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Concept Mapping Techniques to Support Learning Activities in TK Az-Zahra, Kabupaten Karawang

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ABSTRACT

This Community Service (PKM) aims at analyzing teachers' difficulties in making interesting concept maps in the learning process namely teachers' lack of understanding of various applications for making concept maps of subject matter, teachers' difficulties in writing mathematical symbols used in creating learning instruments, as well as inadequate quality in the process of implementing learning activities. This PKM is located at Az-Zahra Kindergarten, Karawang, West Java. Data were collected by means of observation, interviews, and Zoom. The method used by the PKM team to solve problems was to provide training activities on a scheduled basis for one semester. The material presented was the introduction to and use of Mind Map and Math Type application software. The results of this PKM for partners are teachers' ability to create interesting concept maps and the improvement of learning activities in education units. While the output for the PKM team is the fulfillment of responsibility stated in the Tri Dharma that must be carried out by lecturers indicated by receiving certificate from a partner.

Keywords: *Concept Map, Mind Mapping, Math Type, Learning, Activity*

1. INTRODUCTION

Early Childhood Education (PAUD) is a coaching effort aimed at children from birth to the age of six which is carried out through the provision of educational stimuli, as a form of assistance for physical and spiritual growth and development so that children have readiness to enter further education. Quoted from the National Association for the Education of Young Children (NAEYC), it is recommended to pay attention to the characteristics of a good PAUD, as follows: (1). Children spend almost all their time playing, making things or playing with friends. (2). Children are given various activities throughout the day. (3). children's works are displayed to decorate the classroom, so that children feel proud and excited. (4). The curriculum can be adapted for children who are faster learners, and also for children who need more help with learning. (5). Facilities and infrastructure will later become a support for children's education in the PAUD **(Zeuny, 2019).**

Child development at an early age (0 to 5 years) is a golden stage of human development. Therefore, it is necessary to have the right stimulus to support them at every stage of their development. Therefore, Kindergarten teachers/PAUD educators have an important role in assisting the developmental stages of their students. According to **Susanto (2011)** based on the research in the field of neurology, 50% of children's intelligence capacity is formed in the first four years since birth. By the time a child reaches the age of eight, brain development has reached 80% of brain development in that age range. Newborn babies have 100 billion neurons and trillions of connections between neurons. Through natural competition, eventually joints that are not or rarely used will experience antrophy. Connection stabilization occurs when neurons get information that is capable of producing an electrical burst. This will stimulate increased production of myelin produced by glial adhesive substances. The more myelin substances produced, the more dendrites that grow, so that the more synapses, which means more neurons are fused to form units.

Early childhood educators must be able to be actively involved in the learning process. This is necessary so that children can get the right stimulus at every stage of their development. This is in line with what was conveyed by **Suryana (2016)** that educators for early childhood should be actively involved in the children's education process. Providing broad opportunities for children to recognize their environment by exploring is the main task of educators. Coercion and restraint of exploration power can kill the development of children's potential and can even cause children to experience pressure and confusion in doing something if they don't like it. The main focus for educators is managing the educational process in the implementation of activity programs that make every child feel happy with what he is doing, resulting in both educators and students constantly gain new knowledge and experiences.

Referring to the results of observations made by the PKM team of Universitas Indraprasta PGRI, during the Covid 19 pandemic, children must study at home. Therefore, the role of teachers in schools is automatically replaced by parents as children's companions in learning. This situation certainly raises various problems, including: (1). Teachers have difficulty in conveying material to children. (2). It is difficult to control the time in learning activities. (3). The output of learning activities is not in accordance with what is expected. (4). It is difficult to determine the right learning strategy because it has to be adjusted to the companion and students.

