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School Performance and Technology: The Importance of ICT Skills for Chilean Student's Learning

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Abstract

The article analyzes the school performance of Chilean secondary school students in the areas of Language, Mathematics and ICT using the database of the SIMCE 2013 Survey. It also measures the contribution of technologies to the level of school performance, analyzing their impact, compared to other components of the student's socio-family profile. For this purpose, descriptive-correlational and Logistic Regression analyzes are performed. It is found that levels of school achievement are poor and are deeply segmented according to the student's family income level. Although components of technological profile have an impact in this respect, the economic and cultural attributes are the structuring components of performance.

Keywords: school performance, level of achievement, standardized tests, ICT skills, ICT experience, lag.

1. Introduction

The educational system is a framework of didactic and disciplinary levels and processes in which various actors intervene in order to learners acquire knowledge and also quality and relevant skills in the different areas of the school curriculum. Since the creation of the Education Quality Measurement System (SIMCE) in 1988 in Chile, deficits and segmented achievement levels of the school population have been informed (Aguirre, Castro & Adasme, 2009; Mora, 2010).

Learning is a complex social phenomenon on which a set of personal, socio-family and institutional factors of varying magnitude and nature intervene in continuous interaction. When explaining school performance, cultural and family economic capital attributes are predictable factors, which have a significantly higher incidence than that attributed to the school (Lozano, 2000; Brunner & Elacqua, 2005; Navarro, 2003). The educational institution evidences difficulties to incorporate added value in the educational process, particularly in the poorest, making them responsible for the deepening of the learning gaps (Matear, 2007; Gisbert & Esteve, 2011; Tejedor & García-Valcárcel, 2006).

School success, is therefore strongly linked to socio-family coordinates, conditioning performance, educational expectations and attitude towards student's learning based on their social origin. Parents transfer attitudes and expectations to their children, which vary according to socioeconomic status (Arnold & Doctoroff, 2003); Mothers with a lower level of schooling would be less rigorous and selective regarding educational material, showing less concern about what their children are learning compared to those who are more educated (Piacente & Tittarelli, 2009). Similarly, parents of lower socioeconomic status tend to have lower levels of schooling and cultural capital, a situation that would directly influence their children's school performance (OECD, 2010; IEA, 2008; Marks, Cresswell & Ainley, 2006). There is even a significant relationship between school performance in literacy and the family level of income (Magnuson, 2007).

In poor households, there would be less availability of quantity and quality cultural artifacts. For example, the reduced presence of books restricts reading habits, language comprehension and vocabulary management (Bus, Van Ijzendoorn & Pellegrini, 1995). The sociocultural level not only influences the availability of educational potential material existing at home, but also determines the relevance and quality of the experience with them.

On the other hand, in the context of learning, especially in areas of socio-educational vulnerability, Information and Communication Technologies (ICT) can be an important tool to guarantee quality, relevance and equity in the levels of educational achievement. ICTs have the potential to democratize access to knowledge and to develop meaningful learning experiences using the educational material available in them. The new generations demand a greater use of technologies to achieve school success (Pedró, 2006), since the mastering of them would influence the academic performance, in strategic curricular sectors such as Language and Mathematics (Formichella, Alderete & Meglio, 2009; Spiezia, 2011; Cristia, Ibarra, Cueto, Santiago & Severin, 2012; Torres & Padilla, 2015). The Internet, for example, based exclusively on written text and used in a non-sporadic way, would improve reading results (Jackson et al., 2006; Jackson, von Eye, Witt, Zhao & Fitzgerald, 2011).

Although ICTs have an important potential for school learning, they are only tools that accompany the educational process, so the results will depend on the use that is being made of them (McFarlane, Sparrowhawk & Heald, 2002). The availability, knowledge and use, condition the quality of the educational experience. When, for example, the computer is used mainly for communicative and non-academic leisure activities, its use would not have positive effects on school performance (Montero & Nahuelpán, 2010). Also, according to authors like Schofield, Demont and Webber (2005), Hollingworth, Mansaray, Allen and Rose (2011), Hargittai (2010), in poor economic contexts, ICT penetration is more limited and less intensive use is made of them.

The school system shows important difficulties to install ICT skills and abilities in its students, especially when compensating for the weaknesses of the technologically most neglected sectors. ICTs find serious barriers to penetrate the education system and the classroom's black box. Beyond the declaratory level and strong social desirability of the pedagogical discourse, with its politically correct imprint of modernity that makes the use of ICT a recurrent linguistic expression to define the task, the truth is that pedagogical strategies are rather conservative and do a low use of technologies. It is not that ICT is outside the teaching profession, but its use is more reserved to the administrative management of the curriculum than to the development and implementation of it.

The scarce and rudimentary use of ICT is one of the main weaknesses to be overcome by pedagogical action, especially when several research findings inform its importance in the installation of higher levels of educational achievement. If ICTs were used as part of the classroom experience, the impact on student learning would be greater (Condie, Munro, Seagraves & Kenesson, 2007; Claro, 2010). The use of ICT in school, along with promoting reasoning (Cox,

2003), reinforces the pedagogical role by allowing bi-directional interactions during the learning process (Gómez & Macedo, 2010).

