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UPDATING SUBJECT LITERACY FOR TEACHERS AS A NECESSITY TO IMPROVE THEIR PROFESSIONAL COMPETENCE

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Abstract. The ability of teachers to manage learning activities is one of the skills professional teachers should possess. This ability is called teaching competence. Teaching competence is a particular competence that distinguishes teachers from other professions and determines the level of students' success in learning. Purpose of the study: to explore and describe a model for the renewal of subject literacy as a necessity to improve teachers' professional competence. A

systematic review can be explained as a research method and process for identifying and critically evaluating relevant studies and for collecting and analysing data from those studies. The teacher's subject literacy update is a collaborative learning experience for teachers to improve the quality of learning in the classroom. Lesson study can be applied in cycles, each cycle consisting precisely of steps; plan, do and watch. This educational services programme concentrates on improving the teaching competence of teacher-educators, which involves planning learning, implementing learning and assessing learning. The teacher will be the model, while the other teachers will perform the role of observers, observing the activities of the students in the classroom. Reflection exercises are actions taken by the team to discuss the results during the observation, which can be used to improve the following learning. This study identifies that inquiry-based learning can contribute to the development of lifelong learning skills in educators, which is extremely significant in a modern, rapidly developing world. It is why there is a necessity to provide numerous opportunities for pupils to participate in research activities in their regular primary school lessons because the processes of independent or guided experimentation allow pupils to develop relevant learning skills and acquire new information.
Keywords: teacher subject literacy, teacher competence, professional learning, teacher professional competence, updating subject literacy

Introduction

As teachers, they are certainly eager to provide their students with the best teaching, learning activities that can enable every student to study properly. The ability of teachers to manage learning activities is one of the skills professional teachers should possess. This ability is called teaching competence. Teaching competence is a particular competence that distinguishes teachers from other professions and determines the level of students' success in learning. This competence is not acquired suddenly, but as a result of continuous and systematic learning efforts, both during preparation for work (teacher education) and during service, supported by the talents, interests and other abilities of each teacher [1].

Teaching competence is not only connected to the planning of instruction, its implementation and assessment but is also connected to several factors associated with any effort to improve the quality of learning in the classroom. Efforts to improve the quality of learning in the classroom are also inseparable from the educational qualifications of the teacher. The teacher's educational qualifications should also be in line with their field of expertise. But what if there are still teachers whose educational qualifications do not correspond to the teacher's field of expertise, even if the educational qualifications do not correspond to the minimum requirements of the teacher. This is a fact that occurs to most teachers [2]. There are still many teachers who are unfamiliar with the information technology commonly used by teachers in urban areas to support learning. They cannot update their knowledge where they may encounter so many obstacles, which consequently make their knowledge obsolete. The government and the district education department in particular still consider the issue to be complicated [3].

The authors conducted a community service programme on this distant issue. The programme provided teachers with issues connected to learning through special training. Based on this experience, the authors identified that teachers still encounter obstacles when preparing

teaching guides, such as lesson plans, learning materials, student worksheets, assessment tools and learning materials. They are currently using old training devices, tools, instruments or media, and they are in constant use without any revisions or modifications [4]. Another issue is the difficulty of recruiting teachers who can teach students. Thus, most of the teachers come from the region itself. This impacts the existence of some teachers who have only completed secondary school and many others who teach subjects that are not relevant to their education. This is also the reason for their poor competence. One example is junior and middle school and high school [5]. Solving this problem can make a significant contribution to changing the atmosphere of the academic field. Teachers should have the opportunity to continuously improve their teaching skills. To be efficient, the mentoring process should be collaborative. It may be heard about collaborative learning so often; even the author may have applied it to the teaching and learning process. For example, when collaborative learning has been a central feature in the application of learning-based lesson study for a century [6]. Collaborative learning is the essence of learning because there is no individual learning that can be done. Collaborative learning gives learners the right to learn, with learners participating in the learning process to progress in their studies and gain the expected results. Collaborative learning can also facilitate cooperation between teachers in planning, implementing, observing and reflecting on learning, to enhance the efficiency of both the teacher and the students in the teaching and learning process. This is a lesson study session that is conducted in schools [7].

