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A. Sadykova¹, N. Serikbay²

^{1,2}Suleyman Demirel University, Kaskelen, Kazakhstan

EFFECTS OF MENTORING ON EDUCATION OF MATHEMATICS FOR STUDENTS

Abstract. Teachers in secondary schools in Kazakhstan take part in various seminars and professional development programs. One of these in-school programs is mentoring. Where a teacher is just starting his career works with a more experienced teacher at a certain period of time. The aim of this work is to help the new teacher adapt to the new environment. This work examined effects of mentoring on education of mathematics for students focusing on how do mentors and mentees perceive mentoring during math classes, how is it recognized and implemented in the school. The study also identify what kind of opportunities these programs may provide for mentors and mentee and what challenges all parties may experience. The research was conducted using a qualitative research approach, with data gathered by semi-structured interviews and augmented with a paper overview of school policy and other mentoring-related records. Six people were interviewed, portraying mentors and mentees. The results showed that, amid time constraints, periodic mentor-mentee mismatches, and disparities in perceptions toward mentoring, it has a significant effect on teachers' professional growth and to education process. Teachers connect mentorship with topic awareness growth, career development growth, efficient integration, potential for independent consultation. Mentoring can be introduced as a low-cost, fast, and active addition to schools' professional development activities as part of Kazakhstan's shifting education system.

Keywords: Professional development, mentor, mentee, mentoring, coaching.

Аннотация. Учителя средних школ Казахстана принимают участие в различных семинарах и программах повышения квалификации. Одной из таких школьных программ является наставничество. Программа в которой учитель только начинающий свою карьеру, в определенный период времени работает с более опытным учителем. Цель этой работы - помочь новому учителю адаптироваться к новой среде. В этой работе изучалось влияние наставничества на обучение студентов математике, уделяя особое внимание тому, как наставники и подопечные воспринимают наставничество во время уроков математики, как оно распознается и реализуется в школе. Исследование также определяет, какие возможности эти программы могут предоставить наставникам и подопечным и с какими

проблемами могут столкнуться обе стороны. Исследование проводилось с использованием качественного исследовательского подхода, данные были собраны с помощью полуструктурированных интервью и дополнены бумажным обзором школьной политики и другими записями, связанными с наставничеством. Были опрошены шесть человек, являющиеся наставниками и подопечными. Результаты показали, что в условиях нехватки времени, периодических несоответствий между наставниками и подопечных и различий в восприятии наставничества это оказывает значительное влияние на профессиональный рост учителей и процесс обучения. Учителя связывают наставничество с повышением осведомленности о теме, ростом карьерного роста, эффективной интеграцией, потенциалом для независимых консультаций. Наставничество может быть введено как недорогое, быстрое и активное дополнение к деятельности школ по профессиональному развитию в рамках меняющейся системы образования Казахстана.

Ключевые слова: профессиональное развитие, наставник, подопечный, наставничество, коучинг.

Андатпа. Қазақстанның орта мектептеріндегі мұғалімдер әр түрлі семинарлар мен біліктілікті арттыру бағдарламаларына қатысады. Осы мектепшілік бағдарламалардың бірі - тәлімгерлік. Мұғалім өзінің мансабын жаңадан бастаған жерде белгілі бір уақыт аралығында тәжірибелі мұғаліммен жұмыс істейді. Ол бағдарламаның мақсаты - жаңа мұғалімнің жаңа ортаға бейімделуіне көмектесу. Бұл жұмыста тәлімгерлер математика сабақтары кезінде тәлімгерлікті қалай қабылдайды, оны мектепте қалай таниды және қалай жүзеге асырады деген сұрақтарға назар аудара отырып, студенттерге математиканы оқытуға тәлімгерліктің әсері зерттелді. Зерттеу барысында сонымен қатар осы бағдарламалар тәлімгерлер мен жаңадан келген мұғалімдерге қандай мүмкіндіктер ұсына алатындығы және барлық тараптар қандай қиындықтарға тап болатыны анықталды. Зерттеулер сапалы зерттеу әдісін қолдану арқылы жүргізілді, мәліметтер жартылай құрылымдалған сұхбаттасулар арқылы жинақталды және мектеп саясаты мен басқа да тәлімгерлікке қатысты жазбаларға қағаз шолумен толықтырылды. Тәлімгерлер мұғалім мен жаңадан келген алты мұғалімнен сұхбат алынды. Нәтижелер көрсеткендей, уақыттың шектеулігі, ментор-тәлімгердің сәйкессіздігі және тәлімгерлікке қатысты түсініктердің сәйкессіздігі жағдайында бұл мұғалімдердің кәсіби өсуіне және білім беру үдерісіне айтарлықтай әсер ететіндігі көрсетілді. Мұғалімдер тәлімгерлікті тақырыпты ақпараттандырудың өсуімен, мансаптық өсуімен, тиімді интеграциямен, тәуелсіз консультация әлеуетімен байланыстырады. Тәлімгерлікті ауыспалы білім беру жүйесінің

бөлігі ретінде мектептердің біліктілігін арттыру іс-шараларына арзан, жылдам және белсенді қосымша ретінде енгізуге болады.

