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THE EFFECTIVENESS OF A PROFESSIONAL DEVELOPMENT PROGRAM FOR TRILINGUAL EDUCATION IMPLEMENTATION.

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Abstract. This article provides analysis of the relevant literature related to the effectiveness of a professional development program for trilingual education implementation. The first section defines the main concepts of the article such as the concepts of effectiveness, multilingual/trilingual education, and professional development program for teachers. This article discusses the international perspectives of professional development programs for teachers that includes the impact of professional development programs on teaching practices, teachers' views on the effectiveness of PDP's, challenges encountered by STEM teachers. It also provides information on the Kazakhstani context of trilingual policy implementation and teachers' professional development which includes the implementation of trilingual education policy in Kazakhstan, the development of teachers training within trilingual policy.

Keywords: professional development program, effectiveness, STEM teachers, trilingual education, multilingual education.

The concept of effectiveness.

According to the existing literature (Fraser, 1994; Erlendsson, 2002; Vlăsceanu, Grünberg, Pârlea, 2007) the concept of effectiveness has several key characteristics and is defined mostly in the educational field from three perspectives as: the achievements of 'inputs' of a program, specific analyses of an output of a program, and a measure of the expected goals.

Regarding the first perspective, Fraser (1994) highlights that the concept of effectiveness shows how an activity achieves its' intended function and purpose. It is the extent to which an activity fulfils its' intended purpose or functions. In other words, the concept of effectiveness is about the achievements of 'inputs' of a program.

Regarding the second perspective, the concept of effectiveness is "an output of specific analyses" to measure the effectiveness and the quality of specific educational goals or the degrees to which education institutions might be expected to reach the specific requirement. (Vlăsceanu et al., 2004, p. 37). Therefore, the engaging process of the measurement of the educational effectiveness might create a "value-added" process via accreditation and quality assurance. (Vlăsceanu et al., 2004, p. 37).

Regarding the third aspect, the definition was given by Erlendsson (2002) who states that effectiveness is a measure of the expected goals and its' achievement. He defined effectiveness as "the extent to which objectives are met." (Erlendsson, 2002, p.1). He states that the concept of effectiveness in the field of education is a certain input that measures the quality of a specific achievement of the educational purpose based on certain requirements.

The concepts of multilingualism/trilingualism in education.

The globalization process leads to the emergence of multilingualism/trilingualism in education. Multilingualism/trilingualism in education are more widely used than anywhere else in the European context as the result of political, historical, and social factors, which based on the combination of various languages. Many of the European countries implement new language

policy to develop and support multilingual education. Currently, the Republic of Kazakhstan implements the new trilingual policy, as it is an important indicator of becoming a competitive country on the bases of economic, political, and sociolinguistic factors.

In the existing body of literature (Cozart, Haines, Lauridsen, & Vogel, 2015; De Jong, 2011; Dodman, 2016; European Commission, 2007) multilingualism is presented from 3 main perspectives: 1) individual; 2) societal; 3) environmental. These three perspectives differentiate the coexistence of several languages might appear either within a society or inside an individual, and in the environment.

In relation to the first perspective, multilingualism/trilingualism is related to the coexistence of several languages inside an individual. De Jong (2011) claims that multilingualism is an ability of an individual to use more than 2 languages. In addition to De Jong (2011), Li (2008) provided a more extended definition of multilingualism by expanding its' scope from the ability to speak to the ability to communicate ability through active writing, speaking skills or passive reading, listening language skills (Li, 2008 as cited in Cenoz, 2013).

Regarding the second perspective, it implies the coexistence of several languages in a society. For instance, the European Commission (2007, as cited in Cenoz, 2013) states that societal multilingualism is "the ability of societies, institutions, groups and individuals to engage, on a regular basis, with more than one language in their day-to-day lives" (p. 6). Although, societal multilingualism does not imply that members of the society will communicate in the existing languages within the society (Council of Europe, 2006). This means that societal multilingualism doesn't ask every member of the community to possess an individual multilingualism.

Finally, the third perspective which is the environmental multilingualism means the presence of a couple of languages in the environment. Environmental multilingualism is being applied within a variety of societal multilingualism; it appears in a certain environment where several languages might coexist within a certain organization i.e. educational institution (Dodman, 2016). Dodman (2016) illustrates the environmental multilingualism in education and utilizes the multilingual concept of the learning environment to explain it some educational settings where educators and students might communicate in a number of languages.