Purpose of the study: to explore and describe a model for the renewal of subject literacy as a necessity to improve teachers' professional competence.

Materials and Methods

The following research methodology was used to examine and describe the model for renewing the subject literacy of a teacher as a necessity for improving their professional competence: systematic review can be explained as a research method and process to identify and critically evaluate relevant studies and to collect and analyse data from specified studies. The purpose of a systematic review is to identify all empirical data that must meet predetermined inclusion criteria to answer a specific research question or hypothesis. Through explicit and systematic methods in examining articles and all available evidence, prejudice can be minimised, thereby ensuring reliable results on which to base conclusions and decisions.

Meta-analysis is a statistical method of combining the results of various studies for weighting and comparison, and for identifying patterns, disagreements or relationships that appear in the context of several studies on the same subject. In the meta-analytic approach, each primary study is abstracted and coded, and the results are subsequently converted into a general metric for calculating the overall effect value. However, to be able to perform a meta-analysis included studies must have general statistical measures (effect size) to compare results. Thus, it is complicated to perform a meta-analysis of studies using various methodological approaches.

After conducting a literature review and selecting a final sample, it is essential to consider how the research will be used for the relevant analysis. Thus, once the final pattern has been identified, standardised means of abstracting the relevant information for each item should be used. Extracted data can be in the form of descriptive information, such as authors, years of publication, subject or type of study, or in the form of effects and results. It can also take the

form of a conceptualisation of a particular idea or theoretical opinion. Notably that this should be done by the purpose and research question of the particular review, and the form can vary. At this stage, it is crucial to consider training reviewers to avoid any variation in coding and abstraction (if more than one) and to closely monitor data abstraction during the review process to ensure quality and reliability. Frequently, if the purpose is to publish in an academic journal, this requires a detailed description of the process or a reliability assessment between reviewers. Occasionally this is easy to do with interesting information, such as the general population, effect size or sample size. However, it becomes more complicated when the subjects of literature, perspectives or historical chronology are of interest. this requires a detailed description of the process or a reliability indicator between reviewers. Occasionally this is easy to do with interesting information, such as the general population, effect size or sample size. However, it becomes more complicated when the subjects of literature, perspectives or historical chronology are of interest. this requires a detailed description of the process or a reliability indicator between reviewers. Occasionally this is easy to do with interesting information, such as the general population, effect size or sample size. However, it becomes more complicated when the subjects of literature, perspectives or historical chronology are of interest.

Results

Based on an analysis of the priority problems encountered by most teachers in remote areas, the dedicated team then tries to propose a solution through this programme, which is to apply the "model for professional development of special teachers from remote areas through the implementation of lesson study", which was previously developed as part of a research programme under competing grants [8]. This social services programme concentrates on improving the teaching competence of teacher, which involves planning learning, implementing learning and assessing learning. The teacher's subject literacy update is a collaborative learning experience for teachers to improve the quality of learning in the classroom. Lesson study can be applied in cycles, each cycle consisting precisely of steps; plan, do and watch.

"Plan" is an action that can be implemented collaboratively or as a team to develop learning tools. The "Before" activities are about the implementation of what the teacher is trained to do. This is an implementation of how learning tools are applied in teaching and learning in the classroom. Learning activities in the classroom emphasise collaborative learning with various learning models that allow students to be more active and provide objectives to improve high-level thinking skills, such as performing jumping exercises. The teacher will be the model, while the other teachers will perform the role of observers, observing the activities of the students in the classroom. Reflection exercises are actions taken by the team to discuss the results during the observation, which can be used to improve the following learning. These learning activities in the classroom can be implemented at all school levels and in distant schools. Students' engagement in learning at the college level can be enhanced by improving the quality of learning through lesson study sessions. When lessons are delivered continuously, it has a positive impact on improving teachers' competence. Consequently, teachers will continually deliver innovative learning that is designed to improve teaching and learning that has been done over and over again in the past. Continuous lesson study activities will lead to

the establishment of a learning community.

