

THE BUSINESS COMMUNITY TO SUPPORT THE TRAINING OF PROSPECTIVE STUDENTS/EMPLOYEES

Professor Eng. Dan-Maniu DUȘE, PhD

“Hermann Oberth” Faculty of Engineering, “Lucian Blaga” University of Sibiu, prodid@ulbsibiu.ro

Gabriel-Octavian NEGREA

PhD Student, Engineering and Management – “Hermann Oberth” Faculty of Engineering, “Lucian Blaga” University of Sibiu,
Principal of the “Gheorghe Lazăr” National College Sibiu, gabriel.negrea@gmail.com

In the past years, theoretical high-school education in Romania has gone through much public criticism regarding both the quality and the effectiveness of the instruction offered to students. An excessive focus on theory for most subjects and the neglect of the practical aspects/applications of the themes studied are known to have had negative effects on students' motivation and their ability to choose a career and to adapt to the labour market requirements. The authors of this article intend primarily to briefly analyse some of the curricular aspects underlining this problem and to suggest some opportunities to offset this situation – opportunities derived from the business community and within the reach of the theoretical high-schools' managers. In support of the proposed solutions, the authors are going to examine two types of initiatives implemented at the “Gheorghe Lazăr” National College from Sibiu: “training placement” in EU-funded Leonardo da Vinci projects and a “work-experience” type of initiative leading to a successful programme run every school year in cooperation with firms, institutions, and companies from Sibiu.

1. DEFINING THE PROBLEM

The successive reforms of the education and training system in Romania have established the following educational lines for high-school (the term is used here as educational level) [14]:

- Theoretical
- “Vocational”¹
- Technological

Both “vocational” and technological educational lines combine theoretical education with practical training. More specifically, for both these fields of study the frame-curricula establish a balance between theoretical classes and practical activities. The practical activities usually take place within the high-school for the “vocational” line and in specialized school-workshops, and/or in training placement with appropriate firms and companies for the technological line. This type of combination is envisaged to ensure that the graduates of the “vocational” and of the technological high-schools respectively achieve appropriate professional competences that enable them to either continue their studies on a higher level in similar specializations or to enter the labour market [15].

Regarding the theoretical educational line, things are quite different, and the frame-curricula provide only for theoretical classes with very limited practical activities (e.g. experiments, programming, etc.) to be organized within these classes for certain subjects [15]. The question, “Why theoretical high-school is so... theoretical?” becomes legitimate when investigating the students' motivation and their ability to choose a career and to adapt to the labour market requirements. There are at least three issues that need to be addressed in order to find an answer to this question [8], [13]:

- National Curriculum (frame-curricula, syllabi, textbooks);

- Teaching methods and teachers in general;
- Laboratory equipment and resources in general.

It is neither the place nor the time here to discuss teaching methods and resources, although their impact on the balance between theoretical and practical activities in the classroom might be very important in some cases. However, a brief analysis of the National Curriculum seems necessary due to the following reasons:

- It is the **determining reason** for the excessive theorizing
- It **cannot be changed** at the school level

First of all, within the theoretical line there are four so-called “specializations of study”², and when comparing the frame-curricula [15] across these specializations there are two major issues to be noticed:

1. A rather strong overall orientation towards general education subjects (we call this “general culture”), despite the idea of the “specialization” of the studies – as indicated in the statistical analysis presented in **Figure 1**.
2. A rather unbalanced distribution between the core-subjects (meaning here the subjects defining the specialization of study) and the “general culture” subjects across the different specializations, with somewhat a “disadvantage” for math and science oriented studies – as indicated in the statistical analysis presented in **Figure 2**.

Without going any deeper into this analysis, at least the following implications have to be mentioned:

- General culture increases the theorizing level of the studies
- Math and science specializations are less “specialized”

Secondly, the syllabi for the different subjects are built based on “general competences” and “specific competences” [15], where “competency” follows (to some degree) the definition

¹ “Vocational” has a rather different meaning in Romanian legislation than it has in the EU countries, for example. In the Romanian education and training system, “vocational” refers to the following high-school specializations of study: military, theological, sports, arts, and pedagogical [14].

