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Chemistry is All Around Network Workshop on "Student's Motivation" Kırıkkale (Turkey), Friday, 28 September 2012

Minutes

Participants

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Minutes

In the context of every country's general aims, there has been curriculums developed to educate students at the desired level. And one of these curriculum is science education curriculum. One of the aim of science teaching at primary school level is to provide students to understand environment and to develop their own thought system.

In science lessons, it is not expected from students to know scientific knowledge, and it is aimed to gain students attitudes and mental process ability to solve both scientific and daily problems in their lives. In respect to this, many science curriculum are developed and its implementation are given at international levels. In international evaluation exams (PISA, TIMSS), it is seen that students achievements are not satisfactory and not at desired level. Therefore the science teaching curriculum has been made over in Turkey. Especially in primary schools, secondary schools and other education institutions science teaching curriculum has been renewed. At new science curriculum, constructivist approach has been taken for the center of the curriculum.

For constructivist approach, students' prior knowledge are all important and therefore it is important to identify students' prior knowledge and if there are any misconceptions, eliminating those misconceptions are necessary.

In science education, it should not only be determined the cognitive level of knowledge. Besides realization level of attitudes and value behaviors should be determined. Because affective domain of learning contents are important for clarifying cognitive learning. In respect to this, attitudes and values education are given place in science curriculum in Turkey. It can be mentioned that the current science teaching curriculum is appropriate in the point of content, method and etc.

In science lessons, it can be said that chemistry has maybe the most abstract concepts. Students find chemistry difficult because of abstract concepts and being at molecular levels. It is important to concrete these abstract concepts for learning with understanding and for resolving misconceptions. To concrete abstract concepts make easier everything for both students and teachers. In respect to this, in Turkey, it's seen that science curriculum and especially chemistry curriculum has many activities based on contextual learning. In contextual learning, students learn with making connections between the concepts and events that happening around. So, they can make connection to these concepts and they learn them with understanding.

Effective chemistry teaching can be made with animations, simulations and videos, with all these alternative





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ways, students can concrete concepts in their minds. During these kind of activities teachers attract students attention, motivate them and make learning occur quickly. So in the learning environment with animations and simulations, students can study individually and they can control their learning according to their own individual learning speed. At the same time manipulative, time and money savings can be made. One of these kind of projects is FATİH Project and with this project classrooms are equipped with smart boards and tablet computers are given to each students. All classroom have internet connection, WEB Portals (Vitamin, Morpa) are made for students. Students, teachers and parents can use these portals free of charge. Students can use these portals and follow up their own individual development.

Nowadays theoretical knowledge has been put into practice and learning with practicing is provided. For example, formerly in chemistry lessons, the structure of atom has been taught by just explanations but nowadays these kind of lessons can be made with 3D videos and materials with computers software. With all these up growth, learning with understanding can be provided and students can make active participation to the lessons.

Laboratory applications are important in chemistry teaching and it is effective in concept learning. So there are many laboratory approaches that are used to make efficient laboratory applications and experiments. Among those kind of approaches, research-based approaches should be chosen. During the lessons, students should be motivated to make hypothesis, make guesses, make reasoning, collecting data and analyse the data and then to make some inferences about their data. That is to say, students should participate actively to the learning process. As a result of the process, students should have all these skills.

In this context, with laboratory studies, the following results are aimed:

1. Understanding of the essence and the method of science
2. The development of problem-solving ability
3. Examination of detected events encountered in everyday life
4. The development of technical and scientific process skills
5. The development of analyzing and making generalizations skills
6. To increase the interest and motivation of chemistry lessons
7. Presentation of information within a sequential order
8. The idea of changeability of well-known theories and models in the acquisition of overtime
9. To intend to provide contributions to acquire positive attitude of the students towards scientific research and to be a scientist.

Besides laboratory studies help students to critical thinking, reasoning, to recognize the nature of science, to develop the ability of operation and etc. In laboratory atmosphere, individual or collaborative models can be used and the ability to use these kind of models can be improved.

It is necessary for students to connect their daily knowledge with their lessons. A student who cannot explain the concept in daily life cannot be efficient in learning with understanding. In this regard, examples should be given with connecting daily life events. Informal learning environments provide students to use their knowledge, especially science centers and science festivals motivate students towards science. Besides the manipulative and experiment environments in these festivals and centers help students to resolve their misconceptions and help them to understand the nature and science deeply.

The studies made in universities and the studies in schools should be connected with each other, and common projects should be done. Thus the studies made in academia can be brought into life. Therefore teachers should be informed about the new approaches, teaching and learning strategies and alternative





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evaluation methods.

When ongoing project is analyzed, it helps;

- To increase the interest in teaching chemistry
- How to explain everyday events of chemistry and how it helps to explain the affects to daily life
- To provide cooperation between teachers and experts

In respect to this, with this project, we have the chance to compare the different countries' science teaching curriculum and make exchange of information to each other. Besides conferences related to science teaching will be made up. It is considered that this project will have positive contributions to science teaching.