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Web: web: http://peijes.com/en/
ifiasa@yahoo.com

Grafic disinger: Marin BUGIULESCU

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Preface

The 2-st issue of *Pro Edu. International Journal of Educational Sciences* (January 2020) presents scientific and theoretical articles on various aspects, all of them centred on the area of Science of Education.

The first study included in this volume, entitled *IDENTIFYING BARRIERS FOR WOMEN PARTICIPATION IN COMPUTER SCIENCE*, prepared by Assoc. Prof. Ph.D. Maria KORDAKI and Ph.D. Candidate Ioannis BERDOUSIS addresses a topical issue, related to the identification of main barriers that discourage women to pursue Computer Science (CS) as their University studies and their careers options.

The next work, *PROMOTING INQUIRY-BASED SCIENCE EDUCATION THROUGH TWO CONTINUOUS PROFESSIONAL DEVELOPMENT PROGRAMS* belongs to Prof. Ph.D. Gabriel GORGHIU, Assoc. Prof. Ph.D. Laura Monica GORGHU, Assoc. Prof. Ph.D. Ana-Maria Aurelia PETRESCU and Assoc. Prof. Ph.D. Luminița Mihaela DRĂGHICESCU. They intend to present some issues concerning two continuous professional development programs, proposed in two European projects, in which Valahia University of Târgoviște was partner.

The paper entitled *PROFESSIONAL TRAINING IN THE NATIONAL EDUCATIONAL SYSTEM IN THE CONTEXT OF ROMANIA'S ACCESSION TO THE EUROPEAN UNION* belongs to Ph.D. Candidate Anamaria BURADA. In this context, the author makes a predominantly theoretical presentation of the activities of continuous training of teachers in Romania.

The paper entitled *THE VARIABLE OF CREATIVITY AND PRE-SCHOOL EDUCATION*, Ph.D. Candidate Georgiana Alexandra ȘERBU, proposes to identify the ways of expressing the creativity among preschool children, as well as parents' opinions about the activities carried out in order to stimulate the children creativity.

Another study, developed by School Counseling Teacher and Ph.D. Candidate Irina BANU, presented the issue relatd to *THE RELATIONSHIP BETWEEN SELF-ESTEEM AND AGGRESSIVE BEHAVIOR AMONG PRETEENS.* The research, based on a focus group survey, analyzes the relationship between self-esteem and aggressive behavior of preadolescent students, the main objective being to highlight the need to develop and implement some methods that are required for growing the self-esteem.

The following study, entitled *THE PEDAGOGICAL PRACTICE - DIMENSION OF THE TRAINING OF FUTURE TEACHERS*, belongs to the authors Assoc. Prof. Ph.D. Luminița Mihaela DRĂGHICESCU, Lecturer Ph.D Ioana STĂNCESCU, Assoc. Prof. Ph.D. Ana Maria Aurelia PETRESCU and Prof. Ph.D Gabriel GORGHIU This actual study is focused on the analysis of the opinions of the practitioner-students and teacher-mentors regarding the organization and leading of pedagogical practical activities. The purpose of investigation was to obtain relevant feedback and to identify concrete measures or ways for improving the pedagogical practical activities

Assoc. Prof. Ph.D. Ana Maria Aurelia PETRESCU and Assoc. Prof. Ph.D. Luminița Mihaela DRĂGHICESCU make a review of the *BOOK COLLECTION: FUNDAMENTAL CONCEPTS IN PEDAGOGY* - author Sorin Cristea -, considering it as a work of extreme importance for the field of pedagogical literature in Romania, demonstrating an undeniable theoretical and praxiological value.

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Assoc. Prof. Ph.D. Ana Maria Aurelia PETRESCU
Teacher Training Department
Valahia University of Targoviste, ROMANIA

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IDENTIFYING BARRIERS FOR WOMEN PARTICIPATION IN COMPUTER SCIENCE

Maria Kordaki[1], Ioannis Berdousis[2]

[1]Associate Professor, Dept of Cultural Technology and Communication, University of the Aegean
[2]PhD Candidate, Dept of Cultural Technology and Communication, University of the Aegean,
GREECE.

E-mail: [1]m.kordaki@aegean.gr, [2]i.berdousis@aegean.gr

ABSTRACT

This study focuses on the development of a framework for the identification of main barriers that discourage women to pursue Computer Science (CS) as their University studies and their careers options. The proposed framework is based on the analysis of secondary data emerged from the research literature. In fact, a large number of papers were qualitatively analyzed and the themes who act as barriers for women participation in the CS scientific field and career were estimated. The analysis of the data identifies as essential barriers: school, family, computer games, role models, peers and work culture, stereotypes and communication of stereotypes. All these barriers form a model that seemed to shape females' perceptions, attitudes, interest, confidence and career decisions regarding CS education and career choices. Based on the aforementioned barriers, proposals for future research dimensions and suggestions for the treatment of the phenomenon of females' under-representation in CS education is given.

Keywords: *barriers; Computer Science; females; gender representation; model;*

INTRODUCTION

Women have been pioneers in the evolution of CS, and their stories need to be known more widely. They have passionately programmed computers for many decades. As far back as 1843, Ada Lovelace wrote programs on Charles Babbage's mechanical computer while in 1946 six women mathematicians, known as human 'computers' -Fran Bilas, Betty Jennings, Ruth Lichterman, Kay McNulty, Betty Snyder, and Marlyn Wescoff- created working programs for the ENIAC computer during the Second World War. Even later, Grace Murray Hopper played a key role in creating COBOL and standardizing FORTRAN - named as the Data Processing Management Association's first 'man of the year' in 1971 (Misa, 2010a). According to Misa (2010b), in the 1950s the pioneering generation of CS featured a surprising number of prominent women who led research teams, defined computer languages and even pioneered the history of CS. In the 1960s, women entered the emerging CS profession in unusually large numbers. Despite these early successes, in the late-1980s women stop entering CS in large numbers, and the proportion of women studying CS actually began falling dramatically - and it has continued to do so, steadily, until to date (Camp, 2012). Despite the shrinking representation of females in undergraduate studies and in CS workforce, the proportion of women at higher ranks -doctorates and faculty- have continued to grow overall.

Abbate (2010) attributes women under-representation in CS to the entry requirements that CS departments instituted -in the mid of 80's- which ultimately favored males, in an attempt to reduce the number of their students. However, C. C. Hayes (2010a) claims that unattractive stereotypes about CS scientists started to become established, affecting more females than males. Here it is worth mentioning that, research has identified several reasons to justify why increasing the participation of women (and other underrepresented groups) in CS is crucial. Camp (2012), advocates that when it comes to the underrepresentation of women, being educated in CS, three critical issues emerge. These issues concern the *labor shortage and huge demand* that exists for people trained in CS, the need for diversity in the workforce to innovate higher quality technologies and the goal of equal opportunity.

In fact, when it comes to females in CS, their underrepresentation is an alarming issue for both; the USA and the EU. A sizable, diverse and creative CS workforce is critical for continued participation in the high-tech, global economy (C. C. Hayes, 2010b). Failing to capitalize on the talent of women in CS may threaten productivity, innovation and competitiveness (Ashcraft et al., 2012; Hill et al., 2010). Attracting more women into CS will not just help to address a problem that risks damaging the whole economy and failing to reflect our diverse society, but also contributes to realizing goals for equal opportunities and empowers women by enhancing their capacity to participate fully in the information society and shape its development (Ashcraft et al., 2012). With technology playing an increasingly crucial role in all of our lives, having more people from different backgrounds in its creation can help break down gender inequalities (Ashcraft et al., 2012).

The under-representation of females in both CS education and the workforce in several countries has motivated excessive research, documenting the necessity of increasing females' representation and identifying those essential factors influencing females' participation in CS. Thus, it is crucial to capitalize on previous research findings towards the development of a model that reflects the essential barriers for women participation in CS which have been reported till now in the literature. This is the contribution of this paper.

Thus, in the next section of this paper, some essential barriers for women participation in CS are reported, namely: school education, families, computer games, role models, peers and work culture as well as society in terms of negative stereotypes and their communication through media and people. Finally, a model reflecting all the barriers emerged from the literature is proposed and conclusions and future research directions are drawn.

1. IDENTIFYING BARRIERS: WHY WOMEN DO NOT PARTICIPATE IN COMPUTER SCIENCE

Over time, several studies have identified numerous key social and structural factors that influence girls' participation in CS, often deterring them from choosing future education or careers in technology (Ashcraft et al., 2012; Barker & Aspray, 2006; Gürer & Camp, 2001; 2002). These factors are addressed below.

School Education

Concerning school education, some key factors contributing to loss of interest, -not just for girls- in CS are: (a) the *curriculum* with no relevant connection, (b) the *teaching practices* that discourage collaboration and some pedagogies that, mainly, rely on lecturing, (c) *teacher stereotypes,* and (d) *uncomfortable learning environments* discourage girls' participation fading out their interest.

Curriculum. Some studies indicate that CS courses, and the way these are taught, make CS curriculum irrelevant, encouraging negative perceptions, deterring girls from taking these courses (Margolis, 2010; Ashcraft et al. 2012). When CS is taught in the abstract, students cannot recognize how technology can help address social problems. This approach also reinforces a view of CS as a lonely, isolated, machine-focused field (Margolis, 2010; Papastergiou, 2008). Female secondary students also identified two key factors for not taking CS courses: (a) 'the subjects are boring', and (b) 'the subjects would not be helpful to me in my chosen career path' (Anderson, Lankshear, Timms, & Courtney, 2008, p. 1310).

Teaching practices. CS classrooms teachers in both; secondary and tertiary level often *favor independent work and discourage collaborative work* as well as do not give the chance to students to take risks or make mistakes (Margolis, 2010). However, research has revealed positive effects of collaboration for girls (Werner & Denning, 2009). In addition, *instead of traditional lecturing teaching active, hands-on, project-based learning approaches play a key role in attracting girls in CS undergraduate studies too*. As for example, males seemed to prefer the traditional computer based computer programming module, while girls performed better when the teaching emphasized the use of some principles of physical CS, in order to take computational concepts out of the screen and into the real world so that students interact with them (Rubio, Romero-Zaliz, Mañoso, and Angel, 2015).

Teacher stereotypes. What is more, teachers often have the tendency to assume that, while girls work hard, boys have innate talent for CS, are more natural with the computer and have more interest (Margolis, 2010). That unconscious biases about who has a flair on CS are crucial since perceived support from teachers affects girls' interest in CS classes and CS careers (Denner, 2011).

Uncomfortable learning environments. Societal beliefs about CS as a masculine field are present and disseminated in CS classrooms (Margolis, 2010). CS classrooms are also often dominated by boys and girls often experience then as uncomfortable and unwelcome environments (Goode, 2007).

Families

Families seem to play a crucial role in girls' engagement in CS (Ashcraft et al., 2012). The *parental influence*, regarding parental expertise or career in CS along with their support and encouragement, as well as girls' *early exposure* to Computers and CS at home are considered as key factors in affecting girls' interest in CS.

Parental Influence. Parents have significant influence as role models and in the types of messages or beliefs they communicate to girls both implicitly and explicitly (Liston, Peterson, & Ragan, 2007). Parental expertise or career in CS can play an important role in influencing girls' perception on the CS field. On the other hand, research suggests that *parental or familial support, advice and encouragement* to pursue CS seem to be decidedly important. In some cases, parents unintentionally provide obstacles for their own daughters and through subtle biases provide more support for their male children (Gürer & Camp, 2002). Perceived parental encouragement and support had a powerful impact on girls' interest in CS (Denner, 2011) as well as on the completion of their CS studies and choose a CS career (Guzdial, Ericson, McKlin, & Engelman, 2012).

Early Exposure to Computers. Abbate (2010) argues that one of the primary reason for females' under-representation in CS is their lack of experience. She maintains that as college students flocked to CS in the mid-1980s, depts tried to reduce the numbers to a

manageable size by instituting entry requirements that favored candidates with prior computer experience, discouraging those students who had less experience or confidence. As a result, fewer women than men have been admitted to CS. The gendered effects of these changes were probably unintentional, but true. There are also studies emphasizing on the role of the *early exposure* to computers and CS, pointing out that a crucial factor is the kind of CS experience to improve success in future CS classes (Barker & Aspray, 2006). Early exposure to CS seems to favor boys, as research found that more boys than girls used computers at home, boys began using computers earlier, and boys used their computers at home on average more hours per day than girls (Barker & Aspray, 2006). Opportunities for early familiarization of students with computers at home acknowledged as key factor differentiating boys' and girls' motivation for studying CS (Papastergiou, 2008). Even if computer use and early exposure in CS is a key factor influencing children's choices and perception about CS, the *'creative production rather than just use'* of technology in home seems to be another important factor in later success in CS courses (Barron, 2004). More boys than girls had that kind of experience. Interestingly, in most cases – apart from programming courses - girls and boys in the same 'experience level' had no differences in the confidence, interest or motivation. Camp (1997) also asserts that access to computers and training in the concepts of CS should be provided at preschool levels in order to give women the greatest chance to avoid developing insecurities about their abilities.

Computer Games

Unfortunately, the majority of computer games target the boy market. Stereotypical representations and narratives are present in many computer games (E. Hayes, 2008). Moreover, many games created for girls reinforce stereotypes about the kinds of things girls are interested in (E. Hayes, 2005). The boy-dominated characteristics –shooting, violent graphics, loud noises– do not appeal to girls who tend to prefer games that encourage collaboration with other players and involve storylines and character development with female characters (Gürer & Camp, 2002). Some studies, also, suggest that the games addressed to boys usually allow users to make programmatic modifications, which directly develop actual CS or programming skills, encourage online communities where boys interact, exchange knowledge with other players and gain more advanced skills (E. Hayes, 2008). However, research indicates that, intervention programs using games to increase girls' interest in CS can have positive effects (Werner, & Denning, 2009). Taking this into account, games can be a promising way of making CS classes more relevant for boys and girls and integrating them early in actual CS activities (E. Hayes, 2008). Understanding fully the gaming practices of girls and how they learn CS concepts through these practices can held the better design of that programs (Denner, 2011).

Role Models

Research in CS education finds that role models are important factors influencing girls' decisions to pursue CS (Barker & Aspray, 2006; Cozza, 2011; Gürer & Camp, 2001; 2002; Townsend, 2002). Girls and young women need women role models in CS related professions who can inspire interest in CS careers and demonstrate to them that computer scientists have whole and satisfying lives inside and outside the workplace (Gürer & Camp, 2001). One of the most important characteristics of a woman-role model is that girls perceive these role models as 'relatable' and similar to themselves. This perceived similarity to people in the field and a feeling that one will 'fit in' is a crucial factor in pursuing a CS career (Cheryan, Siy, Vichayapai, Drury, & Kim, 2011). There can be many types of role models, family members, teachers, faculty members and colleagues. Girls can interact with

women computer scientists online or in person or learn about their stories through biographies and talks (Townsend, 2002) Female faculty in Computing depts provide the most appropriate form of mentoring for female students (Carrington, Tymms, & Merrell, 2008). The absence of female faculty in CS dept may deter young women from retaining in the field; depts with no female faculty lost female students at high rates relative to men while CS depts with a higher number of female students retained them at most (Cohoon, & Aspray, 2006).

Peers and Work Culture

Peers can have a powerful influence on children's beliefs and behavioral choices (Barker & Aspray, 2006). Peer influence is really strong during school years, as students need to ensure acceptance of peers (Barker & Aspray, 2006). Girls' intention to pursue CS can be *positively affected* by the perceived support of peers and school peers as well as real life examples of girls interested in CS (Denner, 2011; Cozza, 2011). Cozza (2011) also noted that, boys and girls consider peers as guides, especially when they lack adult mentors or role models. However, peer influence can have a *negative effect* on girls' perceptions and interests if their peers are not interested in CS. Girls' interest in CS classes was affected by the perception of the climate of these classes and the possible dominance of boys in the labs (Jenson, De Castell, & Bryson, 2003). In addition, girls in all –or mostly- boys' environments may feel uncomfortable being the only girl in the class. However, research has shown that, often, *single-sex education* can benefit girls since that set classroom discourses free from male domination, diminish gender-related perceptions and tensions and increase girls' confidence and interest in CS (Barker & Aspray, 2006; Gürer and Camp, 2002).

As far as the workplace environment, peers influence seems to be crucial for women's decision to stay in CS. Women cited feelings of isolation, unsupportive work environment, extreme work schedules, unclear rules about advancement and success, sexist humor and macho work culture as major factors in their decision to leave the CS industry (Cohoon, & Aspray, 2006). In addition, the conditions in the computer-game industry remain overtly hostile to female employees (Jenkins & Cassell, 2008). Misa (2010a) also noted that there has been a gender-specific tail-off in the CS workforce, where women leave the workforce in the middle of their career. That mid-career exit was not a result of women's choices, because they actually chose that profession, but women were pushed by *'macho work environments, serious isolation, and extreme job pressures'* (Misa, 2010a, p. 6). However, Abbate (2010) interviewed successful women in CS and provide clues describing CS not merely as a field where women can just survive, but one where *'stereotypes lose their sting'*, and work is both challenging and social while the focus on just negatives, deters many women from considering a career in the field.

Stereotypes

Most recent studies argue that one novel and powerful social factor that may perpetuate the under-representation of women and girls in CS is the stereotypes about the culture of the field (Cheryan et al., 2015; Cheryan, Plaut, Davies, & Steele, 2009). Cheryan et al. (2015) argue that stereotypes about CS act as '*educational gatekeepers'*, preventing females from joining the CS field. They support that students espouse several *stereotypes about the culture* of CS while *girls face negative stereotypes* about their *abilities*. Both sets of stereotypes may be operating simultaneously to make girls feel like they do not belong in the field of CS.

About the culture of the field. Research has found that stereotypes about *computer scientists* lower high-school girls' interest in CS (Master, Cheryan, & Meltzoff, 2014).