² These are **Math-ICT**, **Natural Sciences**, **Philology**, and **Social Sciences**. The high-school can decide to add an “extra” specialization: “intensive ICT” for Math-ICT, or “intensive/bilingual” study of a foreign language for any of the specializations [14].

agreed upon in the EU “Education and Training 2010 Programme.”³ We are not being critical toward the competences-based curriculum, which is a good idea, and it was fostered starting as early as the late ’90s in the National Curriculum policies, but more toward the problems residing in the *understanding* of the term, and moreover toward the *balance* of these “competences” when it comes to theoretical vs. practical aspects and applications. Analysing the “general/specific competences” in natural sciences – stated to be achieved by all the students by the end of the education-cycle – and the content to be taught in order to develop these competences, it can be easily noticed that there is a strong focus on the theoretical approach [2], [9].

Finally, it is worth mentioning that the textbooks have to follow the curricula strictly, hence the same accent on theory more than on practical aspects and applications [2]. Furthermore, within a long-established paradigm of “a lot of theory” for the theoretical line of study, plus the other two issues earlier mentioned (teaching methods and resources), it is not surprising that a large part of the science textbooks, for example, focus on detailed and elaborate presentations of theoretical aspects rather than on practical aspects and/or applications in technology, industry, etc.

What are the possible effects on the students of such “excessive theorizing” in most of the subjects? First of all, studying a subject mostly at the theoretical level and with very little connection with the everyday applications is certainly one way to undermine students’ motivation. Secondly (and concurrently), it has a limiting effect on their choices regarding their further studies and/or career – mainly due to “warding” them off certain areas/domains, and as such actually reducing their options [1]. Finally, informal feedback from the graduates themselves, from higher education institutions and even from employers, indicate a range of training and/or work-related problems that are most likely determined by the “excessive theorizing” of the studies during high-school. These problems can be as simple (and possibly improvable) as a certain lack of adaptability to less theoretical requirements, or as complicated and challenging to correct as an actual bad career choice.

Within this context, it becomes obvious why there have been a serious number of public debates as well as public statements of various policy makers in the last years regarding the quality and the effectiveness of the theoretical line of study – all of them focusing on the “excessive theorizing” problem [16].

The question that naturally arises is if there is anything that can be done in order to address this situation. The first answer that comes to mind is to *revise the curricula* [10], and then to *train the teachers*, and finally to *improve the resources of the schools*. However, beside these types of major (and certainly very costly) actions that are the prerogatives of the educational policy makers, there certainly are other possibilities that are within the reach of high-schools’ managers. It is not about correcting what appears to be a *systemic problem*, but more about *alleviating* its possible negative effects – mostly in what concerns the ability of the students to make good/appropriate choices for their further studies and/or careers. This becomes even more important when taking into consideration the challenges of the school-to-work transition process in today society and economy [11]. The main idea is to “import” (to some extend) a method that is practiced for the technological

high-school students and to adapt this method for the theoretical high-school students – and that is to place, for limited periods of time, the students of the theoretical high-schools in firms/companies for practical activities.

Transferring and adapting this method for theoretical high-school students has some limitations, as well as a number of feasibility issues that will be briefly addressed further on. What is important to outline at the end of this general discussion are the following ideas:

1. The problem of “excessive theorizing” in most of the subjects taught in theoretical high-schools is real and it can cause negative effects on the students.
2. It is possible to alleviate the effects of this problem by placing the students, for limited periods of time, in firms/companies for practical activities.
3. It is possible to implement this method in two different scenarios and the case study discussed further in this article will support this idea.

2. LOOKING FOR OPPORTUNITIES

The two scenarios of the method briefly described in the previous section are “training placement” and “work experience”. Both these terms refer to a period of time spent by a student within a firm/company. During this period, the student is required to perform a limited amount of work that is related to the activities of the firm/company. However, in order to better clarify the problem, we propose the following distinction between these two terms:

- During “training placement” the student is required to perform activities that are **strictly related** to his/her specialization of study.
- During a “work experience” programme the student is required to perform activities that are **not necessarily/strictly related** to his/her specialization of study, but more to his/her current options regarding his/her further studies and/or career.

Therefore, the “training placement” is an activity mainly oriented towards improving/developing the students’ professional competences. The “work experience” programme is an activity mainly oriented towards helping the students to assess (and eventually to correct) their options regarding their further studies and/or careers. It is obvious that this distinction is formal – as “training placement” can support students’ career guidance and the “work experience” programme often leads to the development/improvement of competences, etc. However, we will retain the idea that the “training placement” **has to be strictly related** to the students’ specialization of study, whilst “work experience” is a more general “immersion” of the students in the labour market that is **not necessarily/strictly related** to their specialization of study.