Түйін сөздер: біліктілікті арттыру, тәлімгер, қамқоршы, тәлімгерлік, коучинг.

Intorduction

An integral part of the teaching and learning process is professional development. To be an effective teacher and educator, a teacher must constantly improve his / her teaching methods and techniques by reflecting on the lesson and collaborating with other colleagues. Student success often depends on how well the teacher can work with students. Teachers need to be supported and provided with new theories and practices so that they do not stagnate. So they have to adapt to different situations.

The education system in Kazakhstan is undergoing a transition from the Soviet system to the modern system (Gabdulina & Zhuman, 2018). Most of it was learned by rote (Burkhalter and Shegebayev, 2012). Students were expected to learn insurmountable amounts of information with no writing and contact with their learning media. This method of “brain learning” may have been useful in the past, when resources were scarce and material was small. Brain preparation is insufficient to train students for the global arena of today’s system, where knowledge extension is the standard. (Schulleri, 2020). The nation’s president, Nursultan Nazarbayev, was at the forefront of the educational reform, laying out phases of the reform in the form of Strategies (2020, 2030, 2050), (Lillis, 2007). Kazakhstan needed a new generation of teachers with modern education expertise to teach their youth how to become global players in order to achieve the goals set out in the Strategies (Hartley, Gopaul, Sagintayeva, & Apergenova, 2016). Local Kazakh teachers lacked foreign expertise in modern teaching techniques. To accomplish this, it was determined that the mentoring process would better fit this transformation and impart expertise in the most efficient, cost-effective, and pedagogically sound manner. So by order of the Minister of Science and Education of the Republic of Kazakhstan dated April 24, 2020, the rules for organizing mentoring and requirements for mentoring teachers were approved [6].

The mentoring literature contains many explanations of the mentoring method. The method is generally accepted to include various stages of mentoring relationship formation, dynamics of the mentoring program, and the implementation of cognitive development theory to the mentoring relationship. Mentoring is a multifaceted method of advising, educating, shaping, and assisting a beginner or inexperienced instructor in the field of education. In a job scenario marked by shared confidence and confidence, the mentor-teacher leads, guides, and supports another teacher who is younger in practice. Mentoring services often combine new teachers with more seasoned teachers who can clarify school rules, laws, and practices, exchange strategies, tools, and other

tools, assist in the resolution of teaching and learning issues, offer professional and personal guidance, and direct the new instructor's development through observation, cooperation, and mutual investigation (Feiman-Nemser and Parker, 1992).

Teachers also use the terms mentoring, training, and coaching different words. Although there are certain semantic similarities between these words, the concepts are vastly different. Modeling is the act of acting as a role model. A model is a physical representation of a concept or ideal. Among a mentor's responsibilities is to serve as a good role model. Coaching, also known as peer coaching, is the support that one teacher gives to another in the learning of instructional skills, methods, or procedures, usually in a structured three-part framework: peer-conference, class observation, and post-conference. In mentoring, the coaching system is generally used to structure the mentor's classroom observation. If the starting instructor requires this form of assistance, tutor coaching can become an important practice.

Mentoring is the practice of acting as a tutor to another person, assisting and facilitating their progress. Since the instructor must be able to model the messages and ideas being taught to the starting tutor, the process involves modeling (Gay, 1995). In addition, as previously said, the instructor must be willing to act as a role model. In teaching, the position of the teacher is crucial. Coaching as an educational tool used in activities such as sport or apprenticeship at the workplace is used in the mentoring process. It also requires "cognitive counseling", a concept that is gaining popularity in education. The mentor must be able to show a variety of cognitive coaching skills, such as asking carefully formulated questions to encourage thought, paraphrasing, probing, using pause, and gathering and using data to enhance teaching and learning, in order to be successful. Mentoring, like coaching, is a collaborative process.

Mentors include psychosocial counseling, in which they accept and affirm the actions of beginning teachers, role modeling, in which they direct the beginning teacher's attitudes, beliefs, and activities, and career learning, in which they serve as mentors to the beginning teacher. Training mentors for new teachers will increase the quality of the mentors and will encourage veteran teachers to undertake the task of mentoring their colleagues (Gagen & Bowie, 2005).

