exposed to SBTD training and a standard deviation of 5.500, indicating that there is a difference in the achievement score of SBTD trainees and their counterparts not exposed to SBTD training.

Teaching ability is defined as the capacity to combine and focus on a mixture of management, topic understanding, and interpersonal skills. According to Nausheen and

Richardson (2010), there are three theoretical frameworks for teacher education innovations. They said that improvements included competency-based teacher education (teacher roles and tasks), personal orientation to teaching (the personal component of teaching), and reflection and inquiry-based paradigms (teacher researcher and reflective practitioner). These, on the other hand, have had a limited influence and reflect a wide range of, if not diametrically opposed, viewpoints.

According to Greenberg, Pomerance, and Walsh (2011), Vygotsky's socio-cultural theory provides a more comprehensive model that integrates the good aspects of the three paradigms. According to socio-cultural theory, the learner creates knowledge, which is affected by the learner's historical and cultural background, as well as their social, emotional, and cognitive interactions with the environment in which they learn (Gore, Griffiths & Ladwig, 2016). Vygotsky's socio-cultural theory is built on three basic principles: social roots of individual development, semiotic mediation in human development, and genetic analysis (Tarman, 2012).

The pre-service teacher's viewpoint on knowledge was one of the key gaps in the literature that this discovery filled. There are various points of view on the value of information for effective instructors, many of which are expressed from the perspective of an expert or experienced educator. Only a few studies have actually sought pre-service teachers' opinions on what they believe they need to know and how coursework and teaching experience contribute to the development of expert knowledge, according to Jegede, Taplin, and Chan (2010), who claim that only a few studies have actually sought pre-service teachers' opinions on what they believe they need to know and how coursework and teaching experience contribute to the development of expert knowledge.

The study showed that male pre-service teachers had a higher mean score than female pre-service teachers after receiving SBTB training, with a mean score of 65.44 and a standard deviation of 9.400. There are 61 male pre-service teachers who have received SBTB training and 59 female pre-service teachers who have received SBTB training, with a mean of 63.81 and a standard deviation of 9.442, indicating that there is a difference in achievement scores between male and female pre-service teachers who have received SBTB training.

VIII. CONCLUSION

Based on the findings of the study; research question one stated that is there a difference in the teaching practice achievement score of SBTB trainees and those who did not? It was found out that there is a clear difference in teaching practice achievement score of SBTB trainees and their counterpart. The research hypothesis one corroborated what was concluded in research question 1. Furthermore, research question 2 stated that is there a difference in the achievement score of male and female trainees on SBTB? It was found out that there was no significant main effect of gender on pre-service teachers skill acquisition.

IX. RECOMMENDATIONS

None of the professional development initiatives discussed in this assessment took place in a single, isolated interaction (Gallagher, Woodworth & Arshan, 2017). Instead, the programs generally lasted weeks, months, or even academic years, with teachers actively participating in the learning process. These findings are in line with earlier research on the duration of effective professional development, which implies that in order to have an impact, professional learning must be sustained (Mudawali, 2017).

There should be a location where students and adults alike may participate as active learners in topics that are important to them, and where everyone can help each other learn" (Roberts & Pruitt, 2008). Newmann (1996) outlined his vision of a professional learning community, which consists of five major components. The professional learning community is a group of instructors who share a common vision for cooperating, sharing, reflecting, and

meeting the requirements of their teaching and learning practices (Hord, Roussin, & Sommers, 2009).

From sharing individual activities to building a common culture that develops continuing collaboration in more substantiated, educated ways, the professional learning community will assist teachers in expanding their thoughts and aims. Teachers in PLCs pay more attention to the outcomes of their students.