In short, the quality of learning would be conditioned upon a set of socio-cultural and technological factors distributed with little homogeneity within the Chilean school population. In this sense, based on socioeconomic segmentation, this article comparatively analyzes the quality of learning informed by SIMCE standardized tests in the curricular areas of Language, Mathematics and Technology for the second year of secondary education or high school. Specifically, it emphasizes the contribution of ICT skills in school performance, analyzing its predictive capacity and incidence in comparison with other socio-cultural profile components.

2. Methodology

The databases of the Education Quality Measurement System (SIMCE) tests of Mathematics, Language and ICT skills for Learning (SIMCE-TIC) applied by Chile's Ministry of Education in 2013 to second year high school students are used in this article. These databases are available for academic research since the end of 2014.

The Mathematics and Language SIMCE Tests evaluate the achieved learning in these subjects based on the standard established in the fundamental objectives and obligatory minimum contents of the current national curricular framework. School performance is expressed through score and level of achievement:

- **Adequate Learning Level:** the student has demonstrated that he/she has acquired the basic knowledge and skills stipulated in the curriculum according to his/her grade level. In the case of mathematics implies that the student obtains a score equal to or greater than 319, and for language 295 or more.
- **Elementary Learning Level:** students demonstrate partial knowledge and skills according to their grade level. In the Language test implies a score between 250 and 295 points, and between 252 and 319 points for mathematics.
- **Insufficient Learning Level:** students in this level have not acquired the elementary knowledge and skills stipulated in the national curriculum. In the case of mathematics, students in this level are under 252 points and under 250 points in the case of language.

On the other hand, SIMCE- ICT has the purpose of determining the development of ICT skills for educational learning and also of knowing the personal factors and context related with the achieved technological appropriation level through the application of two context surveys, one for parents and another for the implied students. Both surveys, under reserved and confidential conditions, aim to find out socio-familiar attributes, attitude towards ICT, as well as availability, knowledge and use made of technologies at home and school.

SIMCE-ICT evaluates face-to-face the student's competencies in problem and task solving in the school context through the use of basic computer applications and internet tools. This test is carried out in front of a computer with an ad hoc computer application that emulates a virtual environment on which the student receives instructions to solve problems associated with a curricular transverse unit. At the disaggregated level it measures a total of 12 skills distributed in three dimensions: Information, Communication, and Ethics and Social Impact.

The Information dimension evaluates competencies related to the search, selection, evaluation and organization of pertinent and necessary information at the user-student level, as well as the capacity he/ she manifests to integrate, understand, analyze and represent those findings (Enlaces, 2013). In the Communication dimension, the student's ability to transmit information through technological means is evaluated. Specifically, it explores and quantifies the

capacity to recognize the components of the information to be communicated, identify the means to transmit it and select the most pertinent one based on the context. Finally, the area of Ethics and Social Impact dimensions the capacity to recognize and reflect on ethical dilemmas that technologies present in their relationship with personal and others lives and society as a whole. At the disaggregated level, it explores privacy protection, network security and responsible use of ICT.

From these skills, three levels of achievement are elaborated which allow to classify the performance of each student according to the obtained score:

- Initial Level: the student interprets simple information and is able to make a basic and rudimentary use of ICT, obtaining a score equal to or less than 245 points.
- Intermediate level: the student makes a basic functional use of the simplest digital tools, solving concrete problems. The score varies between 246 and 335 points.
- Advanced Level: they show an advanced functional use of more complex ICTs, which allows them to solve problems flexibly and efficiently. The score that the student must obtain at this level is 336 or more points.

Unlike the census character of the Mathematics and Language Test, the SIMCE-ICT is applied to a representative sample of the students. National and region representative stratified random sampling is used for data compilation at a student and educational unit level. Only students participating in each of the tests have been considered for this analysis purpose due to this procedural difference, using the SIMCE- ICT compilation as basis.

This methodological decision allows homogenizing the databases and being in accordance with the research purposes, despite the eventual loss of information. This structure is composed of 9,781 students, distributed in a total of 490 establishments, mostly belonging to subsidized private institutions (45.7%), urban sectors (94.6%), with a relatively greater presence of men (52.1%).

For the research purposes that guide this article, an analysis in two levels was made using the information of the Mathematics, Language and SIMCE-ICT tests compacted in one base.

In the first instance, a descriptive-correlational analysis is carried out characterizing the behavior registered by the levels of achievement in the different tests, controlled by socio-economic level which, according to the consulted literature, structurally conditions the academic performance of the student. Secondly, in order to give greater depth to the preliminary analyzes, the deficient level of educational achievement in the Mathematics and Language tests is modeled based on the possible incidence of the student's set of technological, educational and socio-cultural factors, modeled by a binomial logistic regression analysis.

Standardized indexes of Home Technological Equipment, ICT Experience and SIMCE-ICT performance were constructed for the configuration of the technological profile components. For analysis purposes, indexes are later made ordinal:

- ICT experience: referred to the time the student has been using a computer, expressed in years.
- Technological Equipment: it is measured by the presence / absence of six artifacts and the variety and availability of digital devices at home. Standardized index that is categorized for analysis purposes in three levels; Low (<0.25), Medium (0.25-0.50) and High (> 0.50).
- SIMCE-ICT performance: level of achievement based on the standard reached by the student in the SIMCE test of ICT skills for learning. The obtained score is dichotomized for analysis purposes, distinguishing the Initial (<245) and Elementary-Advanced (> 246) levels.