Considering the specializations of study for the theoretical educational line and the provisions of the National Curriculum we come to the conclusion that:

- The “training placement” method can be used only for the students of the Math-ICT (intensive ICT) specialization of study. This is due to the fact that these are the only students from the theoretical line that are supposed to develop **professional** competences during their studies **and** the fact that there are placement opportunities in **ICT** firms/companies.
- The “work experience” method can be used for the students of all specializations of study of the theoretical line.

The next question is where to look for opportunities for “training placement” and “work experience” for the students of the theoretical line?

³ “Competences are defined here as a combination of knowledge, skills and attitudes appropriate to the context. Key competences are those which all individuals need for personal fulfilment and development, active citizenship, social inclusion and employment.” [17]; also see [18]

Probably the most important opportunity for “training placement” is the Leonardo da Vinci Programme (LdV) financed by the European Commission as part of the Lifelong Learning Programme. The Leonardo da Vinci Programme funds several types of projects (“actions”) – that “range from those giving individuals work-related training abroad to large-scale cooperation efforts”⁴. The action that interests us in this analysis is the professional mobility action “People in Initial Vocational Training (IVT)”⁵. Within this action, “the participants can do work-related training abroad while they still are at school or college or in alternative education and training schemes”. What we would like to outline here is that it is somehow *uncommon* for the **theoretical high-schools** to apply for the LdV-IVT action as compared to **technological high-schools**. The reasons behind this reluctance derive on one hand from the specificity of the *organizational culture* in theoretical high-schools and on the other hand from a certain lack of understanding of the *objectives of the action* and the *eligibility conditions*. Without going any deeper into this analysis here, what is important to mention is that the objectives of the LdV-IVT action *are perfectly suitable* for the students of the **Math-ICT (intensive ICT)** specialization of study from the theoretical line and that these students *are eligible beneficiaries* of the action. The case-study presented in this article provides the required practical demonstration of this assumption.

Regarding the “work experience” method, it’s all about finding appropriate firms/companies within the local business community to place the students according to their interests and their options for further studies/careers. This is not a simple endeavour due to a number of reasons that are related both to the school and the business community. The very first problem is the reluctance of the firms/companies to allow students to take part in their everyday operations – even for a limited period of time and with limited freedom for the students. This barrier is understandable from all points of view – but it can be surpassed mainly by enforcing all the aspects of the cooperation between the school and the firms/companies through detailed protocols. The second problem resides in the level of limitation that is imposed on the students’ activity during the “work experience.” If these limitations are too strong, then the “work experience” can turn into a “don’t-touch-anything-and-just-look-around” type of experience that certainly has very little benefit for the students⁶. This type of situation is more difficult to overcome and the solution is either to try to reason with the firm/company’s management or to simply exclude the firm/company from the list of the potential collaborators. Thirdly, the high-school has to manage a number of internal problems – of which are worth mentioning: fitting the period of time dedicated to the “work experience” programme in the structure of the school year; selecting the target-group of the “work experience” programme; getting the teachers and the parents involved in the planning, implementing, monitoring, and evaluation activities related to the programme, etc. These types of problems are time and resource consuming and they require the full involvement of the high-school’s management and transparent cooperation with the students and their parents. This is why the “work experience” programme should be part of the *strategic planning* of the school and the *parents’ community* should be strongly involved in the entire programme [4]. The case study

presented in this article indicates that the problems naturally arising from an activity that is not part of the regular activities of a theoretical high-school can be solved and the conditions to successfully implement a “work experience” programme in a theoretical high-school can be met.

3. CASE-STUDY

The “Gheorghe Lazăr” National College (GLNC) is a theoretical high-school from Sibiu, Romania, enrolling around 1000 students and having a strong and traditional orientation towards math, ICT, and natural sciences. Evidence from the school’s statistics as well as informal feedback from the students, their parents, and graduates have indicated that the “excessive theorizing” problem and its negative effects are likely to exist. Consequently, the management of the high-school decided to initiate an independent action in order to try to alleviate the effects of the “excessive theorizing” problem and to better support the students to choose appropriate further studies and careers. The action became part of the strategic planning of the high-school and enjoys the full support of the students and their parents. Initially conceived solely as a “work experience” programme, the action also included later on “training placement” – taking advantage of the opportunities presented by the Leonardo da Vinci Programme.