Specifically, computer scientists are stereotyped as: (a) *males technology-oriented* with strong interests and high skills in programming and enjoy tinkering with electronics (Cheryan, Meltzoff, & Kim, 2011), and little interest in people (Diekman, Brown, Johnston, & Clark, 2010; Margolis & Fisher, 2003), (b) '*geeky guys'* so *obsessed with technology* that they are *singularly focused on computers and programming*, to the exclusion of other interests (Beyer, 2014), (c) *lacking interpersonal skills and being socially awkward* (Mercier, Barron, & O'connor, 2006). Undergraduate students (Beyer, 2014; Margolis & Fisher, 2003), high school students (Schott & Selwyn, 2000), even middle school students are aware of this stereotype (Mercier et al., 2006), *(d) males* (Mercier et al., 2006), (e) having *masculine interests* -such as liking science fiction and playing video games- that may lead some women to question whether they belong in the field of CS (Cheryan, Meltzoff, et al., 2011), (f) '*intelligent*', '*geniuses'* and '*logical'* (Beyer, 2014) while CS is seen as requiring an inborn '*brilliance'* to be successful in the field (Leslie, Cimpian, Meyer, & Freeland, 2015). The pervasive stereotype of computer scientists as being nerds or geeks further conveys the notion that they are smart (Schott & Selwyn, 2000), (g) males who are '*unattractive', 'pale', 'thin', 'wearing glasses'* (Mercier et al., 2006). Stereotypes of computer scientists' physical appearance may deter women more than men (Margolis & Fisher, 2003).

The work in CS is also seen as isolating and relatively dissociated from communal goals such as helping society and working with others (Diekman, Brown, Johnston, & Clark, 2010). The pervasive image of the solitary male programmer, so wrapped up with CS as to be 'dreaming in code,' is not universally attractive or inviting. In fact, in today's society, CS stereotypes are perceived as incompatible with qualities that are valued in women, such as being feminine, people-oriented, and modest about one's abilities (Leslie et al., 2015). As a result, when these stereotypes are prominent, females fell less belonging in the field (Cheryan et al., 2009; Master et al., 2014). The less that students feel a sense of belonging in a field, the less likely they are to pursue that field (Master et al., 2014).

About girls' cognitive abilities. Stereotypes about girls' math abilities 'girls are not good at math' are negative (Cheryan et al., 2015). This stereotype may affect female students' test performance as well as their self-confidence deterring them from pursuing a career in science. However, difference in average math performance between girls and boys no longer exists in the general school population (Hyde, Lindberg, Linn, Ellis, & Williams, 2008). Actually, girls and boys tend to have different cognitive strengths and weaknesses (Hill et al., 2010). Boys seem to perform better on tasks using spatial orientation and visualization and on certain quantitative tasks that rely on those skills. However, research shows that individuals' spatial skills consistently improve dramatically in a short time with a simple training course (Hill et al., 2010). Girls outperform boys on tests relying on verbal skills, writing, as well as in tests involving memory and perceptual speed (Hill et al., 2010).

Ceci et al. (2009) reviewed more than 400 articles exploring the causes of women's under-representation in STEM fields (including CS), referring to biological - as well as to social - factors, and concluded that the research on sex differences in brain structure and hormones is inconclusive. Ceci et al. (2009) suggest that males and females use different parts of their brains to complete the same tasks. They conclude that '*men and women achieve the same general cognitive capability using somewhat different brain architectures'* (Ceci et al., 2009, p. 236). Overall, studies of brain structure and function, hormonal modulation, human cognitive development, and human evolution have not found any significant biological difference in men's and women's ability to perform in science and mathematics

(Ceci & Williams, 2007). The absence of negative stereotypes about girls' abilities and the thought they can make it can increase their confidence and interest in science fields (Hill et al. 2010).

Communication of stereotypes

The stereotypes about the culture in the field of CS are communicated, perpetuated, and transformed through *media*, *people* in the field, and the *school environment*. These stereotypes could be changed by trying to diversify the images of CS.

Media. Several studies have investigated the way in which CS and technology are portrayed in a variety of media texts (Misa, 2010a) and found prevalent gender stereotypes about people in CS. Tympas, Konsta, Lekkas, and Karas (2010) examined the construction of gender and CS through advertising images. They examined 1500 CS advertisements and they pointed out that in these advertisements, there is no shortage of women; but there is a very strong gender stereotypical pattern in how women are shown with computers and what they are shown doing with them: (a) women do the Computing work; they are working at the *keyboard-input* and the *printer-output* parts of computers. They are– fully engaged with the standardized, routine, digital side of CS, the office working of CS, that awaits passive computation, (b) men are not working with the computer; they are in control of the CS work. In this case the image on the computer screen was changed from a female eye or face to a financial or engineering chart.

In fact, men are placed at what has always been the expensive side, that of the analog Computing that is required to actively produce the Computing analysis. This follows a historically deep pattern of imaging men as 'analysts' and women as 'computors'. This pattern is also broken only when the sitting male was a student of a standing female teacher. In this case women were depicted as providing education to boys and only rarely to adult men. However, advertisements of vocational computer schools show women to teach students to be proficient at routine data-entry jobs using generic computers and men to teach computer programming often with an interesting variety of computers.

Advertising, and other media have played a large role in establishing, spreading, and perpetuating images of men as the decision makers, experts, and innovators in CS, and women as 'computer phobes' or users who merely execute the instructions of men (Tympas et al., 2010). Media still portrays gender stereotypes and of computer professionals as geeks without social skills doing boring and solitary jobs (Ashcraft et al., 2012; Cheryan et al., 2015), while women are represented as holding little power or understanding of technology and being passive individuals (Cozza, 2011). The power of media to alter the perceptions concerning gender stereotypes in CS can be confirmed by the progress that have been made in portrayals of other - once male-dominated - fields. Once established, the stereotypes became self-fulfilling prophecies by rendering invisible the people who did not fit the stereotype, such as female computer users and the large number of computer- phobic males.

People in the field. People in the CS field (CS professionals, school teachers and students) embody certain characteristics, habits, and belief systems that can signal what is normative and valued in the field. Cheryan, Siy, et al. (2011) experimented how people embodying CS stereotypes can influence women's interest to CS. Results showed that women who interacted with the stereotypical actors were significantly less interested in majoring in CS than those women who interacted with the non-stereotypical actors, while this effect endured for 2 weeks after the interaction and was equally strong regardless of whether the actor was male or female (Cheryan et al., 2013). When the people in CS depict

themselves in a manner consistent with the stereotypes, it can convey to other students that one must fit the stereotypes to be successful in this field.

School Environment. School environment that fit CS stereotypes and are compatible with characteristics, interests, and values associated with males are likely to deter females from CS (Cheryan et al., 2015). Cheryan et al. (2009) studied how objects in a CS class can influence undergraduates' interests to CS. Women in the room that did not contain the stereotypical objects (Star Trek poster, comics, videogame boxes, soda cans, electronics, software, computer parts and technical books and magazines) expressed significantly more interest in majoring in CS than those in the room that did fit the stereotypes (nature poster, neutral books, water bottles, healthy snacks, general interests books and magazines). For men, the environment did not affect their interest in CS. Similar results came up when undergraduates were asked to join an online educational environment as well as an introductory CS course (Cheryan, Meltzoff, et al., 2011;). In both cases females reported a lower sense of *belonging* in the stereotypical environment. In contrast, men reported an equal, and sometimes greater, sense of belonging in the stereotypical environment than the non-stereotypical one. Studies with high-school students had also similar results.

Diversifying the images of CS. If the popular image of the CS field is a significant factor in widening the gender gap, then diversifying the popular images may be a crucial strategy. While, it may be difficult to erase the already established stereotypes, multiple images and possibly contradicted stereotypes can coexist (Misa, 2010a) as for example, computer scientists as 'evil hackers', 'whiz-kid nerds', and the twenty-something entrepreneur-millionaires (C. C. Hayes, 2010b). Fortunately, people can hold multiple, possibly conflicting images of a single profession, simultaneously. Actually, in some cases, stereotypes of computer scientists can be a source of pride, identification, and belonging for some in the field. It is widely acknowledged, that there is a large number of students who may be drawn to these fields *because* of these stereotypes (Cheryan et al., 2015).

By diversifying the image of the CS field, students who are interested will not think that they must fit a specific mold to be successful. Diversifying the image of CS may not only attract more women in the field, but also make a more comfortable environment for men because some of them seemed to prefer the non-stereotypical environment over the stereotypical one (Cheryan et al., 2015). What is more, some men also highly value opportunities to work with and help others (Diekman et al., 2010). Attracting more men that do not fit to the 'computer scientist stereotype' is a way to stretch stereotypes and diversify the field.

Cheryan et al. (2015) state that females to date are exposed to an image of CS that is not realistic and does no depict CS in full extend. This image presents CS cultures as fitting a narrow profile. A broader image that shows many different types of people and working environments in CS represents a more realistic portrayal. Cheryan et al. (2015, p.6) believe that '*once we start the process of welcoming more women and girls (into CS), the process of culture change will likely build on itself and contribute to further improving the actual and perceived culture of these fields for women*'. They believe that we have to encourage diversity of backgrounds and ideas. Here, it is worth noting that there are at least two successful real-world examples of CS depts at -Carnegie Mellon and Harvey Mudd - that increased the proportion of women majoring in CS by changing stereotypes of CS in addition to structural changes. These changes involved: use of diverse role models, keeping high admission standards, but adding an emphasis on leadership qualities and dropping the requirements for prior programming experience as well as exposure of students to a variety

of CS applications and reforming some introductory CS courses by adding a few 'catch-up' courses to the curriculum to level out background differences so that CS not seen as a '*geeky, know-it-alls*' field (Cheryan et al., 2015; Margolis & Fisher, 2003). None of these changes were gender specific, but after implementing them the dept increased the percentage of women students from less than 10% to more than 30%, and greatly changed the culture.

Girls' Perceptions, Interest, Confidence, Attitude and Career Choices in CS

Girls' perceptions, interests, confidence, attitudes and career choices are shaped by the larger society and local environments in which they learn about CS and technology, and this significantly influences what appears to be their *'choices'* to pursue CS studies careers. The aforementioned factors preclude women from being able to make a truly 'free' choice (Ceci et al., 2009). Girls do not come by these perceptions, interests, and career decisions innately or develop these beliefs and perceptions in a vacuum. Recent research indicate that girls and boys perform in CS at comparable levels, when they realize similar training and experience, showing no innate reason boys would be better at technology (Voyles, Haller, & Fossum, 2007). In a study conducted in Greece, Ilias and Kordaki (2006) studied 1957 degrees earned by Computer Engineers and revealed that, in terms of achievement, there were no significant differences between male and female graduate computer engineers.

Perceptions of CS. Girls, even boys, either have very limited knowledge or inaccurate perceptions about what CS careers involve and what CS professionals do (Carter, 2006). The stereotypes about the culture of the field are still predominating in girls and boys. They perceive CS as a field dominated by genius male computer hackers who spend a great deal of time alone on the computer, working or playing games, have an inadequate social life, enjoy hobbies involving science fiction and wearing glasses and lab coats. They also perceive CS careers as having little or no interaction with others and that CS professionals are obsessed with computers (Anderson et al., 2008; Papastergiou, 2008).

Interest in CS. One of the basic motivators for girls' and boys' decisions to pursue CS studies is their interest in CS as a subject (Tsagala & Kordaki, 2007; 2008). Nevertheless, girls and boys are not equally interested; even interest varies among girls already interested in science. Despite the fact that a considerable percentage of girls seemed to express interest in CS and STEM fields it doesn't necessarily translate into choosing one of these fields for a career. As one of the contributing factors to the interest of girls in CS is the extent to which they see the value and their relevance in CS (Denner, 2011) including a belief that one can succeed in that occupation (Hill et al., 2010). Compared to girls who were not interested in STEM fields, girls interested in STEM fields were higher achievers, better students, had stronger support systems, had higher confidence in their academic abilities, have higher academic goals and aspirations for themselves, had been exposed early to STEM fields, had more career support from parents, family members, teachers, and friends, and have had greater exposure to STEM fields. Changing girls' limited knowledge and inaccurate perceptions of CS is vital for increasing their interest.

Confidence. Gürer and Camp (2002) argue that self-confidence is influenced and formed by four different components: performance and accomplishments, observing and learning from others, freedom from anxiety concerning work and conduct in a particular field, as well as persuasion and support from others. Boys have expressed higher levels of confidence with computers (Barker & Aspray, 2006) while most male students seem to believe that they are better than their female classmates (Sieverding & Koch, 2009). Contrarily, girls mostly express lower levels of confidence, rating their ability lower than

boys, even when actual achievement levels are similar (Ashcraft et al., 2012). Even female CS majors found that they had less confidence than did male non-majors (Beyer, 2014).

Experience with computers seems to be a critical factor influencing girls' confidence in CS (Guzdial et al., 2012). However, research argues that girls are entering introductory CS courses at universities with less experience than boys (Cohoon & Aspray, 2006). The prior knowledge that CS programs assume for their students, that girls may have not obtained, can be considered as lack of ability or interest, discouraging females (Gürer & Camp, 2002). However, students with equal levels of programming experience, perform at the same level (Bruckman et al., 2009). Despite that fact, girls often evaluate their own abilities lower than do boys with same levels of experience (Guzdial et al., 2012).

Encouragement seems to be another important factor affecting females' self-confidence and a decisive factor for them to choose a CS major or career (Guzdial et al., 2012). The importance of encouragement from parents, teachers, and other influencers is a very consistent finding across studies and it is promising for the design of interventions aimed at increasing females' participation in CS (Ashcraft et al., 2012).

Attitudes. Gürer and Camp (2002) argue that positive attitudes towards CS can greatly influence the success of a female-student and also whether she continues in CS. Students in elementary school seem to have positive attitudes toward computers, but it is later that gender differences in attitudes become pronounced. Nevertheless, the majority of studies, presented in the literature review of Gürer and Camp (2002), have shown that boys and girls who spend more time with computers have a more positive view of CS. However, girls' and boys' gender-stereotyped views on computers were not related to their computer attitudes (Meelissen & Drent, 2008). The intensity of *computer use and self-efficacy* beliefs in the computer use has also a positive effect on students' computer attitude.

The use of computer outside school hours has a positive effect on the computer attitude of boys but not on that of girls. Compared to girls, boys report considerably more frequent computer use outside school hours and judge their *self-efficacy* in computer use more positively. Boys with more confidence in their abilities had more positive attitudes toward computers. Gender differences in computer attitude seemed to be related to gender differences in students' perceived *encouragement by parents* about computers and CS. The *pedagogical approach* followed in school seemed to have no particular influence on boys' computer attitude, while girls seemed as influenced by a student-oriented pedagogical approach.

Women seemed to have lower but not negative computer attitudes than their male counterparts (Sáinz and López-Sáez, 2010). The fact that boys and girls exhibit different computer attitudes could entail that they differ in their motivations and interests in considering the utility of computers, as well as the role that computers play in their lives. It is also claimed that girls hold more positive attitudes about CS professional's social skills while boys hold more positive attitudes about CS professional's intellectual aptitudes than their female counterparts (Sáinz and López-Sáez, 2010). Overall, many women want to use computers as to make society better, and to 'do good' in the world, use CS for medical purposes, communication, and solving community problems over CS for the sake of CS, developing better computers, or programming for games, whereas boys prefer to show CS as a tool to help them be in control of their own lives (Margolis, & Fisher, 2003). Finally, women's negative computer attitudes have been associated with their scarce representation in technology and CS studies (Anderson et al., 2008). However, it is plausible that the influence of the above-mentioned factors on computer attitude is reciprocal: the more

positive the computer attitude of a student, the more interested he / she will be in using computers and trying (new) computer applications, resulting in an even more positive attitude toward computers. Because girls show lower intensity and lower self-efficacy in computer use than boys, these reciprocal relations may increase gender differences in computer attitudes in the long term. Thus, gender differences in computer attitude may increase with age.

Career choices. Boys and girls pursue a CS major or career for several reasons. Sometimes they are different but in some cases there are similarities. The most important reason boys chose a CS major was interest in computer games while, the most important reason girls chose a CS major was their desire to use computers in another field (Carter, 2006). Interestingly, the most important reason, for both girls and boys, for not choosing a CS major was the lack of desire to sit in front of a computer all day. Guzdial et al., (2012) found that the 3 top reasons for choosing a CS major are the same for both males and females, namely: interest in computers, rich opportunities and financial gains. Concerning the reasons for choosing a CS career, both girls and boys placed a high value on *communal* career characteristics, like *'having the power to do good', 'doing work that makes a difference',* higher than having a *prestigious and secure* career or a *creative and innovative* career (Guzdial et al., 2012).

Basic motivating factors for females were an interest in CS as a subject, job security, *interest in helping people or society* and good living examples, such as charismatic teachers, successful family members in CS and mentors projected by the media (Tsagala & Kordaki, 2007). Basic motivators for males included an interest in CS as a subject '*interest in computer games*', *'interest in solving problems with Computing,' and 'liking to program computers'*, rich employment opportunities, financial gain and experience with computers (Tsagala & Kordaki, 2007).

More males than females imagine their future after studying CS to be in a profitable career in the Computing Industry, while a considerable percentage of females expressed an interest in a CS-based career to attain job security, mainly in the public sector (Tsagala & Kordaki, 2008). School seemed to positively affect the decisions of more females than males in choosing studies in CS. Friends can also affect students' choices. Friends seemed also explicitly to affect, males' more than females' choices (Tsagala & Kordaki, 2007). Furthermore, the most influential factors -among 91 factors- to pursue a CS degree, were: social encouragement, self-perception, academic exposure to computers and CS, and CS career perception (Wang, Hong, Ravitz, and Ivory, 2015) .

2. IDENTIFYING BARRIERS FOR FEMALE PARTICIPATION IN CS: A MODEL

Based on all the above a model identifying essential barriers for female participation in CS is presented in Figure 1 and is briefly summarized below.

Education: Formal education can be a factor contributing to the low representation of females in CS negatively affecting, in some cases, their interest in the field. Irrelevant curriculum with no connection to real life, teaching practices that discourage collaboration and teachers with (un)conscious bias about girls' abilities and the culture of the field are basic aspects of school education that may deter girls, from pursuing CS. The unwelcome environment in a CS class, -dominated by boys- also reinforces the loss of girls' interest.

