Students’ Pedagogical Counselling in the Science Learning Context

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Abstract

In the current context, where school faces a multitude of psychosocial issues, the pedagogical counselling activities have become an indispensable prerequisite, related to almost every aspect of the educational system or learning process. Starting from the premise that one of the fundamental tasks of the pedagogical /school counselling work is offered by providing students with a range of effective learning techniques, in this study we intend to customize this aspect, taking into account the training approach developed within Science disciplines.

As such, the purpose of this study is to capture the impact that the pedagogical counselling process has on the optimization of the learning activities related to Science area (Chemistry, Physics and Biology). Thus, we undertook an investigative approach, from a sample of over 1.000 Romanian secondary school students, as indirect beneficiaries of the teacher training programme “PROFILES - Education through Sciences”. The questionnaire administered to those students envisaged a number of issues concerning: the attractiveness of the Science lessons, their impact on the affective, behavioural and learning style, valorisation of their effectiveness in efficient instructional models, the importance of the lessons from the perspective of determining their skills for everyday life, specific pedagogical relations that are structured in such teaching approaches, etc.

The data processed from the questionnaires, correlated with the results gathered from the focus group discussions, allowed us to formulate pertinent conclusions regarding the facilitator role of the school counselling activities, in terms of learning management disciplines within the specific Science content.

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1. Introduction

The *psycho-pedagogical counselling*, also called *school or educational counselling*, represents a special type of counselling, realized in the context of the educational institutions, whose direct or indirect beneficiaries are the pupils/pre-school pupils, their parents and the teachers. The counselling approach can be realized both by specialists in psycho-pedagogical assistance or school counsellors and by every teacher, in relation to the psycho-pedagogical and methodological skills available to him or her.

The main purpose of the counselling activities carried out with students is to help them have a correct perception of the situation they are faced with and to find by themselves optimal solutions for solving it. The counsellor does not need to suggest solutions for the student, but needs to guide him in such a way as “to make him/her capable to help himself/herself, to understand both his/her own self and the surrounding reality. Consequently, the task of the school counsellor is not to give advice, but to help the person in need to become able to solve the problems he/she is faced with by himself/herself” (Moțoc, Popa, & Petrescu, 1999).

The Romanian psychologist Adriana Băban considers that the “*fundamental goal of educational counselling is the optimal psycho-social functioning of the person/group*”. In order to realize this very comprehensive fundamental goal, she identified three auxiliary goals: promoting health and welfare (physically and psychologically); personal development (through self-knowledge, optimal inter-personal relations, decisional capacity, positive and creative attitude, etc.); preventing undesirable situations such as: negative affective disposition, getting involved in conflicts, difficulties in solving certain problems, psychosomatic dysfunctions etc. (Băban, 2001)

From the perspective of the time needed to turn them into practice, there can be identified: *short term goals*, which suppose solving some urgent problems or going over some current obstacles the student is faced with, and *long term goals*, which involve providing the student with a set of methods and creating some skills allowing the student to efficiently solve his/her existential problems.

2. Basic functions of psycho-pedagogical counselling

In relation to those goals, one can identify the basic functions of psycho-pedagogical counselling which are:

- **the knowledge function** - identifying the problems of the person in need of counselling and his/her personality features;
- **the self-knowledge function** - identifying the personality features, some of them completely unknown, by the counselled person;
- **the formative function** - supporting and stimulating the process of progressive development of all the skills available to the individual;
- **the informative function** - which involves obtaining information by the counselled person concerning different aspects of reality, which can contribute to the solving of the problem the individual is faced with;
- **the school and professional orientation function** - which deals with solving certain specific problems, related to the choice of a school or a profession.

The contents approached in the context of psycho-pedagogical counselling included in the curricular area called *Counselling and Guidance* are structured on five thematic modules which remain the same at all school levels: self-knowledge and personal development; communication and social skills; information and learning management; career planning; life style quality (according to the Order of the Romanian Ministry of Education and Research O.M. No. 5286 / 09.10.2006). The specific goals of those activities, but which can be realized in the context of all the educational approaches, aim at: developing the students’ self-knowledge skills and the inter-knowledge skills in the class-group; facilitating interpersonal relations in the school group; forming and developing the students’ conscience and moral-civic behaviour; familiarizing the students with the norms of social life in general and of the school life regime in particular; forming their skills for solving difficult or conflict situations; optimizing school performances through the acquisition of some efficient learning techniques; identifying and turning to good use the students’ skills and interests for an optimal orientation of their career;
familiarizing the students with the school network and the world of professions; analyzing one’s own lifestyle, in order to promote a healthy behaviour and to prevent or counteract some risky behaviours.

