The socio-scientific issues (SSI) in the teaching of natural sciences (secondary education)

Objective of the survey
The project "Scientific Knowledges and Teaching" supported by the Institute of the sciences of the communication (ISCC) which is part of the CNRS (National Center for Scientific Research, France) is interested in disseminating scientific knowledge. The investigation carried out within the research team ACCESS (Updating knowledge of teachers) of the INRP (National Institute for Research in Education, Lyon, France) investigates the teaching practices which contribute to the "dissociation of scientific knowledge" in the teaching of the natural sciences to middle and high schools.

Problematic
Given the increasing importance of topical socio-scientific issues in the school field, the teachers are more and more faced with scientific knowledge not yet stabilized (Global climate change, GMO, etc.) and with social knowledge and concerns expressed by the pupils to the teacher in classroom. What are the perceptions of investigated teachers about disseminating scientific knowledge? What are socio-scientific issues discussed in natural sciences teaching? What are the teaching practices to deal with socio-scientific issues in classroom? What difficulties are met by teachers? And what aids would they expect?

Methodology of the survey
The methodology relies on a survey by questionnaire intended for the natural sciences teachers of the secondary education (Middle school and High school)

Various types of questions compose the questionnaire:
- Single or multiple choice questions including scales requesting a ranking or rating
- Open end questions to collect some elements about teaching practices and the expectations of the teachers investigated (answers were the object of an analysis of thematic contents)
- Lists of propositions concerning representations, attitudes and opinions for which the respondents were asked to position themselves on the Likert scale (Agree, Disagree, etc.)
- Grids self-assessment of skills with scales to estimate the "feeling of competence" of the teachers and to identify difficulties met in teaching and training needs

SSI answers to the questionnaire were obtained.

Socio-demographic characteristics of the investigated population
- 66 % teachers are women
- The average age is 39.5 years
- 66 % of the teachers are in middle school, 37 % in high school and 8 % are in two types of schools
- Nearly 30 % of the teachers are in a school located in urban areas and 30 % are located in rural areas

About disseminating scientific knowledge
Some of their expectations:
- Possessing multidisciplinary knowledge: History - of Science, Religion, Psychology, Economics, Laws
- Training in Health Education (knowledge about addictions)
- Having objective and regularly updated sources of information
- Method of training in sociological approach to the learning of science
- The methodology of teaching science: (collaborative, constructive)
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- Impact of SSI on pupils

About science in society

Some perceptions of teachers

Topical socio-scientific issues in the classroom

Contexts in which SSI are discussed in natural sciences teaching

Perceptions of the teachers of SSI

Methods for studying SSI in courses

Impact of SSI on pupils

Difficulties met by teachers in respect to SSI in natural sciences teaching

Which themes related to SSI appear to be difficult for teachers?

Some of their expectations:
- Being acquainted with scientific controversies and risks linked to science advances
- Having objective and regularly updated sources of information
- Learning specific teaching strategies as conducting a debate in classroom
- Training in Health Education (knowledge about addictions)
- Possessing multidisciplinary knowledge: History - of Science, Religion, Psychology, Economics, Laws

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