The tutor instructor is critical to the mentorship relationship's growth, long-term viability, and performance. Despite the benefits of serving as a mentor, not all professional teachers possess the requisite supervision and communication skills to help a young teacher over their first challenging year. (Rajuan & Beijaard & Verloop (2007)). Teachers who are decent, if not great, are not always good mentors. Mentor teachers must build attitudes, experience, and skills in mentoring in addition to their teaching expertise. Most teachers need training and career development in order to effectively mentor. Identifying what to analyze and also how to give guidance, learning how to keep

dialogue open and overcome problems, and then being able to research someone's teaching and share their own experiences so others can gain from them are also some of the skills needed for effective mentoring.

Methodology

The research looked at the impact of mentoring on teaching mathematics for students in two state schools. The qualitative method of analysis was used in this research to gain a deeper understanding of mentoring efficacy and its effects on both tutor and mentee mathematics education. The suggested approach was selected because it aimed to better interpret and describe participants' actions based on their living experiences in a given social situation. The aim of this study is to see how mentoring effects mathematics education in the classroom. The research focuses on mentoring, which is called a research unit and is defined by cases in two state schools.

An interviewing questionnaire was created, and teachers from two schools were told about it and invited to participate. The interviews were done with math teachers who were collaborating with a mentee (n=4). In the first school, the interview was taken face-to-face. In the second school, the interview was taken through via Zoom. The data was provided primarily through semi-structured interviews. Semi-structured interviews were a good choice for this analysis because they required the participant to change the style or questions during the interview to get more details about the phenomena. The use of open-ended questions that needed detailed responses was encouraged in this qualitative interview style. The goal of semi-structured discussions with mentors and mentees was to learn how data is maintained the impact of mentoring on mathematics education in the sense of students. These interviewing allowed me to learn more about the mentor and mentee perspectives, values, ideal mentoring methods, and explanations for those activities. I have read at some documentation as part of the paper review, such as mentee work plans, tutor work plans, and mentee observations about what had been done and how the mentoring work was structured. The mentorship guidebook and other materials, as well as school policy relating to teacher professional development and the mentorship program, were examined. This study has been completed in consideration of the interview in addition to being able to explore the details as result of the semi-structured interviews.

The interviewing environment was open and comfortable, with free expression of feelings, such as laughing, sighs, signs of desperation, and something else that teachers felt, as this was used as an opportunity for teachers to discuss what they had been experiencing personally. It was also intended to foster an inclusive atmosphere in which respondents could express themselves freely. The contact time was designed to be as realistic as possible, as if it were a regular office discussion. Each interviewing last about 30 minutes.

Results

New teachers face various difficulties and obstacles of transition and adaptation during their first year of teaching in a new classroom. In this situation, mentoring is provided to assist them in adjusting to new working environments and overcoming the difficulties that beginner teachers face as they arrive at school. Mentoring, according to the majority of participants, is a phase where a more professional instructor/colleague supports a less experienced teacher in solving difficulties that the latter may encounter upon approaching a new learning environment. While the majority of participants see mentoring as a resource for new teachers, some stated that even experienced teachers want help in solving issues that arise after they move schools. Respondents in the interviews described and clarified how they viewed mentoring as assisting all new teachers to the field and others attending a new form of workplace to transition in a working place at the entry phase, as one of the mentees said:

When a young person, a young teacher, comes to our school grounds, he or she is appointed a mentor who is responsible for assisting the young colleague in overcoming the many difficulties and issues that he or she encounters during his or her first year here.

Mentorships perceived as an important method for career advancement, in addition to providing guidance and help in meeting obstacles. Sharing, tools observing lessons, and receiving feedback from mentors all helped mentees achieve their full potential skills. According to the results, respondents observed an increase in their instructional performance as a result of cooperation with their superiors.

Mentorship is an outstanding method of career advancement in classrooms because it benefits all participants and fosters the ideals of continuing education and continuous engagement in professional learning.

Respondents also commented about the mentor's activities. Mentors' work is directly linked towards their own views of mentoring and it is focused on personal interest in mentoring activities of all partners. The majority of responses were similar and shared the argument regarding professional development assistance. Lesson insights, giving input, teamwork, and writing notes were among the most commonly recorded tasks undertaken by mentors. This was the most common viewpoint shared by both mentees and mentors.

The mentor's duties are to assist partners with career advancement, to exchange expertise through teamwork, and to enhance the mentee's learning process.

Both mentors and mentees shared a common view of the role and career learning in the mentoring program. Each groups identified useful experience obtained from mentoring as well as the beneficial impact it has on their individual technical set of skills.

Closer collaboration between pairs or teams are essential for success. Mentors should have such personal characteristics that matter to their mentees

in order to establish partnerships for future cooperation. Three mentees stressed the importance of mentors' personal attributes in laying the groundwork for fruitful work. They represented a positive trainer as a responsible individual who was always willing to assist them. Furthermore, one of the big reasons that contributed to effective work was their friendship with their mentors. In other words, if mentees were able to establish positive relationships with their mentors, they feel more optimistic and less depressed. Since mentors and mentees had to work side by side during the school year, personal qualities were critical in developing a positive interaction.

