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Valorization of Specific New Educational Contents in Science Lessons

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Abstract

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With the launch - in the early '80s -, of the “*problematic of the contemporary world*” concept, it was started for being used, in an associative manner, the concept of “*New Educations*”. That paradigm constitutes on specific contents generated beyond the traditional dimensions of education (intellectual, moral, aesthetic, technological, physical), and also answers to the requirements of education systems development, adapted to the changes of the actual world.

In the literature, there are identified three practical ways of introducing “*new education*” in the context of national education systems: the introduction of new disciplines focusing on a particular type of education; the creation of specific teaching / training modules, mostly interdisciplinary, within traditional disciplines; the infusion of the messages related to new contents in the context of teaching of traditional disciplines. More, it was recorded an active process of restructuring and reforming the curriculum devoted to Sciences (Physics, Chemistry and Biology).

Based on those records, in the paper, we intend to consider a series of point of views of a representative sample of secondary students involved in the European FP7 project PROFILES, on considering the value of new education issues (economic education, entrepreneurship education, gender education and health education) introduced in Science lessons. The obtained results after applying a questionnaire with 12 items were related to those coming from discussions in focus groups and configured the idea that inserting specific content of new education in the science curriculum increased the attractiveness and enhanced the student's learning motivation.

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Keywords: Problems of the contemporary world; New Education; curriculum dedicated to science; key competences; PROFILES Project.

1. Context

According to Sorin Cristea (2010), *“the new educations represent a set of special contents, asserted as pedagogic answers at the contemporary world problematic, of political, economic, ecological, demographic, sanitary nature etc. They are generated by the positive and negative evolutions registered within the modern and postmodern society at the level of environment, population, mass-media, health, democracy, social change, civic values, international relations, inter-culturalism etc.”*. In the literature, there can be identified four practical modalities of introducing “new educations”, in the context of national educational systems:

- The introduction of new disciplines centered on a certain type of education;
- Creation of specific modules, with interdisciplinary character, within the traditional disciplines;
- The infusion of messages connected to new contexts, in the context of traditional disciplines;
- The transdisciplinary approach of the contemporary world issues, in the context of formal or non-formal activities.

At the same time, at international level, we witness an active process of restructuration or reformation of curriculum for Sciences (Physics, Chemistry and Biology). This demarche has as prior objectives: instruction based on investigative demarches, approach of socio-scientific type problems, making interdisciplinary connections and also between science and everyday life etc. As such, during the Sciences classes, there are transmitted contents and developed a series of connective competencies, specific to economic education, enterprise education, gender education, education for health etc.

Economic education help students understand the problems of financial nature with which they confront, it familiarizes them with fundamental economic concepts and the economic manner of thinking, it develops thinking and efficient action skills, it trains them for a realistic reference to the world of consumer goods, to the economic practices and the world of labor, it develops a series of fundamental thinking competences which are meant to transform them into rational and active citizens, strongly involved in the contemporary society.

Entrepreneurial education leads to the development of the entrepreneurial spirit, the ability to judiciously manage the personal goods or earnings. It refers to a mainly formative demarche, based on the students' understanding and internalization of a specific conceptual frame reported to: what does it mean to be a good entrepreneur?; how to initiate and manage a business?; how to be proficient in business?; how to manage the available human and material resources?; how to approach the situations of crisis which might appear? Within this context, the students form or develop the enterprise competences which represent the ability to transform ideas into actions, imply innovation, creativity and taking risks, envisage the ability to plan and manage projects with the purpose of attaining objectives, they assume an acknowledging of the ethical values and the promotion of a participative management.

The principles and values of the economic and enterprise education are structured thus in the table 1.

Table 1. The principles and values of the economic and enterprise education (MERM, 2013)

Principles	Values
Learning by acting;	Rationality;
Applicative character;	Efficiency, initiative and economic liberty;
Centering on student;	Security and economic equity;
Corresponding between curriculum and the actual experience and practices;	Equality of chances;
Inter-disciplinarity;	Respect for law.
Accessibility;	
Reporting the individual needs to the public good;	
Responsibility for the personal career.	

Gender education is one of the new dimensions of education which is frequently approached at the level of the educational politics and projects in the last decades. According to the Gender Barometer made by the Open Society Foundation in 2000, 74% of the youth with ages between 18 and 29 considered that man is the head of the family, and an average of 63% of the Romanians considered that it was rather the women's duty to fulfill the domestic chores, more than then men (Barometrul de gen, 2000).

The Romanian educational system, taking into account the content that can be found in the school manuals and sometimes by the used didactic strategies, prescribes gender models regarding the individuals' social integration and professional evolution. The approach of the gender education, in the Romanian school, is also accomplished within some non-formal activities or circumscribed to the curricular area named *Counseling and orientation*. These activities objectives are: promoting gender equality regarding the social and professional roles; avoiding the stereotypes and preconceptions referring to gender dimension; the adequate management of some situations which involve discrimination on gender criteria etc. At the level of the Science disciplines, we may speak of a gender education regarding the orientation towards certain professional fields in which prevail the male or female gender.

