

A Systematic Review: Relationship Between Teacher's Professional Development and Students' Academic Achievement

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Abstract

Educationalists' principal obligation and objective is to provide quality education for the success of the society. They are accountable to ensure that students are learning in a non-hostile environment, the primary criteria that lead to an effective academic outcome and meets the objective of the school curriculum as well as school vision. Apparently, there are still neglected factors affecting students' achievement and particularly teachers are considered as one of them. Education is developing process, which reflects itself in the changes around the world. The increase in demand for advance quality education is changing education, thus it reminds a continuous process of circle and teachers who are supposed to be the driving force behind provision of inclusive quality education for student's academic achievement we have to stay at the cutting edge of new trends in teaching and learning in education. They should try to move away from the banking system of education for a change to a discovery learning system. Nonetheless, we assume that teacher's professional development should be one of the priorities for educators to be able to enlighten and prepare students with the right tools they need for the world and contribute to the society. The article reviewed the link between teacher's professional development and student's academic achievement using Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to develop quantitative data extraction from ERIC, JSTOR, ScienceDirect, NCBI, and also Google scholar to provide a quantitative overview of the existing evidence. The outcome of the review found a significant relationship between teachers' TPD and students' academic achievement. The study further suggested more research on TPD especially on teacher's research skills. In conclusion it seeks to suggest to the policy-makers that investment in teacher professional development is projected to be an alternative direction for students' academic achievement and teacher's personal development.

Keywords: Collaboration, Development, Educators, Learners' Achievement, Policy-Makers

Introduction

Technological advances, internationalization of the society, and increasing globalization of the modern education system require today's teachers to adjust to changing perspectives of the education. In this sense, it is critical for a teacher to be constantly trained to meet the expectations of the learners. Teachers' professional development (TPD) is a vital component of the education system as it creates necessary opportunities for teachers to acquire new knowledge and skills which reflect themselves in students' performance (Akalin & Sucuoglu, 2015). The purpose of this study is to provide empirical evidence on the influence of teachers' professional development on students' academic achievement in public schools in Azerbaijan. It is identified that TPD is crucial for organizing better classroom instruction and improving students' performance (Akalin & Sucuoglu, 2015). Teachers who aim to support the progress of their students in the classroom are supposed to take into consideration the physical environment, stress management, and instructional materials of the classroom and adapt them to students' needs. Simultaneously, they must organize the classroom setting appropriately, identify and implement classroom rules and norms, keep students responsible during the process of instruction and assessment, and create a positive classroom environment. (Akalin, 2015).

The study conducted by Riley (2009) reveals that teachers are often unaware of their influential power on student's behavior. To correct students' mistakes, teachers show aggression and even punishment which they associate with disrespectful behavior of students. Riley summarizes the importance of well-organized classroom management and specifies it as a vital

component of TPD. Thus, this research will also consider the problem of classroom management originated from a lack of teachers' knowledge in the given area.

Fullan's (2006) Change Theory introduces a broad theory including teachers' skills and knowledge on a particular subject, research, ethics, ICT, however, the effectiveness of TPD also depends on teachers' motivation and experience. This study will discuss the impact of provided concepts on teachers' perception and formulate the necessary elements of them in a possible professional development model for collaborative teaching and learning. Teachers' subject knowledge plays a central role in students' academic progress and performance. Empirical studies promote the necessity of teachers' subject as well as pedagogical knowledge to achieve educational quality and improvement in students' outcomes (Sadler, Sonnert, Coyle, Cook-Smith, & Miller, 2013). A group of researchers, on the other hand, emphasize the importance of teachers' ICT skills development to keep up with the trends and developments in the 21st century (Alt, 2018). They highlight the positive influence of teachers' ICT skills on their technopedagogical content knowledge which they apply primarily in lesson design and students' outcome evaluation.

In the era of science and technology, teachers play a crucial role in the learning process of students, thus teachers' motivation is another topic to be considered in the TPD program. Several factors such as classroom environment, personal and social factors, students' behavior, teachers' examination stress, and rewards/incentives are identified to effect on teachers' motivation (Alam, science, & 2011, n.d.)The researchers further stated that educational administrators, as well as parents, should take an active part in the enhancement of teachers' motivation. To achieve the purpose of this study, we come up with three objectives: 1) To explore the empirical researches on TPD and its influence on students' academic achievement, 2)

To define the elements of TPD on teachers' knowledge that could also reflect in students' academic achievement, 3) To discuss and strongly suggest the TPD as an alternative to improve students' academic performance.