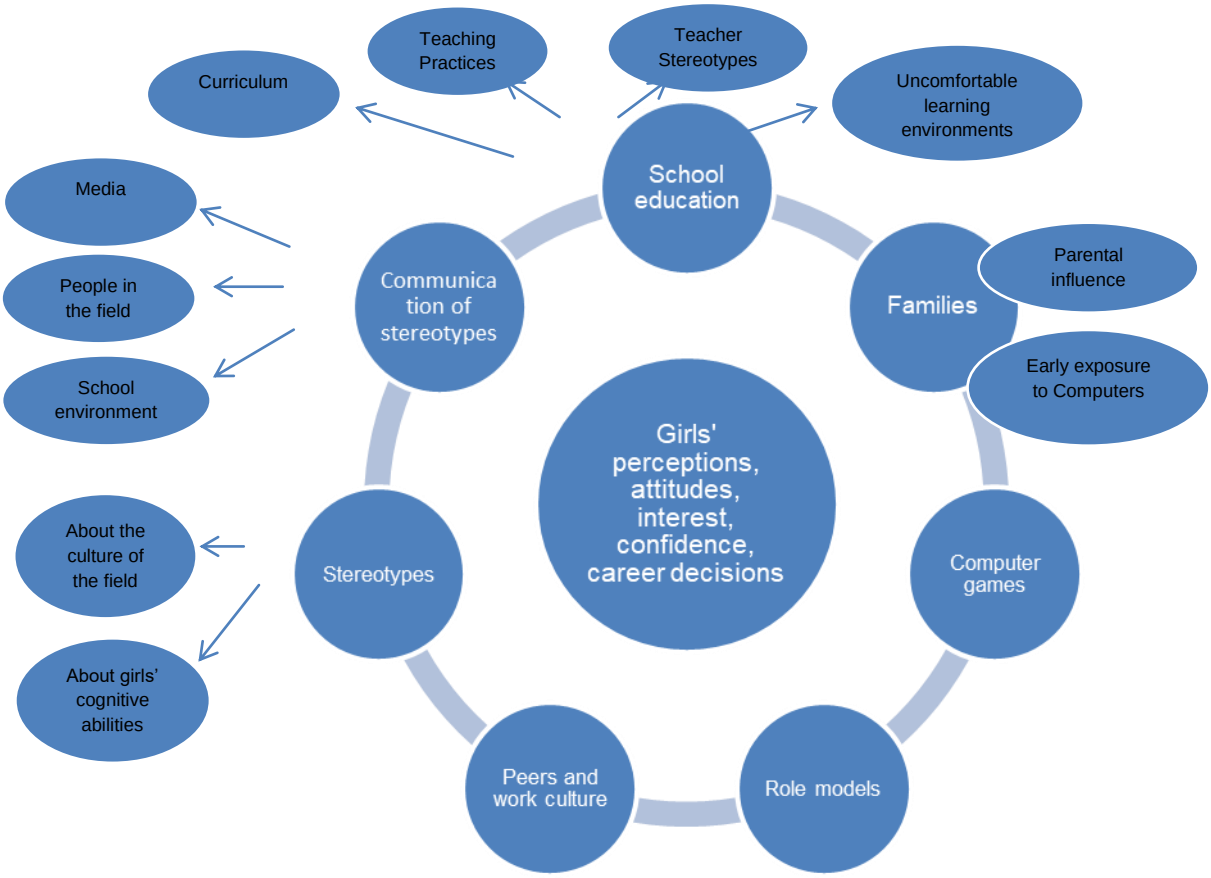

Figure 1. *Key factors that influence women's participation in Computer Science*

Families: families can play a significant role in girls' and boys' decision about pursuing CS. The parental - or familiar - expertise or career in CS can play a role, but the parental support and encouragement, the early exposure to computers and CS at home and the kind of computer experience have a decidedly powerful impact on girls' choices to persist.

Computer games: These, which are often children's first introduction to CS activities, seemed to deter girls from computers, because these are designed mainly for male audiences with stereotypical representation. The opportunity for programmatic modification and other kinds of computational interactions may also foster mainly boys' interest in CS. Nevertheless, the rise of appropriate gaming, influencing girls' participation in CS is worth of further research.

Role models: It seems that the existence of females in the CS field can inspire women, improve their self-efficacy, and reverse negative stereotypes as they can realize - through real life examples- that they can pursue, persist, 'fit in' and succeed in CS.

Peers and work culture: Peers, at school and at work, influence females' decisions and choices. Peer influences can have a positive effect on girls' plans to pursue CS or women's decision to persist. Peers can also negatively affect girls' choices and decisions if their peers are not interested in CS. A possible solution to that may be single-sex environments that can boost the positive aspects and mitigate some of the negative aspects of peer influences.

Stereotypes: Even if there is not clear evidence that one of the two sexes is smarter than the other, the belief that girls' cognitive abilities lag behind boys' prevails. That stereotype affect girls' performance and self-efficacy deterring them from choosing science and CS. What is supposed to be a 'free' choice is unconsciously guided by that stereotype as well. In the absence of that stereotype girl gain on confidence and perform equally well as boys.

Communication of stereotypes: The stereotypes about the culture of CS –people in the field, work, and values– and the abilities of girls are communicated through media, people in the field, and the school environment. Media and popular culture -persisting on a small percentage of CS jobs- present CS as masculine and geeky. The different images impact our ideas and our ideals, including whom we see as qualified for CS work when we see certain kinds of people doing certain jobs. But media also have the power to alter the stereotypes if someone see the progress has be done in portrayals of other occupations. Moreover, people in the field with their characteristics, their habits, and their beliefs, as well as a school environment that reflects all the stereotypes can discourage women from CS. Diversifying the popular images of the CS field seems to be a promising strategy. In that way we can attract women, as well as men, in the field who are interested and have not to believe that they must not adapt to a certain matrix to be successful. In addition to diversifying the field, men free of stereotypes in CS can favor a progressive mitigation of the negative stereotypes.

CONCLUSION

Concluding on all the above, it seems that, girls' perceptions and interest in CS, confidence and perceived ability, attitudes towards CS as well as study and career choices are influenced and shaped by the larger environment they learn about CS, especially by the factors described above, namely: school education, family, computer games, role models, peer and work culture, stereotypes and communication of stereotypes by the Media, people in the field and school context. Girls' perceive CS as mainly masculine field, because of the limited knowledge or inaccurate perception they have about the field, mainly shaped by the images projected by the media, deter women from the field. Enriching and diversifying the images of CS, can foster girls' interest in the field, as this interest can be shaped by the extent to which they see the value and relevance in CS as well as by their belief that they can succeed in that. However, girls express less confidence and rate their abilities lower than boys even when actual achievement levels are equal.

Experience can play an important role reinforcing their self-confidence, while encouragement by family, school and peers can mitigate differences in levels of self-confidence and perceived ability. Moreover, positive attitudes toward CS can greatly influence girls pursue of a career in the field. These attitudes are shaped by the barriers discussed above and mainly, experience, self-efficacy, encouragement, stereotypes and preferences. Finally, females' CS career and study choices are shaped by the majority of factors discussed so far, but it seems that key influential factors are: social encouragement, self-perception, experiences with and exposure to CS activities, and career perceptions.

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PROMOTING INQUIRY-BASED SCIENCE EDUCATION THROUGH TWO CONTINUOUS PROFESSIONAL DEVELOPMENT PROGRAMS

Gabriel Gorghiu[1], Laura Monica Gorghiu[2], Ana Maria Aurelia Petrescu[3], Luminița Mihaela Drăghicescu[4]

[1,3,4] Teacher Training Department, Valahia University of Târgoviște
[2] Faculty of Sciences and Arts, Valahia University of Târgoviște
ROMANIA

E-mail: [1]ggorghiu@gmail.com, [2]lgorghiu@gmail.com, [3]anapetrescu2007@yahoo.com, [4]lumidraghicescu@yahoo.com

ABSTRACT

In the context of permanent and complex changes recorded at the level of the global social system, the education system - through its teachers as its other actors - has to make an effort to continuously adapt to the various problems that appear generally and specifically in educational activities. As such, the teachers' concerns related to their own professional development, through a variate typology of continuous professional development programs, becomes a constant of the contemporary educational environment. Those training programs are designed to equip the teacher with new skills, mainly related to: understanding and developing the psycho-social knowledge of the students, solving the problematic situations in which some of them are involved, training / designing efficient student-centered demarches by using inquiry methodology, designing problem solving demarches, introducing responsible research and innovation, exercising the students' metacognitive capacities etc. Those are the coordinates on which a number of European programs were built, emphasizing also on developing activities or even programs for teachers continuous training. The paper intends to present some issues concerning two continuous professional development programs, proposed in two European projects, in which Valahia University of Târgovişte was partner. Both programs (entitled "PROFILES - Education through Science" and "Applications of Nanomaterials") proposed training models that considered inquiry-based science education as one of the best methods for the teaching and learning of Science nowadays.

Keywords: *Science education, Inquiry-based Science Education, Responsible Research and Innovation, Dissemination, Networking, PROFILES Project, IRRESISTIBLE Project*;

INTRODUCTION

In the last decade, a number of important changes have been registered in the Romanian primary and secondary education, being focused essentially on ensuring an adequate endowment of the educational units, providing the necessary resources for the teaching process, as well as the continuous training of the teaching staff. At the same time, specific actions related to quality assurance in education, lifelong learning, and professionalization of teaching career have also become a priority. In this sense, at national level, following the trends recorded at European level, a multitude of projects have been proposed and implemented which aimed at the continuous professional training of teaching staff, promoting theoretical and pedagogical knowledge, in order to acquire transferable skills and rethink the teaching strategies, in a great measure.

Some of those kind of projects - implemented by Valahia University Targoviste - had particular objectives dedicated to the continuous professional development of Science teachers - in essence, Chemistry, Physics and Biology teachers -, in the format of presenting and implementing of new teaching and learning methods and techniques in the formal curriculum, but also in non-formal activities. In the context of the knowledge-based society, such integrated approaches related to teaching Science represent a necessity, due to the fact that current top scientific areas are practically interdisciplinary, located at the border between Science and Technology, being successfully enriched with particular issues from Information and Communications Technology area.

1. THE PROFILES PROJECT

The FP7 Project entitled: "*PROFILES - Professional Reflection-Oriented Focus on Inquiry-based Learning and Education through Science*" (2010-2015) - international web page: http://www.profiles-project.eu/, national webpage: http://profiles.ssai.valahia.ro/ - promoted the students' instruction by exploiting the features of IBSE method (*inquiry-based science education*), having the aim to improve the students' scientific literacy. In fact, the project partnership, initially formed by 22 institutions from 20 participating countries, proposed a specific approach for teaching Science, based on students' socio-scientific motivation.

The project introduced to science teachers teaching materials based on IBSE, offering so a series of reflection issues that aim to develop creative skills, but also to solve problems in socio-scientific environments, stimulating the intrinsic motivation of students, with the view to learn science, develop the students' skills specific to scientific research, and those ones related to taking optimal decisions. Thus, the elements of success were configured both by determining the self-efficacy of the teachers who embraced the PROFILES approach, as well as the students' attitude towards Science and Science Education (Bolte et al., 2014).

The dissemination of the PROFILES project results, the feed-backs offered by the educational actors involved in the project, the related research perspectives opened by the project, but also the evaluation of the whole project, results and processes represent - in fact - key targets for the success of this important project, in the long term. Its ultimate goal is dedicated to science education, making it much more important to students, more strongly linked to current scientific and technological development, much more associated with general education, and in particular, more oriented on promoting and strengthening IBSE methodology in modern education.

Basically, the PROFILES project aimed to ensure the enlargement of students' scientific education, by offering new opportunities for teacher professional development. This objective became tangible through (Bolte et al., 2012):

• providing a training program for teachers, in which IBSE methodology were introduced and presented, accompanied by the development of new teaching modules, with the perspective to be implemented in classrooms;

• establishing mutual cooperation and networking between the actors and the involved educational institutions;

• developing the concept of professionalization of the teaching career and strengthening the teachers' self-efficacy;

• evaluating the results of the classroom implementation process and highlighting the students' feedback;

• disseminating the ideas, materials and results of the PROFILES project, as well as its potential to create teachers' networks who interact with other regional, national and even international networks.

Those interactive networks influenced the promotion of science teaching using IBSE, and thus, allowed and increased self-efficacy in innovative student-centered teaching. In fact, the teachers' self-efficacy represents what motivated the PROFILES teachers to evaluate their own professional development, as well as to advise other colleagues to analyze and consider teaching activities oriented on IBSE.

In Romania, the teachers' continuous professional development program entitled: "*PROFILES - Education through Science*" had the objective to improve the activity of teachers, trying to contribute to the modernization and improvement of the quality of primary and secondary education, through a training offer dedicated to science teachers.

The program had as objectives the following issues (Petrescu et al., 2014):

• training and developing teachers' didactic competences by promoting the exploitation of IBSE method in formal and non-formal activities;

• considering integrated approaches of topics related to the scientific fields;

• capitalizing the students' potential and individual experience;

• designing educational demarches, in accordance with the principles of the constructivist paradigm;

At the same time, the teachers who participated in the continuous professional development program were expected to train and develop solid scientific skills for future graduates, providing them with opportunities for:

• building and improving their own scientific knowledge and understanding;

• understanding various fields of application of the contents related to Science;

• conducting a series of investigations using various materials and appropriately capitalizing their own experience;

• solving problems or problem situations, encountered mainly in the real life;

• training and practicing the ability of "learning to learn".

The continuous professional development program "*PROFILES - Education through Science*" totalized 60 hours (18 hours - courses, 36 hours - practical applications and 6 hours - evaluation) being accredited at national level, and granted with 15 transferable credits.

2. THE IRRESISTIBLE PROJECT

The FP7 project entitled: "*IRRESISTIBLE - Including Responsible Research and innovation in cutting Edge Science and Inquiry-based Science education to improve Teacher's Ability of Bridging Learning Environments*" (2013-2016) - international web page: http://www.irresistible-project.eu, is a European Commission funded project, whereby 14 partners from 10 countries, including academic institutions, science centers and museums, collaborated through a Science-in-Society activity, having the goal to bridge formal and informal/non-formal education by developing Training Modules that introduced actual and cutting-edge scientific topics through inquiry-based science education (IBSE), in order to raise the awareness of students and public in *Responsible Research and Innovation* (RRI).

RRI implies that societal actors (researchers, citizens, policy makers, business, third sector organizations etc.) work together during the whole research and innovation process in order to better align both the process and its outcomes with the values, needs and expectations of society (http://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation)

In Romania, the teachers' continuous professional development program was developed around a didactic Module entitled: "*Applications of Nanomaterials*", that proposed a series of activities which tried to address RRI issues via related societal and environmental implications and ethical issues (Petrescu, Gorghiu, & Lupu, 2015). The didactic Units contain guidelines for teachers and additional materials related to the proposed topics, according to the current typical recommendations and formats. Each Unit is proposed to be taught in 4 hours, approximately. This means that the entire Module can be covered in 40 hours.

The Units and the related activities are addressed to primary school level (some of them), and lower and upper secondary school students, proposing the following topics (Gorghiu, & Petrescu, 2016):

(1) *Natural Nanomaterials* - the experiments proposed in this unit direct students to acknowledge the nanoparticles in natural nanomaterials. The activities are planned to make students think about maintaining people's health and responsible use of food-related nanotechnology.

(2) *Lotus Effect* - the students approach the effect from a nanoscience innovation perspective. The purpose is to form a responsible attitude towards using nanomaterials in various industries. The experimental activities highlight the structural and functional properties of super-hydrophobic nanomaterials.

(3) *Nanoscience - A Facilitator Background for a United Group* - the students are introduced to the concept of nano-metals and learn green methods for obtaining colloidal nanoparticles (Au and Ag) from plant extracts, with a responsible attitude concerning the use of nanoparticles in practice.

(4) *Magnetic Liquids Technology - Ferrofluids* - ferrofluids are a special class of nanomaterials that combines the usual properties of a liquid and a magnet. This unit involves students to study the properties of such unusual materials before proceeding to search and design several applications. The unit claims some previous knowledge related to magnets.

(5) *Applications of nanomaterials in Medicine* - the activities designed in this unit aim to the formation of a conscious and responsible attitude towards the importance of using the properties of nanomaterials - either natural or synthesized - in the medical laboratory.

(6) *Applications of nanomaterials in Solar Energy Systems* - the envisaged activities target to enrich the students' knowledge concerning the renewable energy, but also to specific RRI issues related to solar energy technologies.

(7) *Industrial applications of nanomaterials* - the activities proposed to be carried out by the students lead to know general notions about nanomaterials and their applications in industry.

(8) *Applications of nanomaterials in Museum Research* - the envisaged unit activities - strengthening the whole knowledge gained till this moment - propose to carry out also a series of experimental / practical work specific to museums.

(9) *The World of Nanomaterials* and (10) *Biomimicry / Nanobiomimicry* - those two multimedia units are designed in order to fundament the concepts and notions learnt by the students during the entire Module. In this respect, a movie (in the first activity) and many images (in the last one) are used to explain - in details - various applications of nanomaterials and introduce also the concept of biomimicry.

The big challenge was strictly related to the national curriculum for Science (Physics, Chemistry, Biology), where no reference concerning RRI had been included. That challenge led the IRRESISTIBLE Community of Learners to analyze the introduction and adaptation of the RRI specificity in the proposed activities. That was the reason for approaching the RRI dimensions in conjunction with the curricular science education activities.

3. DISSEMINATION ISSUES

The dissemination of results and good practices recorded in both projects, was made taking into account the needs of the educational actors who acted in the Science area. As normal, the main dissemination channels were represented by: national web page, leaflets, posters, newsletters, participation in workshops, seminars, conferences, but also in several important events.