3.1. Training Placement

Analysing the objectives and the conditions of the LdV-IVT action, the management of the GLNC came to the conclusion that the students of the Math-ICT (intensive ICT) specialization of study meet the eligibility criteria of the action and that the school can apply for funding. This conclusion was supported mainly by the fact that, according to the provisions of the National Curriculum for the Math-ICT (intensive ICT) specialization, specifically for the ICT-subjects, the students should develop **professional competences** during their studies. Moreover, according to the current legislation, Math-ICT (intensive ICT) graduates can take an exam to attest their professional competences – which fully proves that the Math-ICT (intensive ICT) students meet the eligibility criteria set for the LdV-IVT action.

Consequently, the GLNC successfully applied for the LdV-IVT action and received the necessary funds to implement two professional mobility projects: the first one in 2005-2006, and the second one in 2010-2011. For both projects, the beneficiaries were 15 students from the Math-ICT (intensive ICT) specialization of study, age 17-18. For the first project, the students were placed for 5 weeks in companies in Plymouth, UK, whilst for the second project the students were placed for 4 weeks in a company from Leipzig, Germany⁷.

The evaluations of the projects were accomplished through questionnaires filled out by the students upon returning from the training placement and through the final reports of the project-teams. According to these evaluations, the following positive conclusions can be drawn:

1. The knowledge, skills, and improved attitude gained by the students during the training placement were appreciated as a beneficial “supplement” to the rather theoretical approach in their ICT studies at school.
2. The first-hand experience in a work-place in a foreign company, the cultural activities included in their programme, as well as the everyday living for a rather long period of time in a foreign country were appreciated to

⁴ See <http://ec.europa.eu/education/lifelong-learning-programme>

⁵ See http://ec.europa.eu/education/leonardo-da-vinci/initial_en.htm

⁶ We note that an “on-the-job-shadowing” type of action is not suitable in this case due to the very limited period of time that can be dedicated to the “work experience” programme in a theoretical high-school.

⁷ For a detailed presentation of the projects, please see www.cngl.eu, the Leonardo da Vinci Projects section (provided in Romanian only).

have significantly improved their communication skills and their understanding of a different European culture.

3. The training placement helped the students to better decide on their further studies and careers – as confirmed 5 years after the mobility by the beneficiaries of the first project⁸.

It should be mentioned that the 15 beneficiaries of each of the LdV-IVT projects represented roughly 25% of the total number of eligible students in the school in each of the given years (17-18 years old and enrolled in Math-ICT, intensive ICT, classes). This is considered a fair percentage given the inherent challenges to implement such a project. Also, the time-span between the two projects is rather large and it is mainly explained by the reluctance of the teachers towards the significantly increased responsibilities involved by the projects.

Regarding the management of the projects, probably the most difficult problems encountered were the ones related to some compatibility issues between the LdV-IVT administrative and financial procedures and the current legislation regarding financial management of the public institutions. These problems led to a number of bureaucratic challenges that meant overtime work for the accounting officer of the school, etc.

3.2. Work Experience

The “work experience” programme was initiated by the GLNC more than 10 years ago as a programme targeting 17-18 year-old students from all the specializations of study provided by the school. The programme aims to offer the students a 1-week “work experience” period in a local firm/company in order to give them a better understanding of the requirements of a job and to support them in their decisions regarding their further studies and careers. It is important to mention that, unlike the “training placement” case, the “work experience” programme cannot significantly help the students in a 1-week period to develop/improve their professional competences. However, the 1-week “immersion” in a workplace can increase the awareness of the students regarding what is expected from them in the future, and furthermore can improve their motivation. Finally, the “work experience” programme can provide some of the much-needed practical support for the highly theoretical studies of the students in the school.