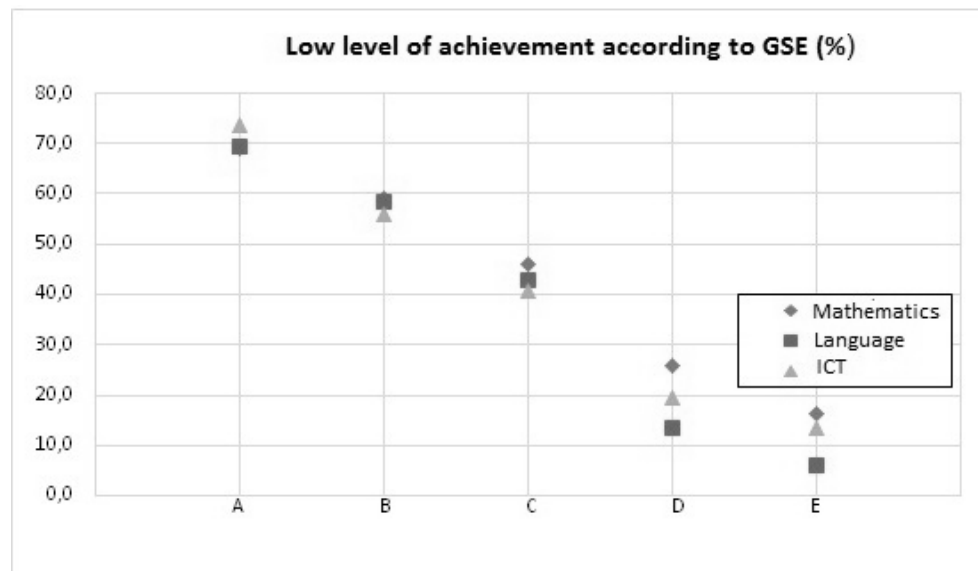
For socio-cultural factors, the socio-economic stratum was used. This variable is expressed in five levels based on the classification provided by the Ministry of Education, and it was supplemented with the level of maternal schooling and the number of books existing in the household, these variables were used as proxy of the socio-cultural level of the student's family. In particular, the number of books can be even considered as an efficient variable to estimate the family socioeconomic level (Schütz, Ursprung & Wöbman, 2008).

Finally, regarding the educational profile components, besides the well-known school performance in Mathematics and Language tests, the repetition condition is recorded.

3. Analysis

The SIMCE test measures the quality and equity in learning of Chilean students through various standardized tests, designed based on the fundamental objectives and minimum obligatory contents of the educational curriculum established for the student's grade level (MINEDUC, 2009).

Graph 1. Low level of achievement according to GSE (%)



Note: GSE= Socioeconomic Group; A= Low GSE; B= Low to Medium GSE; C= Medium GSE; D= Medium- high GSE; E= High GSE.

Source: SIMCE, 2013. Authors own elaboration.

Regarding this study, data report the low level of achievement attained in the three analyzed tests. Students obtained an average of 255.2 ± 56.5 points in language (Table 1) and only 26.7% demonstrated adequate knowledge for their corresponding grade level, while 45.8% presented an insufficient level of achievement (Graph 1). That is, about one out of every two students will find it difficult to read and comprehensively understand different types of texts.

In the Mathematics test, similar results are observed. On average students present 268.95 ± 68.87 points (Table 1) and 41.3% an insufficient level of achievement (Graph 1), registering little mastery and application of elementary procedures of arithmetic, algebra and geometry.

National educational system difficulties in granting quality education in the different areas of the curriculum are also verified when assessing the level of skills and competencies in the

use of technologies for learning. In the SIMCE-ICT test, with an average score of 251.14 ± 49.83 (Table 1), only 2.8% register an advanced level of proficiency, while 43.5% are placed at an initial achievement level (Figure 1), which is considered insufficient for the student's grade level. Generally speaking, one out of every two students shows only a functional and rudimentary management of ICTs. Scarce use and knowledge that represents a handicap that violates the student's educational performance since the technological tools are not only necessary to learn in the current school context, but also throughout life (Morrisey, 2007).

Based on the socioeconomic profile of the students, deep segmentation is added to these low levels of achievement. As parents' levels of family and educational income decline, scores on standardized tests decrease too, increasing the proportion of students who rank the lowest achievement levels. This learning gap is an expression of a fast process of socio-educational segmentation and a distinctive characteristic of a school system based on vouchers, parents' freedom of educational choice and of the little/low state intervention.

The school evidences difficulties to install quality learning. It fails to offset the deficiencies of an impoverished socio-cultural family context and even causes the existing gaps to expand. In mathematics, the probability of a low socioeconomic level student to be part of the lowest performance level is 11.5 times higher than that of a student of high socioeconomic status. In language and ICT, although less pronounced than in mathematics, the gaps are equally significant, reaching Ods Ratio of 4.2 and 5.5 respectively.