In this current study, the researchers are keen on reviewing and providing empirical studies on the relationship between the three variables; the student's academic achievement as the dependent variable and teacher's professional development as the independent variable and the teachers as the mediating variable between the independent variable and the dependent variable. The conceptual framework for this study seen below in (*figure1*).

Conceptual Framework

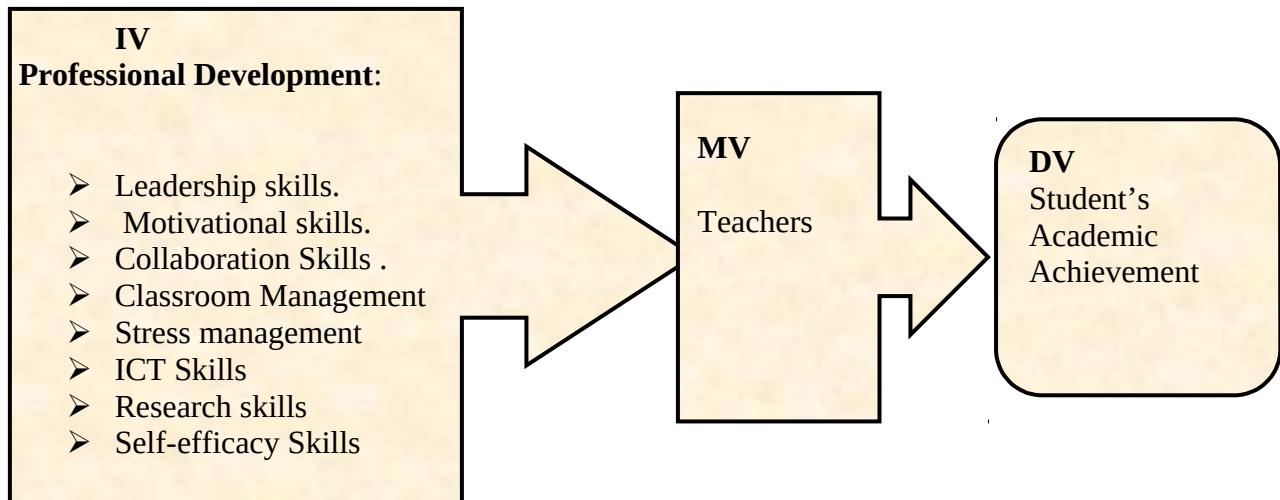


Figure1. Conceptual framework Relationship Between Teacher's Professional Development and Students' Academic Achievement

Literature Review

This part of the study focuses on empirical research and review articles on the teachers' professional development relationship with students' academic achievement. The main aim and objective of this study are to systematically identify the empirical studies on the teachers' professional development and its relationship to students' performance. According to (Luo,

2014), the study revealed that PD was perceived by the teachers as a setting where all teachers come together to share experiences and learn from each other. They further stated that teachers preferred the professional development program that focused more on teachers' instructional skills. It is arguable that focusing on instructional skills is not enough to ignite effective teaching in the absence of classroom management. If a teacher knows the content of the subject and instructional approach, it does not mean that he/she would be able to manage the class effectively. One of the teachers' challenges (mostly beginner teachers') is classroom management regardless of their subject area. Dicke, Elling, Schmeck, and Leutner (2015) define classroom management as the actions taken by teachers to create a conducive learning environment that supports and facilitates academic and social-emotional learning. One empirical study conducted in Turkey (Sadik and Akbulut, 2015) states classroom management as an essential skill that teachers need for effective classroom instruction and learning. Additionally, the result of their study indicated that teachers' collaboration with school administrators, parents, and counseling service are part of the teacher's problems. Teachers' collaboration skill is an effective tool for teachers to be able to develop communication, creative thinking, shared vision, critical thinking and problem solving which practically could be extended to the teacher-student relationship. On the other hand, they might lead to effective learning and provide an opportunity for teacher-parent cooperation for the students' success. Syriopoulou-Delli, Cassimos, and Polychronopoulou (2016) research study show that communication and collaboration of students, teachers, and parents are necessary according to the results of their investigation. It also states the enhancement of students' school performance, though the study was conducted on students with autism spectrum disorder (ASD). Effective TPD components include building teachers' content knowledge, relationship with students, increasing teaching resources, and providing

support for participation in TPD (Keil et al., 2016). Providing support for the professional development of teachers is essential as many teachers in public schools are unable to afford to pay for TPD program. To support Keil's statement, a study conducted in Russia indicates that teachers wages are the most significant factor for teacher's satisfaction which has a relationship with teachers realization of opportunities for professional growth and career development (Rudaleva, Kabasheva, and Kovaleva, 2014). To improve the school performance as a whole, the stakeholders and policymakers in education have to adhere to the effectiveness of TPD on the teacher-student relationship as well as students' academic achievement (Prast, 2018). TPD about differentiation has the potential to promote the achievement of all students. The study of Fischer et al. (2018) produces a weak significant of TPD on students' academic achievement. However, they still place emphasis on the provision of opportunities for teachers' high-quality PD. Teachers' professional development is positively related to teachers' efficacy, whilst teachers self-efficacy is significantly related to student academic achievement (Rutherford, Long, & Farkas, 2017).