As example, the Community of Learners built up in the frame of IRRESISTIBLE project organized a series of workshops and exhibitions, as a point of meeting and discussion between academic staff, teachers, students and even general public. In this respect, the workshops thematic were anchored around the topics of nanomaterials and RRI (Măntescu, Gorghiu, & Gorghiu, 2017):

- "*Nanosciences and responsible research*" - at History Museum of Dambovita County;
- "*Multimedia Instruments for Promoting the Concept of Responsible Research and Innovation in Museum Practices*" - at Prahova Natural Science Museum;
- "*Responsible Research and Innovation in the Area of Nanotechnology*" - at "Ion Heliade Rădulescu" Dambovita County Library;
- "*Nanobiomimicry and Responsible Research*" - at National College "Constantin Cantacuzino" Targoviste;
- "*Applications of nanomaterials in industry*" - at Valahia University Targoviste;
- "*Applications of nanomaterials in renewable energy technologies*" - at Multidisciplinary Scientific & Technological Research Institute of Valahia University Targoviste;
- "*History of nanomaterials. Applications of nanomaterials in practice*" - at "Ion Heliade Rădulescu" Dambovita County Library;

- "*Applications of nanomaterials in museum research*" - at Prahova Natural Science Museum;
- "*World of Tomorrow and the Future Energy*" - at Technical College "Elie Radu" Ploiesti.

More, the IRRESISTIBLE students - together with their teachers - designed several exhibitions, some of them being opened in two important museums from Dambovita and Prahova Counties (Petrescu et al., 2016):

- *Local Exhibitions* (in schools) - starting with March 2015 (schools involved in IRRESISTIBLE Project);
- *Exhibition 1*: "*The World of Nanomaterials and Solar Energy*" - August - November 2015 - at History Museum of Dambovita County;
- *Exhibition 2*: "*The Sun & The <Nano> World*" - March - July 2016 - at Prahova Natural Science Museum.

A valuable presence of the IRRESISTIBLE Community of Learners was recorded with the occasion of *European Researchers' Nights* public events, such large meetings being dedicated to gather researchers closer to the general public, expressing the diversity of research and highlighting the impact of research on our daily lives (Gorghiu et al., 2017):

- in September 2015 - at History Museum of Dambovita County;
- in September 2016 - at History Museum of Dambovita County / Museum of the Romanian Police Targoviste;
- in September 2016 - special event in Kiel, Germany.

On the other hand, the concept of *Networking* was introduced, being referred to the network paradigm and implemented step by step, in the format of a communication system based on reciprocity. In this respect, all the involved educational actors were able to exchange opinions and information, but also cooperate on various issues of interest.

As example, in the PROFILES project, the establishing of specific networks was fulfilled, with the aim to maximize the dissemination efforts and make the teachers more aware of the project objectives, activities and results (Rauch, & Dulle, 2012):

• cooperation networks between Science teachers from one school - as *teachers' network*, for disseminating the PROFILES modules for the school and school community educational actors;

• cooperation networks between Science teachers from 2-3 schools - as *school network*, for disseminating the PROFILES modules for the educational actors from the particular county / region;

• cooperation networks between Science teachers from local / regional structures - as *local / regional networks*, for disseminating information for educational actors at regional level, and subsequently, national one.

Creating such kind of networks was not a simple process, but it had a constant activity. During the project lifetime, the PROFILES networks played crucial roles for sharing the teachers' experience into the educational communities and valorized the best practices, spreading them at local, regional and national levels (Gorghiu, & Gorghiu, 2014). But it is clear that special attention had to be paid to the sustainability of those networks, so efforts were constantly done for keeping them alive, in order to maintain their dynamics, flexibility and democratic actions.

CONCLUSION

It is obvious that, in the frame of various European projects, Science teachers had the opportunity to participate in a multitude of continuous professional development programs, which offered proper environments for improving the quality of science education by developing their pedagogic knowledge, in strong correlation with the actual European requirements. At the same time, such programs have all the advantages, being able to promote socio-scientific learning environments based on the exploitation of IBSE methodology, with direct impact on the development of students' creative and scientific thinking. In addition, the process of dissemination - through traditional and modern channels, and its possibilities of maximization using the networking power - offer the possibility to extend the number of targeted educational actors, offering various ways for collaboration, both in real and virtual spaces.

Inside the networks, the teacher has to be ready to communicate, cooperate and share experiences and best practices. But for defining an optimal picture, the teacher has not to forget to work as a reflective teacher, to be responsible, to be aware of the importance of his/her mission, ready to learn permanently, respect the child and the teaching profession, and constantly invest in his/her own professional development (Stăncescu et al., 2019).

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PROFESSIONAL TRAINING IN THE NATIONAL EDUCATIONAL SYSTEM IN THE CONTEXT OF ROMANIA'S ACCESSION TO THE EUROPEAN UNION

Anamaria BURADA
Ph.D. Candidate, Doctoral School of Humanitas Sciences,
"Ovidius" University of Constanta,
ROMANIA

E-mail: anamaria_burada@yahoo.com

ABSTRACT

This article aims to present the way in which Romania harmonizes the European legislative framework presented in previous chapters in the field of professional education and training, the proposed educational strategies, to present the concepts of adult education and professional training of teachers and the procedure for accrediting a lifelong training program. The usefulness of this material lies in the fact that it gathers together this information in a unitary and scientific framework, as it is not only a resource but also a benchmark for further research. Global educational policies are based on lifelong learning, on adult education, on the reconstruction of the vision of relevant, motivating, active and creative learning, on the impact on life and society, as learning is based on authentic experiences focused on results. Education and professional training contribute to the improvement of the capacity to understand values such as solidarity, equal opportunities and social participation.

Keywords: *adult education; European Union; training;*

INTRODUCTION

In the last years, on the territory of Romania there have been a series of transformation processes both at the level of the society and at the economic level, noticed through the transition to post industrialism and a knowledge-based society, these components representing challenges for the professional education and training. All these represent the expression of the desire for evolution, natural for any emerging society, but equally the expression of the permanent efforts made for alignment with the European framework. Following these efforts, a dynamic educational system will respond to the demands of the society, which is becoming increasingly dynamic.

The reunion of these specific aspects follows the natural direction of the society but also of the increasing volume of information that can be accessed. The elements of risk character can come from the informational fluidity and sometimes its ambiguous character plus the excessive specialization that could lose sight of the elements which make up the general view, attracting potential future conflicts both at the level of ideas and of action processes.

1. HARMONIZATION OF LEGISLATION - COMMITMENTS TAKEN BY ROMANIA

The European dimension was built and developed in the Romanian education over time, it is not new, but it has acquired new connotations in the context of European integration (Tudorică, 2004, p.11).

30 years after the end of the communist era in Eastern Europe, 12 years after joining the European Union, Romania is in a permanent reform regarding the Romanian education. The reforms often contradict the previous reforms and do not continue them. Changes in the level of an educational system contribute to the changes of the society and these can be visible in the long term. Over time, there have been numerous changes in the laws of education, the tendencies to harmonize the national practices with the international ones, the need to highlight the international dimension, the globalization, the compatibility of the Romanian education system with the European one.

The legislative basis by which the Romanian state grants the right to education is represented by S.32 of the Constitution of Romania. The year 2011 brought about Law no. 1 of the National Education, law that united the old law of education with the status of the teacher, based on which the entire education system in our country is organized.

In the current context, taking into account the major role that professional training plays for Romania's economic and social development, the experiences accumulated in the previous period, the rethinking of vocational training should be correlated with the Strategy for education and professional training in Romania proposed for the period 2016-2020, because it addresses in an integrated way the field of initial and lifelong professional training. Permanent assessments have the role of regulating the professional training and specialization of individuals.

Professional training is developed in organized manner and is offered by different agents, in compliance with the standard rules. The financing of these professional training programs is supported either from structural funds or from the state budget, either by the employer but also by the direct beneficiaries, depending on their type, duration, purpose and utility. Because education was one of the major chapters with which, in March 2000, negotiations for Romania's accession to the European Union began, compatibility with European organizations and performances represented an important point of debate. Some examples are OMEN 3621/13.04.2000, which led to the systematic introduction of elements of European studies in the curriculum of schools, colleges and universities in Romania, OMEN 3685/26.04.2000, which provided for the setting up of Lifelong Training Centres in European Studies.

Romania signed the Bologna Declaration (1998) and the Florence Declaration (1998) on the creation of the European educational space and in Bucharest, and between June 18-20, 2000 the Conference of European Ministers of Education was held, which was entitled "Quality of education social cohesion". This has led to the underlining of the importance of education in European countries and of the extent to which educational policies can be promoted and supported by each government, in the context of the need to improve the quality and increase access to training (Tudorică, 2004, p.53).

In 2009, the Commission prepared the Strategic Framework for European Cooperation in the field of professional education and training, which highlights the role of professional education and training policies in increasing productivity and sustainable development (ET20202).

Addressing the European dimension of education through the mobility of people, the recognition of qualifications and diplomas, harmonization of structures, consideration must be given to how our education system harmonizes with European standards by analysing documents and reports such as the Monitorul educației și formării din 2018 (Education and Training Monitor of 2018) and strategies such as the Strategy of Professional Education and Training for the period 2016-2020 and the Europe 2020 Strategy. This alignment involves building performance in terms of content, methods, discipline plans and professional training programs.

2. 2025-PERSPECTIVES - THE ROLE OF EDUCATION IN THE CHANGE PROCESS. CONTINUOUS TRAINING OF TEACHING STAFF

The social-political, economic and cultural reform in the system of the Romanian society has determined global and profound transformations at the level of the education system, the human factor proving to be the valuable resource of the changes (Constandache, 2006, p. 7). Teacher training represents an indispensable strategy for developing the quality of education. Quality in education also implies its power of differentiation according to the level of training, of the competences required on the labour market since the educational systems are characterized by dynamism. The Romanian education system is included in the comparative studies carried out by the European Commission, these reflecting the common tendencies in the process of initial and lifelong training of teachers, but also elements of national orientation.

Both the Romanian education system and most of the European education systems will be on the short term in the situation of facing new challenges. Massive population migration and the influx of migrants result in multicultural challenges. Different values, different backgrounds, different beliefs and language spaces can raise barriers, but they must in fact become opportunities for educational development rather than barriers. We consider that this step can only be achieved if we previously prepare specialists and teachers from an intercultural perspective. Thus, a more tolerant universe for differences can be born, but also a much easier integration of the new population groups, which will lead to a natural evolutionary process, cancelling potential conflicts. Of course, those responsible for organizing these educational policies are the representatives of the governing bodies, both politicians and opinion leaders.

Lifelong professional development is regulated by S.242 of the Law of National Education no 1/2011, as subsequently amended and supplemented, the lifelong formation representing both a right and an obligation according to the legislation in force, Order 5562/2011 assuming the obligation to accumulate 90 credits in the last 5 years of activity. Labour Code - Law 53/2003, republished, provides that employers must provide employees access to professional training.

The main institution involved in lifelong learning is the House of the Teaching Staff, which operates on the basis of the Minister's Order number 5554 of 2011, a provider of lifelong training programs at national level.

A condition of the training programs is to allow the mobility of the learner both vertically and horizontally. Horizontal mobility allows attending courses that are not available in the institution of origin. Vertical mobility refers to the possibility of reducing the standard duration of university residence, as long as the minimum transferable credits are accumulated. This would encourage the development of research institutions, the development of alternative systems, such as distance learning (Iucu, 2004, p.23). This is of

real utility as it responds to the obvious needs of the beneficiaries, uses the intelligent technology, offers flexibility from a temporal point of view and allows good communication between beneficiaries and trainers.

The Order of the Minister no. 5561 of 2011 regulates the Methodology regarding the lifelong training of the personnel from the pre-university education which states that they have the right to participate in any of the forms of training/organization of lifelong training/improvement in the country but also abroad, by participating in the mobility within the European programs. Access to these facilities is open to all interested parties and there are no barriers or restrictive conditions.

"Changes can be inevitable in any field, but what we want from life and from the European values we value remains unchanged. We want a society where peace, freedom, tolerance and solidarity are above all else. We want to live in a democracy where there is a diversity of views and a critical, independent and free press. We want to be free to express our opinion and to be sure that no person or institution is above the law. We want a Union in which all citizens and all Member States are treated equally. We want to ensure our children a better life than the one we have lived." These statements bring along with them a high degree of responsibility for the factors that guarantee them.

On November 26, 2018, the Council of the European Union adopted its position on the Erasmus+ program for the period 2021-2027. The proposed regulation will expand the range of learning opportunities in Europe and beyond, to reach more people compared to the current period. Also, following the extension of the offer, all levels of education and training will be included. In order to underline its inclusive favourable approach, the Council maintained the current name of the program, "Erasmus +". At the December 2017 European Council meeting, EU leaders called for increased mobility and exchanges, including through a substantially enhanced, expanded and inclusive Erasmus + program.

3. ACCREDITATION OF LIFELONG TRAINING PROGRAMS

Teacher training is a priority of the Romanian education system, little valued, but in a close correlation with the other components of the education reform. Of course, this process has a speed of achievement influenced by the size of the education system, by the differences of specialization, by the specificity of the human resource and even by the existing relative financial resources.

Credit is a unit of value that tends to indicate the quantity (without making a precise reference to quality) of work, of effort involved by a discipline in relation to the total number of academic requirements necessary to obtain a diploma/certificate/certification, through which the contribution of a subject/topic within the curriculum can be quantified (Iucu, Păcurari, 2004, p.42). The quantity is related to the actual number of hours allocated to the training activities within these specialization programs, regardless of the effective form of training.

The underlying legislation is represented by the Methodology of accreditation and evaluation of training providers, approved by OMECTS no 5564/2011 and the procedure of accreditation of a lifelong training program by the Directorate of Lifelong Learning within the Ministry of National Education, called before CNFP, respectively DFC (Lifelong Education Directorate) and the way in which the participation in the European learning programs is converted into transferable professional credits.

In addition to central public authorities, lifelong learning also involves other public institutions at regional and local level, as well as social partners and civil society

organizations. In order to increase the participation and relevance of lifelong learning, long-term actions are needed, involving all parties, coordinated and sustained effort from all key actors - Ministry of National Education, National Qualifications Authority, universities, lifelong education centres, NGOs. Developing strategies is also a condition for accessing European funds for future programs.

Among the priorities of action of Romania, we can mention the promotion of awareness campaigns, the development of an attitude that favours learning and its benefits, the granting of subsidies for training providers and organizations that develop innovative training projects in partnership. Taking also into account the recent results of national and international assessments, we observe an increasing interest in the priority of education, the reduction of the phenomena of school dropout and illiteracy.

The National Lifelong Learning Strategy 2015-2020 has established four directions of action, one being represented by supporting participation in European mobility programs. The professional education and training sector is essential for the achievement of the Europe 2020 objectives, its improvement having an influence on economic growth through employment. Thus, education is preserved as a strategic area for our country.

Even in terms of the training of teachers it must be taken into account that the triangle of knowledge has become innovation, education and technology, the development and the exercise of creativity, of the ability to innovate, of the technological skills, of the capacity to accept the new and to promote it, the adaptability to change. We consider, moreover, that the shortest reaction time can create efficiency in education, which is the appropriate response to the educational challenges that the society gives in relation to the educational system. Education needs to be elaborated at a deep level for all involved and an active monitoring of the smooth running of the process intervenes and regulates the educational system while running. Active partnerships between school, community, parents, turn into real learning scenarios and experiences that contribute to a harmonious development of students. However, counsellors and career counselling and guiding centres appear and manifest in an active manner, namely not only specialists, but also bodies designed to actively support and contribute to training, specialization of beneficiaries through the simulation and construction of career plans but also of alternative paths in professionalization.

At European level there are some new trends and educational policies at the level of the elaboration of the professional training programs of the teaching staff such as the decentralized planning of the training, of the professionalization of the teaching staff by means of the introduction of the research elements, the shift of the focus from acquisition to knowledge of training and development of competences.

CONCLUSION

The European Union is a unique identity, without historical precedent, dynamic and flexible, the most evolved example of a hybrid entity, which through its dimensions of enlargement, through its elements unites Europe in a multisectoral political, economic, military, cultural, spiritual and social ensemble.

The conclusions we can draw from this article are related to the transformation processes of the society at school and education level, to their internationalization, demonstrating the importance of this field in the evolution of the world, showing an overview but also highlighting globally the different cultures of learning and training with an emphasis on Romanian culture. An image on the dynamics of education can only capture a

moment of it as the dynamics prove to be permanent and perhaps from this perspective, we can also understand how the reforms in education come and manifest themselves. Of course, the concerns about education will be permanent and are becoming more and more accentuated. Specialization and professionalism obviously bring about high performance.

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THE VARIABLE OF CREATIVITY AND PRE-SCHOOL EDUCATION

Georgiana Alexandra ȘERBU
PhD. Candidate, University of Bucharest,
ROMANIA

E-mail: serbu.virgil@yahoo.com

ABSTRACT

Pre-school education as the first stage of institutionalized education comprises a series of activities that have as their origin the creation of a creative and autonomous personality that makes subsequent social integration possible. Thus, the variable of creativity plays a special role in the process of modeling the human personality and it is necessary that its stimulation be realized early. Given that the variable of creativity has multiple forms of manifestation, the role of education is to model it and stimulate it by virtue of a holistic formation. The purpose of this study is to identify the ways of expressing creativity among preschool children, as well as parents' opinions about the activities carried out in order to stimulate children's creativity. "Creativity is a social need." (Roco, p. 12) Education, as a factor of human educability, assumes an imperative role in the process of modeling human personality. The variable of creativity, through various forms of manifestation, influences the adaptability process of the human being and has defining influences in terms of building a personality according to the requirements imposed by the present, but also future society. Being a social need, creativity has the potential needed for a holistic, harmonious development that will lead to improvement and innovation. The need to stimulate creativity from an early age derives from the developmental needs and individual characteristics of children. Creativity should be seen as a necessary tool for a harmonious development that has the power to shape the human personality. Therefore, pre-school education, as the first stage of institutionalized education, has to make early use of the creative potential of the child.