REFERENCES

- [1]. Adedeji, F. A. & Syakirah, S. (2018). Are Biology pre-service teachers ready to implement 21st century skill in teaching and learning in Nigeria? *International Journal of Academic Research in Progressive Education and Development*, 7(3), 414-423.
- [2]. Allen, J. P., Hafen, C. A., Gregory, A. C., Mikami, A. Y., & Pianta, R. (2015). Enhancing secondary school instruction and student achievement: Replication and extension of the My Teaching Partner-Secondary intervention. *Journal of Research on Educational Effectiveness*, 8(4), 475-489.
- [3]. Ambarita, A. J., & Ridho, H. (2016). Pengaruh Mutasi Terhadap Semangat Kerja Pegawai Negeri Sipil Pada Kantor Pelayanan Pajak Pratama Kota Pematang Siantar. *PERSPEKTIF*, 8(2), 1-13.
- [4]. Caena, F. (2011). *Literature review: quality in teachers' continuing professional development*. European Commission, Directorate-General for Education and Culture.
- [5]. Capps, D. K., Crawford, B. A. & Constan, M. A. (2012). A review of empirical literature on inquiry professional development: alignment with best practices and a critique of the findings. *Journal of Science Teacher Education*, 23(2), 291-318.
- [6]. Darling-Hammond, L. (2016). Research on teaching and teacher education and its influences on policy and practice. *Educational Researcher*, 45(2), 83-91.
- [7]. Darling-Hammond, L., Hyle, M. E. & Gardner, M. (2017). *Effective teacher professional development*. Palo Alto, CA: Learning Policy Institute.
- [8]. Darling-Hammond, L., Wei, R. C., & Johnson, C. M. (2012). Teacher preparation and teacher learning: A changing policy landscape. In G. Sykes, Barbara, L. Schneider, Timothy, G. Ford. *Handbook of education policy research*, 613-636. New York: Routledge. .
- [9]. El-Bassuony, J. M. (2017). Using creative problem solving and mobile learning to develop classroom management skills of English pre-service teachers. *International Journal of English Language Teaching*, 5(3), 41-69.
- [10]. Fattah, A. S. (2015). The effectiveness of using WhatsApp Messenger as one of mobile learning techniques to develop students' writing skills. *Journal of Education and Practice*, 6(3), 115-127..
- [11]. Gore, J. M., Griffiths, T. & Ladwig, J. G. (2016). Productive pedagogy as framework for teacher education: Towards better teaching. *Australian Association for Education in Research*, 2(1) 1-11.