This community service programme can uncover data on a teacher's teaching competence in the form of qualitative data. To obtain data on teachers' teaching competence, researchers use a tool in the form of an analysis and observation sheet. The results of the analysis of teachers' learning tools will provide additional data on teachers' ability to plan lessons. Meanwhile, from classroom observations, there is evidence of teachers' ability to implement the learning process. In addition to this data collection process, data on teachers' abilities in preparing learning assessments are also obtained through the analysis of teacher assessment tools. The tools in this study borrowed those used in the assessment of the teaching profession and training by making adjustments to specific statement items. A first tool is a tool that allows teachers to develop learning tools that include a curriculum, lesson plans and teaching materials. The second tool is the teacher's ability to implement learning, which includes preliminary, main and final actions. A third tool is a tool that allows teachers to develop assessment tools for learning.

Teachers' abilities in training for learning are described based on an analysis of the training devices. Based on observations of the teaching and learning process in the classroom, the data obtained on the teacher's ability to implement learning is indicated in the following table. Based on the analysis of learning assessment tools, which is determined by the teachers' ability to prepare a learning assessment tool, the following table describes the activities in detail. The assessment of the teaching competencies assessed is based on three aspects, namely the ability to develop teaching tools, the ability to implement learning in the classroom and the ability to conduct assessment. The assessment is conducted after training sessions over three (3) cycles. The results of the attestations indicate a significant increase in the teaching competence of teachers. This conclusion is consistent with the results of a study examining the professional development of teachers in the teaching and learning of mathematics. It is also consistent with the study of a model of professional teacher training for teachers from distant areas. It emerged that lesson-learning was very efficient in areas where access to information was complicated. As a consequence, it was a significant contribution to the professional development of teachers [9].

Some aspects of teachers' teaching competence can be identified from the results of the work in the planning phase. When preparing a curriculum, for example, the personality is fully recorded in the curriculum, there is a correlation between the standard competence recorded in the curriculum and the competence stated in the curriculum and a correlation with the written core competence. Teachers are qualified in defining performance indicators and learning objectives related to the core competencies. Functional verbs used for learning objectives can be measured, as can the choice of learning materials according to predetermined learning outcomes. The teaching methods used in preparing the teaching stages are various, as presented in the lesson. Methods mainly emphasise students' classroom activities, such as discovery, exploration and research. In the "pre-activities" phase, all teachers use the student worksheets that have been prepared and provided for the exam, and the exercises to assess student learning outcomes. However, once you have been accompanied in the preparation of teaching guides, including media, student worksheet and assessment tools, the teacher is more skilled in establishing real media in the school environment, establishing a student worksheet that is relevant to the teaching method, and establishing an assessment tool adapted to the solved

question that has been drafted before. These assessment forms cover two different types of objectives or question levels. This is the "general objective" and the "jumping objective". These two types of objectives in the learning process serve not only as an assessment tool but also as a tool that triggers the implementation of learning routines for real learning outcomes that enable learners to understand and acquire the actual learning [10].

While the implementation of " Do with one teacher" becomes the model teacher and the other 3 teachers become observers, learning implementation is more active than before the lesson study session. As the learning tools used are more engaging and involve almost all students in the classroom, learning is more learner-centred. Students actively express their opinions, but teachers do not manage their time well. The average implementation of the training does not coincide with the time already indicated. A reflection objective is performed after implementation, the exemplary teacher reports the obstacles encountered in implementing the learning, and then the observer reports the results in the learning process. These results can be discussed and solutions identified for further training improvements [11].

Finally, during the lesson study process, which was implemented over 3 cycles, starting with Planning, Doing and Visioning, it can be concluded the following:

1. Lesson studies can be a way of developing a professional tutor through collaborative learning and continuous learning, based on the principles of collegiality, which help each other in learning to establish learning communities. It can be implemented collaboratively by teachers through the establishment of specialist groups, i.e. specific social, religious, linguistic, sporting and artistic groups. The group may consist of 4-5 teachers and each group is accompanied by one member of the dedicated team according to their field of expertise.