Education for health represents one of the main means of promoting correct knowledge regarding different health status and of teaching attitudes and skills that are indispensable for a responsible and healthy behavior. In the Romanian school, Education for health is accomplished either as optional, separate discipline, either by inserting some specific themes or modules among the contents of some disciplines like: Learning environment, Counseling and orientation, Sciences, Biology or Chemistry. The objectives of the education for health are: to promote the students' health and wellbeing - optimal functioning from somatic, physiologic, cognitive, emotional, social and spiritual perspective; promoting a healthy life style; contributing to the students' personal development based on: self-knowledge, construction of a personal positive image, adequate communication and interpersonal relation, stress control and harmonious development of the personal career; accomplishment of preventive actions reported to: prevention of accidents and behaviors presenting health risks; prevention of the personal negative attitude, and more generally, the personal life; prevention of interpersonal conflicts and social disadaptation, but also of different crisis situations. (MEC, CNC, 2004)

2. Methodology

In the present study, we analyzed the opinions of a representative sample of students involved in the PROFILES Project, regarding the valorization, within the Sciences classes, of some contents connected to the new educations (economic education, enterprise education, gender education and education for health). For this purpose, we applied a 12 items questionnaire, three items for each of the four fields of the envisaged new educations: economic education, entrepreneurial education, gender education and education for health. The students' answers were echeloned on a Likert type appreciation scale with 6 steps, predefined as follows: total disagreement, disagreement in a great measure, disagreement in a certain measure, agreement in a certain measure, agreement in a great measure, total agreement. The problematic which was considered in the questionnaire, for each investigated field, is thus illustrated in table 2.

Table 2. The correlation between the new educations and the adjacent problematic aimed within the classes of Sciences

No.	New educations fields	The problematic considered in the classes of Sciences
1.	Economic education	The understanding of some aspects which are specific for the economic field, the familiarization with the raisons of the poverty degree in Romania and in the rest of the world.
2.	Entrepreneurial education	Acquaintance with the characteristics of the different professions, of the specific attributions and of the forms of professional qualification.
3.	Gender education	Acquaintance with the social expectations and representations, reported to the gender dimension.
4.	Education for health	Acquaintance with the modalities of maintaining the health state, of the causes that lead to health degradation and understanding the processes which take place in the human organism.

The results obtained after applying the questionnaire were processed based on the statistical-mathematic analysis and they were subsequently correlated with the results obtained from the focus-group discussions.

3. Results and discussion

The three items that analyzed the measure in which the economic education field is approached during the Sciences classes were: to understand the economic aspects, to know the reasons of the poverty degree in Romania and to know the reasons of the poverty degree in the world. As we can see in the chart below (figure 1), most of the students agreed in a certain measure that those aspects had been approached during the classes of Sciences. Starting from those factual data, we may appreciate that in Romania the present curriculum for the disciplines which are part of the category of Sciences (Chemistry, Physics and Biology) could be restructured in accordance with the economic nature issues that are in direct or indirect connection with the physical, chemical or biological processes from nature and from everyday life.