Ytsma (2001) gives the definition of multilingualism in the framework of the environmental multilingualism as "the practice of multilingual/trilingual education which implies teaching subjects in three languages as a medium of instruction" (p.12).

Professional development programs for teachers.

The central part of the educational reform efforts is the ongoing professional development training programs. Professional development programs for teachers play an important and essential role in improving and supporting the teachers' work in schools (Guskey, 2001). The design of professional development programs varies depending on the goal of the training programs and population (Birman, 2000; Guskey, 2001; Sparks, Richardson. 1997; Smith, 2003; Villegas-Reimers, 2003).

The analysis of the literature revealed 2 types of professional development programs which are the reform-type and traditional (Birman, 2000). The reform-type program aims to change the teaching instructions as well as teaching practices. The second, traditional type of training refers to short term workshops which are aimed to share new practices and knowledge among professionals. Guskey (2001) states that professional development programs begin with teachers' desired goals and learning outcomes of learners. When educators have their goal to participate in this professional development programs, they might make an input into their personal/professional development and become more motivated to take part in various workshops and coursed. As a result, they apply new knowledge and skills in what they learned.

Villegas-Reimers (2003) defines professional development for teachers as "development of a person in his or her professional role" (p.11). On the other hand, Sparks and Richardson (1997)

state that professional development for teachers has a focus on developing teachers' skills and knowledge (as cited in Cooper, 2009, p. 1). Smith (2003) defines the professional development programs for teachers as an individual learning process of educators who improve their knowledge and skills to "become the best professional one can possibly be" (Smith, 2003).

International Research on Professional Development Programs for Teachers

It is very important to take into consideration teachers' views on the effectiveness of professional development programs to assist teachers in learning new skills and knowledge and acquire new teaching practices in order to be more competent. The existing literature uses the quality and the effectiveness of PDPs interchangeably and identifies a variety of aspects of professional development (Birman, 2000, Garet, Porter, Desimone, Birman, & Yoon, 2001, Guskey, 1993, Little, 1993, Mizell et al., 2001, Robinson, Carrington, 2002).

Birman, 2000, Garet, Porter, Desimone, Birman, Yoon (2001) found that teachers considered an effective PDP to have a clear learning focus on content and classroom practices. In particular, Birman et al. (2000) conducted a survey among more than one thousand educators who took part in a professional development program, which was supported by the federal government of the USA, Eisenhower Professional Development Program to identify teachers' feedback on the effectiveness of a PDP. Interestingly, the findings showed that teachers considered a PDP effective if it had an active learning, coherence, and focus on content. This aligns with Guskey's conceptual framework (2003) the participants' reaction, participants' learning, and the participants use of new knowledge and skills. In fact, teachers said that PDP mattered if it improved skills, classroom practices, and knowledge. In particular, based on the research which was conducted by Garet, Porter, Desimone, Birman, & Yoon (2001) teachers' viewed the effectiveness of a PDP as a learning process which improves their knowledge, learners' academic achievement, and classroom instructions. Generally, they considered a PDP as a continuous process that likely happens with an intensive, job embedded, sustained program with professional teachers (Garet, Porter, Desimone, Birman, & Yoon, 2001).

In addition, some papers reveal that effective professional development programs are embedded in daily teaching practice i.e. in a job-embedded pledge (Diaz-Maggioli, 2004, Little, 1993, Mizell et al., 2011, Guskey, 2003, Robinson, Carrington, 2002).

Little (1993) revealed that for teachers an effective professional development program is embedded in their daily teaching practices and lives. Teachers believe that an effective professional development program occurs often in their professional communities. Therefore, cooperation among teachers should be among the PDP participants to build up leadership skills and useful resources (Mizell et al., 2011, p. 14).

Learners and teachers who in its turn apply appropriate design for the learning process with a clear focus on education standards measure these leadership skills. Guskey (2003) states that a professional development learning experience of teachers does not happen within few days or hours.