3. Features of the psycho-pedagogical counselling accomplished in the context of teaching Sciences

One can easily note that in the psycho-pedagogical counselling activities, a particular attention is given to the learning process itself and, in particular, to aspects like: self-knowledge, identification of the learning style and of the dominant features of one’s personality etc.

The knowledge of those aspects by a teacher who teaches disciplines from the Sciences area (Chemistry, Physics and Biology) represents a compulsory and necessary condition for achieving an adequate teaching approach based on high-quality standards. This will influence the projection and the realization of the didactic activities through: adoption of certain models of training - in relation to the students’ learning style; differentiation up to individualization of the didactic approach; adoption of modern active-participative training strategies, development of democratic, partnership pedagogical relations, cultivation of skills needed for the daily existence.

The management of learning supposes the administration by the student, initially under the teacher’s or parent’s guidance and then autonomously, of his/her own learning approach. It integrates, as a unit, motivational aspects (cognitions, emotions and behaviours meant to initiate, to guide and to maintain the motivation for learning) and strategic aspects (techniques and strategies used to increase the efficiency of the learning process).

In order to optimize the learning process realized by the students during the classes of Sciences, the teaching staff should use specific training strategies, aimed at: using the students’ critical thinking, permanently monitoring the educational approach, using techniques of logical memorization of the information, etc.

Critical thinking supposes the formation and the development of the students’ ability to interact with the information actively, to process, interpret and make a critical, analytical evaluation of the information contained in a material taught or studied independently. Critical thinking supposes the formulation of questions concerning: the significance of the ideas or concepts used, the examples by means of which these ideas are concretized, in the daily life, the derived or adjacent concepts, the way the pieces of information are interconnected, the possibilities of transfer in other situational contexts.

The monitoring of learning involves a process of systematic evaluation of the degree of understanding and of integration of the ideas or concepts assimilated by the students. Monitoring supposes: revising the main concepts, formulating questions on the degree of understanding of these concepts, clarifying certain ideas more difficult to understand, decoding, and summing up the information to highlight the main ideas.

The use of mnemotechniques or memorization strategies helps students to learn the information and facilitates their access to increase the area of scientific and other types of knowledge. This involves: understanding the material to be learnt, organizing the study in short sessions close to one another in time, dividing the material into units of content, systematically repeating the material (which must not be confused with the mechanical repetition of a text), using certain methods to help memorize the information (such as: highlighting certain parts of the text, using colours, making sketches, graphs, tables, synthetic revision of the information, etc.).

The teacher’s skill in developing the students’ motivation for learning represents a compulsory condition for the optimization of the training approaches, in the context of Sciences and not just there. So, the psycho-pedagogical counselling activities designed by the teaching staff, in this sense, involve the use of strategies for motivating the students, which suppose:

- creating a motivating educational environment, as far as the contextual factors are concerned: the relation teacher-students, a pleasant and supportive atmosphere in class;
• triggering the motivation for learning through the development of a positive attitude towards the disciplines of the area of Sciences;
• knowing the students’ expectations in relation to the assimilation of the contents and the shaping of the specific skills for Sciences;
• maintaining the students’ motivation for learning through the formulation and realization of certain immediate goals, the shaping of a positive self-image, the increase of the students’ trust in their own forces, etc.
• concluding in a positive way the proposed learning experiences, which should be focused on a positive self- and inter-evaluation, with direct effects on the students’ formation.

4. Description of the methodology and procedure

The impact that the pedagogical counselling activities has had on optimizing the learning activities related to the Science area was assessed through an investigative procedure that involved over 1,000 secondary school Romanian students - as beneficiaries of classroom implementation of designed PROFILES training modules, in the frame of the training programme “PROFILES - Education through Sciences”. This accredited course was organized with the support of the FP7 European Research Project “PROFILES - Professional Reflection-Oriented Focus on Inquiry-based Learning and Education through Science” that has the objective to promote a continuous professional development program with the view of promoting Inquiry-Based Science Education (IBSE) through raising the self-efficacy of Science teachers with the view to take ownership of more effective ways of teaching students, supported by stakeholders (PROFILES Consortium, 2010). The investigation was based on questionnaires for assessment of the Motivational Learning Environment - MoLE - (Bolte, 2006), which recorded students’ own perception and evaluation regarding several dimensions, including psycho-pedagogical counselling ones. Although there are advantages by conducting a research on a specific sample, in this case, the whole population (over 1,000 secondary school Romanian students) was included in the survey, so that all requested students answered to the questionnaire, thereby ensuring an extremely low error rate.