2. With lesson study sessions, it appears that teacher competence can be improved, especially teaching competence. Teaching competencies include planning learning, implementing learning and assessing learning.

3. Activities to promote lesson study can start with seminars on understanding lesson study, principles of lesson study, understanding the curriculum and reinforcing the content or concept.

First of all, based on the results of this public work, which concentrates on the educational aspects of teaching the learning process using lesson study activities, the following suggestions can be made:

1. Distribute this dedication programme to other schools in the Republic of Kazakhstan.

2. Implement this continuous maintenance.

3. The implementation of this dedication programme concentrates on competencies other than teaching, i.e. professional, social and personal competencies.

Discussion

While many studies have examined the impact of inquiry-based teaching compared to conventional lecture-based teaching on the academic achievement of students in primary science classes, few studies have examined its impact on the development of students' ability to learn to study. Such studies are particularly rare in the initial stages of training. Furthermore, previous research on the competence "learning to teach" has identified the possibility of developing it in the learning process by implementing specific learning strategies and active learning methods. Thus, this study concentrates on how inquiry-based learning, as opposed to

conventional learning, impacts learners' perceptions of learning, their motivation to learn, their learning process in various circumstances and the impact it has on the application of various learning strategies [12].

This study identifies that inquiry-based learning has contributed to the better development of students' ability to learn and that its impact on this development was significantly higher than that of conventional lecture-based teaching [13]. Based on this research, the hypothesis was confirmed that inquiry-based primary science teaching would result in more active development of students' learning ability (compared to conventional teaching). The better development of students' ability to learn in the experimental group can be interpreted as a result of students' active participation in planning the research process and in thinking and reasoning about the learning purposes they needed to achieve. It is essential to highlight that inquiry-based learning is a student-centred approach, with an emphasis on questioning, critical thinking and problem-solving. Pupils are actively involved in establishing the question and the problem and making connections about what they are learning. It allows them to gain a deeper understanding than they could by simply memorising and recalling facts, and they can develop a passion for research and learning. Furthermore, the ability to learn to study implies that students start with previous knowledge and life experiences in the process of learning, which is a basic tenet of constructivist learning, embedded in the base of inquiry-based learning. The positive impact of inquiry-based learning is mainly determined by their perception of learning and the use of various learning strategies. These results can provide valuable information for the successful establishment of primary education in the fields of: science, technology, engineering and mathematics), which often relies on students' interest and motivation to learn [14].

In the current educational system, students' ability to manage and regulate their learning process is high in the hierarchy of educational purposes and key competencies that students require to successfully deal with everyday life situations and problems. Because of the central role, it plays in enabling quality learning and student achievement in and out of school, self-regulated learning or the ability to study to learn has become one of the key constructs in education [15].

In addition to comprehension and learning skills, study skills training includes attitudes, values and beliefs that enable the individual to develop effectiveness, flexibility and self-organisation in learning in various contextual frameworks. Based on these features, it can be defined as a meta-competence because it has a significant impact on the acquisition and application of other competencies. The reason why European education policy concentrates on educational competence as one of the key competencies that every European citizen should develop is due to the accelerated global changes that encourage educational activities to prepare students to handle these changes and to train them for lifelong learning [16].

Study-learning is a process that centres on a person's self-awareness as a student, which includes their motivation to learn, their learning purposes, their preferred learning strategies and their cooperation with other learners. Throughout life, especially during intensive learning, a person develops, mostly unconsciously, an awareness of themselves as learners and, based on this awareness, develops their learning strategies. Learning skills training involves understanding the concept of learning and the process that occurs at its essence, and the ability to adapt to this process if some limitations occur. Cognitive skills training involves a deeper

understanding of the structure of specific material during learning and may result in a critical awareness of assumptions, rules and social expectations that influence a person's cognitive experience and way of perceiving. thinking, feeling and behaviour during learning. This competence refers to motivation to learn, learning purposes, preferred ways of learning, learning strategies and cooperation with others and enables students to become more efficient, flexible and self-organised learners in various contexts [17].