Learning during the COVID-19 pandemic will of course involve parents or companions in learning. Therefore, parents or companions must understand in advance about the study of the learning material presented. Therefore, the PKM team at University Indraprasta PGRI provided a solution, namely making a concept map (*Mind Map*). **Hudoyo, *et al* (2002)** suggest that: "concept maps for learning citizens, including Package B, function to, among others: (1) provide an overview of the depth, and breadth of a concept that needs to be taught to learning citizens, and (2) be used to prepare a sequence of concepts-concepts and systematic learning organization". Concept maps will clarify the main ideas of a concept for tutors and residents study. Concept maps can visually show various avenues that can be taken in connecting one concept with another concept. Concept map can ultimately be used as a schematic summary of the subject matter which contains the relationships between concepts. The role of concept maps in order to improve learning achievement of learning citizens has been put forward by several experts including **Jegede, Alaiyemola, and Okebukola, 1990 (Basuki, 2000)**, who stated that: "Learning strategies using concept maps can help in improving outcomes study. Furthermore, **Novak and Gown in 1995 (Basuki, 2000)** stated that: "Learning with the help of concept maps is one way to improve

learning outcomes". Specifically for learning mathematics, the main prerequisites that students must master are prerequisite concepts. For example, to learn "the concept of fractional numbers", the prerequisite knowledge that must be mastered by students is integers and their operations. Therefore, fractions, integers and operations have a very close relationship. With the help of the concept map, the relationship between the three components can be easily understood by the learning community.

Concept maps are abstract ideas in mathematics. Considering that learning citizens who receive concept maps are not all able to think abstractly (at the level of formal thinking), it is necessary to have a separate strategy from a tutor so that students who are still in the stage of concrete thinking or in transition from the level of concrete thinking to the level of formal thinking can understand the concept map presented and at the same time helps him to understand the concepts being taught. If the teacher is able to make a concept map well in every learning activity, of course it will make it easier for parents or companions at home to understand the presented material. The use of concept maps in learning activities is indeed quite effective in providing understanding to students. The use of the concept map method can increase students' learning motivation. Concept maps can also improve learning outcomes, and increase student creativity as well as can be used in learning/applied to all subjects so that students are easy to learn. This is in line with what was conveyed by **Fachrurrozie dan Wahyuningrum (2010)** that the use of concept map media is more effective than learning without concept map media, especially accounting courses on the subject of account classification. The average value of learning outcomes using concept map media is 78 while learning without concept map media is 64.90. The level of learning effectiveness after using concept map media is 20.18%.

2. METHOD

The method of implementing Community Service (PKM) activities is training on how to make concept maps with "Mind Maple" and training in operating "Math Type which is carried out online. The target of PKM activities are teachers at Az Zahra Karawang, Jawa Barat. The stages carried out by the PKM team are shown in Figure 1.

Figure 1. Stages of PKM Activities

Based on Figure 1 The preparation stage is carried out by observing the Partners. Observations are made in the form of online interviews with school principals. At this stage, it is very important to analyze the difficulties and obstacles faced by PKM partners. In addition, the team also try to propose solutions to solve the problems faced by partners. The implementation stage is the core of PKM activities. The PKM team from Universitas Indraprasta PGRI provides training on making concept maps with "Mind Maple" and training on operating "Math Type" to teachers online. The themes and training materials are adjusted to the problems faced by partners. The final stage is the responsibility activity. Accountability is carried out to partners and institutions where the PKM team works. Accountability to partners is in the form of reporting to the Principal on the results that have been achieved in PKM activities so that a Certificate can be issued. Accountability to the institution is in the

form of a report on PKM activities to the Community Service Institution as a form of fulfilling the tri dharma activities.

3. RESULTS AND DISCUSSION

Community Service Activities (PKM) carried out by the PKM Team of Universitas Indraprasta PGRI to partners are in the form of training for teachers at Az Zahra Karawang. The community service activity was attended by 9 participants, namely 3 Az-Zahra Kindergarten teachers, 3 representatives of parents, and 3 service teams. The training materials are in the form of making concept maps with "Mind Maple" and training in operating "Math Type" to make it easier for teachers to make learning instruments. Learning instruments are very important for teachers to determine success in teaching. This is revealed in several research results. According to **Nauri, *et al* (2010)** there is a significant influence of the Mind Mapping learning model on the learning outcomes of class X students on geography subjects at SMA Negeri 2 Kikim Selatan.