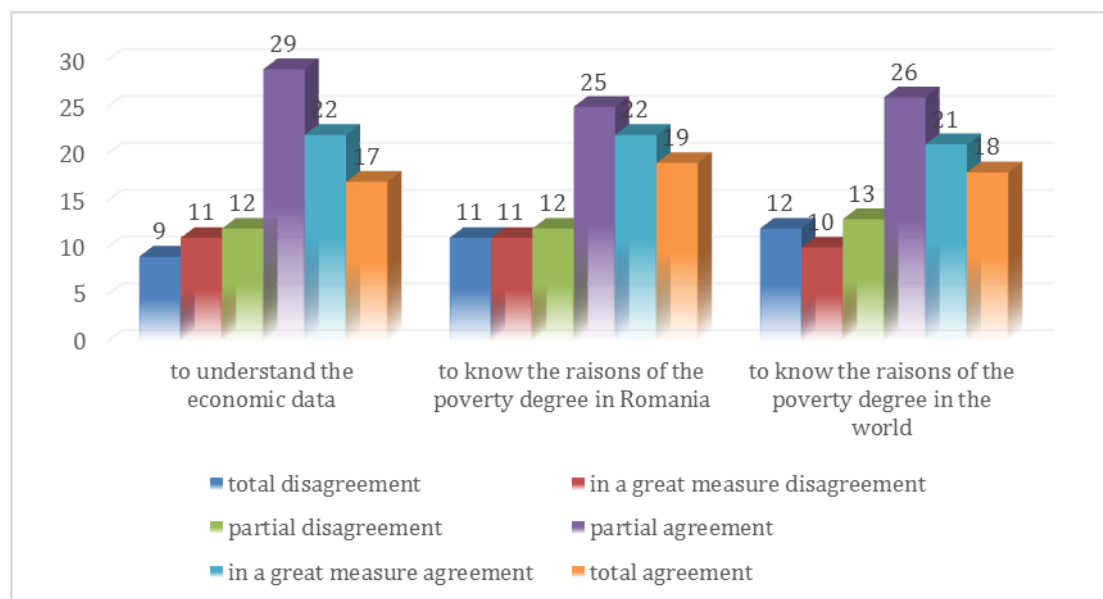


Fig. 1. Correlation between the Sciences classes and the economic education

Concerning the entrepreneurial education, especially reported to the choice of a future profession, the students expressed their opinions reported to the following aspects: to be prepared about the aspects involved by the occupations/professions that require a formal training, to know the main attributions of the occupations/professions that require a formal training, to know what qualifications are needed in different occupations/professions. The data gathered after the statistical-mathematical processing of the answers offered by the 1048 respondents (Fig. 2) demonstrate that during the Sciences classes, the most often approached aspect is the one regarding the necessary qualification for the different professions. From the direct discussions with the students, we found out that the general focus is on the professional areas with direct connection with Sciences, such as Science researcher or teacher. Moreover, we observe a quite reduced preoccupation of the Sciences teachers for presenting the positive or negative implications of each profession and of the professional's attributions in a certain field.

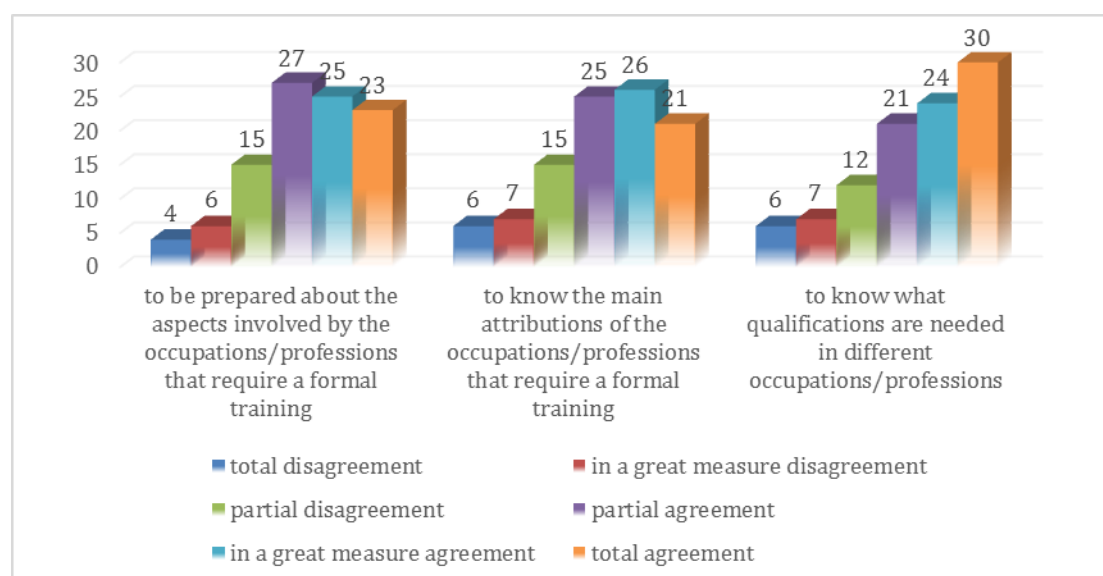


Fig. 2. Correlation between the Sciences classes and the entrepreneurial education

Concerning the gender education, the students expressed their opinions concerning a series of aspects like: to know what the society expects from one person (man or woman), to know what options he/she has within the society as a man or woman, to know what options he/she has, as a man or woman, for the career. As we can see the answers, at all the three items register an ascendant curve (Fig.3), most of the students expressing their total agreement regarding the accomplishment of those aspects during the Sciences classes. We appreciate that the answers may be justified also by the fact that the actual Romanian society is one in which the ancient gender habits are better and better surpassed and, in Sciences, the women's degree of representativeness is very significant.