Methodology

The preferred reporting items for systematic reviews and meta-analyses (PRISMA) was used to conduct the systematic review of this study (Moher, Liberati, Tetzlaff, and Altman, 2010 p.336) defines a systematic review as review of a clearly formulated question that uses systematic and explicit methods to identify, select, and critically appraise relevant research, and to collect and analyze data from the studies that are included in the review.

Selection Process

In order to achieve the purpose and objectives of the study, the literature search was conducted using the PRISMA checklist to search for reviewed articles on the following database

ERIC, JSTOR, ScienceDirect (Teaching and Teachers Journal), NCBI, and also Google scholar by using the following terms teachers' professional development influence on students' academic performance' and 'effects of teachers professional development on students academics achievement; The search was conducted on articles that were written in English and published in peered-reviewed journals between the year of 2010-2019. PRISMA flow diagram (*seen in appendix 2*) was used to illustrate the information through the different phases of the selection process. The total number of records identified through database searching within the given period (2010-2019) was 500 and the number of additional records identified through other sources was 300. The intention was to obtain an overview of previous researches published in international periodicals relating to the link between TPD and students' academic achievement. After considering the duplication issues, 450 records were removed which were followed by a screening of the papers. 350 papers were screened out which 150 were excluded and the rest papers were assigned for eligibility assessment. We screened the titles and abstracts and then applied the same criteria to full-text articles to draw the relevance within studies. The eligibility of 200 studies was assessed during a month by organizing consistent meetings and discussing the full-text content and analysis provided in the articles to minimize the risk of errors and/or bias. As a result of discussions, 117 full-text articles were eliminated with various reasons: some of the articles presented culturally specific data, some of the themes in the review articles did not correspond to the themes developed on the basis of the other articles included in this review text. Consequently, 78 interrelated articles were selected, archived in our Mendeley database that was specially created for TPD and included in quantitative synthesis to systematically assess previous research studies and derive conclusions.

Result

In order to archive the number one objective of this systematic review, we explore (n=78) TPD influence on students' academic performance peered reviewed articles written in English and published between the year (2010-2019). The graph presented below shows the years and the numbers of articles reviewed for this study.

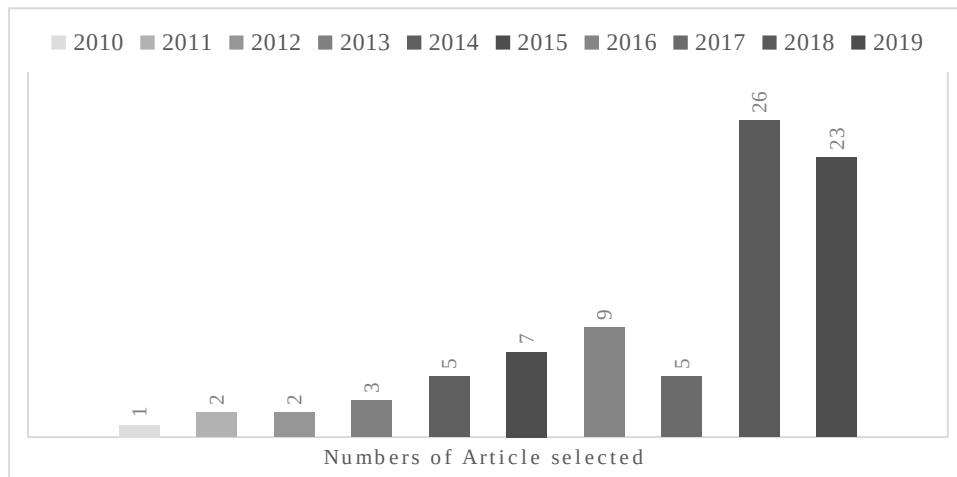


Figure 3.Total numbers of articles explore and the year

Based on our review, we were able to identify major the elements and expectation of TPD, the table below indicated the numbers of review articles that conducted empirical studies on this element as seen below in (*Table 1*) Empirical studies on teacher 'professional development.