Table 1. Language and Mathematics Performance according to GSE and SIMCE-ICT Level of Achievement (average score and correlations)

		SIMCE-ICT level of Achievement				
GSE		Initial	Intermediate	Advanced	General	R_{xy}^1
Language	- Low and Low to Medium	$212,8 \pm 41,6$	$267,5 \pm 47,7$	$313,9 \pm 27,7$	$230,9 \pm 50,8$	$0,61^{**}$
	- Medium	$218,5 \pm 43,7$	$275,2 \pm 45,2$	$320,8 \pm 23,8$	$252,8 \pm 52,9$	$0,63^{**}$
	- High and Medium-High	$240,3 \pm 49,6$	$293,9 \pm 43,8$	$333,4 \pm 33,9$	$287,9 \pm 49,9$	$0,56^{**}$
	General	$217,6 \pm 44,0$	$281,8 \pm 46,6$	$330,3 \pm 32,5$	$255,2 \pm 56,5$	$0,68^{**}$
Mathematics	- Low and Low to Medium	$212,2 \pm 48,6$	$268,3 \pm 51,9$	$333,1 \pm 41,5$	$230,9 \pm 56,5$	$0,58^{**}$
	- Medium	$225,4 \pm 52,3$	$285,1 \pm 50,5$	$337,9 \pm 39,2$	$261,6 \pm 59,7$	$0,60^{**}$
	- High and Medium-High	$275,2 \pm 60,4$	$329,8 \pm 47,4$	$367,1 \pm 35,6$	$323,5 \pm 54,3$	$0,52^{**}$
	General	$223,3 \pm 54,8$	$301,1 \pm 56,2$	$360,4 \pm 38,5$	$268,9 \pm 68,9$	$0,68^{**}$

¹= Correlations resulted from SIMCE-ICT scores and Language and Mathematics tests.

**= Correlation significant at 0, 01

GSE= Socioeconomic Group.

Source: SIMCE, 2013. Authors own elaboration.

Added to the differential level of appropriation of the curriculum in the mathematics and language sectors of Chilean students, are the insufficient and rudimentary ICT skills for learning, establishing even that those who register low performance in these areas of the curriculum also demonstrate low level in ICT skills.

In fact, as ICT performance levels improve, scores on standardized tests also improve. Those who demonstrate an advanced level in the management of technologies, registered a score 51.8% and 61.4% higher in Language and Mathematics tests, compared to those who have initial performance in SIMCE-ICT. The analysis shows that these gaps become more significant when contrasted by socioeconomic group, establishing in the first instance, that educational

achievements in these areas of the curriculum are strongly conditioned by socio-family coordinates.

Despite the ICT competencies correlation to the Mathematics and Language performance, they would not be a determinant factor in the educational achievement; consequently all the association found must be cautiously analyzed when establishing a cause and effect bond for two fundamental reasons: First and consistent with the findings reported by OECD (2010), Aguirre, Castro and Adasme (2009), family social and cultural capital would be the main structurer of the differential school performance found in the different tests. Second, the measured digital literacy levels are structured and dimensioned based on a text comprehension process, so it is likely expected that students who demonstrate skills using traditional methods, also achieve competencies applying a new evaluative context.

In fact, the research findings that seek to causally relate ICT competences with academic performance are controversial and of dissimilar results. However, at the immediate and general level, our data report moderately high and statistically significant correlations (Table 1), both for mathematics [$r_{xy} = 0.68$; $P < 0.01$] as for Language [$r_{xy} = 0.68$; $P < 0.01$]. This implies that, in the context of bivariate analysis, the variability explained in the performance achieved in these curricular sectors is due 46% average to the performance obtained in SIMCE-ICT. These correlations remain constant, in terms of orientation and intensity, even when controlling by socioeconomic group, being only slightly lower in the High and Medium-High GSE level, both for Mathematics [$r_{xy} = 0.52$; $P < 0.01$] and for Language [$r_{xy} = 0.56$; $P < 0.01$].

In order to calculate the incidence of information and communication technologies, especially the level of SIMCE-ICT in school performance from a context of complexity, four multivariate logistic regression models were developed, where a set of technological profile variables of the students' cultural and socioeconomic capital are included. For each of the Language and Mathematics tests, two models are built. The first considers all the independent or predictive variables, while the second, which is more restricted, only considers the technological profile factors.

Table 2. Lag of the educational performance in language and mathematics SIMCE tests

	Language			Mathematics		
	%	Exp (β) ¹	Exp (β) ²	%	Exp (β) ¹	Exp (β) ²
ICTs level of achievement:						
- Initial	76,7	Ref.	Ref.	71,0	Ref.	Ref.
- Intermediate-Advanced	22,1	0,12**	0,15**	18,5	0,13**	0,17**
ICT Equipment at home:						
- Low	51,9	Ref.	Ref.	49,5	Ref.	Ref.
- Medium	33,0	0,75**	1,09	26,0	0,56**	1,08
- High	21,1	0,52**	1,16	12,9	0,30**	1,42
ICT Experience:						
- Low	74,5	Ref.	Ref.	73,5	Ref.	Ref.
- Medium	56,9	0,64**	0,67**	53,7	0,56**	0,54**
- High	34,7	0,41**	0,52**	29,0	0,34**	0,44**
Sex:						
- Male	49,2		Ref.	38,0		0,55**
- Female	42,1		0,69**	44,9		Ref.
Has repeated:						
- Yes	67,9		Ref.	65,8		Ref.
- No	41,6		0,61**	36,7		0,47**

GSE:						
- Low	69,2		Ref.	69,5		Ref.
- Low to Medium	59,0		0,91	58,3		0,79
- Medium	46,1		0,76	42,9		0,59**
- Medium High	25,8		0,52**	13,3		0,16**
- High	16,3		0,32**	6,0		0,06**
Mother's Educational level:						
- Up to 8 years	66,2		Ref.	66,4		Ref.
- 9-12 years	45,3		1,03	41,1		1,18
- More than 12 years	22,6		0,91	14,2		1,20
Books at home:						
- Less than 10	63,1		Ref.	61,6		Ref.
- Between 11-30	49,3		0,90	43,6		0,73**
- More than 30	31,9		0,68**	26,6		0,66**

1= Model involving exclusively technological profile variables; 2= Model involving technological profile and socio family, cultural and educational variables.