While the majority of respondents described having a good mentoring experience, some difficulties and challenges were also mentioned. The data shows three major limitations: workload and scheduling discrepancies, mismatches between mentors and mentees, and perceptions about mentorship. The main issue expressed by both attendees was the lack of time. They argued that it was difficult to make time for meetings and debates because of the numerous roles and responsibilities that they had to perform as part of their everyday routine.

The issue is a time constraints for both attending classes and more study. The causes are work overload and a schedule difference.

Both new teachers and their instructors believe they are overburdened with their main duties, which are teaching. In contrast to their the responsibilities, participants reported that it was hard to make time for meetings with mentees due to the misalignment of mentors and mentees' timelines. The mentorship participants' attitudes about mentoring and personal attributes can also result in certain issues. For illustration, problems can arise as a result of mentees' aspirations. Any young teachers believe they have much experience and are capable of doing their jobs on their own. They fail to seek mentors' guidance and do not take mentors' assistance seriously. Even so, at the conclusion of their studies, they must contact their more knowledgeable colleagues.

Working with a mentor is challenging to me since we mostly have different opinions, and I often disagree with my mentor since I try to do this job in my own way, but she guides me about how to do it out of her own viewpoint. That is why we often get some inconsistencies.

One of most commonly mentioned advantage received by mentees was an increase in professional experience. When recently hired instructors arrive at work, they are supposed to hold lessons and be knowledgeable about the subject matter. In this sense, the discovery shows mentoring to be an important method of directing mentees in subject matter, idea application, and classroom management.

Mentor assists me greatly with subject material, and she also visits my classes, but I also attend to her classes and attend them; I discover many

techniques and practices that she implements in her classes, and she thus contributes significantly to my development as a Math instructor.

Another critical feature of mentoring that was listed by all mentees as having a positive effect on mentees' successful induction into a new working atmosphere was moral support. Such assistance is critical for mentees, as it assists them in overcoming difficulties that they may encounter in the early stages of their career as a teacher.

Mentors' assistance with material awareness and good social guidance encourages mentees' transition to the current workplace and in society. Collaborative effort within the group speeds up comprehension of main concepts, instruction processes, and strategies. The mentors have mentioned personal development and the ability to consider more broadly as benefits of participating in the mentorship program. Mentoring encourages teachers to evaluate also how they will learn from this opportunity, but also how their work will improve the whole school system.

My own background provides great emotional assistance, which has been a huge benefit to me. My tutor is still willing to assist me, and I am thankful for this.

When contrasting mentoring programs to many other career progression courses, the number of respondents thought mentoring was a superior choice for career development. They provided some explanations why they would like to have or be a coach over conventional preparation.

To begin with, mentorship allows for immediate independent work and assisting. So although career learning workshops are often held in classes and leave room for unresolved issues, mentoring enables attendees to offer more personalized, tailored, and immediate assistance. Mentees may contact their mentors at any time to address any concerns they may have.

Conclusion

Mentorship can have different meanings for different people. Most mentees, for example, perceive mentorship as support provided by more experienced teachers to less experienced teachers / new comers in order to assist the latter in adjusting to a new atmosphere and building relationships in a new job. Mentors see mentorship as a means of career growth and continuing education for both mentees and mentors. Regardless of the fact that the participants' expectations and statements regarding mentoring vary, it is apparent so both mentees and mentors value mentoring. Mentorship has much more positives than pitfalls in their opinion.

The second observation is that, when correctly implemented, mentorship is amongst the most feasible and successful methods of professional learning for teachers. Mentorship is more successful than standard teacher preparation courses because teachers would not have to quit their classes or office for center-based trainings. Furthermore, mentorship is more based on mentees' unique

interests and offers resources for urgent assistance in addressing challenges that new teachers face in a new learning climate.

The third assumption is that if there is a difference between the interests of mentors and mentees, mentorship will become an inconvenient and stressful process for teachers. The study's results suggest that participating in mentoring activities may be difficult for all participants if not conducted correctly and with due preparation. The biggest complaint about mentoring was a lack of time. Because of the disparity between the scheduling of mentors and mentees, participants said that it was difficult for them to make time for meetings. A further matter was the ineffective pairing of partners, which led to pressures and misunderstandings among mentors and mentees. According to the findings, one of the most difficult aspects of mentorship is one's behavior toward it. It was discovered that the mentor's reduced desire to engage in the mentoring program, as well as the expectations of the new teachers, may have a negative impact on the outcomes of such a relationship. Mentorship can thus become a detrimental and stressful experience, particularly for mentees who may become overwhelmed work with mentors who are not completely motivated to work.

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