Since its initiation, the “work experience” programme has had ups and downs, and was even suspended for 2 years – due to both internal and external reasons. For example, one of the serious problems that had to be faced every year was to set-up the 1-week period dedicated to the programme within the given structure of the school year. Indeed, the “work experience” programme is considered an extracurricular activity and hence it had to be planned outside the regular school-time. Until the school-year 2011-2012, the only solution to this problem was to plan the 1-week period of the programme during vacations – and the coordinating team of the programme had to face all the difficulties and the consequences of such a decision. However, starting with the school-year 2011-2012, the Ministry of Education, Research, Youth and Sport has decided to provide within the structure of the school year a 1-week period entirely dedicated to extracurricular activities. This decision is perfect for the “work experience” programme of the GLNC and helped revive and reinforce the programme.

According to the data provided by the GLNC, the “work experience” programme involved every year around 80-90 students, age 17-18 (roughly 50% of the total number of

students of this age enrolled in the school). The students spent the 1-week period of the programme in one of the 12-18 local partner-firms/companies covering a wide range of fields: ICT, industry, medical care, pharmacy, banking, insurance, commerce, etc. The partnership between the GLNC and the local firms/companies is enforced through protocols detailing all the aspects of the activities of the students during the “work experience” programme, as well as the mutual responsibilities of the partners, etc. The evaluation of the programme is accomplished every year through questionnaires and/or focus-group discussions with the students (and more rarely with the representatives of the firms/companies) as well as through the annual activity report of the school.

As an example, to reinforce the overall conclusions of our case-study, we will discuss the results of the questionnaire applied to the 76 of the 84 students involved in the GLNC “work experience” programme in the school year 2011-2012. The questions were grouped in 10 different categories as detailed below. Except for the questions in groups 9 and 10 asking to describe the problems encountered during the programme and to provide personal opinions and recommendations, for the rest of the questions, the students were asked to answer using a scale from 1 to 5 – with 1 meaning “strongly disagree/highly negative/very bad” and 5 meaning “strongly agree/highly positive/very good”. The questionnaire yielded the following results (also see **Figure 3**; “0” means no answer; % refers to the proportion of the students giving a certain rating; job-related questions based on [5]):

1. Level of understanding of the activity of the firm/company and of the work and work relations in the firm/company:

Rating	0	1	2	3	4	5
%	2%	3%	10%	20%	26%	39%

2. Level of satisfaction regarding the “job” performed (diversity, completeness, impact on the department/firm, liberty of decision, possibility to self-evaluate the results):

Rating	0	1	2	3	4	5
%	1%	21%	23%	27%	21%	7%

3. Team-activity and team-building (mutual trust, common objectives, decision-making process, level of motivation):

Rating	0	1	2	3	4	5
%	1%	6%	10%	23%	32%	28%

4. Self-assessment regarding the effects of the programme on the motivation level (confidence, human contacts and relations, personal image, school results):

Rating	0	1	2	3	4	5
%	0%	25%	21%	25%	21%	8%

5. Self-assessment regarding the benefits of the programme (support for career guidance, practice and development of general/specific skills, improvement of communication skills in various contexts, gain in general/specific knowledge, respect for work and property):

Rating	0	1	2	3	4	5
%	1%	11%	18%	26%	28%	16%

6. Organizational matters (information received at school and in the firm/company, safety, compliance to the work-schedule, planned/accomplished activities, initiative):

Rating	0	1	2	3	4	5
%	0%	13%	9%	17%	26%	35%

7. Relationships with the other students and the personnel at the working place (respect, correctness, understanding):

Rating	0	1	2	3	4	5
%	1%	1%	3%	8%	18%	69%

⁸ See <http://e-lect.blogspot.ro/> for in-depth feed-back of the beneficiaries of the 2006 project, with updates from 2011 (in English).

Regarding the 8th group of questions, the students were asked if they would recommend the programme to their colleagues in the lower classes (86% answered in the mid to high range), if they would recommend the school's management to keep the programme within the regular activities of the school (89% answered in the mid to high range), and finally if they would recommend the school's management to keep collaborating with the firm where they were placed during the programme (79% answered in the mid to high range).

For the questions in groups 9 and 10, the students were given the possibility to elaborate on their expectations and the problems encountered during the programme, and to provide recommendations and personal opinions, etc. It should be noted that some of the answers given by the students to these questions indicated a very high level of commitment.