In addition, according to **Komarudin *et al.*, (2019)** from the results of research that has been carried out, it is shown that the teaching system using the mind mapping learning model is better than those that do not use the mind mapping learning model. In group activities, all students feel they take part (actively participate). Students realize that their participation is very important to complete their group assignments and through this participation students understand more about the fourth grade's theme "the rich country" in SD Negeri 2 Kampung Baru.

During the Covid-19 pandemic, all learning activities are carried out online. Therefore, it is necessary to help parents in educating children at home. This certainly provides a challenge for kindergarten teachers to design a lesson that is easily understood by parents and students. Therefore, teachers must be able to create a concept map that makes it easier for parents to accompany their children to study at home. Concept maps are very important because they can provide direction/description of learning activities. This is in line with the research results put forward by **Khasanah.,(2019)** that learning with the concept map strategy is much more practical, that students still get material in general, and that it does not make students bored quickly because of the effective, efficient and space-saving way of writing. In addition to this, the concept map learning strategy makes students more free to be creative. Furthermore, the result of research conducted by **Lestari *et al.*,(2016)** shows that concept map media can improve students' cognitive learning outcomes.

In carrying out the training, the Mindmaple Lite App was used. Mindmaple Lite is an application that can visually increase productivity and activity in creating project maps, concept mapping, and ideas. Mind Mapping is a graphical technique that allows us to explore all of our brain's abilities for thinking and learning purposes. Learning materials compiled using Mind Mapping make it effective to understand the materials so that we can easily remember comprehensive information. This is because information is organized and grouped in such a way. Psychologically this also makes it easier for someone to organize and sequence information.

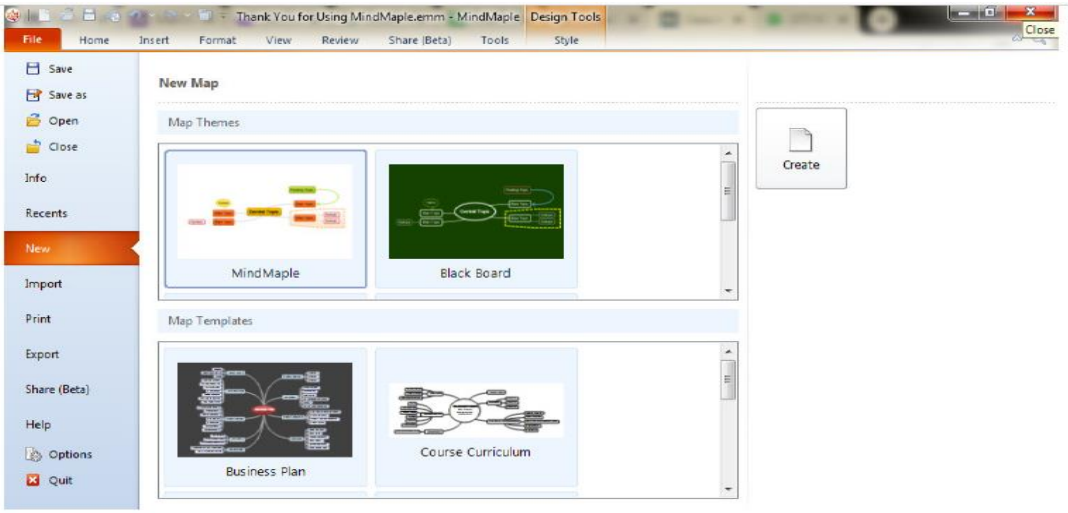

Figure 2. Mind Maple Application Display

Based on Figure 2 The second material for PKM activities is training to operate "Math Type". MathType is software that is used to perform math editors and calculations. You can make mathematical formulations as well as numerical calculations. In addition we can also make it as a document or web page. This software uses a User Interface (UI) that is friendly and comfortable for users, making it easier for users to find tools. This software not only can be used to calculate, but also is supported by mathematical markup languages such as TeX, LaTeX and MathML. MathType can also be integrated with other word processing software, such as Microsoft Office, and OpenOffice. The following shows the display of the Math Type software used as material for PKM activities.