Keywords: *Preschool education; personality; creativity; stimulation of creativity;*

INTRODUCTION

Creativity as a personality variable can influence the individual development of the child and therefore it is important that the aspect of the creative process be an imperative of early education.

The implementation of the new curriculum for preschool education includes changes in the kind of activities in kindergarten, with emphasis on the allocation of the number of hours for each type of activity provided by the instructional-educational program in the preschool institution. „Therefore, early childhood education and care should be considered as the basis of education and training systems, which translates into ensuring optimal conditions for developing key competences in perspective. A coherent early education in all the environments involved (family, kindergarten, community, etc.) represents the necessary context for a balance between socio-emotional aspects, learning and well-being."

(Curriculum for early education, 2019, p. 4). It is desired that the creativity variable be exploited early and therefore the importance of offering the child with learning experiences that aims to model a creative personality, capable of adapting to the requirements, increases, current, but also future of the society in continuous change and transformation.

1. PRE-SCHOOL EDUCATION - ANALYSIS AND CONCEPT

The education law no. 84 of 1995 starts the system of reform of the contemporary Romanian education. This deals with aspects based on certain essential principles or theses, according to Gheorghe Tomșa (2005, p. 17): „the principle of the global approach to change the education system, which aims at the hierarchy of innovative actions at the level of the macrostructural and microstructural fundamentals, the principle of the innovative restructuring of the system of education, which aims to highlight the direction of evolution of pedagogical change at higher levels of creativity, the principle of prospective employment of structural and systemic change, which aims to substantiate the reform at the psychological, philosophical and sociological level." Pre-school education represents the first institutionalized step in which the personality personality is modeled. Its importance derives from the educational ideal prescribed by the Law of National Education of 2011, article 3: „The educational ideal of the Romanian school consists in the free, integral and harmonious development of the human individuality, in the formation of the autonomous personality and in assuming a system of values that are necessary for personal fulfillment and development, for the development of the entrepreneurial spirit, for active citizen participation in society, for social inclusion and for employment in the labor market". Thus, preschool education acquires value in that the shaping of the child's personality, given that formal education is the first line in contact with the child.

Cornelia Ștefănescu (2005) referred to the preschool period as the age of psycho-behavioral acquisitions that play a fundamental role in the level of adaptation and integration of the child in the subsequent evolution. In the preschool period, the child develops basic skills, such as food, clothing, hygiene, but also cultivates skills to gain personal autonomy because he learns how to do it alone. Also, in this period, the child forms his self-image and outlines his first personality traits. From the point of view of physical development, the child develops his musculature, "the stature increases, the definitive tooth buds are strengthened" (Stefanescu, 2005, p. 44).

Also, "the structural development and the fine differentiations from the functional training of the cerebral cortex, the separation of the areas of speech and the fixation of the asymmetrical domination of one of the two hemispheres continue, which imprints the right, left or ambidexterous nature of the child's craftsmanship. The development of the internal biochemistry becomes complex, accentuating the production of hormones at the level of the thyroid and the thymus, with effects on growth." (Ștefănescu, 2005, p. 44).

The imperatives of the pre-school education concern aspects regarding the process of social integration, communication and verbalization, formation of skills and skills, accumulation of knowledge, but also stimulation of memory, intelligence, creativity. Therefore, the need for early childhood institutionalization in pre-school institutions becomes an imperative. The sooner the child comes into contact with the kindergarten, the more easily the school integration and performance are achieved.

The child who attended the kindergarten, in addition to the knowledge, skills acquired, also has a predisposition to learning, still early, being familiar with the rules, norms, but also the learning techniques needed to complete the new schooling cycle. The

intervention of the educator becomes a necessity and prevents the child's development needs, through the variety of activities proposed, the materials used, but also through the level of involvement and skill. The professional training of the staff of the preschool institution marks the educational activity carried out on children. Romiţă Iucu (2007) notes that education imposed interdisciplinary approach regarding professionalization. Monospecialization must be overcome, and the professionalization process must be viewed from a multi-disciplinary perspective. The need for professionalization has become a definite and useful thing. Emil Păun (2002) stated that „the essential orientations regarding the professionalization for the teaching profession are largely influenced by the pluralism and the paradigmatic competition in the education sciences, where two great paradigms - the normative and the interpretative one - are confronted, rather complementary paradigms, than opposite".

The investment in pre-school education is due to the importance of this period in terms of acquiring knowledge, training skills and skills in behavioral, affective, intellectual, social, etc. In the program "Early education matters" (2000, p. 2) proposed by Judith L. Evans, Robert G. Myers and Ellen M. Ilfeld, the importance of early education for the development of the child's personality was discussed. Children up to eight years of age can learn more easily because of the easier handling of the objects around them, through exploration and experimentation, learning by error and trial. Children learn by doing, observing and manipulating until they are eight years old, then being caught in the "age of reason", when they begin to operate differently with certain concepts and can learn mental concepts, being less dependent on objects.

The study by Cristina Felfe and Rafael Lalive (2015) in Germany revealed important aspects of early education on children's personality development. It was found that there are significant differences between the children who attend kindergarten and those who do not attend. There was an improvement in motor skills, socio-emotional development and language of children who attended early education programs. Also, even if they came from precarious socio-economic backgrounds, children who participated in education programs had higher scores in terms of personality development. It has been observed that there are differences between boys and girls, boys being more influenced by such education programs.

The study concluded that in OECD countries, such as Belgium, Denmark, France, Germany, Iceland, Israel, Norway, Spain and Sweden, the education of children between three and four years is done in kindergarten, so that 90 % of children go through the preschool environment. However, there are barriers that parents perceive to justify choosing not to send their children to kindergarten: the costs are too high for some low status families, the child's perception of being too low to complete the institutionalized kindergarten program, the perception according to which the mother must educate the child and not inform about the important role of the preschool environment on the development of the child's personality. The study revealed aspects regarding the role of the kindergarten and the parents' awareness regarding the preschool education.

Another study by Chung E.O., Fernald L.C.H., Galasso E., Ratsifandrihamanana L. and Weber A. in 2019 revealed issues regarding pre-school education and the influence of parents on the development of the child's personality. It was concluded that the family has an important influence in the formation of the child and the investment in the early education creates the premises for a further harmonious development with positive results during the school period. Also, the involvement of parents in early childhood education has positive effects on shaping their personality.

2. THE CONCEPT OF CREATIVITY

2.1. Creativity - the evolution of the concept

Amabile et al. (1996) considers creativity as the supreme innovation. P. Popescu - Neveanu (1978) defined creativity as a complex personality formation. Mihaela Roco (2004) stated that the variable of creativity can be considered as a social need, since it has major implications on the development of the whole personality. Gheorghe Tomșa (2004) stated that there are several directions in the definition of creativity. One point of view would be that the variable of creativity can be interpreted as an aptitude or capacity to achieve something new and valuable, another perspective concerns the process by which the product is realized, and another one considers creativity as any new problem solving. There are five plans for manifesting the creative behavior delimited by I. Taylor: expressive, productive, inventive, innovative and supreme or emergent. In the expressive plane the basis of creativity takes place, in the productive one the individual is able to acquire some skills, information, but also working techniques, and in the inventive plan the person is able to correlate the information held with the new situations they are facing. The innovative plan involves a full understanding of a particular field, its fundamental principles, and the supreme or emergent plan aims at a limited number of individuals, being classified as the high plane of creativity. The emergence of creativity is influenced by a number of factors that influence both the creative process and the final product achieved after the emergence and stimulation of creativity.

The factors of creativity are intellectual, characteristic and social in nature. Iacob Cosmovici (2008) argues that a main component of creativity is the imagination defined as a psychic process that results in obtaining reactions, new psychic phenomenon from a cognitive, affective or motor point of view. The traits of imagination seen as true characteristics of creativity aim at fluidity, plasticity and originality. The use of exercise repeatedly gives importance to another factor of creativity, namely memory. Also, the volume of information, their variety and experience are factors that put their mark on memory. The intelligence of a person can influence creativity and the creative process through the connections they make, as well as through the varied knowledge they possess as a result of their processing. You can see the connection between creativity and intelligence, given that creativity is perceived as an ability of the individual to solve new problems. The intervention of the will, as well as the predispositions and the intellectual capacities, can influence the development of a person's creativity. It is known that heredity is a determining factor in the development of a person's personality, so that the appearance of creativity is closely correlated with the genetic material that the individual has. Also, from the character point of view, the will and the perseverance that the individual has in the accomplishment of tasks contribute to the development of the sides of his personality, including the creative side. The motivation, the demands imposed by the company and the development stage of the discipline are other factors on which creativity depends. The creative process, like any process, comprises a series of fundamental steps that define the creative side of the personality of the human individual. Iacob Cosmovici (2008) recalls the incubation period which involves collecting information, delimiting the problem, incubation period in which efforts are made to find solutions, lighting which means finding solutions and checking which involves identifying and removing errors.

The creativity variable influences the development of the whole personality. Over time, there have been many theories that explained the phenomenon of creativity.

The psychoanalytic theory of Sigmund Freud „explains the phenomenon of creation starting from the theory of sublimation, considering that the phenomenon of creation can be determined, generated by the tension caused by the tendencies, the impulses repressed in the unconscious, tendencies that can appear in disguised forms, in forms resistant to the social existence" (Popescu, 2007, p. 14).

A. Adler 's theory considers creativity as a means by which the individual evolves, adapts, self-realizes and plays a role in society. Associationism defines creation as „a process of association between certain elements, leading to the emergence of new combinations, a process that is subordinate to certain demands or ends (J. Maltzman, 1960, SA Mednick, 1962). The level of creativity of the obtained results is evaluated according to the associated elements, which must be least related to each other" (Popescu, 2007, p. 15). The gestalt theory represented by W. Köhler, M. Wertheimer, R. Arnheim, R. Mooney, sees the creative process in permanent relation with the whole, with the internal structure of the respective phenomenon. The behaviorism represented by C.F. Osgood, J. Rossman, J. Parnes, R. Hyman emphasizes the instrumental conditioning, the stimulus-response relationship, the decisive influence in the creative process being of the parents through the educational value of the rewards granted to the children who can determine the orientations for creative thinking. Humanists (A. Maslow, C. Moustakas, C. Rogers, R. May, E.G. Schachtel) consider creativity as a general human potential, with environmental factors having the influence of unleashing the potential of each individual. The (interpersonal) cultural theory represented by M.J. Stein, G. Murphy, S. Arieti, H. H. Anderson, M. Mead, M. Tumin, P. Matusseck „emphasizes the role of cultural factors in the environment in the genesis and development of creation." (Popescu, 2007, p. 17). Guilford presents a systemic conception of creativity, revealing its components. In 1971, P. Popescu-Neveanu proposed a model by which creativity is seen as the result of the interaction between aptitudes and attitudes (Popescu, 2007). Cognitivists see creativity as a combination of data in order to find concrete solutions.

Integrative models of creativity have been treated by many authors. The theory that belongs to Teresa Amabile concerns the intrinsic motivation in children. They tend to show their creativity through self-interest and self-determination. They consider that they are much better in control of the activities they choose for themselves (Popescu, 2007). Gardner delimits the general framework of analysis of the creative phenomenon at the subpersonal level, where the biological substrate of creativity is found, at the personal level where the cognitive, motivational and creative personality factors are found, at the intrapersonal level where the field in which the individual manifests his action is described creative and at the multi-personal level where the influences of the family and professional environment on the creative action are delimited and described (Popescu, 2007). In the model proposed by M. Csiksentmihaly, creativity, as a complex phenomenon, is a consequence of the interaction and interdependence between the components of social institutions, the cultural field that preserves and transmits the creations and the individual that produces changes in a certain field (Popescu, 2007).

2.2. Creativity - current researches

In the specialty literature, the phenomenon of creativity has long been pursued by researchers who wanted to explain both the appearance of creativity and the methods of stimulation, but also the barriers involved in the creative process. Turkish researchers Elif Celebi and Esra Unluer (2010) conducted a study that revealed the connection between the

manifestation of creativity and the use of children's play materials. Due to the technology and digitization, the symbolism manifested through creativity plays an important role in the development of the child's personality. It has been found that children do not creatively use play materials, symbolically because they do not have frequent contact with such real materials. The study was carried out in two stages: in the first stage, the children got in touch with toys, but also with real materials such as the telephone, kitchen objects, etc. They chose to play with real materials. In the second stage, the children used the play materials in a real way, without being creative. They did not give another value to the used objects, but used them as in real life. Therefore, the conclusion of the study was that it is necessary for the children to have early contact with real objects, in order to make connections, to offer them another value, to be able to show their creativity.

Researcher Elena Lupu (2011) wanted to correlate the development of creativity with physical activities. Starting from Horst H. Siewert 's „Creativity Tests", which considered that „two skills can be developed simultaneously, and not one after another", the study confirmed the hypothesis that physical activities influence the emergence of creativity. Children who play sports develop creative skills, are more resourceful, more attentive, more disciplined, which leads to the development of a more creative personality than children who do not play sports. By virtue of this fact, it is considered necessary the physical effort made through the physical activities. Therefore, the introduction of physical activities from kindergarten has positive effects on children's creativity.

The research study proposed by Hale Hocer (2012) sees the development of creativity through artistic-plastic activities. The research was carried out on a sample of 10 teachers and started from the study of Rozario and Collazo from 1981, which talks about imitation and the tendency of the teacher to lead the student in making a product similar to the one he made. In this way creativity is inhibited. At present, it is desired that the child makes new, original products and that is why „education through art" correlated with „education for art 's sake". The conclusions of the study were that through the artistic-plastic activities the fine musculature of the hand is developed and the coordination of the eye and hand is developed and creativity is improved. The Turkish researchers Belma Tugrul and Hatice Uysal (2014) conducted a research on the creativity of teachers and their personality implications on stimulating children's creativity. The staff involved in the study answered 4 questions: „Do you consider yourself a creative person? Do you know a creative person and why do you think he/she is creative compared to you? What are the characteristics of a creative person? What is creativity in your opinion? Draw the picture of creativity." The study showed that creative teachers form creative personalities for children. M. I. Popescu, N. I. Moraru, A. Sava (2015) conducted a study on family barriers in the development of preschoolers' personality. The objectives of the research were to validate an instrument that measures the parental style, to correlate the child's creativity with the parental attitudes and to identify the influence of the parental style on the child's level of creativity. The study started from the researcher R. Stenberg according to which there are three aspects of creativity: synectical, analytical and practical ability („triarchic theory of human intelligence"). Following the research carried out, the objectives were met and an instrument measuring the parental style was validated. It was also found that parenting style influences children's creativity. Natalia V. Vinichuk and Maria V. Dolgova (2016) addressed the subject of creativity related to happiness. Following the study, it was found that when the level of children's creativity is high, they interpret happiness as an emotional phenomenon and happiness is built as a social interaction with other people. When the level of children's

creativity is low, happiness is impersonal, manifested by concrete things that the child holds. Thus, creativity is correlated with happiness and influences the development of the whole personality of the child.

3. CASE STUDY ON THE MANIFESTATION OF CREATIVITY

The justification for choosing the case

In the kindergarten educational activities, we have seen the known differences on early manifestation of creativity, which is why I tried to delimit the relationship between the expression of children's creativity and stimulation techniques, and the role of social media on preschool children. Some children more easily handle working materials and show increased availability in correlating new content with old ones, some freely draw much easier compared to others, combine working techniques, materials and colors much easier and without support, while others exhibit rigidity, all leading to a different manifestation of creativity. I chose these two subjects because one showed increased creativity compared to the other, although both attended the same preschool and had the same educators.

Identify and highlight the importance of the case

The variable of creativity manifests itself early, and its stimulation can be achieved more easily among preschool children due to the fact that they are constantly modeling knowledge, curiosity. Creativity can be exploited in various forms. Among preschool children can see differences in behavioral, intellectual, in which the process of adaptation and socialization, for which the choice of subjects to learn more about the characteristics and difficulties is one way that you can customize and differentiate act education. After observing the differences of this kind, I decided to choose to research the two subjects precisely in order to be able to overcome some difficulties regarding the stimulation of creativity.

The objectives of the case study were to reveal the differences of manifestation of early creativity among two children aged 5 years with different socio-economic status, to the differences of the socio-economic and cultural environment of the child on stimulating creativity, identifying methods to stimulate early creativity, as well as removing the barriers involved in the creative process during the preschool period. I used two preschool subjects, female.

The purpose of the case study is to determine the ways to stimulate early creativity.

Analysis of the socio-economic and cultural environment.

In the first case, the subject „S" comes from a high socio-economic status. Both parents have university studies, having the occupation of university professor and engineer. They also represent a family model in the community they belong to.

In the second case, the subject „E" comes from a modest family, with parents with high school education, but with a very high level of involvement in the education of children. Although the material possibilities are much lower, the family of the subject „E" participated equally with that of the subject „S" both from a financial point of view, as well as the availability of time and involvement in children's education.

After applying the tests, I found out that the level of creativity differs, although both girls attended the same kindergarten and had the same educator. Subject „S" showed an increased level of creativity compared to subject „E". The test used was the flexibility test of thinking adapted after Mihaela Roco, from which the subjects were tasked to find as many interpretations and meanings as possible for certain drawings. The test with experimental model of stimulation and interpretation was used, in which the

subjects reproduced a flower and received a certain score depending on the reproduction made and the novelty elements brought to the drawing.

Factors

One cause of the different manifestation of creativity is genetic. The factor of heredity has an influence on the whole personality. To sow, the socio-economic factors imprint the variable of creativity. The subject „S" has access to didactic materials provided by parents, experiences the contact with nature with the family, benefits from opportunities for exploration through visits, walks, trips with the family, all of which have influence on the manifestation of creativity. On the other hand, the subject „E" does not have access to the same opportunities offered by the family.

One other factor that could influence the development of creativity is the cultural situation of the family and education level. The subject „S" comes from parents with higher education, with a higher level of education, with a cultural situation different from that of the subject „E".