The results of the questionnaire indicate an overall positive impact of the programme – with most of the students rating the benefits, the experience, etc. in the mid to high range. The most important problems reported were related to (1) the limitations imposed to their activities (“on-the-job-shadowing” was reported for some of the firms/companies involved in the programme); (2) the deviations from the initially agreed upon work-schedule; and (3) the rather short period of time dedicated to the programme leading to “learning too little about the job I’m looking for” as one of the students put it.

4. CONCLUSIONS AND FURTHER STEPS

The “training placement” and the “work experience” programme are two methods that can be used by theoretical high-schools in order to alleviate the possible negative effects of the “excessive theorizing” problem – a problem that is mainly determined by the current provisions of the National Curriculum for the theoretical educational line.

In order to put in practice these methods, the managers of the theoretical high-schools have to resort to the business community. This may mean the European business community – taking advantage of the Leonardo da Vinci Programme financed by the European Commission – or the local business community – taking advantage of the support of the parents and the local community in general. The opportunities clearly exist and it is mainly a matter of reaching out and transforming them into actual activities of the school. This requires the dedicated involvement of the schools’ managers, of the teachers, and of the students and their parents.

There are a number of limitations and conditions in order to put in practice any of the two analysed methods. Attentive management and a good understanding of the legal provisions as well as a strong and transparent relation with the business community can provide sufficient support to negotiate the successful implementation of any of the two methods. However, it should be accepted from the very beginning that very likely, there will never be enough places to satisfy all the needs of all the students in the target-group.

The experience of a high-school like the one we discussed in our case-study should be better promoted as a “good-practice example.” This could encourage other theoretical high-schools to include in their regular activities “training placement” and “work experience” for their students.

The reluctance of the local firms/companies to take part in “work experience” programmes is a matter that needs further investigation. First of all, this investigation should seek for possible methods to increase the awareness of the local business community of the problems that theoretical high-

schools encounter. Secondly, there is a need to further explore the legal provisions (both in the public and the private sector) in order to find stronger and better ways to enforce the cooperation between schools and firms/companies. Finally, it should be better understood what the expectations of the firms/companies are and, based on this understanding, to look for possible methods to encourage their participation in “work experience” programmes.

5. ACKNOWLEDGEMENTS

The authors would like to thank the following teachers from the “Gheorghe Lazăr” National College for their support during the case-study: Ms. Adriana Pașca and Ms. Georgeta Preda (“work experience” programme), Ms. Adina Stănculescu, Ms. Stela Negrea, and Ms. Monica Oancea (LdV-IVT projects).

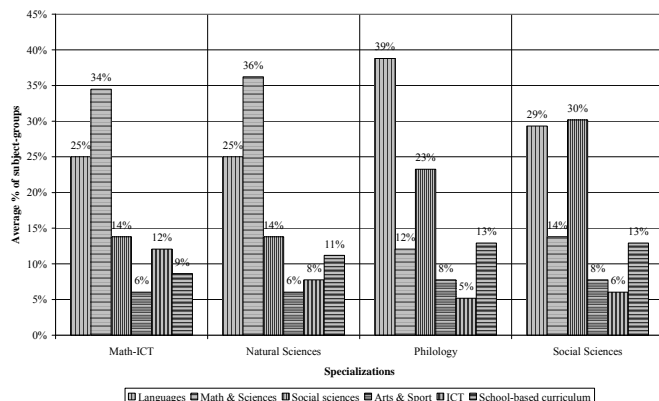


Figure 1. Average proportions of the major subject-groups across the four specializations of the theoretical line of study

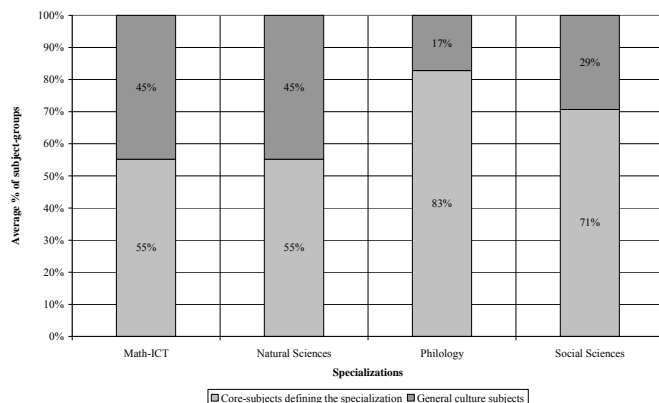


Figure 2. Average proportions of core-subjects stacked vs. “general culture” subjects across the four specializations of the theoretical line of study