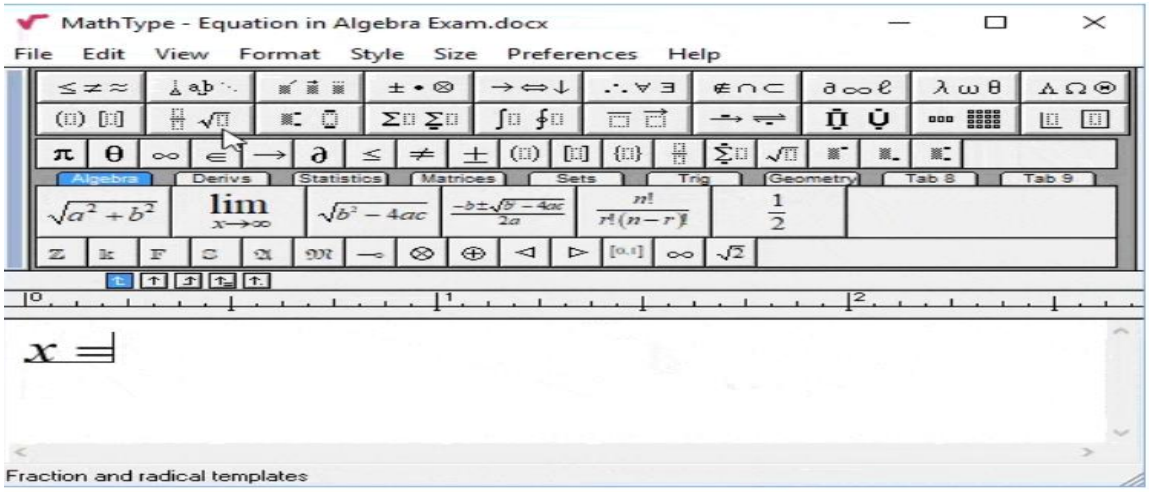

Figure 3. The Display of Math Type Application

Based on Figure 3 In PKM activities, of course, there is a transfer of Science, Technology and Arts (IPTEKS) to partners and vice versa. Analysis of the results of PKM activities which are a form of science and technology transfer are as follows: (1). Overcoming teachers' difficulties in carrying out learning activities in the classrooms. (2). Providing modules that have been made by the community service team to be studied before and after the training. (3). Basic training on using Mind Maple Software which makes it easier to create concept maps in teaching and learning activities in kindergarten. (4). Mind Maple Software Training which is applied directly with an example of a previously created concept map. (5). Math Type

training to make it easier for teachers to make learning instruments in introducing numbers to students. Concept maps for learning citizens, including Package B, function to, among others: (1) provide an overview of the depth, and breadth of a concept that needs to be taught to learning citizens, and (2) prepare a sequence of concepts-concepts and systematic learning organization. Concept maps will clarify the main ideas of a concept for tutors and residents study. Concept maps can show visually various avenues that can be taken in connecting one concept with another concept. Map The concept can ultimately be used as a schematic summary of the subject matter by containing the relationships between concepts.

