

a result of the carefully-planned research lesson. Implications of the research lesson were also discussed during post-observation.

E32-PP TR703 Some results of implementing Lesson Study by Chemistry teachers of Bayangol District

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Keywords:

lesson study, ability to work
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Within the framework of "Teaching Methods improvement Project toward Children's Development in Mongolia" jointly implemented by MECS and JICA during the period 2006 –2009, Lesson study was introduced in Mongolia. Under the 2nd stage of the project implementation in 2010, the practice of Lesson study is being rapidly introduced among schools, teachers and scholars throughout the nation which helps in the dissemination of Lesson study practices. The results of Lesson studies, conducted in many different countries had proved that the Lesson studies conducted on advanced didactic grounds effectively contribute to the renewal of teaching methodologies and learning of students. The Bayangol district of Ulaanbaatar city has 17 state owned schools. In 2011-2012, the district's department of education organised 9 sessions for the secondary school teachers with the aim of disseminating the methodology and management of Lesson study to them. Within the scope of these activities, a chemistry lesson study team, comprising 16 chemistry teachers was established, for conducting joint lesson studies. This presentation will talk about the results of the joint lesson studies conducted in the academic year 2011-2012 by the Chemistry Lesson study team, with the intention of improving students' abilities to work with the given information (using, comparing, transforming and processing). Based on our pursued policy of selecting the abstract type topics with plenty of notion, making difficult for students to understand and requiring certain methodology from teachers, we have selected the group topic of "The atomic structure and properties of chemical elements" for 8th grade, elaborated the 20 hour program based on content study, jointly detailed the methodological didactic solutions for lesson topics of "Components of atomic structures" and "Atomic charge of chemical elements" and experimented on the students of Grade 8G of school number 113. During this experiment, the 11 team members participated as observers, and made improvements in these lesson programs by using the results of post lesson discussions and observations. The analysis of the data showed that during the first round, the teachers had not been able to make differentiation between the sequences of directing questions and basic questions, whereas after jointly elaborating and improving the next program, the directing questions and basic questions were planned separately and teachers had even thought through the alternative action that needed to be taken in case a student was unable to execute a given task. Also the analysis of data reveals that during the first discussion, teachers were able to make only general comments about the lesson without having a clearer idea of how and which areas needed improvement. Whereas during the subsequent discussions, there were able to talk about their observations in the changes of student's capabilities, their weaknesses and also the reasons for these. Based on these discussions, the subsequent lessons were improved. This proves that the teachers' methodology usually changes through lesson studies.

E33-PP TR704 The Preschool Learning Study process - A joint reflection on the use of contrast of critical aspects

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Keywords:

Contrast of critical aspects;
learning study; variation

The aim of the study is to describe the ways in which contrast of critical aspects of the object of learning is used to improve children's ways of discerning the concept twice as found by analysing a learning study process in Swedish preschool. By that, the attempt is to contribute to an expanded understanding of application of learning study and variation theory in preschool educational practice. One researcher, five preschool teachers and

theory; twice as; preschool

44 preschool children (6 year olds) participated in the project. The empirical material consists of verbatim transcriptions of three video documented interventions and 132 individual test forms (pre-, post- and delayed post-test). The preschool learning study process analysed in this study has been built up by a joint reflection on the use of contrast of critical aspects related to the intended object of learning. The study suggests that a developed use of contrast of critical aspects of the object of learning seem to have bearing on children's ways of discerning aspects of their surrounding world short- as well as long term. Main principles found seemingly emerging the children's ways of discerning the intended object of learning is discussed in terms of separation, contrast and generalisation. However, the study indicates the need of additional complementary learning study projects to further expand the knowledge of what it means and entails to take critical aspects of the intended object of learning into account when dealing with content focus in preschool educational practice.

E34-PP TR704 Preschool students' understanding of the function of objects and spaces in a number line

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Mathematics; Number line

According to Swedish preschool curriculum, children should develop an understanding of space, shape, position and direction. In this Learning Study we have focused on children's ability to understand the relationship between spaces and objects on a number line. The Number Line is a graphic representation of the number system; it can vary in length, in the number of points or objects, in what parts are being shown or in the distance between the points. The capability to determine where to place numbers or fractions relative to existing numbers on the line is crucial for more advanced mathematics but can be difficult to teach. The object of Learning was defined to be the ability to place items evenly spaced on a given distance. The study was carried out by preschool teachers with a group of four- and five-year-olds at Sjästadsskolan in Stockholm, Sweden. The teachers at Sjästadsskolan, which is both an elementary school and a preschool, have expressed a need for curriculum-based discussions in order to coordinate teaching. Learning Study is used as a model for teachers to do research in their own practice and to develop collective knowledge on teaching and learning. We found it to be crucial for children to realize that the space between the points vary depending on the number of points and the length of the line. They must also understand that the length of the line varies according to the space between the points relative to the number of points. In the third lesson the children showed an independent ability to handle varying distances on the Number Line by first placing five stations along a three meter long railway and then placing ten streetlights along the same railway.

E35-PP TR704 Learning Study projects in Swedish Childhood Education: Possibility and challenge

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Learning study; Pre-school

Traditionally Swedish pre-schools have been awarded full value, where a path of development and education has often been included. School preparatory learning was rarely emphasized (Brembeck, Johansson & Kampmann, 2004). In recent years pre-school has been given a clearer and partially changed mandate related to children's learning and development (Swedish National Agency for Education, 2010). This new tradition of increased focus on learning and goal achievements is challenging for the teachers (Ljung-Djärf & Tullgren, 2010). With this background the aim of the presentation is to give an overview of Swedish Learning Study projects among pre-school children and how these could impact on the teaching and learning in pre-school settings. The presented studies are Learning Studies and consist of two or three micro-