Based on the research, which was conducted in the National Institute for Science Education an effective professional development program for teachers requires sufficient span of time. Time is important for an effective teachers' professional development program in order to be well planned, directed, and structured (Guskey, 2003). This aligns with the third level of Guskey (2003) conceptual framework, which is the organizational support, change, and participants' use of new knowledge and skills. As an effective professional development teacher like a job-embedded pledge that they make for the purpose of their teaching practice while addressing the learners' needs view program. This aligns with the 5th level of the Guskey's (2003) conceptual framework which is the learning outcomes of learners. This professional development programs for teachers are particular principles which guide their learning and teaching practices aimed at fostering shared expertise and cooperation to improve the learners' academic achievements (Diaz-Maggioli, 2004, p. 5).

According to Robinson and Carrington, 2002 “Professional development programs are most effective when participant driven, connected to the ‘real work’ of teachers, focused on sharing existing knowledge through collaboration and including strategies to sustain the learning” (Robinson & Carrington, 2002). Therefore, an effective professional development program should show educators how to cope with educational issues in a cooperative mode.

To sum up, this sub-section highlighted the role of teachers’ and their views regarding the effectiveness of professional development programs. Since teachers play a significant role as agents of change in a professional development programs initiative. Findings indicate 3 key features of effective PDPs which include the increase in teachers’ skills/knowledge and changes in classroom practices.

The impact of professional development programs on teaching practices.

Research literature shows mixed findings regarding the impact of professional development programs on teachers’ practices. A number of researches revealed that PDP has no (Minuskin, 2009) or some impact on teaching practices (Loucks-Horsley et al., 1998; Santau, 2008; Rust, 2000). This impact is revealed in various aspects such as a change in classroom practices of STEM teachers, teachers’ change in their beliefs, and content knowledge that will be discussed below.

One of these aspects is the impact on the implementation of a professional development program related to a change in classroom practices and knowledge of STEM teachers. The study by Minuskin (2009) researched the impact of professional development program (PDP) on the classroom practices and STEM teachers’ knowledge in school. Eight teachers participated for 18 days in a professional development program. All teachers were from one school in New Jersey. Research findings show that STEM teachers’ instructions did not change after a professional development program. His study suggest that teachers did not have a significant change in content knowledge due to poor teachers’ motivation to participate in the program and work overload.

In contrast to the research study of Minuskin (2009), a research study conducted by Santau (2008) revealed some positive changes of teachers after the completion of PDP. It was a 1-year research study that explored STEM teachers’ practices and knowledge in science instructions in English after completion of a PDP. The research study included 70 participants from one school. The researcher conducted the number of classroom observations. The findings indicated that STEM teachers’ practices and knowledge were based on 4 basic characteristics which were in line with the reform-oriented practices. The 4 domains included teaching practices to promote scientific understanding, teachers’ knowledge of science content, teaching practices to support English language development during science instruction, teaching practices to promote scientific inquiry (Santau, 2008).

Another set of research study highlighted teachers’ change in their beliefs, teaching practices, and content knowledge (Stark, 2011; Loucks-Horsley et al., 1998; Rust, 2000). The first study was conducted by Stark (2011) who examined the science teachers’ change after a one-year professional development program. He used a sample of fifteen STEM teachers of the 6-7th grades participated in this research study. The research indicated a change in teachers’ beliefs, teaching practices, and content knowledge. Specifically, there was a change in teachers’ classroom practices which include a shift from a teacher-centered approach to a student- centered classroom practices.

Similarly, Loucks-Horsley (1998) found that PDPs have a positive effect on teachers’ content knowledge and classroom practices. The study was conducted in 2 urban schools for 28 teachers who went through one professional development program in Singapore (Loucks-Horsley et al., 1998). The findings from the research data collected via surveys, assessment data, and focus group revealed that practitioners improved their content knowledge and new practices in classrooms.

Finally, Rust (2000) summarized the outcomes of 2 studies related to PDPs for teachers at Oxford University. The results of the 2 research studies provided the evidence that a PDP had a positive impact on teaching for most of the participants. This study provided evidence for the idea that a PDP had influenced teaching practices of teachers, their attitudes, and beliefs. The research concludes that “The influence of a PDP goes beyond its’ primary developmental aims regarding teaching and learning through also providing things such as support, induction and networking” (Rust, 2000, p. 261).

The Kazakhstani Context of Trilingual Policy and Teachers’ Professional Development

The Republic of Kazakhstan undergoes some changes in the field of the education system. Following strategic goals of the country outlined in the Presidents’ address the government launched several policy documents aimed at developing the trilingual education policy. These set of policy documents such as the State program for educational development for 2011-2020, the State program of developing and functioning languages for the years 2011-2020, and Road map of trilingual education development for 2015-2020, (2015) promote the development of the trilingual education in Kazakhstan.