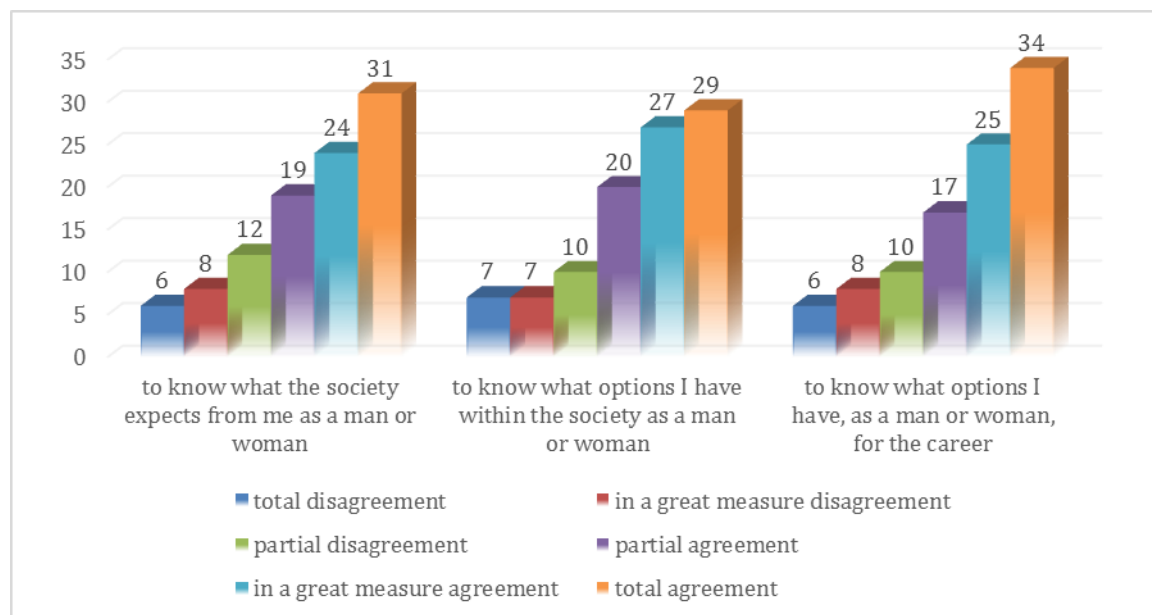


Fig. 3. Correlation between the Sciences classes and the gender education

Education for health is the best represented aspect in the context of the Sciences classes. The students expressed their opinions for the following items: to know what the body needs in order to stay healthy, to know what may alter the health status and to understand the processes that take place in the human organism. Most of the students' answers are structured on the highest levels of the measuring scale (in a great measure agreement and total agreement) (Fig. 4). From the discussions with the students we concluded that those themes are approached especially during the classes of Biology (in distinguish modules) and even Chemistry, but less in the classes of Physics.

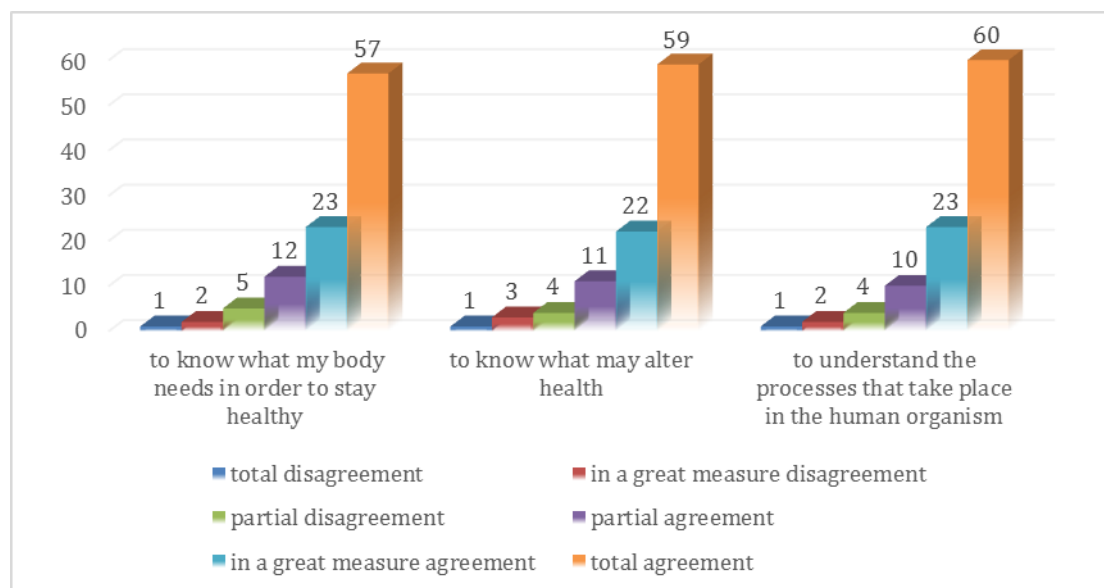


Fig. 4. Correlation between the Sciences classes and the education for health

4. Conclusions

The obtained results prefigured the idea according to which an insertion of the specific contents of new educations within the curriculum for Sciences (Physics, Chemistry, Biology) enhances their attractiveness and potentiate the students' motivation for learning.

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