Subject characteristics

However, the subject „S" has a special temperament. She is selective, she does not perform all the tasks unless she wants, she is not attracted by the activities that require patience, she is an explosive person, with a strong character, she has high intellectual abilities, a solid memory, her imagination is very rich, and her inventiveness is a quality that defines it. The subject „E" fulfills all tasks, is hardworking, dedicated to learning, but with a weaker memory, poor imagination and an introverted character.

Proposed intervention program

Following the discussions with the teachers from the commune, we could find that there is a need to carry out extracurricular activities, which is why we decided to create a creative program in which the children of large group participate, in order to have the necessary learning experiences for stimulating creativity. Both subject „S" and subject „E" participated in the program of creative activities, along with 10 other subjects. As a result of the activities carried out, we were able to find changes both in terms of subject „S" and subject „E".

To track the initial level of creativity, we used a reinterpretation of Mrs. Creativity and Originality Test. Prof. Roco M. The children have determined which object has a round shape. They exemplified the ball, the wheel, the clock. Subject "S" considered that the round shape is characteristic of "a flower medium". Also, the children exemplified what makes noise: the creaking of the door, the car, the toys. The subject "S" considered that what produces noise is "bee buzz" and "when the mother raises the tone to it". Another evidence proposed was that the children made an imitative drawing of a flower. The subjects made faithful copies of the proposed flower, but the subject "S" made a faithful copy of the proposed model, but also added small details such as butterflies, bees, hearts. Thus, when asked why he did not respect the evidence, the subject "S" explained that "this is the most beautiful flower".

Subject „S" has developed attention, could focus better on the task, and with the ability to choose the materials used and strengthened confidence in their decisions. Subject „E" has developed self-esteem and self-confidence, shaped his memory and stimulated the process of communication with other children. Following the implementation of this intervention program, creativity tests were reapplied and it was found that preschoolers enrolled in this type of extracurricular activities have undergone positive changes, being more creative and involved in the subsequent kindergarten activities.

The creative program carried out in the rural area was concluded by an exhibition of children's works, and the parents were the subjects of a questionnaire from which we could find relevant information regarding the creativity variable. The survey method „is an interactive method that involves the direct exchange of information between the researcher and the subjects under investigation. This makes it possible to collect data from a large mass of subjects. The communication relationship encountered in the case of investigations is dual, but strongly asymmetric, as the researcher is the one who designs, conceives, formulates and addresses a series of questions, stimulating the investigated subjects to answer" (Bocoș, 2003, p. 76). The specific instrument used is the questionnaire, „which is a system of written questions, well structured, in a certain sequence based on logical considerations. The questionnaire comprises two parts: the introductory part, where the subjects are motivated the need for its application and clarifications are made regarding the completion, insisting on the importance of the sincerity with which the answers are given; the questions themselves" (Bocoș, 2003, p.77).

The questionnaire addressed to the parents wanted to highlight the parents' opinions regarding the activities carried out within the creative club. This questionnaire included a number of ten closed questions which sought to find out what is the opinion of parents about such activities, what changes have occurred to their children and whether such activities are useful for the development of creativity. All the subjects involved in the questionnaire had affirmative answers regarding the role of extracurricular activities in developing children's creativity.

The conclusions of the proposed questionnaire releaved that the children are more creative and willing to participate in such activities, which is why it is hoped that such educational programs will continue in the future, the role of extracurricular activities being decisive in shaping the child's personality.

CONCLUSION

The study conducted in rural areas has revealed important aspects in which the creative process of preschool children. Extracurricular activities can influence the emergence and stimulation of creativity from an early age, and in rural areas it is necessary to involve teachers in such activities that support children in the process of modeling personality, and implicitly creativity.

The parents of the children from the rural area want to carry out extracurricular activities, but, for lack of financial resources, they decide not to allow the children to take part in such activities. Due to the small number of children in rural areas, non-formal activities end before the proposed date. Creativity can be stimulated by artistic-plastic activities. The children form a positive self-image, fulfill social roles in the micro-group of which they belong, become responsable, eager to learn, curious, communicative. Following the proposed creation program, the subjects involved became more creative.

The socio-economic and cultural environment impresses the child's development, the heredity factor is important, the family's intervention in the child's education plays a decisive role, and the educational influence on the part of the preschool institution plays a decisive role in the modeling of the child's personality. Creativity manifests itself differently, under the influence of various factors, the proposed activities being very important.

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THE RELATIONSHIP BETWEEN SELF-ESTEEM AND AGGRESSIVE BEHAVIOR AMONG PRETEENS

Irina BANU,
Prof. School Counseling Teacher CMBRAE Bucharest,
PhD. Student, University of Bucharest,
ROMANIA

E-mail: tmirina@yahoo.com

ABSTRACT

Students' aggressive behavior generates significant difficulties in the educational environment. It is essential to pay close attention to these issues as their effects often extend beyond short-term disturbances. The school tried to react at the students'aggressiveness problems by implementing intervention programs, counseling programs. These interventions can reduce aggressive behaviors by boosting the social skills, by improving emotional adjustment and by solving problems encountered in a social context. Such intervention programs already exist in schools which is important to mention. Despite that, more and more students are in need of personal development and unfortunately there is only one available specialist in charge of these programs. Developing a high self-esteem can help the student to overcome his/her aggressiveness through experimenting emotions like acceptance and understanding. As a consequence, it is mandatory to use counseling programs in order to reduce and overcome these behaviors. Throughout my life experience, I came to the conclusion that there is a direct link between low self-esteem and aggressive behavior which needs to be investigated. Within a focus group, there were observed several discontents from the students' side such as: not being listened to, not being encouraged, not being appreciated or not being valued. All the students questioned said that if they were being listened to, encouraged, appreciated or valued, they would be more balanced. The current research analyzed the relationship between self-esteem and aggressive behavior of preadolescent students, the main objective being to highlight the need to develop and implement some methods that are required for growing the self-esteem.

Keywords: *aggression; self-esteem; socio-emotional development;*

INTRODUCTION

Long-term aggression can lead to disturbing relationships with others, the latter refusing to communicate and interact with the aggressive ones. Excluding the aggressive students from groups could lead to a decrease in their self-esteem. Therefore, developing high self-esteem could support the aggressive student in diminishing these aggressive behaviours by experiencing feelings of acceptance and understanding. Consequently, it is necessary to intervene in reducing these behaviours through counselling programs.

The central premise of the intervention program asserts that thoughts influence how children feel and act. The behaviour in question is defined not only by how we understand, process and interpret the information but also by how we express our emotions and how we react on their basis.

1. PROBLEM STATEMENT

How is self-esteem formed and what makes the child lose it? What exactly affects children's' self-esteem and what exactly helps in increasing it?

The child's self-esteem is built, has an attachment and is strongly influenced by mother's self-esteem. It is important to treat a child with love and acceptance, autonomy and emotional support.

School is, also, a very important context that parents can no longer fully control and where a child's self-esteem can be strongly affected. The child lacks self-esteem in school with relation to several aspects, either to the fact that they cannot cope with the volume of work or to relationships with colleagues or with teachers. In the school setting, the aggressive behavior was positively correlated with a low level of academic involvement, the number of friends in the classroom, the perception of the level of support of the teacher and the positive attitude towards the school (Estevez et al., 2018).

Among the social factors that contribute to the aggressive behavior of children and students, the circle of friends is one with high impact. There are two main ways in which the experiences with the circle of friends are related to the development of aggressive or, worse, violent behaviors. On the one hand, colleagues or friends "may cause psychological or physical violence in the form of rejection or victimization, which may accentuate aggressive behavior in some children, thus contributing to the cycle of violence" (Vitaro et al., 2007, 361). On the other hand, the group of colleagues and friends can encourage aggressive behaviors, encouraging them and offering a social context in which they are not only accepted, but also accepted (Vitaro et al., 2007).

Each child has his or her own school-related experience; the differences of approach are the result of the individual approach or of the way parents' self-esteem was approached. A very important role is assigned to the emotional imprint the past has left on the child. Should there be positive emotional baggage, there are more chances that the child succeeds on a relational level and copes more easily with difficult events happening in their life.

Parents can strongly influence children's' self-esteem and the way they handle difficult situations. When children have difficulties in adapting themselves and relate to school-related situations, their parents' presence is important, so that they feel emotionally supported in learning how to overpass problems, manage things and find valuable life solutions. Furthermore, adults and teachers have a great impact on self-esteem; if they manage to help them, motivate them in difficult contexts, then self-esteem will win. "Teachers play a central role in a school's efforts to end bullying. According to trainers of the young minds, teachers are also the ones who shape the group ecologies, when teachers are warm and attentive to their students, they, in their turn, will no longer reject your colleagues as easily" (Whitson, 2017). This aspect also came from my observations and from the applied focus group.

In the preteen period, they are on the border between child and future adult. It can be the most delicate period with respect to emotions management, communication, especially due to the changes that preteens they undergo. All of these changes make preteens doubt themselves. Research has shown that, from a hormonal point of view, preteens experience an almost permanent troubled, sad and depressive mood. Many times, preteens lack the competence to live with this mood and that is why parents and teachers should be there to emotionally support them.

A specific approach has to be taken according to different contexts of each child's age. Educational specialists and school counsellors carry out such specifically approached programs both for students, parents and teachers, but schools need more of them.

It is important to realize that the preteen stage implies a constant struggle on the intra-psychical level and this can lead to the occurrence of anxious, depressive, post-traumatic symptoms, as well as cognitive self, world and life distortions along with physical and physiological symptoms (more often conversions). The intensity of these symptoms can fluctuate, as preteens try to handle them and sometimes defence mechanisms succeed in holding them ground (and symptoms do not occur in the behavioural plan), but there are times when, due to the lack of self-control knowledge, their mechanisms fail in keeping the same efficiency (and symptoms occur on a behavioural level). Therefore, personal development programs brought in schools are imperative, since they have an impact on self-control that preteens need so much.

Self-image represents ourselves in relation to the social environment. How do we see ourselves in society? How did we end up having these opinions about ourselves?

1.Social reflexion (it functions by mirror principle):

The social environment to which we belong proposes a definition and a value (reference point) for a particular feature. For example, you are cool if you experience undesirable behaviours...

the social group to which we belong "projects" on us (labels us), an image on what we are considered to be, an image that, once accepted and internalized, becomes a component element of the self-image.

2.Social comparison:

Even if a certain image is projected on them, people often feel the need for confirmation and reinforcement, social comparison providing the objective benchmarks needed to strengthen the self-image.

It is important to question ourselves: Who compares us and with whom? Who throws us all sorts of characters to whom we relate?

3.The role-play:

We are all social actors who play different roles on the stage of life. We do this on a daily basis and too many roles in a certain way can change us deeply.

Manipulate or not, we keep agitating on certain topics and we no longer recognize ourselves. Scientifically demonstrated, by accepting and interpreting a social role, there is a phenomenon of identification with the norms that regulate from a sociocultural point of view the specific behaviour of the respective role, while its characteristics are internalized and assumed.

So are the students with aggressive behaviour; even if they had not shown any aggressive behaviour in the past, they could change their behaviour through manipulation, playing different roles, which in fact do not represent them, but they believe that this is the only way that can survive through.

2. THE INVESTIGATIVE APPROACH

The initiation and development of the research approach of the relation between self-esteem and aggression took into account not only the objectives established for the research of this relationship, but also the specific characteristics of the group of people studied (pre-adolescent students) and the concrete conditions in which the research was carried out.

Research questions

Could an intervention program reduce aggressive behaviours by developing self-esteem?

There is a correlation between aggressiveness and self-esteem?

Purpose of the study

Becoming aware of the increased level of manifestation of aggressive behaviours among children, as well as of the dramatic negative consequences that aggression carries over the children's health and balanced growth;

Research objectives

-Identifying the causes that lead to aggression;

-Identifying the factors that determine the increase of self-esteem;

-Becoming aware that an integrated school-family intervention is necessary for the correct and healthy management of aggressive behaviours;

Research methods

During the research, two tools have been applied in order to achieve the profile I had been aiming at, namely students with low/medium self-esteem and aggressive behaviour.

These tools are the Rosenberg Self-Esteem Questionnaire and the Buss-Perri Aggressive Behavior Questionnaire. These tools have been applied to 100 preteen students. Out of the 100 students, we identified 30 students that matched the search profile, whereof 15 students were involved in the study by applying the focus-group method.

In order to get information with respect to these questions, I have approached group focus method on preteen students from the Gymnasium School No.150, students who had the same problems, namely students with low or medium self-esteem, but with aggressive behaviours, as well. It is very important for the chosen group to be homogeneous, to have common characteristics so that discussions can take place more easily and be constructive. I chose this method because it is effective qualitative research as far as the relationship between results and duration is concerned, it is flexible in terms of the organization modalities and necessary resources, and the information received has a high degree of accuracy.

Within this focus group, the following significant aspects emerged for the research objectives. A low level of self-esteem relates to increased aggressiveness, especially through the forms of verbal aggression, anger, hostility.

By means of intervention activities, we tried to discuss with them what self-esteem means, how it is constructed, how important it is to have a positive perception about us. All respondents said that if they were heard, encouraged, appreciated or valued, they would be more balanced.

Students do not feel encouraged, they are punished by the family and teachers for any mistake and this leads to hostility from their side. Students with low self-esteem lack in trusting their own abilities, they cannot build proper self-esteem unless their parents and teachers trust them.

Students fail in trusting themselves because for the most part they are not accepted by the group of friends or colleagues and this aspect leads to undesirable behaviours, most of the time in order to get their existence noticed. This results further in joining a group that respects and accepts them but which also has a negative influence on them.

Students feel neglected by their family members since they spend a lot of time at work. A consequence of neglecting students is frustration, the feeling that they lack their parents' love and frustration, in its turn, leads to aggressiveness.

Students made a top list of the causes of aggressive behaviour, namely: children are not listened to, they are not observed and encouraged by others, they are not valued, adults punish and discourage their initiatives. Students feel that counselling programs can often do wonders. Many of them have benefited by school counselling in the past and felt that these school counselling sessions lent wings to them.

When students were asked what they had felt when aggressiveness had come over them, a long list of other feelings came up, such as pain, disrespect, disappointment, worry, offence, rejection, frustration, disgust, shame, trauma.

By means of participative observation, I have carried out an activity of follow-up and systematic description of behaviours and events within the educational environment. As a school counselling teacher, I have aimed at an active engagement within the educational environment of students involved in this research and I have achieved a participative examination through in-class counselling activities deployed with the observed students.

Manipulative behaviours were observed. Within the counselling office, students were throwing out the mask they were wearing in class. We discussed this aspect within the focus group and it turned out that students needed this mask in the classroom, since they would be otherwise marginalized or even aggressed by the popular students in the class.

Anger, aggressive behaviour is actually a secondary emotion, being that often what we see on the surface can be misleading. We often tend to say that, practically, an aggressive student has high self-esteem, since he has the courage to be and act that way. As a matter of fact, that aggressive student comes with unstable emotional baggage.

There is a great need to sound a big alarm on this aspect and to try to discern the causes that led to that aggressive behaviour, actually intervening on the cause and not on the effect. Students have many different fears; most of them said they were afraid of failure, fear of rejection, fear of disappointment, fear of not being strong or good enough. Among this multitude of insights, we notice that their core is the "I-others" relationship because preteens try to discover while they discover themselves and it is normal for natural fears to arise in this context.

I also tried to experience intervention and I thought of intervention from children to children, considering that they relate to the core "I-others". In the counselling office, I invited students who talked about the problems they faced and the solutions they found and what were the solutions they found in relation to these problems. Several case studies were analyzed. The students were receptive and they said they did not feel alone anymore; they felt a sense of belonging and more than that they felt a strong motivation and the hope that they can overcome problems having more solutions at hand.

Significant importance must be conferred to prevention policies, the approach of each child according to his/her needs and especially the focus on group solutions, wherein everyone feels integrated, accepted and valued. The interventions are balanced, without judging, centred on everyone's comfort.

Thus, the acquired complex information provided clarifications on the studied issues and facilitated the identification of good practice examples for preteens' stimulation and personal, this aspect leading to a decrease in aggressive behaviours. We can mostly tell a person has high self-esteem proven by his/her behaviour but most of the times these persons show self-esteem in safety by his/her self-image insecurity or his heroics, narcissistic and

defensive particularities. Following-up the relationship between self-esteem and aggression, it is important to observe, to show the significative differences for modern research on aggression, namely those between proactive and reactive aggression, direct and indirect aggression. This is why we aim ar analyzing the problem of self-esteem, its definition, its conditional factors and why it affects our lives so deeply.

During the difficult preteen period, the child needs emotional security, but, most of the time, the preteen does not show this. The way of expressing, affirming, imposing the personality does not always show us the true experiences since it often has a mask disguising many of their anxieties and fears. Often preteen oscillates between the feeling of power and the feeling of weakness and decreasing self-esteem. To protect themselves from these emotions, preteens develop reactions of provocation, aggression, opposition. Violence in school starts, first of all, from a communication deficiency; vulnerabilities and a whole lot of emotions are hidden because they think that, by revealing them, they will make a display of their vulnerabilities, troubles and the fear of being injured or marginalized. Fighting against school violence means improving the quality of relationships and communication between all persons involved in the educational area.

CONCLUSION

This research work has shown the need to investigate the beneficial effects of the counselling program on the overall self-esteem of low and medium self-esteem preteens and to track changes in aggressive behaviours. Also, this research will be expanded and it will be the basis of the experimental research I envisage within the doctoral school, the general objective being to highlight the need to develop and implement self-esteem training methods through the implementation of improvement intervention programs. See on the development of good practices, counselling programs, an option to prevent aggressive behaviours by increasing self-esteem, absolutely necessary for the good development of students.

As education specialists, we want to see that what we achieve has a real impact at the educational level. Student’s emotional development is very important; hence we must intervene and draw attention to the aspects observed in the research. The attention should be both at the level of the family, teachers and the Ministry of Education in order to promote clear procedures and policies for specific intervention.

The research work has tried to draw the attention that focusing schools on cognitive development and neglecting other dimensions such as emotional or social is not an effective approach. Children's well-being means a balance between their needs for emotional stability and security, the needs to build quality social relationships and balanced self-esteem.