**= Level of significance at 0, 01; *= Level of significance at 0, 05

Source: Authors own elaboration based on SIMCE, 2013.

Concerning the ICT equipment at home, the simple proportion analysis indicates that students with a lag in their school performance belong to the most technologically precarious segments. Of students from low digital endowments homes, one in two shows low performance in both Language (51.9%) and Mathematics (49.5%). Significantly lower proportions are evidenced when there is a high endowed household, especially in Mathematics (12.9%). The regression analysis, on the other hand, reports that by having a *Low ICT Equipment Level* at home (Ref.), the probability of registering a low performance at a Medium Level is reduced by 25% in Language [EXP (β) = 0.75; P < 0.01] and 44% in Mathematics [EXP (β) = 0.56; P < 0.01]. This reduction of probability is more pronounced when compared to the *High ICT Equipment* segment, especially for Mathematics [EXP (β) = 0.30; P < 0.01]. However, the incidence of household ICT equipment in models that only include technological profile attributes (Model 1) becomes non-significant when incorporating the set of other variables. In a greater analytical complexity context, socio-family factors would be more relevant. Students' cultural, educational and economic capital components are associated with school performance and with having digital tools in variety and quantity.

On the other hand, SIMCE-ICT experience of use and level of accomplishment register significant incidence regardless of the model used. Seniority in the exploration of the network is important when analyzing levels of educational achievement, both at the level of bivariate and regression correlations. Considering Low Experience (Ref.) as a reference, the probability of presenting low performance when having a *Medium* level, is 36% lower in Language [EXP (β) = 0.64; P < 0.01] and 44% lower in Mathematics [EXP (β) = 0.56; P < 0.01]. The risk of falling into the lag zone is further reduced in a *High* experience level, both for Mathematics [EXP (β) = 0.34; P < 0.01] as for Language [EXP (β) = 0.41; P < 0.01]. In the bivariate space, of those with little experience of use, a proportion close to 74% presents low school performance. This is reduced to 30% in the segment of greater time of use.

Finally and among the analyzed technological profile factors, the level of SIMCE-ICT domain would affect the school performance. It provides the most important indexes in the analyzed models, along with the socioeconomic configuration component. 71% of those with low technological proficiency have low performance in Mathematics, and increased cipher of 76.7% in the case of Language. This proportion is significantly lower when the student demonstrates greater digital competencies (22.1% in Language and 18.5% in Mathematics). These results are endorsed in the multivariate space, here it is observed that the probability of being in a situation of educational insufficiency when the students reach a SIMCE Intermediate / Advanced ICT level of

achievement is significantly reduced in Mathematics [EXP (β) = 0,13; P <0.01] and in Language [EXP (β) = 0.12; P <0.01].

The availability of technology at home, especially the presence of the Internet, and the student's seniority as a user makes it possible for him/her to have a more extensive exploration and knowledge of the network without the restrictions of other places of access, articulate self-learning experiences and enrich educational processes for greater acquisition of educational competencies (Román & Murillo, 2014; Condie, Munro, Seagraves & Kenesson, 2007; Trucano, 2005). It is not surprising then, that in the carried out analysis a link between school performance and technological profile is established, either in its availability dimension, use experience or SIMCE-ICT competencies. However, this relationship is not linear causal, since both, the vectors that comprises the technological variables and the educational performance, are strongly conditioned by socioeconomic coordinates. In this context, the socio-cultural and economic attributes would be the incidental variables contaminating this relationship.

Although there is no consensus in this regard, research such as the one from Woessmann and Fuchs (2004) in the light of the PISA test results conclude that ICT's do not show a positive impact on the student's performance regardless the place of access and once the socio-family and educational institution variables are controlled. On the contrary and in this same line of argument, the limited use of academic-informative purpose of ICT in the home is associated with low school performance. Thus, to own and use technology is not enough to improve school performance, it is also necessary a less rudimentary use of it that complements communicative leisure with academic and educative purpose. It has been shown that when there is a low ICT use for academic purposes, one in every two students' results is insufficient in the Language test (51%), and similar results are shown in the Mathematics test (48%).

A set of the student's cultural, educational and socioeconomic capital attributes are added to the previously mentioned technological factors to evaluate their incidence in the scores obtained in the tests of Language and Mathematics. Although sex does not constitute a structuring variable in school performance levels in standardized tests, differential behaviors are observed in its binomial expression. A greater proportion of men have low performance in Language (49.2%) compared to women (42.1%). In the Mathematics test, on the other hand, the performance of women is more deficient. Consistent results are observed in the regression models that attribute that being a woman is a protective factor for lagging in Language [EXP (β) = 0.69; P <0.01], whereas in mathematics it is the fact of being a male [EXP (β) = 0.55; P <0.01]. In this vein, consulted literature reports small differences by gender in terms of cognitive abilities, but women would have a greater verbal fluency, better reading comprehension and spatial memory while men would succeed upon them in solving mathematical problems (Spelke, 2005, Belo, Ferreira & Telang, 2010).

