

Balancing the needs between training for future scientists and broader societal needs – SECURE project research on mathematics, science and technology curricula and their implementation,

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Abstract:

SECURE is founded as a collaborative project under FP7 to provide research results of current mathematics, science and technology (MST) curricula across Europe. The research focuses on the MST curricula offered to 5, 8, 11 and 13 year old learners in 10 European countries. The consortium invited 60 schools from each partner country to participate in the project. Altogether almost 9000 pupils, 1500 teachers and 600 schools took part in the study.

The research framework was constructed upon the curriculum spider web (van den Akker, 2003), in which curriculum is represented on a spider web with Rationale located in the center and nine other components (Aim and Objectives, Content, Learning activities, Teacher Role, Materials and Resources, Grouping, Location, Time, Assessment) placed around it, becoming the nine threads of the spider web, yet extended with eleventh item: Motivation and Interest, crucial for future scientists as well as broader needs of modern, knowledge-based society. The instruments used in the study consist of a transnational comparative screening instrument for MST curricula and of the school data collection instruments: teacher questionnaires, learner questionnaires and interview protocols for all age groups of pupils and their teachers. A mixed method approach for the analysis of the MST curricula is applied throughout three different representations of the curriculum: the *intended curriculum* (formal curriculum documents), the *implemented curriculum* (the actual process of teaching) and the *attained curriculum* (focus on learning experiences of the learners).

The overall aim of the SECURE project is to make a significant contribution to the European knowledge-based society by providing relevant research data that prompt public debates on this issues. Based on good practices and other research results SECURE will formulate a set of recommendations for policy makers and other stakeholders on how MST curricula and their delivery can be enhanced in order to ensure the balance between the training of the future scientists and broader societal needs. During the presentation a comparative study of written MST curricula in 10 countries and their general trends will be shown. Examples of the national results on several items of the spider web with use of triangulation approach will be also presented.

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References

van den Akker, J. (2003). Curriculum perspectives: An introduction. In J. van den Akker, W. Kuiper, U. Hameyer (Eds.), *Curriculum landscapes and trends* (pp. 1-10). Dordrecht: Kluwer Academic Publishers.