5. Results and discussion

First, the students were asked to assess how often they have the opportunity to make suggestions to the teacher during their Science lessons. Their feedback - illustrated in figure 1 - offers an interesting result: 55% of them are in the position to express suggestions just sometimes or rarely. On the other hand, 7% of students do not make any observations in this sense. This fact shows clearly that Romanian school is still passing a period of profound transformations through curricular reforms, which are implemented in the educational practices of the teachers. Consequently, it requires a reconsideration of the teaching strategies, so that the student to be valorised as an active subject who participates to his own training process. In addition, in terms of the psycho-pedagogical counselling process, a restructuring of the educational relationships is necessary, according to the principles of creating of a genuine partnership between teachers and students, in the context of Science classes. Anyway, the students’ expectations must be known and taken into consideration by the teacher. On the other hand, the rest of the resulted percentage express that there is an educational frame for the students which promotes the opportunity for making opinions or suggestions regarding the content covered in the Science lessons.

Second, the students were invited to assess how often they get the opportunity to ask questions during the Science lessons, related to various subjects. Figure 2 presents their feedback which is a little bit different with that resulted for the previous question. In this case, 36% of them expressed a rarely/sometimes opportunity, but it is quite unacceptable that 4% of students have never met this opportunity. Anyway, the recorded results demonstrate the importance that the teachers give to the feed-back received from the students, in order to adjust the training process and increase its efficiency.

Figure 3 illustrates the level of cooperation provided by the students during the Science lessons. Here, the majority of the surveyed students (about 94%) stated that in the context of the Science lessons they manifested a clear pro-collaborative behaviour, involving cooperative learning, collaboration, networking, constructive
exchange of point of views and ideas. All those facts lead to an increase of the quality of the educational demarche, the learning motivation and the self-confidence in other peers. In fact, increasing the students’ motivation for learning can be also achieved by collaboration, with an important impact also on raising the students’ trust in their own and in the results of group activities.

![Fig. 1. Students’ opinions related to how often they have the opportunity to make suggestions to the teacher during their Science lessons](image1)

![Fig. 2. Students’ opinions related to how often they get the opportunity to ask questions in Science lessons](image2)

![Fig. 3. Students’ opinions related to the level of cooperation during the Science lessons](image3)

![Fig. 4. Students’ opinions related to the effort that the class makes during the Science lessons](image4)

Figure 4 illustrates the general effort made by a class during the Science lessons. Here, it is relevant than more than 60% of students undertake an important input as effort, even the teachers try to develop a positive attitude towards the Science area disciplines. But it is obvious that most of the students made serious efforts to understand the topics, and in general, the Science lessons. This is also much linked with what is presented in the figure 5 - the considered level of effort that the students’ are making for understanding the subject matter during the Science lessons. This also claims a teacher’s supportive attitude related to the availability of the information, the language used when teaching a specific content, the learning experience, the effective teaching communication, but also the overall pedagogical skills. It is clear that the teachers must do more work to try to get the Science near the students, with an emphasis on describing those learning experiences in a very popular format. In this respect, Inquiry-Based Science Education (IBSE) could be a feasible solution.

Finally, figure 6 expresses the students’ opinions concerning their active participatory level in the Science lessons. Here, the predominant answers are concentrated in the central area (sometimes - often), but it is also important to emphasize that almost 10% of the students remain inactive. The results lead back to the necessity of
the restructuring - in the direction of the active-participative methods - of the teaching strategies, when experiencing, discovering and investigating represent important scientific activities.

5. Conclusion

It is obvious that for the Science lessons, the selection of the proper didactic strategies is strongly related to students’ learning styles, their previous knowledge, their meta-cognitive skills and the type of material to be learnt, but also the related educational objectives. Students are at the centre of this process as main beneficiaries, and in this context, they must be offered the suitable opportunities for being involved in the process of their own training, through several channels: freely expressing their ideas and opinions, cooperating with their colleagues, developing their meta-cognitive and socio-emotional skills, etc. But in this respect, the active-participative methods must be used, with clear advantages: the complex approaching of a specific topic (especially when working in groups), communication, collaboration and an optimal relation teacher-students and students-students, multiple possibilities of social realization, involvement, participation, dynamism, constructive exchange of opinions, ideas, immediate feedback, approaching of a large volume of information in a relatively small amount of time, developing their ability to defend one’s ideas in public, a better motivation for learning, developing students’ inter-evaluation and self-evaluation abilities, etc. As a general conclusion, we consider the optimization of all previous statements related to IBSE model represents a pertinent solution and a real perspective in the direction of implementing of a modern education, formative and deeply rooted in the reality.

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