The repetition variable at the educational profile level is, as expected, a relevant risk factor for the student's academic performance, especially in Mathematics [EXP (β) = 0.47; P <0.01]. In fact, deficient academic records condition educational trajectories. According to Cerón and Lara (2011), students who show repetition in their academic records have considerably lower scores than those who have not failed.

Finally, socio-cultural attributes show the highest incidences in the levels of performance in the standardized tests. Family socioeconomic stratum, parental educational level and the presence of texts at home have special relevance.

Students show low performance in Language (69.2%) and Mathematics (69.5%) when belonging to a Low- GSE, proportion that drops significantly in High- GSE. In this segment, only 6% is lagging in Mathematics and 16.3% in Language. Belonging to school segments with higher incomes (High and Medium-High) is a factor of protection against low level of achievement, especially in Mathematics [EXP (β) = 0.06; P <0.01]. Plenty of literature provides similar

conclusions. For authors such as Santín (2003), Rodríguez (2014) and Tedesco (2000), family socioeconomic level is one of the most relevant factors when explaining learning outcomes, even greater than school.

Maternal educational level and the number of books at home, used as a proxy for family cultural capital, also affect in the same orientation in school performance, although their results differ depending on the model used. In the bivariate context, as the educational level of the mother decreases, the proportion of students with low academic performance increases, especially in Mathematics. Although this variable was not statistically significant at the time of regression analysis.

On the other hand, having books at home exhibits a similar behavior, being significant in both the bivariate and multivariate contexts. Having a sufficient number of books at home is a protective element against low school performance, both for mathematics [EXP (β) = 0.66; $P < 0.01$] and for Language [EXP (β) = 0.68; $P < 0.01$].

Material conditions of existence shape the educational quality of the family environment and its capacity to influence the educational achievement of the children. The availability of cultural and symbolic artifacts reinforces the educational role of the parents, allowing the development of innovative and stimulating educational experiences at home. The greater presence of books, for example, would install reading habits, linguistic or vocabulary dominance and reading comprehension. This association has been found in several international studies such as PISA, TIMSS and PIRLS. Competencies are reinforced by parents with a higher level of education. The parental educational level not only influences the variety and relevance of cultural material at home, but also determines the type of relationship established with it (Rodríguez & Muñoz, 2016).

4. Conclusions

The school, as a formal institution, is responsible for enabling an environment where students, especially the most vulnerable, are able to enhance their skills and abilities in the different areas of the school curriculum. However, the Education Quality Measurement System (SIMCE) in Chile demonstrates poor and segmented levels of achievement, both in the traditional learning sectors of language and mathematics and in the emerging ICT area.

In the language sector, one out of every two students presents serious difficulties in reading and understanding different types of texts. In mathematics similar results are observed where students present little mastery of arithmetic, algebra and geometry. The results of the ICT test do not differ in this regard. One in every two students demonstrates a functional and rudimentary management of the technologies, with a marginal use in the educational context.

The scores obtained in the standardized tests of Mathematics, Language and ICT, are conditioned by the students' family socio-economic segment. As the incomes scale descends the proportion of students with poor performance in the tests increases. This is an expression of the difficulty the school has to install quality learning and compensate for the deficiencies derived from the environment.

It is observed that educational competencies in the ICT test are related to school performance in the curricular areas of Mathematics and Language showing high and significant correlations. However, these would not be sufficient determinant. Rather the family social and cultural capital is the main structure of performance in the various tests applied.

The analyzed Multivariate Models report that, along with technological profile variables, socio-family attributes would have an impact on educational achievement. The demonstrated level of ICT competencies for learning and the technological equipment influence

the probability of exhibiting poor school performance, both in Mathematics and Language, as well as the more precarious socio-cultural profile. The family socioeconomic group and having books at home are of special relevance in this matter.

ICTs have the potential to improve the quality and relevance of educational processes, but their real impact will depend on the technological competencies installed in the agents and the pedagogical intentionality that is systematically derived from it. Along with the use of communicative leisure, a less rudimentary technological appropriation and educational function is required, a particularly relevant challenge in the most vulnerable contexts.

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Declaration of interest

Conflicts of interest: none.

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Family “Capital” and Young People’s Educational-Occupational Choices in the Context of a Review of Recent Sociological Literature

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Abstract

Family constitutes the first group in which socialization takes place and within it the young person’s primary system of perceptions and thoughts, as well as his ‘repertoire’ of attitudes, choices and actions, is constructed. The purpose of this study is the investigation and presentation of the influence of family “capital” on the formation of young people’s educational-occupational choices through a review of recent sociological literature. From the study and analysis of the content and the research findings of relevant scientific papers the influence of family “capital” (cultural capital/habitus, economic and social capital) on the formation of young people’s educational-occupational choices in relation to their social origin emerges. In particular, it seems that habitus, through its reproductive and its transformative function, guides young people who come from socio-culturally more or less privileged environments in the formation of educational-occupational decisions and choices in order to maintain or transform their position in the social structure.

Keywords: family “capital”, habitus, reproductive function, transformative function, educational choices of students.

