

EDUCATION CHALLENGES AND CHANGES

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Abstract

The purpose of this article is to consider the process of developing transversal / cross competences in technological secondary schools in Romania to achieve goals such as:

- *lifelong learning by using foreign languages, IT, comparing details, options, solutions;*
- *social cohesion by presenting ideas in an open, creative and critical way, working and communicating with others to satisfy their needs and expectations.*

I examine the role of key competences in the Romanian national reformed curricula according to the Recommendation 2006/962/EC of the European Parliament and of the Council of 18 December 2006 on key competences for lifelong learning and the reports published by European Commission/EACEA/Eurydice during 2009-2014. The dimensions as well as the depth of changes in the pre-university education system are partially correlated with the expected outcomes. I want to capture the opinion of young people of 17-19 years old about their formation, about their future in a world of number one. Transferable skills are needed for a variety of colleges or universities, for jobs etc. and it is possible to transfer them from one task, workplace to another. It is interesting to find out if they know which skills they have to get the kind of study place or job they really want.

It is a starting point in a future education of challenges and changes.

Keywords: competences, transferable skills, change, challenge, secondary school.

Introduction

This article shows the partial results of a research project aiming at the cross-curricular character of competences formed and developed within non-compulsory high school education in Romania and which focuses on the educative activities carried out within technological high schools in a county of the south of the country. The new framework plans and curriculum were gradually implemented in 2006 – 2010, and promote the knowledge, abilities (skills and abilities), attitudes, highly cross character behaviours which offer the high school graduates various opportunities for personal and professional career. The research project suggests a curricular and life long learning approach starting from a dual reference system which, on the one hand, shall promote open models for school and society, and on the other hand, shall demonstrate compatibility between education and learning perspectives and socio-economical and cultural ones. The starting point is students' opinion on the impact of the process of implementation of the european key-competences from the cross-curricular point of view. It was traced the opinion of students following the courses of different departments/profiles/specializations (mathematics-informatics, nature sciences, electronics, mechanics and electrical) during February 2013 – December 2014 about their training for life in a world of personal interest seen through the collective one.

Literature review

Terms such as competences, cross competences, ability, capacity, competent/capable person have sometimes different meanings, sometimes are considered similar. In specialized literature and education policy documents of some countries, Romania included, is most of the times difficult to make a clear distinction between these terms, beyond the space-time context and the socio-economical and cultural present reality.

A first step of the research project is to present from the point of view of education of various approaches of competences in anglo-saxon and francophone areas of the european dimension projected in the romanian one.

The European framework of reference and the conclusions of Eurydice reports from 2010 - 2014 emphasize the cross character of European key-competences and their opening to universal by means of the educational policies of the member states.

The expert studies (Aguerrondo, 2009; Brien, 1997; Crahay, 1997; De Ketele, 1996, 2000; Jonnaert, 2009; Legendre, 2001; Perrenoud, 1996, 1999; Rey, 1999; Gerard, 2000, 2009; Roegiers, 2001; Tobón, 2007; Trotter & Ellison, 1997 etc.) suggest various defining elements of competences and project the relationships between them, suggesting nuances and possible hierarchization of them. The formulations reveal options (in)dependent of the competences manifestation areas, theoretically or practically, from the static or dynamic perspective, depending of the person's psychobehavioural aspects.

A competence-based education is an education of challenges and changes, both in its inner and outer space. It is a continuous dynamic process whose variable parameters impose the configuration of open and flexible educational systems in which both the student and the teacher act as a whole in a time and space which are under permanent change. The second stage of the research project is to specify the way of integrating cross competences in the compulsory curriculum for the upper level of high school education in Romania starting from the dynamic structure of competences which presupposes the use, the analysis and the evaluation of individual, intellectual, practical, applicable and adaptability skills. Studying the current high school programmes in Romania I drew some conclusions:

- there are no unitary definitions of the pedagogical concepts relative to high school competences;
- problem situations do not refer to the inner and outer resources of students with the aim of mobilizing them;
- training design can be done individually / in groups;
- basic acquisitions can be identified and school progress is certified;
- the approach of cross disciplinary topics is conditioned by a series of factors such as school subjects, the time necessary to do homework, the prior past experiences, the openmindedness of students and teachers etc.;
- some instances of cross competences are mentioned in the methodological suggestions which are most often viewed as the default elements of the training and development of general and specific competences.