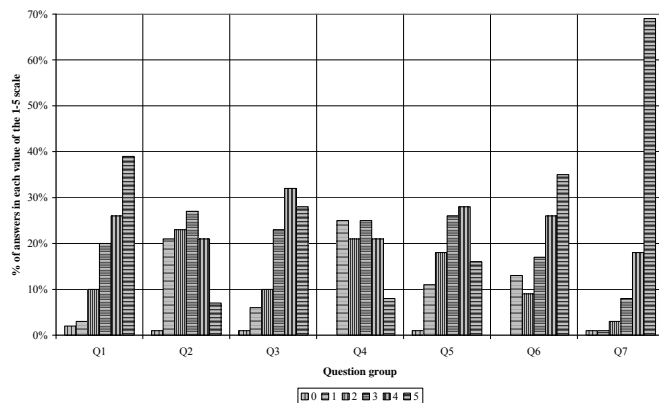


Figure 3. Overall results of the questionnaire applied during the case-study

The Leonardo da Vinci Programme is financed by the European Commission. This article reflects the views only of the authors, and the European Commission cannot be held responsible or liable for any use which may be made of the information contained herein.

6. REFERENCES

1. Becker, F. S., *Why don't young people want to become engineers? Rational reasons for disappointing decisions*, European Journal for Engineering Education, Vol. 35, No. 4, 349-366, (2010)
2. Căpiță, L. E. (coord.), *Analiza programelor și a manualelor școlare alternative*, Editura Didactică și Pedagogică, București, România, (2012)
3. Coleman, M. Earley, P., *Leadership and Management in Education*, Oxford University Press, (2005)
4. Dușe, C. S., *Managementul educațional. Managementul instituțiilor educaționale, Vol. I*, Editura Universității „Lucian Blaga”, Sibiu, România, (2006)
5. Dușe, D. M., *Managementul resurselor umane*, Editura Universității „Al. I. Cuza”, Iași, România, (2010)
6. Fenichel, M., Schweingruber, H. A., *Surrounded by Science: Learning Science in Informal Environments*, Board on Science Education, Center for Education, Division of Behavioral and Social Sciences and Education, The National Academies Press, Washington, DC, (2010)
7. Hoy, W., DiPaola, M., *Improving schools. Studies in Leadership and Cultures*, Information Age Publishing Inc., USA, (2008)
8. Neacșu, I., *Studiul relațiilor dintre curriculum, competențe, motivație, învățare, și rezultate școlare*, Editura Didactică și Pedagogică, București, România, (2012)
9. Noveanu, G., *Curriculum intenționat – curriculum realizat. Studiu comparativ la disciplina chimie*, Editura Sigma, București, România, (2009)
10. Potolea, D., Toma, S., Borzea, A. (coord.), *Coordonate ale unui nou cadru de referință al curriculumului național*, Editura Didactică și Pedagogică, București, România, (2012)
11. Quintini, G, Martin, J. P., Martin, S., *The changing nature of the School-to-Work transition process in OECD countries*, Discussion paper No. 2582, IZA, Bonn, Germany, (2007)
12. Savickas, M. L., *The Transition From School to Work: A Developmental Perspective*, The Career Development Quarterly, 47: 326–336, (1999)
13. Vlăsceanu, L. (coord.), *Școala la răscruce: schimbare și continuitate în curriculumul învățământului obligatoriu*, Editura Polirom, Iași, România, (2002)
14. *** *Legea educației naționale nr. 1/2011*, Monitorul Oficial al României nr. 18 din 10 ianuarie 2011
15. *** *Planuri-cadru de învățământ; Programe școlare*, MECTS, www.edu.ro, București, România, (2003-2011)
16. *** *România educației, România cercetării – Raportul Comisiei Prezidențiale pentru analiza și elaborarea politicilor în domeniile educației și cercetării* – www.presidency.ro
17. *** *Recommendation of the European Parliament and of the Council of 18 December 2006 on key competences for lifelong learning*, Official Journal of the European Union, L 394/10, 30.12.2006, (2006)
18. *** *Key competences for a changing world: implementation of the education and training 2010 work programme*, Official Journal of the European Union, C 161 E/8, 31.05.2011, (2011)