Emotional wounds hurt under different forms:

rejection, abandonment, anger, hatred, revenge, aggression, but human beings are so complex that no one has so far established what their limits really are. We are the limit, we strongly believe in this, we believe that when it hurts, we can survive; it is not easy, it does not last long... but it can help us to gro and discover another level yet not known to us. We see aggressive, uneducated, manipulative people... the so-called unexplored people neither by others nor by themselves. One needs to travel to oneself; it is fascinating and painful at the same time, but we can only this way to maintain our mental health. We think it's important not to be afraid of relationships anymore; I think it is important to communicate, so that we could grow together, to help ourselves so that we should not have the feeling that we are alone and that, when finding ourselves at hard times, we have no one to call to. It is important to have the courage to look at those around us, appealing to compassion and

curiosity... so we should proceed with ourselves... By means of socio-emotional development programs, we can start the journey to our inner self.

A child is not born violent, he learns violence. Some of the causes could be the exclusion of their group of friends, humiliation within their group of friends or in school. The attack actually means defence. Children defend themselves so as not to be victims, not to become victims and thus they become aggressors. Through aggressive behaviours, they validate their position as aggressors in the group.

What is to be done?

-The socio-emotional development programs in the school must be supported by parents;

-Legislative initiative on reducing aggression in schools should be implemented;

-A systematic approach should be implemented in order to decrease aggressive behaviours among children.

Children imitate everything they see; if they see aggression in their parents' behaviour or in the media, why are we surprised that they have become aggressive?

Considering that so many bullying cases are publicized, some of them with dramatic consequences such as deaths among children, public policy should be initiated urgently to prohibit bullying and take immediate measures against the aggressive ones and even against their parents if it is proven they have become aggressive due to their family environment.

When we refer to immediate measures, we do not refer to their punishment, as it is currently pursued, but we refer to the compulsory involvement of both aggressive students and their parents in socio-emotional development programs.

Researches lead to the conclusion that parents' aggressivity within the family leads to children's familiarization with aggression, consequently, its application. There are children who have only seen violence, disrespect and lack of tolerance in their family. They have not been taught how to connect to others.

Therefore, emotional and social education grant significance to what connection means, to their self-esteem development and connection to others and to the socio-emotional development. Why should we invest in children's socio-emotional development? Because these students will be the future adults with serious behaviour issues, those adults people fear, those adults who could even kill others. These programs no longer have to be options but urgencies where through procedures must be carried out so that to oblige the introduction of aggressive students in such programs. It is worth noting that among the criteria for establishing adult personality disorders, one of the criteria refers to the fact that the individual was involved in several acts of violence or had behavioural disorders during schooling. This aspect must be pursued.

Thus, socio-emotional development programs for students and parents is compulsory. The detection of these students prematurely, through collaboration with the family in granting the consent to enter such programs and through the collaboration with specialists can prevent many serious acts.

In this manner, the behaviours of future adults with personality disorders can be prevented. While interacting with aggressive behavioural students in the school counselling office, I noticed that all these students had problems in the family, as well, so one of the causes of their aggressive behaviour was related to family and family relationships.

The family approach is important because it is relevant to take into account the significant relationships of the aggressive student. Therefore, we need to pay attention to the way family functions as an interconnected system, because it is known that when a wheel is

affected, it is normal for this aspect to have repercussions on the whole. Often, what can greatly help the aggressive student to overcome his or her difficulties is related to the changes that occur within the family, the affective relationships between its members, the emotional availability that the family offers, the structure and the warmth that the child receives from the significant adults in his life. But when it comes to preteens, importance must be given both to the family, but especially to them. The focus is on the changes and transformations they can make in their life so that they can improve their aggression and their relationships.

If the greater investment is granted to socio-emotional education by creating more school counsellor positions that implement personal development programs, students' aggressive behaviours can be significantly reduced and prevented.

When education specialists decide that parents should help aggressive students, the goal is not to pity these students, but rather to understand why they have this aggressive behaviour and to use this information as a significant help in changing their behaviour. From my point of view, there is a paradox: aggressive students who try to intimidate others are actually those who most need others.

Aggression, just like bullying, is an acquired behaviour which was learnt at home, within the family, but the positive part is that it can be unlearnt. Children living in aggressive families need someone who can see beyond the noise of their violent behaviour and actually hear their cry for help. These children's deficit of emotional control drives them towards aggressive behaviours.

Scientific research does not always imply finding answers, but asking a great question. By analyzing and interpreting the collected data, they can be the basis for developing good practice examples in socio-emotional development. This product could be very valuable and useful for all teachers and education specialists and could be a landmark in understanding the relationship between self-esteem and aggressive behaviours.

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THE PEDAGOGICAL PRACTICE – DIMENSION OF THE TRAINING OF FUTURE TEACHERS

Luminița Mihaela DRĂGHICESCU[1], Ioana STĂNCESCU[2], Ana Maria Aurelia PETRESCU[3], Gabriel GORGHIU[4]
[1,2, 3,4] Teacher Training Department, Valahia University of Târgoviște
ROMANIA

E-mail: [1]lumidraghicescu@yahoo.com, [2]stancescu_ioana@yahoo.com, [3]anapetrescu2007@yahoo.com, [4]ggorghiu@gmail.com

ABSTRACT

The Romanian education system needs today, more than ever, good teachers, dedicated, devoted to their mission and aware of the major responsibility they must take on - accompanying the child on the path of his / her development, as a harmonious personality, and, thus, implicitly, to contribute to the "healing" of the society, which is marked by the dissolution of real values. In this context, the universities - especially through the teacher training departments -, have to be engaged in an efficient approach, oriented towards the formation of the professional competences related to the teaching career. The realization of such approach implies the prioritization of the pedagogical practical activities, in which the collaboration between all the factors involved in this process is important: students, mentors, coordinators of practical activities and, last but not least, teachers of pedagogy, psychology and didacticians. The present study is focused on the analysis of the opinions of the practitioner-students and teacher-mentors regarding the organization and leading of pedagogical practical activities. The investigative approach was made through a questionnaire-based investigation. Its items are focused, in particular, on the collaboration between two main actors of the pedagogical practical activities: the student-practitioner and the teacher-mentor. The purpose of this investigation was to obtain relevant feedback and to identify concrete measures or ways for improving the pedagogical practical activities.

Keywords: *didactic career; initial teacher's training; professional competences; transversal competences; pedagogical practical activities*;

INTRODUCTION

In a society troubled by various changes that occur in all the fields of activity, the only institution responsible for preserving and disseminating authentic values remains the school. In this context, the main responsible actors are the teachers, who must become aware and assume their mission: to provide a quality education, not only for the actual generation of children, but a quality education for a whole nation, for maintaining its moral health and contributing to its revival.

The teaching profession therefore implies an immense social responsibility. In this respect, the initial training process for the teaching career must be permanently monitored and adjusted, in order to identify and integrate in a timely manner any experience of good

practice that can generate the improvement of the expected results, which are materialized in solid professional and transversal competences of the people who want a teaching career.

"Teaching is a complex task, which requires a broad set of competences, the ability to apply them in varying situations, and the readiness and opportunity to develop them continuously. Initial teacher education offers candidate teachers knowledge and skills, which they can then practice and develop further in their professional life", shows the Report of the European Committee – Education and Training. Monitor 2019 (2019, p. 27).

One of the components of major importance in this process is represented by the pedagogical practical activities, when the practitioner-student can directly exercise, being monitored and advised by the mentor teacher, and ready to acquire necessary skills. If we analyze the picture of the defining competences for the teaching profession - didactic, psycho-educational, psycho-social, managerial and socio-educational -, we find that such activities, confined to the pedagogical practical activities, allow the formation / consolidation / development of the abovementioned competences.

The more necessary become the careful monitoring and prompt intervention in order to improve the pedagogical practice activities, the more "initial teacher education modules offer less preparation than programmes in other European countries, especially in practical domains" (2017, p. 123), as it is shown in an OECD Report – Reviews of Evaluation and Assessment in Education. Romania 2017.

If we refer to the curriculum related to the initial training process for the teaching profession, we consider, like all those who are concerned about increasing the quality of this process, that "teaching practice is (...) the most important part of pedagogical studies, which helps future teachers take a full part in the school life." (Rauduvaite, Lasauskiene, Barkauskaite, 2015, p. 1052).

1. BEST PRACTICES RELATED TO PEDAGOGICAL PRACTICAL ACTIVITIES

1.1. Description of the best practice model

In a study carried out in 2015, Martinjak apreciate that "a teacher's practical education and training are very important first steps in the real world development of a teacher's praxis" (2015, p. 192). With the same perception on the importance of the pedagogical practical activities in the process of initial training of the teaching staff, the Teacher Training Department from Valahia University of Târgoviște has been constantly involved in organizing, monitoring, evaluating and adjusting the activities subordinated to this demarche.

Thus, at the end of each semester, feed-back questionnaires are administered to the coordinating teachers of pedagogical practical activities, but also to the teacher-mentors from schools and students.

The questionnaires envisage to specific aspects of the pedagogical practical activities, mainly targeting on:

• the relationship established between the main actors of the pedagogical practical activities: (coordinating teacher) - (teacher-mentor) - (student-practitioner);

• the involvement of the coordinating teachers, the teacher-mentors and students in an efficient organization and development of the pedagogical practical activities;

• the identification of the dysfunctions that exist at the level of the various activities subsumed to the pedagogical practical activities;

• the identification of specific ways / measures for optimizing the whole process.

The data collected by the mean of those tools are supplemented with the information recorded after the semiannual meetings, in the format of focus groups, with participants from each of the three categories mentioned above.

1.2. Specific objectives

Through the best practice model described above, the following objectives are addressed:

- analysis of the perception of the practitioner students / coordinating teachers / teacher-mentors, concerning the efficiency of the organizing and conducting pedagogical practical activities;
- identification of proper ways / measures for optimizing the pedagogical practical activities.

1.3. Proposed activities in the best practice context

In accordance with the specific requirements of an approach that aims to optimize the educational activities, it was necessary to carry out activities such as: delimiting the problem, formulating the objectives; establishing the specific strategy / methodology; elaborating the research tools (feed-back questionnaires); pre-testing research tools; reviewing of the questionnaire feed-back; conducting the survey based on questionnaire; organizing the focus groups; processing and interpretation of results; capitalizing the obtained results, and, respectively, evaluating the impact of best practice.

1.4. Recorded results

In order to demonstrate the effectiveness of this model of best practice - designed by the Teacher Training Department from Valahia University Târgoviște -, we present, synthetically, the data collected after the administration of questionnaires to students and mentor teachers, at the end of the first semester of the 2017-2018 academic year. The datawas statistically processed and interpreted, in correlation with that registered within the two focus groups organized with practitioner-students and mentor-teachers.

The target group consisted of 260 students and 27 mentor teachers.

The quantitative and qualitative analysis of the collected information generated several interpretations:

1.4.1. Practitioner students' feed-back

One of the items of the questionnaire dedicated to practitioner-students envisaged the extent to which they appreciate that the mentor-teachers provided them with a relevant feed-back at the end of the pilot and final lessons. The percentage of respondents who appreciate that mentor-teachers provide them - to a very large extent and to a large extent - a relevant feed-back, at the end of the lessons, is 96% (fig. 1).

The positive students' feed-back related to mentor-teachers confirms the concern of the department training staff, along with its partners in such activities - Dâmbovița County Scholar Inspectorate and the schools, as units of application -for making a permanent selection of the teacher-mentors, based on clearly defined criteria.

The existence of 4% of the respondents who consider that the feedback is only relevant to a small or moderate extent, can be explained by the subjectivity expressed by them, as a result of the low marks received in the support of the pilot and final lessons.

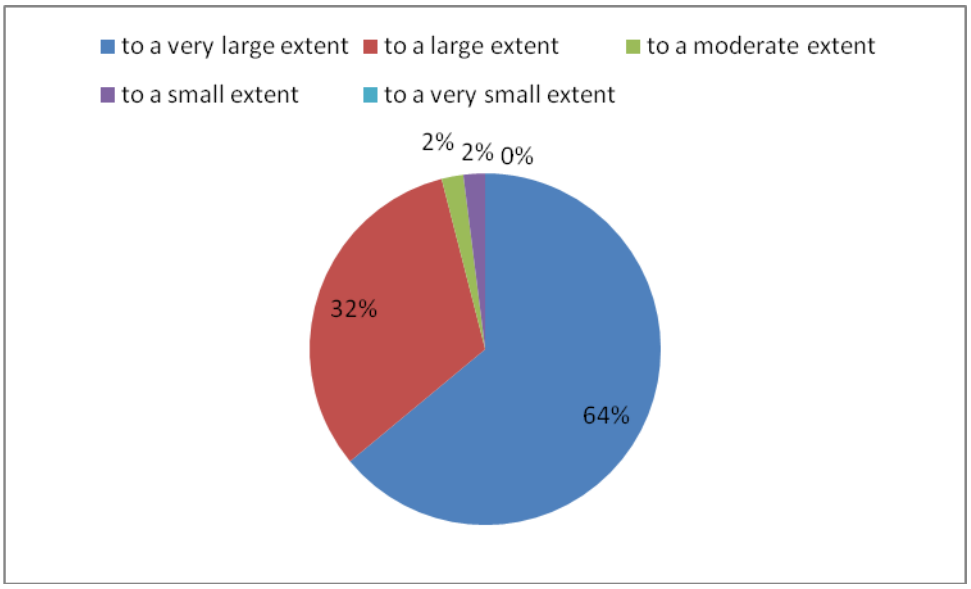

Figura1. Practitioner students' feed-back concerning the feed-back offered by the mentor-teachers

With the help of another item of the questionnaire administered to students, we targeted to identify the measure in which they consider that they benefited from the support of the mentor-teacher for identifying clear ways to optimize the didactic approach. Moreover, the improvement of the educational act must be a constant concern for each teacher, regardless of the accumulated teaching experience.

Moreover, the practicing students, being for the first time in the situation on managing themselves of all the variables which are specific to an instructional context, they need support in order to raise the awareness of the strengths of the lesson, but also the problematic aspects, mostly those which can be optimized and, above all, how can be achieved.

Following the distribution of the data recorded on this item, we can notice again, that in a very high percentage, respectively 93%, the respondents confirm the consistent support they receive from the teachers with a mentor status, in order to improve the subsequent training demarches. However, there are also practicing students (7%) who appreciate that mentoring teachers offer them suggestions for optimizing future lessons, to a moderate extent (fig. 2).

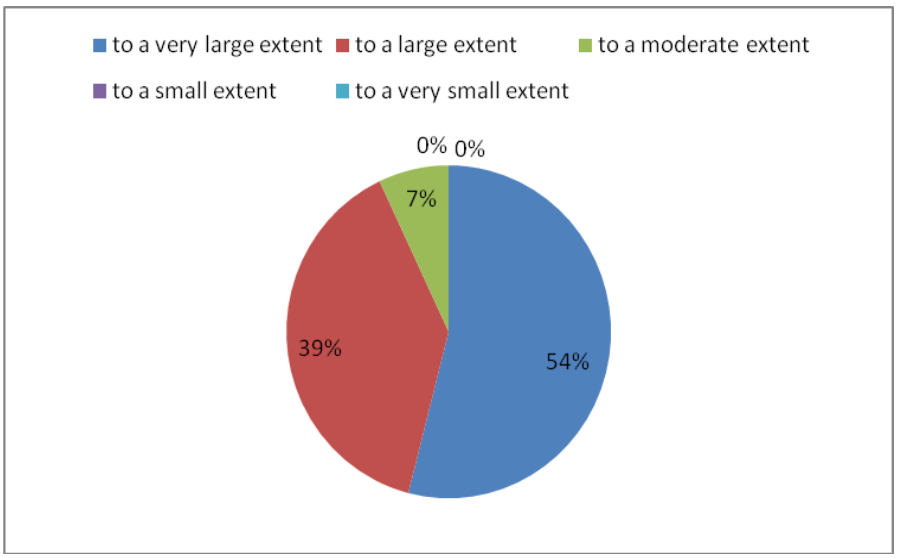

Figura 2. Practitioner students' feed-back concerning the support offered by the mentor-teachers in order to improve the didactic demarches

This is one of the issues we analyzed in the focus group organized with the mentor-teachers, the last ones underlining on the following explanation: "Students do not have enough confidence in them, they do not use their own creative potential and often expect solutions only from the mentor-teachers."

Being asked about the extent to which they appreciate that the mentor-teacher, in the context of the analysis of the observed / sustained lessons, stimulates them to develop their assessment / self-assessment skills, the practitioner-students provided us with answers that led us to the following findings:

- the analysis of the lessons is carried out with responsibility and professionalism;
- the mentor-teachers stimulate students to get involved in the evaluation / self-assessment demarches, based on the criteria included in the lesson observation sheet (Drăghicescu et al., 2018, p. 34) and on the items from the reflection sheet (Drăghicescu et al., 2018, p. 42), thus contributing to the training / development of the specific skills of a reflective practitioner (fig. 3).

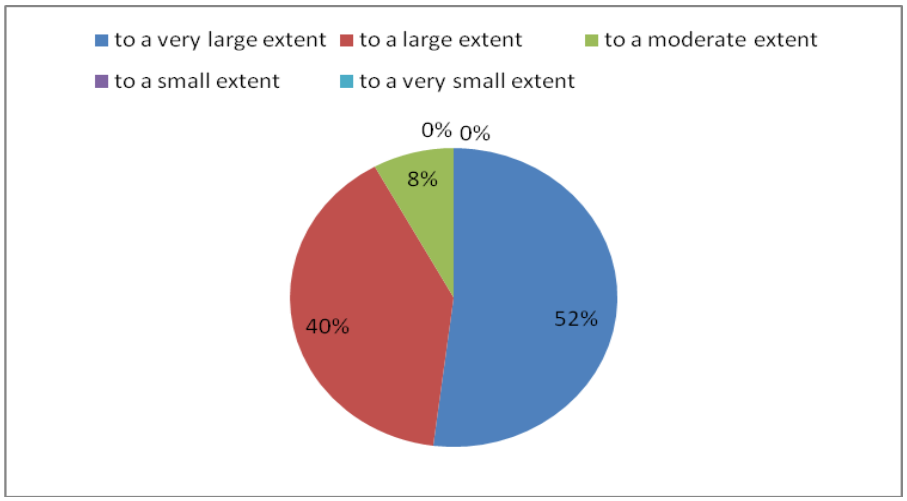

Figura 3. Practitioner students' feed-back concerning the measure in which they receive support offered by the mentor-teachers for developing the evaluation / self-assessment skills

1.4.2. Mentor-teachers' feed-back

One of the questions included in the questionnaire administered to the mentor-teachers aimed to identify their perception regarding the involvement of the students participating in the pedagogical practical activities, when designing and implementing the didactic approaches.

