

Chapter 14

Guide Material Study for the Use of Web Tools in Science Lessons: Example of Physical and Chemical Change

Fatma Alkan

 <https://orcid.org/0000-0003-2784-875X>

Hacettepe University, Turkey

Melih Erkan Doğan

 <https://orcid.org/0009-0009-8224-8678>

Hacettepe University, Turkey

ABSTRACT

The use of computers in education has brought about developments in web technology, and Web 2.0 tools have begun to be used frequently in science lessons. Web 2.0 tools are a technology that allows materials to be developed without space and time limitations, and these materials can be easily shared with students. This study was prepared as a guide material on how to develop the lesson content of the eighth-grade science lesson on physical and chemical change using Web 2.0 tools. All contents about eighth grade physical and chemical change were prepared with Web 2.0 tools, and it was emphasized how to benefit from Web 2.0 tools. With Web 2.0 tools, various tools have been introduced for use in interactive presentations, animations, videos, concept maps, and measurement and evaluation. It is thought that lessons taught with Web 2.0 tools increase students' motivation, permanent learning occurs, and contribute to collaborative learning, and students will actively participate in the process.

INTRODUCTION

Science Teaching

Science is studies events in nature, trying to recognize and explain it. The aim of the science lesson is to cultivate environmentally sensitive individuals who explore, investigate, produce solutions to problems, make logical decisions, open to technological developments, produce new technology, use technology (MEB, 2000). Teaching science is useful in enabling people to know themselves better, as well as being able to describe the events and developments around them (Uzuner, 2018). It is possible to keep up with the current pace of scientific developments through qualified science teaching. Skilled science teaching allows the student to study knowledge in depth, relate it with old knowledge, become aware of responsibility, cooperate with those around him, and strive to overcome the difficulties that arise (Uzuner, 2018). Research and inquiry are at the core of the curriculum of the sciences (Mone, 2018). Together with the transition from traditional teaching management to constructivist approach, project-based learning environments with students at the center of science teaching and promoting cooperation were envisaged (Mone, 2018). The constructivist approach is mainly aimed at the teacher's ability to access and bridge the knowledge with previous knowledge, by preparing appropriate learning environments, so that the teacher can access the knowledge and build bridges with previous knowledge, structuring the knowledge. The science lesson focuses on 3 main skills, namely scientific process skills, life skills, engineering, and design skills (Mone, 2018). It would be appropriate to use time-appropriate, methodological techniques that are engaging, capable of addressing multiple sense organs to gain access to the achievements of the science lesson (Karahan, 2022). When the specific objectives of the science lesson are examined, they have gained basic knowledge in the fields of biology, physics, chemical engineering, are able to explore nature and produce solutions to problems encountered in nature, developed awareness of sustainable development, can solve everyday life problems, have career awareness and entrepreneurial skills, understand scientific knowledge, are curious about the surrounding events, universal ethics It can be considered to educate individuals with moral values who have adopted scientific ethical principles (Mone, 2018).

The basic principles outlined in the science curriculum, the skills desired to be acquired and the specific purposes can only be possible with appropriate educational environments. Instead of continuing to use traditional teaching methods in science teaching, taking advantage of the evolving technological possibilities can contribute more to achieving the objectives in the program. The science lesson collaborates with other disciplines and adopts an active learning approach based on research and inquiry. With the development of computer technology, it can be said that science teaching is more effective, interesting and an environment in which research and inquiry are easier with the Internet environment. Among the many concepts and knowledge that will enable students to produce solutions to problems that may be encountered during their life adventures, the lesson of science from the bar is an important lesson (Erdoğan & Yıldırım, 2023).

Technology in Science Education

Rapid developments in the field of technology have also jumped into the field of education, especially advances in computer technology have directly affected education. Progress in technology is the most important indicator of the degree of development of countries (Akbaba & Kılıç, 2022). In the field of science, it has been concluded that when computer-assisted teaching is used instead of traditional meth-

30 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:
www.igi-global.com/chapter/guide-material-study-for-the-use-of-web-tools-in-science-lessons/342270

Related Content

The Role of Physical Affordances in Multifunctional Mobile Device Design

Sorin Adam Matei, Anthony Faiola, David J. Wheatley and Tim Altom (2010). *International Journal of Information Technology and Web Engineering* (pp. 40-57).

www.irma-international.org/article/role-physical-affordances-multifunctional-mobile/49199

DEPTH: A Method and a Web-Based Tool for Designing and Executing Scenario-Based Usability Inspections of E-Systems

Petros Georgiakakis and Symeon Retalis (2010). *Integrating Usability Engineering for Designing the Web Experience: Methodologies and Principles* (pp. 309-323).

www.irma-international.org/chapter/depth-method-web-based-tool/40505

Connecting Communication to Curriculum and Pedagogy in Online Environments

Marius Boboc (2016). *Web Design and Development: Concepts, Methodologies, Tools, and Applications* (pp. 315-338).

www.irma-international.org/chapter/connecting-communication-to-curriculum-and-pedagogy-in-online-environments/137353

Probabilistic Models for Social Media Mining

Flora S. Tsai (2011). *International Journal of Information Technology and Web Engineering* (pp. 13-24).

www.irma-international.org/article/probabilistic-models-social-media-mining/52803

Quality-of-Service Based Web Service Composition and Execution Framework

Bassam Al Shargabi, Osama Al-haj Hassan, Alia Sabri and Asim El Sheikh (2011). *International Journal of Information Technology and Web Engineering* (pp. 57-74).

www.irma-international.org/article/quality-service-based-web-service/64175