1. Introduction

Family, which constitutes the first group within which the young person is socialized, has a decisive effect on the formation of personality and the shaping of the system of perceptions, preferences and choices (Giddens, 2002; Hughes & Kroehler, 2007; Nova-Kaltsouni, 1998). It seems that researchers active in the field of the Sociology of Education are engaged in the issue of social and educational inequalities in relation to the socio-cultural origin of students (Kyridis, 1996, 1997; Lamnias, 2001; Matěakejů & Straková, 2005; Pyrgiotakis, 1998; Sianou-Kyrgiou, 2006, 2010). That’s why research interest focuses on the educational success and the educational-occupational choices and opportunities of young people. More particularly, many studies examine the influence of particular factors, which contribute to the educational course and educational success of young people, as well as to the choices concerning their educational and occupational

future. In this context, there are some studies which examine the contribution of socialization and pedagogical practices, applied within the family context, to the educational course of children (see: Colpin, Vandemeulebroecke, & Ghesquière, 2004; Vincent, Ball, & Braun, 2010; Vincent, Ball, & Kemp, 2004). Moreover, study interest focuses on the investigation of the influence of the educational route of students and the cooperative relationships that develop between students' parents and teachers (see: Levine-Rasky, 2009; McClure & Walker, 2000; Seyfried & Chung, 2002). Also, the discriminations and inequalities students are likely to experience in school according to their social, national, racial and religious origin attract researchers' attention (see: Levy & Massalha, 2010; Rankin & Aytac, 2008; Rogers, 2007). In addition, research interest focuses on the investigation of the relationship between the educational choices of students and the various forms of family “capital”, such as cultural and social capital (see: Bodovski, 2010; Green & Vryonides, 2005; Heath, Fuller, & Johnston, 2010).

This paper attempts to investigate the influence of family “capital” on children's choices concerning their educational and occupational future. In particular, our interest focuses on the answer to the following question: *How is the influence of family “capital” on the formation of educational-occupational choices of young people presented in the context of recent sociological scientific studies?*

For the construction of the content of this paper, which is developed after the section on theoretical references, we focused our interest on the approach to and study of relevant scientific literature. This guided us to define the following sections which are related to the thematic categorization of the papers we studied. The present paper closes with some concluding observations.

2. Theoretical pointings out

The approach to the theme which is under investigation is directly related to the use of the theoretical framework of Pierre Bourdieu. More particularly, the notion of capital possesses a central position in Bourdieu's theoretical construction (1977b, 1986, 1990). Capital “does not exist and function except in relation to a field” (Bourdieu & Wacquant, 1992: 101; Wacquant, 1989: 39) and is effective within the confines of this field, whereas it is converted to another type of capital under certain conditions (Bourdieu, 1993: 73).

According to Bourdieu (1986: 243), capital can exist in the following forms: (a) As *economic* capital, which was directly converted into money, and it may be institutionalized in the form of property rights. (b) As *cultural* capital, which is convertible under certain conditions into economic capital, and may be institutionalized in the form of educational qualifications. (c) As *social* capital, which is related to social “connections” convertible to economic capital under certain conditions, and which may be institutionalized in the form of a title of nobility. And, (d) as *symbolic* capital, which is related to resources available to the individual on the basis of “prestige” and “honor” and contributes to their growth. However, according to Bourdieu, all types of capital (economic, cultural and social) can function in the form of symbolic capital if they have explicit and practical recognition (Bourdieu, 1986; Bourdieu, 2002).

Cultural capital, which constitutes a central notion in Bourdieu's theory, could be defined as “cumulative capabilities and opportunities of the family to cultivate the most valued social knowledge, sensitivities and ways of thought and action”. Namely, it concerns “a corpus de savoir, de savoir-faire” and mainly “de savoir-dire” (Bourdieu & Passeron, 1964: 36-37; Lamnias, 2001: 157; Milonas, n.d., 211). Specifically, Bourdieu (1977b, 1986, 1994a) discerns three forms of cultural capital: the embodied form – habitus, the objectified form and institutionalized cultural capital in the form of educational credentials (a form of socialization).

Cultural capital in its embodied form is acquired through a long process of inculcation and incorporation, and it presupposes investment in time from the person himself. It is directly

related to the body of the individual in the form of dispositions, since it constitutes ‘a have that became a be, an hexis’ (Accardo, 1991: 88; Bourdieu, 1994a: 78). Habitus, ‘the endless capacity to engender products –thoughts, perceptions, expressions and actions– whose limits are set by the historically and socially situated conditions of its own production’ (Bourdieu, 1977b: 95, as cited in James, 2009: 317), provides a theoretical link between objective social structures and subjective perceptions of the world (James, 2009: 317).

Objectified cultural capital includes visible cultural goods that can be inherited, such as paintings and books. Comprehension and “consumption” of cultural goods is related to the embodied cultural capital the social subject possesses (Bourdieu, 1986; Bourdieu, 1994a: 81-82; Lamnias, 2001: 158).

Institutionalized cultural capital is acquired in the context of educational institutions and is legalized in the form of educational credentials obtained by students after their successful graduation from these institutions. This form of cultural capital reveals the history and the course of the individual across the educational system (Bourdieu, 1986; Lamnias, 2001: 158).