Expanding the problem and addressability of the competence based education reported to the cross curricular dimensions of the process is a reality which exceeds the massmedia effect. The rapport between competences and knowledge is under permanent change, the mutual influence between competences and different categories of learning situations determines a mobile structure of the crossdisciplinary elements. In a world of competences the key point is represented by how, when and to what extent the student learns how to learn, to use his knowledge, to value his skills by training and developing of skills and abilities, to listen and communicate with those around him and himself. To learn how to learn the present and future through the past, the new by means of the old presupposes a continuous passage from simple to complex both for the student and for the teacher.

Research methodology, methods and techniques

This research project is an observant study using deductive and inductive methods of logical reasoning, the first method in the early stages of the project, the latter in the stages of interpreting the results, formulation and argumentation of conclusions and proposals. It is a combined research, quantitative and qualitative, type practical teaching, with its emphasis on training and development of cross - curricular skills of students in high school upper cycle. The study has a transversal character being applied during February 2013 - December 2014 to a statistical population represented by three samples/groups, two of them consisted in students of grade XI and XII studying in technological high schools, theoretical profile, specialization mathematics – informatics and natural sciences, and technical profile, specializations electrical, electronics and mechanics, and the latter sample/group consisting of teachers who teach in secondary education.

The aim of the research is to identify the perception of students in upper secondary level relative to the importance of transversal competences, to analyze the causes derived from pre-university system and leading it, to propose a model to promote these skills to improve the instructive - educational results and allowing easy integration of young people into the socio – economic space. Research hypothesis were formulated so as to achieve the goal and objectives of the project.

The variables involved in the research are real variables classified, according to the influencing factors, in two types: independent variables and dependent variables. The independent variables are: profile / specialization, age, residence, place of business environment, gender, level of instruction, professional degree, seniority in the department. The dependent variables consist in the students` opinions relative to their transversal skills formed and developed through the educational activities carried out in schools and the teachers' perceptions on the impact of the training programs on the students` required skills. Coding variables involved using the Likert-type scales with 2 to 6 steps.

Setting the samples was done taking into account the purpose and objectives. We used probabilistic sampling methods (simple random) with unrepeatable choices in the population framework for teachers and non-random sampling methods (samples of volunteers) for students. The information was obtained through surveys based on questionnaires applied by the investigator. The items of the questionnaires were closed questions which required a single choice answer options to materialize the prevailing options of the participants and open questions that allowed the argumentation of responses.

For the primary and secondary processing of the recorded information were used indicators of statistical data analysis, graphical methods and statistical tests via SPSS 14.0 software and Excel, Microsoft Office 2007. The normal distribution of variables was tested through the Shapiro-Wilk test and the Kolmogorov-Smirnov test, respectively absolute values of coefficients of Skewness and Kurtosis. The condition of the linear dependence between variables was verified by inspecting the scatterplot. I calculated the following statistical indicators: the mode, the median, the average mean, the amplitude, the variance, the standard deviation, the coefficient of variation, the obliquity / Skewness, the vaulting / Kurtosis, the Alpha Cronbach reliability coefficient. The confidence interval of each variable and the correlation coefficients were determined. In each case I studied the effect size, its interpretation being reported to the referential system of Cohen (1988), respectively the benchmarks propose by Field (2001). The statistical tests used are: the One - Sample T Test, the Levene test, the Independent - Sample T Test, the test Mann-Whitney U, the test χ^2 *Chi – square Goodness of Fit*, the test Kruskal - Wallis H.

Among the limits of this research there are:

- the diversity of opinions and expectations of participants;
- the disadvantages of methods, techniques and tools, acknowledged / known within the scientific communities;
- the size and characteristics of samples subjected to investigation (profile / specialization, age,level/type of school institution, residence /teaching environment, gender);
- the clarity and consistency of students`logical approach;
- unidentified effects of a variable on other variables.