Finding

- The study findings indicated that all the reviewed articles for this study highlight the significant of TPD.

- Two empirical studies stated the significant relationship of TPD and students' academic achievement .(Fischer et al ,2018; Holdway, J., & Hitchcock, C. H. 2018)
- Teachers' classroom management ,teaching and learning approach ,teacher's personal development and collaboration ,teachers 'control are the most common TPD programs among all the articles studied.

TABLE 1. Empirical studies on teachers' professional development

Element of TDP	No.of Articles	Title	Authors	Journal	Year of Publication
Students Academic Performance	2	<p>Exploring ideological becoming in professional development for teachers of multilingual learners: Perspectives on translanguaging in the classroom.</p> <p>Investigating relationships between school context, teacher professional development, teaching practices, and student achievement in response to a nationwide science reform</p>	<p>Holdway & Hitchcock,</p> <p>Fischer et al.,</p>	<p>Teaching and Teacher Education</p> <p>Teaching and Teacher Education</p>	<p>2018</p> <p>2018</p>
Teachers'Leadership Skills	2	<p>A review on leadership and leadership development in educational settings</p> <p>Teacher communities as a context for professional development: A systematic review</p>	<p>Daniëls, Hondeghem, & Dochy,</p> <p>Vangrieken, Meredith, Packer, & Kyndt,</p>	<p>Educational Research Review</p> <p>Teaching and Teacher Education</p>	<p>2019</p> <p>2017</p>
Teachers'Motivational skills	1	Factors affecting teachers' motivation	Rasheed, Humayon, Awan, & Ahmed,	International Journal of Educational Management	2015

Teachers'Collaboration Skills	1	Collaboration between teachers and parents of children with ASD on issues of education	Syriopoulou-Delli et al.	Research in Developmental Disabilities	2016
Teachers'Classroom Management	1	An Evaluation of Classroom Management Skills of Teachers at High Schools (Sample from the City of Adana)	Sadik & Akbulut,	Procedia - Social and Behavioral Sciences	2015
Teachers'Stress Management Skills	1	Reducing reality shock: The effects of classroom management skills training on beginning teachers	Dicke et al.,	Teaching and Teacher Education	2015
Teachers' ICT Skills	1	Categorising teachers' use of social media for their professional learning: A self-generating professional learning paradigm	Prestridge and Sarah,	Computers and Education	2019
Teachers' Research skills	0	-----	-----	-----	-----
Teachers Self-efficacy	2	The impact of Lesson Study professional development on the quality of teacher learning Teacher value for professional development, self-efficacy, and student outcomes within a digital mathematics intervention	Vermunt, Vrikki, van Halem, Warwick, & Mercer, Rutherford et al.,	Teaching and Teacher Education Contemporary Educational Psychology	2019 2017

Discussion and Suggestion

The outcome of this systematic review indicates that teacher's professional development could have a lot of benefit for teachers most especially for the on-classroom management and leadership skills are also linked to teacher-student relationship and students' academic performance. We can also argue that TPD is essential for the effectiveness of teachers across the listed in the general module of TPD. Due to the limited time frame for the submission of this executive summary, we were unable to expand our search for the numbers of peer-reviewed journals for this study, however, this doesn't have any impact on the selection and screening of articles for this review. In addition, we were unable to produce a reviewed article relating to teachers' professional development and teacher's research skills. We will also highlight some of the factors affecting TPD that we came across during the reviewing process. Few of the articles have mentioned about the financial burden and low teachers' wages affecting teacher's professional development and self-efficacy.

However, in case of financial difficulties every school administrator might organize monthly TPD program in the school environment at least as a roundtable for teachers' collaboration, peer learning and sharing the vision. We would also like to suggest free online teachers' community professional development (FOT-CPD). We recommend teachers' professional development on research skills, in believing that if teachers' research skill is considered as one of the summative assessments for teachers, it could influence teacher's whole development and students' academic performance. Lastly, we would like to strongly recommend TPD training for all public-school teachers on the listed elements of teacher's development in this systematic review.