Kazakhstani secondary schools implement the trilingual policy with 3 languages as a medium of instruction. Therefore, to understand the importance of this policy, its’ vital to look at the prerequisites of the trilingual policy.

President Nazarbayev launched an initiative which is called the “Trinity of languages”. The President’s statement is of utmost importance who states “Kazakhstan should be seen around the world as a highly educated country, with a population use three languages” (Address of the President of the Republic of Kazakhstan, Nazarbayev, to the People of Kazakhstan”, 2007). The President supports a strong political value to outline an image of the citizens of Kazakhstan. Therefore, this discussion delineates a general picture of the importance of trilingual policy implementation in Kazakhstan.

Firstly, its’ important to understand what the trilingual education in Kazakhstan is? Mehisto et al. (2014) state that trilingual secondary schools are the educational institutions with three languages (Russian, Kazakh, and English) as media of instruction. The first so called ‘germs’ of trilingual education policy are 117 pilot secondary schools (Kazinform, 2016). In particular, some science subjects will be taught via English including Chemistry, Physics, Biology, and Computer Science, the Kazakh literature and the History of Kazakhstan will be taught in Kazakh, while Russian literature and Russian in Russian (MoES, 2016).

In conclusion, the implementation of trilingual policy in education is the key reforms in Kazakhstan. The trilingual policy is one of the main indicators to the prosperous future. Therefore, several policy documents and initiatives have been made by the government including teachers’ training within its implementation.

The Development of Teachers Training within Trilingual Education Implementation in Kazakhstan.

One of the key aspects of the implementation of trilingual policy are the institutions. Since 2012, 32 universities are involved in preparing more than 5.500 practitioners, who are trained to teach STEM subjects in the English language. (Kazinform, 2012). According to the State Program for Educational Development for 2011-2020 (MES, 2010) 10% of teachers were planned to teach STEM subjects in English by 2015 and gradually increase the number up to 15% by 2020 (p. 19). However, only 0.15% of the STEM teachers were teaching subjects in English in 2014 (MES, 2014, p. 52).

In 2015, the Ministry of Education and Science of the Republic of Kazakhstan initially planned to introduce English as a medium of instruction in the undergraduate programs for pre-service teachers’ professional development training programs. Based on this plan more than two

thousand in-service STEM teachers would be able to improve their English language skills. However, the time wasn't indicated by the government. This initiative was planned to be developed as a part of the second stage of the program for 2016-2019 ("O perekhode na tryekhyazychnoye obrazovaniye", 2015). Based on the program English will be introduced in schools as a medium of instruction for Chemistry, Biology, Computer science, and Physics starting from the 10th and 11th grades in 2019-2020. According to the State Program of Education Development in Kazakhstan for 2011-2020 (2010), the English language should be taught as a foreign language and as the language of instruction.

The Ministry of Education and Science piloted 33 schools' where science subjects are being taught in English from the 7th grade (Mehisto et al., 2014). Teachers of mainstream schools are trained by several professional development programs. Subject teachers are being trained at the National Center for Professional Development "Orleu", at the Centre of Excellence at Nazarbayev University, NIS schools.

However, the major changes will start in 2019 on the 1st of September in all schools in Kazakhstan. In 2019 all teachers who teach in the 10, 11 grades will teach 4 subjects in the English language such as Physics, Chemistry, Computer Sciences, and Biology. Therefore, this large-scaled project of trilingual policy requires teachers who will be able to teach science subjects in English. To sum up, there are various teachers' professional development programs for the Kazakhstani educators in progress due to the implementation of the new language-in-education policy. Despite these steps forward, there is no evidence-based study on the STEM teachers' views on the effectiveness of professional development programs within trilingual education implementation.

Conclusion

This article reviewed literature related to the professional development programs. Much of the research literature on the effectiveness of professional development programs studies show some mixed findings regarding the effectiveness of teachers' professional development programs. The literature shows that there is a certain impact of PDPs on teachers' classroom practices and teachers' beliefs. The article provided an analysis of the key concepts of "effectiveness", "multilingual/trilingual education", and "professional development program" were described as the scope of the research study.

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