The competence of study for learning also includes the ability to organise and structure one's learning in an individual or group context, and the ability to efficiently manage time and information, solve problems and accept, apply and evaluate new knowledge in various fields. circumstances. It includes awareness of the learning process and the demand for learning, and the ability to overcome obstacles to more efficient learning. It also includes the absorption, application and assessment of new knowledge and the application of acquired knowledge and skills in various contextual frameworks. In a broader sense, it can make a significant contribution to a person's personal and professional development. From this definition, it is clear that this competence encompasses both cognitive and affective aspects and indicates its transversal nature and continuous and lifelong measurement. These components of study skills training indicate its great complexity. Under the rhythm of contemporary social developments, learning is no longer a one-off acquisition, then repeating and maintenance of knowledge already acquired, but becomes an innovative activity that is constantly establishing something new. Study learning is not a skill set or a prescription that will improve learning [18]. It is a kind of philosophy that puts the student at the centre through several crucial factors: the school, which provides the student with the opportunity to learn; parents, who are involved in establishing learning by encouraging children to find their learning methods and strategies; students themselves, who aspire to become individuals who will practise lifelong learning [19].

Conceptually, learning can be divided into two broad categories: learning as knowledge reproduction and learning as knowledge transformation. The first category includes an understanding of learning as the accumulation of knowledge (increasing the volume of information) or as a process of remembering knowledge and skills to use later. The second category refers to the concept of learning as a process of discovery that enables the understanding of phenomena in nature and activities that result in conceptual (and personal) change. According to the above, to develop the capacity for lifelong learning, it is necessary to view learning as a process that involves the transformation of knowledge rather than simple memorisation and reproduction. In the last decade, research on learning competence for learning, its main features and crucial elements and its development among students has become more frequent. For example, as part of the "Life as learning" project, the university organised a series of studies to explore this competence. The university has launched a project known as the "Efficient Inventory of Lifelong Learning", which is designed to identify and examine respondents' orientation towards lifelong learning. They used "learning ability" as a new term that implies a complicated combination of predispositions, experiences, social attitudes, values, attitudes and beliefs that influence an individual's engagement in various learning opportunities [20].

The theoretical starting point and structure of the European test for study to learn consists of cognitive, metacognitive and affective dimensions of this competence. The affective dimension consists of three sub-dimensions. The first sub-dimension consists of motivation to

learn, learning strategies and change orientation; the second is academic confidence, and the third is the environment in which learning occurs. The cognitive dimension also includes several sub-dimensions. These include identifying statements, applying rules, checking rules and applying mental tools. Finally, the metacognitive dimension includes problem solving, metacognitive accuracy and metacognitive confidence. Preliminary results from studies using this device have indicated the necessity for further improvements. Currently, one of the best known international tests of students' knowledge and skills is the International Student Assessment Programme, which is designed to determine "what students can do with their knowledge". The survey does not concentrate on any particular aspect of the curriculum but is designed to assess how well students can use knowledge in everyday life situations. In context, the assessment programme for international students approaches the study of specific aspects involved in teaching for competence learning, and the objectives used demonstrate similarities with the framework for testing this competence [21].

Training students in the use of various teaching methods and techniques should begin at the first level of formal education. In contemporary teaching literature, this attitude is often accompanied by the use of the term "metacognition". This concept refers to a person who consciously explores their mental processes while adapting and enhancing their learning. The term metacognition is synonymous with study skills training is applied by other authors in addition. By this term, they include understanding of the learning process, learners' awareness of their learning features, perception of the context and manipulation of contextual content to attain a higher level of learning efficiency [22].

To develop this competence, students must first ask themselves why they are learning and how what they are learning can help them. Several organisational prerequisites should then be considered to establish the basic conditions for training: preparing the workplace and training materials, analysing the content and planning the time needed. It is followed by planning the work on the objective, applying reading and note-taking techniques, separating the essential things from the inessentials, applying memorisation techniques and measuring learning results [23].