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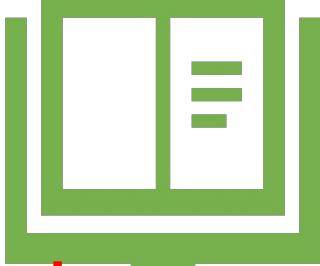
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Educators



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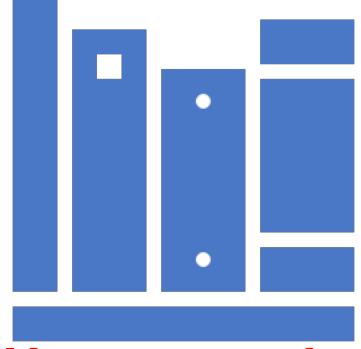
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Development



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Policy-Makers

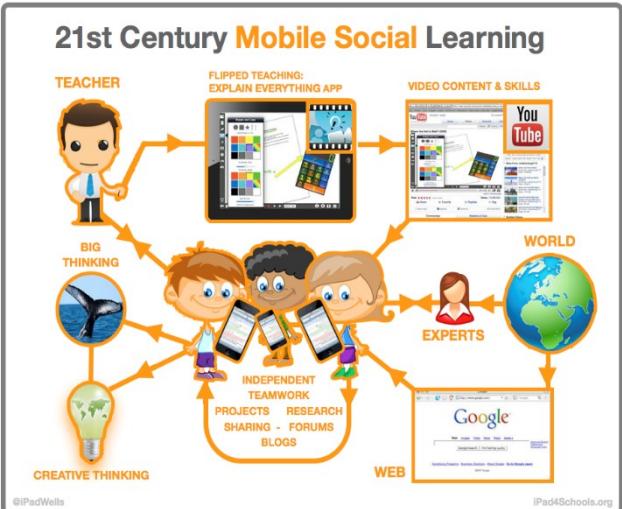
A Systematic Review: Relationship Between Teacher's Professional Development & Student Academic Achievement



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INTRODUCTION

1



1. Technological advances, internationalization of the society, and increasing globalization of the modern education system require today's teachers to adjust to changing perspectives of the education.

2

2. Teachers' professional development is defined as a wide variety of specialized training for teachers', school administrators, advanced professional learning intended to help improve their professional knowledge, competence, skill, and effectiveness

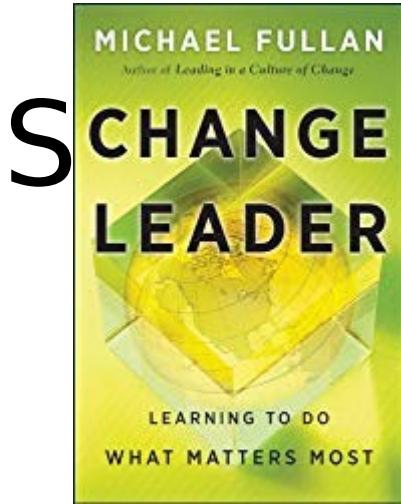
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3. The purpose of this study was to provide empirical evidence on the influence of teachers' professional development on students' academic achievement through a systematic review of peer-reviewed published article between 2010-2019 .

In order to achieve the purpose of this study, we come up with three objectives.

- To explore the empirical researches on TPD and its influence on students' academic achievement.
- To define the elements of TPD on teachers' knowledge that could also reflect in students' academic achievement.
- To discuss and strongly suggest the TPD as an alternative to help teachers improve students' academic performance.

