Title: Interdisciplinary relations of physics and chemistry in science education

Abstract:
This master's degree thesis deals with the topic of interdisciplinary relations of chemistry and physics in science education. According to the review, to conveniently integrate physics and chemistry the appropriate topics and approaches were selected. The thesis includes teaching materials and worksheets to the three topics (Evolution of the Universe and the Origin of Elements, Luminescence and Composition and Properties of Matter) that are suitable for integration of physics and chemistry. The teaching material "Evolution of the Universe and the Origin of the Elements" includes a study text for teachers and a shorter study text for pupils. The teaching material "Luminescence" is based on an independent research done by pupils with their own crafted UV-lamp, completed with the facts included in a powerpoint presentation. The teaching material "Composition and Properties of Matter" consists of three parts (The paraffin, The Candle and The Properties of Selected Organic Substances) and is designed for an independent research done by pupils. Listed study materials were checked by teachers during meetings and seminars. The thesis also includes an evaluation of listed study materials by an expert group of high school teachers according to the given criteria. The survey was done by questionnaire and discussion with teachers. For even more effective feedback, the created materials were also used by teachers during their teaching and in preparation for teaching. The structured interviews were done with two teachers who used materials in their lessons. Based on the feedback, the teaching materials were modified. Furthermore, the survey also shows the approaches of selected teachers to integrated teaching and its realization.

Keywords: discipline cross-links, interdisciplinary approach, physics education, chemistry education, interdisciplinary relations, luminescence, evolution of the universe, origin of the elements, candle, paraffin