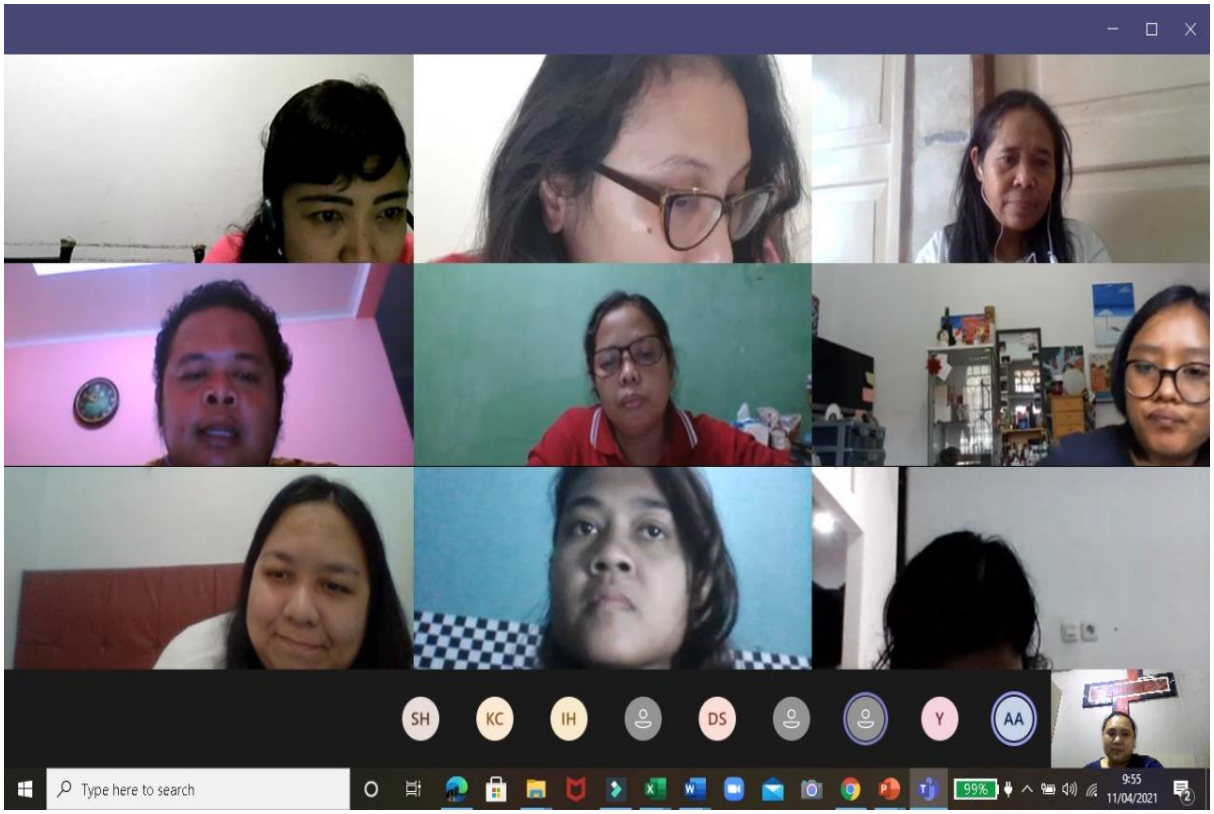

Figure 4. Mind Maple Application Activities at TK Az Zahra

Figure 4 shows activities at Az-Zahra, Karawang, West Java when conducting a question and answer session of the material. During PKM activities, of course, the team encountered various kinds of obstacles that must be faced. The obstacles for the PKM team when conducting online activities include: (1). Different network connectivity, when there were participants whose internet network was low or unstable, the information they got was often disconnected or broken, (2). Differences in the ability of teachers to use existing tools, and (3). External disturbances, for example: children asking for food, neighbors coming and some even remodeling their houses. However, thanks to the good cooperation of the PKM team, these obstacles could be overcome. Learning during the COVID-19 pandemic will of course involve parents or companions in learning. Therefore, parents or companions must understand in advance about the study of the learning material presented. Therefore, the PKM team at University Indraprasta PGRI provided a solution, namely making a concept map (*Mind Map*).

4. CONCLUSION

The conclusions that can be drawn from the Community Service (PKM) activities regarding "Training on Concept Map Making Techniques to Explain Learning Materials at Az-Zahra Kindergarten, Karawang Regency" which was attended by 9 participants, namely 3 Az-Zahra Kindergarten teachers, 3 representatives of parents, and 3 service teams are as follows: (1). Teachers get an overview and are able to use "Mind Maple Software" to create a concept map of learning materials. (2). The training stimulates and brings up creative ideas from teachers to develop more innovative learning media that are interesting and easily understood by students. and (3). Teachers have skills in using "Math Type", making it easier for teachers to develop instruments related to the introduction of mathematical symbols to students.

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