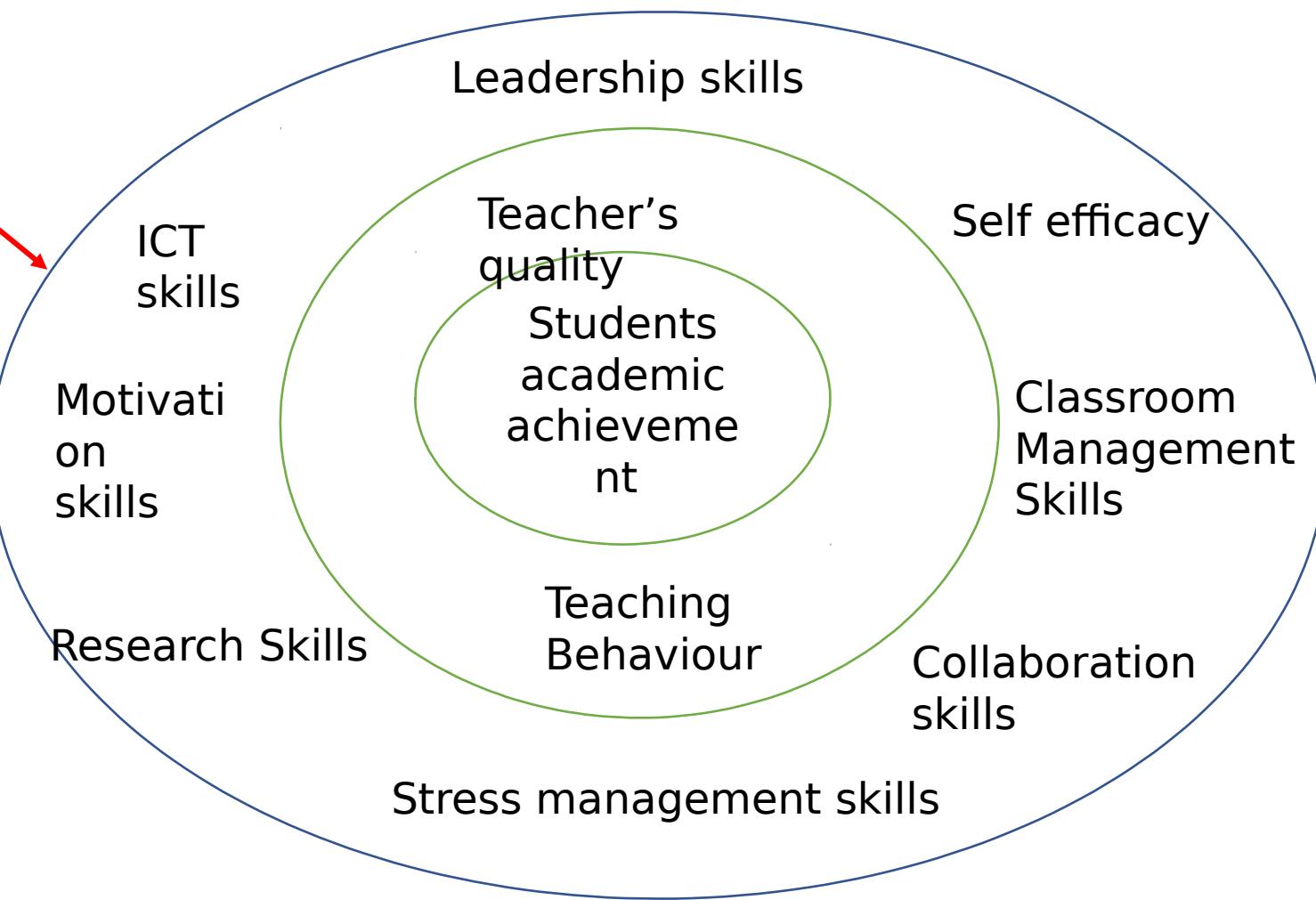
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4. This study adopted Fullan (2006) Theory of change; learning to do what matters most in which he reveal the six practices for leaders ,earn trust, fine-tune focus, develop others, know your impact, embrace complexity, and hope no matter what

5

5. This is the general TPD model used as a basis for the systematic review on TPD influence on student's academic Achievement in this study



6



METHODOLOGY

- The preferred reporting items for systematic reviews and meta-analyses (PRISMA)
- PRISMA focuses on the reporting of reviews evaluating randomized trials, but can also be used as a basis for reporting systematic reviews of other types of research, particularly evaluations of interventions.