These are the basic prerequisites for the establishment of metacognition of one's learning. Each of these assumptions is accompanied by metacognitive insights that children gain in particular learning situations. Once these metacognitive ideas are implemented, it can be expected to see a shift from one content to another or from one situation to another. There are four typical elements for the efficient transfer of metacognition about learning: knowledge common to new and old objectives, skills and abilities that can be used in a new objective, learning habits and learner characteristics that can usually help in the learning process, such as perseverance, competence and enjoyment of learning. Children do not usually learn to consider the components of their learning at the metacognitive level. This understanding is most often hampered by their prejudices or implicit theories about learning. These are assumptions that prevent children from working successfully on an objective because they believe they are not capable of mastering the content, or believe they can easily master the content [24].

Study to learn is at the heart of the educational process. It strongly influences the ability to manage a professional career, and its development is therefore essential for every student. It is sometimes identified with lifelong learning and requires the development of metacognitive skills. The usefulness of the education system for students would certainly be greater if

students, in addition to acquiring more and more complicated specific knowledge, also developed the general skills necessary for an efficient approach to learning various contents. Current particular knowledge and skills are rapidly becoming obsolete and therefore require constant updating. Without appropriately developed learning skills training, the individual is at increased risk of social and economic exclusion [25].

Research in higher education has identified that students often have inappropriate study habits and learning prejudices and that they lack the self-assessment and metacognitive skills necessary to self-identify problems in their learning strategies [26].

The positive shift in the development of the ability to "study to learn" through inquiry-based teaching indicates its essential role in preparing students for lifelong learning. It can be assumed that a longer exposure of students to inquiry-based learning would have had an even more positive effect on the development of their learning competence in basic sciences because the short period of three months was sufficient to achieve a statistically significant positive result. a shift in the development of this competence.

Conclusions

This study identifies that inquiry-based learning can contribute to the development of lifelong learning skills in educators, which is extremely significant in a modern, rapidly developing world. It is why there is a necessity to provide numerous opportunities for pupils to participate in research activities in their regular primary school lessons because the processes of independent or guided experimentation allow pupils to develop relevant learning skills and acquire new information. Participation in research activities offers a unique opportunity to simultaneously strengthen conceptual understanding of the research field/subject, acquire research skills, explore new skills and understand the learning process; as such, it should be a central activity in science education. In this study, inquiry-based learning resulted in increased motivation to learn science, improved perceptions of learning and better use of learning strategies, and management of various learning environments among fourth-grade primary school students.

When assessing the impact of inquiry-based learning on students' development of learning competence, it should be considered that the development of learning competence was analysed by using a survey in which students expressed their observations regarding their learning competence. changes in their learning process in science class. A follow-up study to investigate the development of this competence could further explore learners' use of learning to acquire the competence in specifically designed situations and test a larger sample. The study will also provide insight into the possibilities of developing this competence in secondary level science lessons.

In Kazakhstan's education system, which is currently in the process of introducing a new curriculum, the research approach is an integral part and one of the main concepts of the interdisciplinary school subject called "Science and Social Sciences" in the first place. four primary school classes, but the possibility of implementing it in other school subjects cannot be excluded. The present study proves that inquiry-based learning should be implemented in science classes in the first stage of education because of its wide range of benefits for students. In this context, it is essential to emphasise that the introduction of inquiry-based learning requires appropriate teacher competencies that will enable its high-quality organisation and

implementation through carefully planned research activities for students, enabling them to develop not only their scientific literacy. but general competencies such as learning initiative and independent learning, the ability to analyse and synthesise learning content, the ability to plan and manage your time during learning, and information management skills. These include, for example, motivation and willingness to apply inquiry-based learning, knowledge of authentic scientific research, skills to implement it and positive beliefs about its application in the learning process. It requires appropriate teacher guidance through well-planned timetable activities that allow for meaningful conceptualisation during an elementary science lesson. Consequently, it is also necessary to provide appropriate teacher training courses in this field, as previous research indicates that teachers often lack clearly defined learning strategies and are not taught how to learn, which demonstrates a failure to develop one of the most crucial objectives. academic competencies, and that teachers' beliefs about learning affect how they implement learning development to teach competencies in the classroom.

This educational services programme concentrates on improving the teaching competence of teacher-educators, which involves planning learning, implementing learning and assessing learning.

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