- [12]. Greenberg, J., Pomerance, L. & Walsh, K. (2011). *Student teaching in the United States*. Washington, DC: National Council on Teacher Quality.
- [13]. Gretter, S. & Yadav, A. (2018). What do preservice teachers think about teaching media literacy? An exploratory study using the theory of planned behaviour. *Journal of Media Literacy Education*, 10(1), 104-123.
- [14]. Grossman, P. L. (1990). *The making of a teacher: Teacher knowledge and teacher education*. New York: Teachers College Press..
- [15]. Hill, H. C., Beisiegel, M., & Jacob, R. (2013). Professional development research: Consensus, crossroads, and challenges. *Educational Researcher*, 42(9), 476-487.
- [16]. Idris, M. (2016). The impact of supervision, motivation and work ethic on teachers' professional competence: A case study of private Islamic high school teachers. *International Journal of Human Resource Studies*, 6(1), 147-158.
- [17]. Jegede, O. & Taplin, M. & Chan, S. (2010). Trainee teachers' perception of their knowledge about expert teaching. *Educational Research*, 42(3), 287-308.
- [18]. Johnson, C. C., & Fargo, J. D. (2014). A study of the impact of transformative professional development on Hispanic student performance on state mandated assessments of science in elementary school. *Journal of Elementary Science Teacher Education*, 25(7), 845-859.
- [19]. May, H., Sirinides, P., Gray, A., & Goldsworthy, H. (2016). *Reading recovery: An evaluation of the four-year i3 Scale-Up*. Philadelphia, PA: Consortium for Policy Research in Education.
- [20]. McArdle, F. (2010). Preparing quality teachers: Making learning visible. *Australian Journal of Teacher Education*, 35(8), 112-130.
- [21]. Mista, I., & Embir, M. (2016). Students' perception on the use of Whatsapp as a learning tool in ESL classroom, *Journal of Education and Social Sciences*, 4(3), 96-104
- [22]. Mudawali, M. (2017). Relationship between instructional supervision and professional development: perceptions of secondary school teacher and Madrasah, Tsanawitah (Islamic Secondary School) teachers in Lhokseumawe, Aceh, Indonesia. *A Master's Thesis in Education submitted to School of Education, University of Tampere*.
- [23]. Nausheen, M. & Richardson, P. W. (2010). The relationships between the motivational beliefs, course experiences and achievement of postgraduate students. In M. Devlin, J. Nagy and A. Lichtenberg (eds.), *Research and Development in Higher Education: Reshaping Higher Education* (pp. 501–513), Melbourne, 6–9 July.
- [24]. Nwaboku, N. C. (2006). *Teachers, the answer is blowing in the wind*, 20th inaugural lecture series, Lagos state University.
- [25]. OECD (2009). *Creating effective teaching and learning environments: First Results from TALIS*. OECD Database.
- [26]. Oparah, J. S., Nwoke, B. I. & Ikwuanusi, E. N. (2017). Influence of teaching practice exercise on pre-service teachers' professional development. *IOSR Journal of Research & Method in Education (IOSR-JRME)*, 7(5), 34-39.
- [27]. Powell, D. R., Diamond, K. E., Burchinal, M. R., & Koehler, M. J. (2010). Effects of an early literacy professional development intervention on Head Start teachers and children. *Journal of Educational Psychology*, 102(2), 299-312.
- [28]. Powell, D. R., Diamond, K. E., Burchinal, M. R., & Koehler, M. J. (2010). Effects of an early literacy professional development intervention on Head Start teachers and children. *Journal of Educational Psychology*, 102(2), 299-312.
- [29]. Shaha, S.H., & Ellsworth, H. (2013). Predictors of success for professional development: Linking student achievement to school and educator successes through on-demand, online professional learning. *Journal of Instructional Psychology*, 40(1), 19-26.
- [30]. Shieh, R., & Wheijen, C. (2014). Fostering Students Creative and Problem-solving Skills Through a Hands-on Activity. *Journal of Baltic Science Education*, 13(5), 650-661.
- [31]. Tanang, H. & Abu, B. (2014). Teacher professionalism and professional development practices in South Sulawesi, Indonesia. *Journal of Curriculum and Teaching*, 3(2), 123-137.
- [32]. Tarman, B. (2012). Prospective teachers' beliefs and perceptions about teaching as a profession. *Educational Sciences: Theory & Practice*, 12(3), 434-418.
- [33]. Taylor, J. A., Roth, K., Wilson, C. D., Stuhlsatz, M. A., & Tipton, E. (2017). The effect of an analysis-of-practice, videocase-based, teacher professional development program on elementary students' science achievement. *Journal of Research on Educational Effectiveness*, 10(2), 241-271.
- [34]. Tesfaw, T. A., & Hofman, R. H. (2014). Relationship between instructional supervision and professional development. *International Education Journal: Comparative Perspectives*, 13(1), 82-99.
- [35]. Tribble, C. (2017). *Continuing professional development and English language teaching: A report on teachers' CPD in Lithuania*. London: King's College London.
- [36]. Tufail, M., & Malik, S. K. (2016). Analysis of textbook of Biology for higher secondary students with reference to 21st century life skills. *Journal of Research in Social Sciences*, 4(2), 196.
- [37]. Walker, T. M., Spencer, T., Claiborne-Payton, S. & Whiteman, L. (2017). Putting theory into practice: An examination of preservice teachers' beliefs about teaching science. *International Journal for Cross-Disciplinary Subjects in Education*, 8(3), 3151-3159.
- [38]. World Bank (2015). Indonesia. Retrieved on 9th March 2015 from <http://data.worldbank.org/country/indonesia>.

- [39]. Yaki, A. A., & Babagana, M. (2016). Technology Instructional Package Mediated Instruction and Senior Secondary School Students' Academic Performance in Biology Concepts. *Malaysian Online Journal of Educational Sciences*, 4(2), 42-48.
- [40]. Yunus, N. Y. K., Yunus, J. N., & Ishak, S. (2012). The school principals' roles in teaching supervision in selected schools in Perak, Malaysia. *Asian Journal of Business and Management Sciences*, 8(1), 50-55.
- [41]. Yusuf, M. O., & Afolabi, A. O. (2010). Effects of computer assisted instruction (CAI) on secondary school students' performance in biology. *TOJET: The Turkish Online Journal of Educational Technology*, 9(1), 62-69.