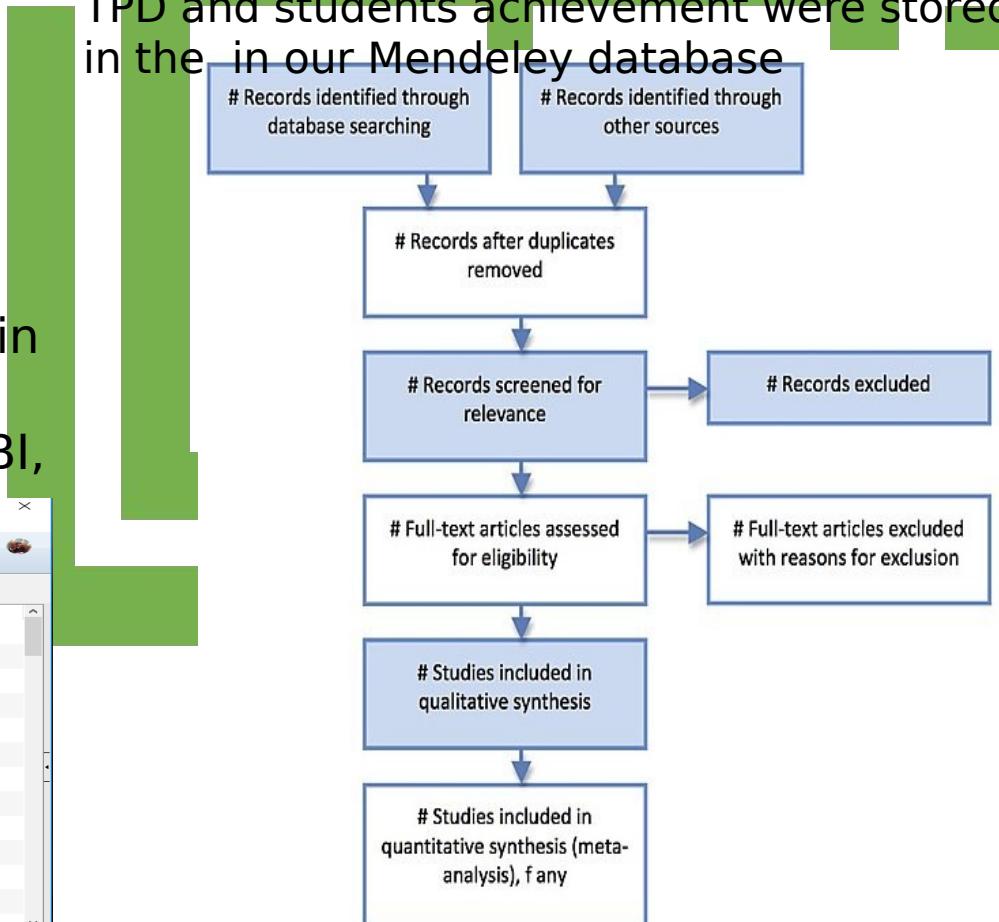
Selection

Literature search conducted using the PRISMA checklist to search for reviewed articles published in English on the following database ERIC, JSTOR, ScienceDirect (Teaching and Teachers Journal), NCBI, and Mendeley.

The screenshot shows the Mendeley Desktop application window. The menu bar includes File, Edit, View, Tools, Help, Add, Folders, Related, Sync, and Help. On the left, there's a sidebar with 'Groups' (Child Studies in Physical Education, Literature, TPDCP) and a 'Filter by Authors' dropdown. The main area displays a list of references with columns for Title, Year, Published In, and Added. The references are from various journals and years, such as 'Teacher learning in a combined professional development intervention' (2018, Teaching and Teacher Education) and 'The role of teacher professional development in financial literacy education: A systematic literature review' (2019, Educational Research Review).

Article Selection Process

500 articles searched and 300 of the articles were not eligible due to the sources .Out of all the article 200 was eligible for screening , following the criteria 117 article was excluded and 78 article interrelated with TPD and students achievement were stored in the in our Mendeley database



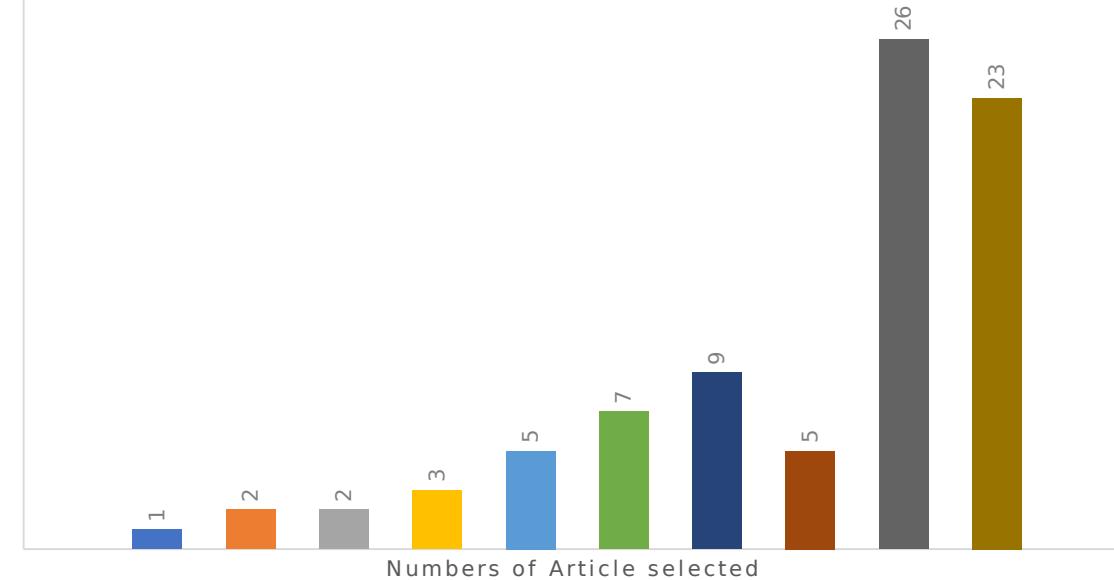
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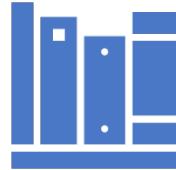