According to the feed-back offered by 80% of them (fig. 4), the students are very involved in the actions concerning the effective designing and implementation of lessons, which demonstrates a responsible attitude, but also confirms that the choice to participate to the Initial Psycho-pedagogical Training Program was a good and assumed decision, doubled by the motivation to invest in the complex process of becoming a teacher.

We also note a percentage of 20% of the respondents who consider that the practicing students are largely involved in the activities specific to the pedagogical practical activities. According to the recorded data, we mention that those students come, in particular, from the faculties that do not have a didactic profile (Engineers, Law, Economics), their motivation to invest in such training for a teaching career being considerably lower.

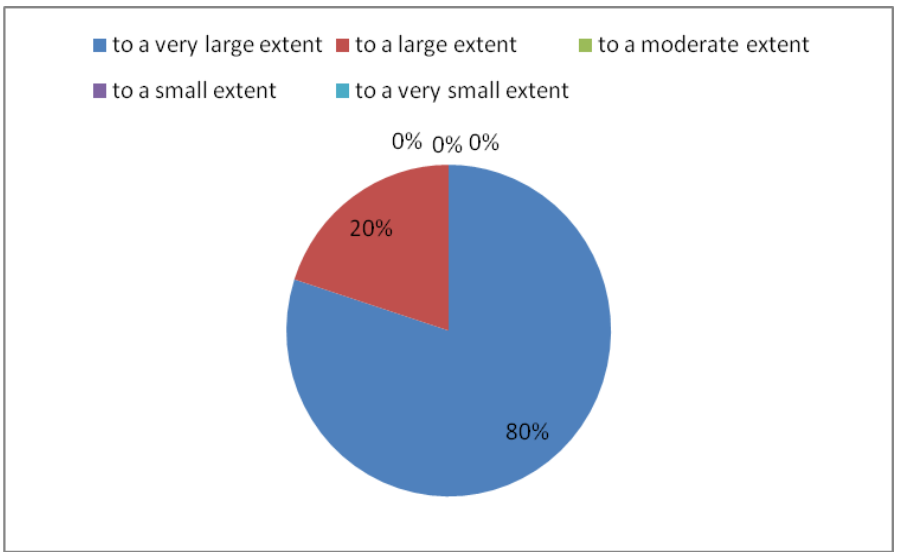

Figura 4. Mentor-teachers' feed-back concerning the implication of practitioner students concerning the designing and implementing of didactic demarches

Regarding the appreciation of the mentor-teachers related to the students' participation - with relevant observations - in the analysis / self-analysis of the lessons observed or implemented, and demonstrating real evaluation / self-evaluation abilities, a percentage of 93% of them (fig. 5) stated that the students participate to this action to a very great extent and to a great extent, which confirms that they have a solid psycho-pedagogical and didactic preparation, and can relate objectively to their own educational approach, as well as to that of their colleagues.

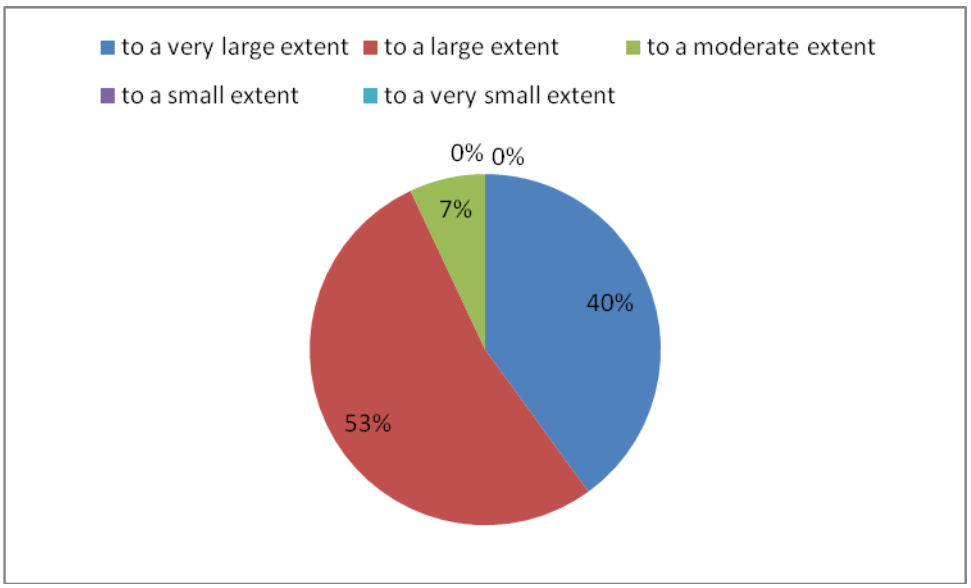

Figura 5. Mentor-teachers' feed-back concerning the participation of practitioner students to the analysis / self-analysis of the lessons

It can be noticed that in the training process of their assessment / self-assessment capabilities, useful tools proved to be the *Lesson observation Sheet* (Drăghicescu et al., 2018, p. 34) and the *Reflection Sheet* (Drăghicescu et al., 2018, p. 42), both subsuming their relevant criteria from this point of view.

The percentage of 7% of the respondents who consider that the students participate moderately in the analysis / self-analysis activities, is explained, to a certain extent, by the fact that the students to whom they refer, come in particular, from faculties that do not have a didactic profile.

Both categories of respondents were asked, by the mean of the administered questionnaire and within the organized focus groups, to identify or mention ways / measures / suggestions for optimizing the pedagogical practical activities. From the received answers, we selected the following ones, specifying that some of them have already been implemented:

- a better correlation between the pedagogical practical program and the mentor-teacher's schedule;
- a greater number of hours allocated to pedagogical practical activities in general, and observational practice in particular;
- supporting several test/pilot lessons;
- using of several modern teaching methods and tools;
- fast notifying of the problems faced by the practitioner-student in the classroom / lesson management process;
- better collaboration between practicing students;
- timely identification of the needs of practicing students etc.

CONCLUSION

The main difficulties, problems or limits identified in the integration of thepedagogical practical activities within the specific framework were:

- a light resistance manifested by the coordinating teachers of pedagogical practical activities in the administration of the feed-back questionnaires and in the participation in the focus-group, probably generated by the interpretation of this approach as a control, respectively of excessive / unexpected monitoring of the activity carried out;
- for maintaining a status - as a coordinating teacher of pedagogical practical activities or as a mentor teacher - and demonstrating that they exercise their roles and fulfill their attributions specified in the documents that regulate such activities, the respondents had the tendency to "pimp" the reality, placing each other, in a favorable "light";
- the feed-back questionnaires also requested to mention the identity, which let the answers to be objectively affected;
- the collection of the administered questionnaires was also achieved overpassing the deadline, some of the coordinating teachers motivating the delay by expressing the desire to process, independently of the Teacher Training Department, the whole data (we specify that most of the coordinators of pedagogical practical activities come from faculties, not being members of the department).

In order to optimize the best practice, we identified the following measures or modalities, some of them being already applied:

- adequate training of the coordinating teachers of pedagogical practical activities, of the mentoring teachers and of the practitioner-students, regarding the purpose and the objectives aimed at implementing the pedagogical practical activities;
- anonymizing the feed-back questionnaires;
- developing the possibility to fill-in online feed-back questionnaires;
- involvement of coordinating teachers of pedagogical practical activities in the process of processing and interpreting the collected information.

We appreciate that the approach taken into account can be included in the category of best practice, because it has generated the following effects:

- more careful programming of the pedagogical practical activities, by establishing a correlation between the scheduling program of the coordinating teacher of pedagogical practical activities, of the mentor teacher and of the practicing students;
- planning and supporting several test/pilot lessons;
- use of several modern teaching methods and tools, both in demonstration lessons, as well as in the test/pilot and final lessons;
- a better collaboration between the main actors of the pedagogical practical activities, in order to optimize its subordinated activities;
- organizing the conditions for simulating lessons, mostly in the context of other studied disciplines (Student Class Management, Computer Assisted Instruction);

- raising the responsibility of all those involved in organizing and carrying out pedagogical practical activities;
- raising the crucial role played by the pedagogical practical activities in the initial training process for the teaching career.

In conclusion, we consider that the pedagogical practical activities represents an essential dimension of the initial training for the teaching career, offering the appropriate framework for training / practicing / developing of all the professional and transversal competences, indispensable for a future profession in the big area of education, and ensuring the necessary conditions for the placement of the practitioner-student in different contexts, relevant in terms of the roles and duties specific to a teacher.

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BOOK REVIEW

COLLECTION: FUNDAMENTAL CONCEPTS IN PEDAGOGY, (author) Sorin Cristea (CONCEPTE FUNDAMENTALE ÎN PEDAGOGIE, Didactica Publishing House, Bucharest, 2017-2020)

Ana-Maria Aurelia PETRESCU[1], Luminița Mihaela DRĂGHICESCU[2],

[1] Teacher Training Department, Valahia University Targoviste
[2] Teacher Training Department, Valahia University Targoviste
ROMANIA

E-mail: [1]anapetrescu2007@yahoo.com, [2]lumidraghicescu@yahoo.com

Following the hard work, of a remarkably scientific accuracy and productivity, the author **Sorin Cristea** introduces now to the public no fewer than 12 volumes of the collection **FUNDAMENTAL CONCEPTS IN PEDAGOGY**, which was from the very beginning (2017) expected to be tremendously valuable in the field of the contemporary pedagogic literature. It is, as the author stated initially, a *necessary pedagogic collection, the result of hard work of high scientific quality*, as it includes 17 synoptic volumes, relating to 17 concepts/fundamental pedagogical issues which structure, to all intents and purposes, the epistemic core of pedagogy/educational sciences.

Sorin Cristea is a graduate of the Faculty of Philosophy, major in Pedagogy, University of Bucharest, class of 1973. He continued his educational path with doctoral studies in the field of Educational Sciences, and since 1994 he has been a Doctor of Pedagogy, with the doctoral thesis *Pedagogical Bases of the Educational Reform.* The paper was published by *Didactica and Pedagogica Publishing House*, in the same year, and represents even today a landmark for all and any person who pursues a genuine reform of the Romanian school.

His vast, diverse professional experience, enabled him to gain a profound understanding of the realities, specific to the educational landscape in Romania and recommends him as one of the few pedagogues possessing sound expertise in any domain subsumed under education.

Therefore, since 1973 to date, he has been, in turn, teacher of pedagogy-psychology in secondary and post-secondary education; teacher counselor - the Laboratory of Educational and Vocational Guidance, the County School Inspectorate of Bacău; Deputy School Inspector within the County School Inspectorate of Bacău; Deputy in the Parliament of Romania, Commission for Education; Secretary of State within the Pre-university Education Department of the Ministry of Education and Science; Senior Scientific Researcher level II, Institute of Educational Sciences, Department of Educational Theory and subsequently the Department of Educational Management.

Effective 1994, he goes through all the stages specific to the academic career: assistant professor with a PhD with the Faculty of Sociology-Psychology-Pedagogy, Teaching Staff Training Department, University of Bucharest, PhD Associate Professor and PhD Professor, within the same faculty. He is a coordinator of the courses *General Pedagogy (Fundamentals of Pedagogy, Curriculum Theory, Theory of Training, Assessment Theory, Classroom Management, Innovation in Education, Learning Theories, Educational Policies, Management of Educational Organization, Education Management* etc.).

Between 2004 and 2008, he was the Manager of the Teaching Staff Training Department, Faculty of Psychology and Educational Sciences, University of Bucharest. Furthermore, he had a long-term collaboration with "Ion Creangã" State Pedagogic University in Chişinău, Department of Educational Sciences. This collaboration was focused on holding courses intended for graduate students and coordinating PhD candidates in the field of Educational Sciences.

The didactic activity encompasses not only initial training of teachers but also lifelong learning of teachers in pre-university and higher education.

Additionally, it is worth noting the prolific activity conducted in the field of publications, which resulted in a number of over 40 books, most of them as sole author, over 600 specialty studies and articles, numerous participations to national and international conventions. Some of the fundamental books that any man involved in the educational sector should read, *Encyclopedic Dictionary of Pedagogy*, *Learning Theories – Training Models*, *Management of Educational Organization*, demonstrate the author's solid competencies in all branches of educational sciences and beyond, given their interdisciplinary nature.

It should be also noted the high editorial activity: permanent / weekly column, *Recourse to Pedagogy* in the *Education Tribune*, in April 2000; permanent / bimonthly column, *Pedagogic Dictionary* in the *Education Tribune*, year 2004; permanent / monthly column, *Dictionary - Didactica Pro… Magazine for Theory and Educational Practice*, Chişinău, Republic of Moldova; permanent column - *History of Pedagogical Thinking*, in the Magazine *Universitatis Studies, Series Educational Sciences*, State University in the Republic of Moldova; course of *General Pedagogy* held on a weekly basis as *university television* with *The Television of Tomorrow* (*TVRM*), academic years 2001 - 2002, 2002 - 2003.

Furthermore, professor Sorin Cristea is member of professional associations and editorial committees of some prestigious journals/magazines in the field of *Educational Sciences.*

Taking into account that he is by definition a literate person, we are not to disregard his intense activity carried out in the field of promoting pedagogical writings, in general. He is the Coordinator of the Collection *CONTEMPORARY PEDAGOGICAL IDEAS*, *Didactica and Pedagogica RA Publishing House*, in 1994, and the Collection *HISTORY OF PEDAGOGICAL THINKING*, *Didactica and Pedagogica RA Publishing House*, in 2007.

Returning to the work under review, we have to state that, according to the author, the general goal of this collection is to attempt at *re-establishing the normality in the field of education, learning, training,* by highlighting the epistemological status of pedagogy, as a specialized social and human science in the field of education, based on some fundamental pedagogical concepts.

In terms of specific objectives, derived from the general goal, the author's intention is:

a. to structure the issues on education, training, curricular design of education and training, in relation to fundamental pedagogical concepts, grouped within the general theories in the field;
b. to capture and interiorize some fundamental concepts in relation to the theoretical and practical pedagogical consciousness of the teaching staff;
c. to implement those fundamental pedagogical concepts in solving the current issues faced up by education and training;
d. to analyze and create a synopsis of those fundamental concepts in the permanent self-improvement process, relating to the activity performed by the teaching staff.

Given the goal and the objectives enunciated above, we consider that this collection already occupies a leading position in the series of the works and papers on pedagogy in Romania. Moreover, it should be noted the topicality of the issues presented in the volumes of the collection, and the clear, organically-structured and well-argued manner in which the main themes of the field of education/pedagogy are approached.

In terms of architecture, the collection is structured in 17 volumes, grouped in line with those three fundamental domains of pedagogy, namely: general theory of education/fundamentals of pedagogy, general theory of training/general didactics, general theory of the curriculum.

Therefore, the first part of the collection, entitled **General Theory of Education/Fundamentals of Pedagogy** comprises 5 volumes entitled: Pedagogy/Pedagogical Sciences/Educational Sciences – vol. 1; Education. Concept and Analysis – vol. 2; The Outcomes of Education – vol. 3; Contents and Forms of Education - vol. 4; Education/Learning System – vol. 5.

The second part, **General Theory of Training/General Didactics** is structured in seven volumes as follows: Training/Learning Process – vol. 6; Forms of Organization of Training/Learning Process – vol. 7; Objectives of Training/Learning Process - vol. 8; Contents of Training/Learning Process – vol. 9; Methodology of Training/Learning Process – vol. 10; Assessment of Training/Learning Process – vol. 11; Conducting Training as Teaching - Learning - Assessment Activity – vol. 12.

The last part of the collection, dedicated to the **General Theory of the Curriculum** includes other five volumes, respectively: Curriculum – vol. 13; Fundamentals of Curriculum – vol. 14; Domains of the Curriculum – vol. 15; Construction of the Curriculum – vol. 16; Curriculum Design of the Lesson – vol. 17.

Each volume of the collection starts with a quote in harmony with the topics addressed and with an argument by which the author introduces the concept to be enlarged upon in a synthetic and concise manner.

It is worth stressing the fact that added value is brought to each volume of the collection by the significant contribution, of a practical-applicative nature and with a clarifying role, made by Mrs. Mirela Mihăescu, PhD, School Inspector for Elementary Education in Dâmboviţa County, author of textbooks on didactics and teaching aids. She possesses a PhD in the field of educational sciences, being is also an experienced practitioner, with a significant expertise in the field of education. Therefore, at the end of each volume the author included, as *Applications,* a series of examples intended to highlight the relevance of the pedagogical concepts approached at the level of current educational practices.

The volumes included in this collection are dedicated both for undergraduate and graduate students who are preparing for a didactic career, teachers/professors in both pre-university and higher education, principals and school inspectors, in essence, to all entities directly involved in the epistemological and praxiological analysis of the education phenomenon.

In addition, it should be noted that all the volumes of the collection are supported by a consistent, relevant and up-to-date bibliography, thoroughly selected from international and national literature published in the field of pedagogy/educational sciences.

To conclude, we consider that the material reviewed, i.e. the Book Collection: **FUNDAMENTAL CONCEPTS IN PEDAGOGY,** is a work of paramount importance for the field of pedagogical literature in Romania, which has demonstrated an incontestable theoretical and praxiological value.

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