Data processing, analysis and interpretation

One hypothesis of the research is that the participation of teachers in training programs is a necessary, but not sufficient, condition for training and development of students` transversal skills. Results emphasize some aspects. Some teachers think that the training programs they attended during 2007 - 2013 have very little or no influence on teaching practices and student achievement, given that the vast majority of required courses focused on professional skills development, their relevance having been above average. The vast majority of subjects believe that student achievement is directly related to the applied practical skills of teachers perceived as the meaning of the art to learn. Also, students' results may be heavily influenced by the level of adaptability to new teacher's promotion of a relative balance between professional, managerial and interpersonal skills. Another group of respondents is made up of teachers who were not interested in continuous training programs which targeted specifically the development of interpersonal skills, oral communication, counseling, mentoring, interviewing, mediation etc.

Teachers say that students are frequently requested, in order, the following skills: communication (in the Romanian language / foreign languages, oral and written, empathy etc.), mathematics and technology skills, creative thinking, teamwork conduct, social and civic competences etc. Teachers find it necessary to be given special attention and a longer time to the following students' skills: communication, creative thinking, practical skills, critical thinking, knowledge mobilization etc. Please note that not all interviewees expressed full, motivated responses relative to the training and development of students' competencies, which is a limitation of this study.

Another hypothesis of this research are the following:

- the attitude of students in upper secondary education to the training and development of skills / transversal skills vary according to their profile / specialization, gender, residence;

-it's a positive correlation between the projects involving knowledge and resources from different fields, created and promoted by the technological high school students` and their transversal skills.

Student questionnaires have led to partial conclusions.

Most respondents attaches great importance to:

- disciplinary knowledge and general culture;
- oral communication, the direct one, which is preferred to written communication;
- conduct group activities;
- decisions regarding herself / himself and responsibilities;
- behavior, open and flexible attitudes, transparent decisions and actions;
- Baccalaureate examination;
- daily access to internet and email.

A percentage ranged from 50% to 70% of respondents stated that they have the following skills at a level at least acceptable, taking a positive attitude towards:

- communication, oral and written, in Romanian or an international language, as independent / professional users;
- frequent use of IT methods and techniques, Word, Excel etc .;
- structuring, interpreting and synthesizing essential ideas about a topic;
- use opportunities to learn or do something new;
- create and promote, individually or in teams, projects, presentations involving knowledge and resources from different fields;
- time management, activities, priorities, their own financial resources, perseverance and respecting deadlines in performing tasks, motivating those around;
- providing support to people in their entourage when necessary;
- tolerance;
- the art of compromise, consensus in the group to which they belong;
- accepting constructive criticism to their true size, although the vast majority of teenagers say that the feedback is, in many cases insufficient, irregular;
- analyzing and assessing the overall / detailed a situation - problem, viable alternatives to solve it.

In a percentage between 10% and 49% participants state that they:

- do not have basic knowledge of Romanian / a modern language (fairness, clarity and coherence);
- do not have basic knowledge of mathematics or fail to use it in everyday situations;
- do not understand and / or do not use technical terms;
- do not know to mediate or negotiate conflicts;
- do not develop their artistic abilities and / or sports;
- critical thinking and creative thinking are not always promoted;
- are unable to easily identify various sources of information;
- stimulate young people's interest is insufficient regarding aspects of the environment and society.

Please note that at least 70% of students opt for getting a job and pursuing a form of higher education after high school, and more than 40% of respondents do not want to specialize / to undertake work in the field related to the graduated profile in high school.

Conclusions

Practicing skills in different environments, technology, job dynamics in the labor market subject to permanent change, information flow are aspects of social-economic development. Teens are encouraged to use or build more and more complex combinations of knowledge and skills in various situations, including their own interpretations. It is a constant challenge both for the student and the teacher, a succession of questions and answers formulated by both sides. Are they sufficient to the school area, especially outside it, to achieve the purpose of a particular action and achieve a high efficiency by harnessing their potential? The school provides students with opportunities to learn, to know, to experience, to harness, to assess, to reinvent changes to reshape the old in the new. Learning to learn, to know how to mobilize, to know how to do, knowing how to exist, to know how to be yourself are in human nature itself, proposing various units relative to the elements that define autonomous structures in space and time well established, confer those who build them the authority and power in action, and for action.

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Brief biography

Daniela Nistor is a Math teacher in high school, having graduated the University of Bucharest, Faculty of Mathematics and a PhD student of the same university, Faculty of Psychology and Educational Science. The author holds the Master degree in "Management education and European integration ", graduated at the Petroleum - Gas University of Ploiesti, Faculty of Letters and Science.