RESULT

- In references to the descriptive analysis of this study (n=78) articles were accepted based on the selection criteria of the systematic review of articles in this study .
- The graph shows the numbers of the selected peer reviewed articles published on different areas of TPD and TPD relationship to students academic achievement as analyzed in this current study according to the years of publication .
- There are (n=11) empirical published articles in this study and (n=67)were systematic reviewed published articles, while (n=2) empirical articles published in 2018 stated the significant relationship between TPD and students' academic achievement.

■ 2010 ■ 2011 ■ 2012 ■ 2013 ■ 2014 ■ 2015 ■ 2016 ■ 2017 ■ 2018 ■ 2019





Result Table

TABLE 1. Empirical studies on teachers 'professional development

Element of TDP	No.of Articles	Journal	Year of Publication
Students Academic Performance	2	Teaching and Teacher Education	2018
Teachers 'Leadership Skills	2	Educational Research Review	2019
		Teaching and Teacher Education	2017
Teachers 'Motivational skills	1	International Journal of Educational Management	2015
Teachers 'Collaboration Skills	1	Research in Developmental Disabilities	2016
Teachers 'Classroom Management	1	Procedia - Social and Behavioral Sciences	2015
Teachers 'Stress Management Skills	1	Teaching and Teacher Education	2015
Teachers' ICT Skills	1	Computers and Education	2019
Teachers' Research skills	0		
Teachers Self-efficacy	2	Teaching and Teacher Education Contemporary Educational Psychology	2019 2017

FINDINGS

The findings of this study provide support for some of the relationships described

- We found out that all the reviewed articles for this study highlight the significant of TPD.
- Two empirical studies stated the significant relationship of TPD and students academic achievement .(Fischer et al ,2018; Holdway, J., & Hitchcock, C. H. 2018)
- Teachers' classroom management ,teaching and learning approach ,teachers personal development and collaboration ,teachers 'control are the most common TPD programs among all the articles studied.

FINDINGS

- ❑ Influence of TPD participation on teachers' knowledge and instruction. Numerous research studies indicate that participation in PD that has a focus on content, provides coherent learning experiences, models instructional enactments, affords collective participation, or has high duration are associated with increases in teacher knowledge (Vermunt et al, 2019; Sadik, F., & Akbulut, T. 2015; Yoon, S. Y., Diefes-Dux, H., & Strobel, J. 2013; Alt, D. 2018)
- ❑ Factors understand to be affecting teachers 'participation in TPD program.
 - i. Management support
 - ii. Colleague support
 - iii. TPD program that are not aligned with teachers' need

9

Limitation of Study

- Limitations of this study relate to the time frame and the use of secondary data sources
- Few database were selected
- Due to time we couldn't extend our search for articles
- We also reduce the analysis for this study .

conclusion

- ❖ Teacher professional development is a vital concept in our era of school reform and school change.
- ❖ TPD is important for an effective teacher-student relationship and its has influence on students' academic achievement.
- ❖ Classroom management and teachers' leadership skills are firmly linked to TPD which reflect themselves in students' academic performance.
- ❖ Some factors (financial burden, teachers' low wages) might affect teachers participation TPD.
- ❖ School administrators might come up with alternatives means to organize TPD (activities within the school environment).



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suggestion



Monthly TPD program in the school environment at least as a roundtable for teachers' collaboration, peer learning and sharing the vision.

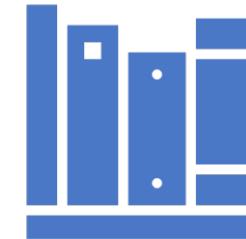
Teachers' professional development on research skills, in believing that if teachers' research skill is taken into account as one of the summative assessment for teachers, it could influence teachers whole development and students academic performance.

Free online teachers' community professional development (FOT-CPD).

The End

Take-Away

Get students curious about discovering knowledge for themselves, and focus on their interests and inherent skills and natural talents.-**Robert Frost**



Q & A



A large graphic at the bottom right containing the words "GRACIAS", "ARIGATO", "SHUKURIA", "JUSPAXAR", "TASHAKKUR ATU", "YAQHANELAY", "SUKSAMA EKHMET", "MEHRBANI PALDES", "TINGKI BIYAN SHUKRIA", "THANK YOU", and "BOLZİN MERCI" in various languages, with smaller text below each word.

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