From Bourdieu’s theoretical framework it emerges that social inequalities in educational success are traced to the social distribution of cultural capital. In this regard, educational reproduction leads to social reproduction (Bourdieu, 1977a; Symeou, 2007: 475). Bourdieu and his collaborators, in the context of their studies on the educational system, initially used the notion of cultural capital in order to explain the degree of educational success of children whose parents have high educational qualifications. These children hold a privileged position in school due to the help they receive from their parents, on the one hand, and, on the other hand, due to the familiarity they acquire with “highbrow” culture (Pieur, Rosenlund, & Skjott-Larsen, 2008: 47). In fact, Bourdieu and Passeron (1979: 17) mention in a characteristic way:

Not only do the most privileged students derive from their background of origin habits, skills, and attitudes which serve them directly in their scholastic tasks, but they also inherit from it knowledge and know-how, tastes, and a “good taste” whose scholastic profitability is no less certain for being indirect.

So, according to Bourdieu (1986: 243), academic success concerns “the specific profits which children from the different classes and class fractions can obtain in the academic market”.

In the course of this paper, the categorization of the review of scientific literature according to the thematic content of relevant studies is presented. Also, in each thematic categorization we will focus our interest on the brief presentation of the findings of some characteristic studies.

3. Choice of higher education studies

There is great interest, mainly in the Anglo-Saxon space, in the investigation of young people’s educational choices in the field of higher education. In particular, studies which focus on the United Kingdom place emphasis on the examination of the effects which are due to family socio-economic and cultural factors regarding the definition of its members’ higher education choices. Increased participation in the British higher education system, with its gradual transition from an ‘elitist’ to a ‘mass’ system, advantages socio-culturally privileged young people. So, class inequalities, whose preservation operates against socio-culturally underprivileged people, seem to remain intense (see: Iannelli, 2007; Machin & Vignoles, 2004; Pugsley, 1998; Reay, Davies, David, & Ball, 2001; Waters & Brooks, 2010; Watson, 2013). It seems that the current British higher education system remains as stratified as it was in the past, offering an additional advantage to socio-culturally privileged people, who already enjoy many advantages (Blackledge & Hunt, 2002). Moreover, the specific educational system could be parallel and correspond to the French stratified educational system that Bourdieu describes in his theory (Reay et al., 2001: 858).

In the Greek educational system, access and the degree of participation of young people in tertiary education has expanded offering more chances and opportunities to students from socio-culturally less privileged environments to be admitted to tertiary education. However, the representation of social classes in the field of higher education, which presents characteristics of social stratification, remains uneven (Kyridis, 1996, 1997; Sianou-Kyrgiou, 2006, 2010).

The education system, which appears meritocratic on the surface, actually perpetuates and reproduces existing socio-economic and cultural inequalities, because it includes, on the one hand, a hidden value system which privileges people from backgrounds with high socio-economic status, who are “de facto” privileged from a socio-economic point of view. And, on the other hand, people, whose habitus, which is opposed to the “legitimate habitus” means they have a lower socio-economic status, consciously follow a course which excludes them from the educational field while also denying them any future chance of contact with this field (Bourdieu, 1977a; Dumais, 2006: 86).

In his work *Cultural Reproduction and Social Reproduction*, Bourdieu states characteristically (1977a: 494):

...the educational system demands of everyone alike that they have what it doesn't give. This consists mainly of linguistic and cultural competence and that relationship of familiarity with culture which can only be produced by family upbringing when it transmits the dominant culture.

In this regard, equal educational opportunities and prospects for every student alike is a myth, since socio-economic and cultural inequalities seem to be perpetuated and reproduced in the educational field (Bourdieu, 1977a, 1984).

4. Social origin, forms of family “capital” and students' educational-occupational choices

Recent sociological studies reveal that family habitus combined with the families' possession of economic and social capital play a significant role in the formation of the educational-occupational choices of young people from middle-class and working-class backgrounds. This is related to the use of the family's social “connections” which seem to contribute to the occupational choices and outlets followed by its young members (see: Green & Vryonides, 2005; Pugsley, 1998; Sianou-Kyrgiou, 2010; Sianou-Kyrgiou & Tsiplakides, 2009, 2011; Tavares, Tavares, Justino, & Amaral, 2008; Vryonides, 2007; Waters & Brooks, 2010).

In particular, young people of working-class origin, whose family environment can't offer them ‘effective’ social, economic and cultural capital, tend to choose more “secure” and “compromised” educational and occupational solutions. In contrast, young people of middle-class origin, whose families possess a great volume of cultural, social and economic capital, are guided to choose high status studies in the social and academic hierarchy, such as medicine and law. This is imprinted in the major classification of the university field concerning “*les Grandes et les Petites Écoles*”, as well as the “homology” of working-class young people who choose “*la petite porte des Petites Écoles*” and middle-class young people who choose “*la grande porte des Grandes Écoles*” (Bourdieu, 1989: 188). Also, it seems that a large number of middle-class young people choose to study in prestigious university institutions in order to use institutionalized cultural capital, acquired in the form of undergraduate degrees and postgraduate diplomas, as a means of reproduction of their social advantages and maintenance of their privileged position in the social field (Azaola, 2012; Bourdieu, 1984; Bourdieu & Passeron, 1977; Green & Vryonides, 2005; Sianou-Kyrgiou, 2006; Sianou-Kyrgiou & Tsiplakides, 2009, 2011; Waters & Brooks, 2010).

Sianou-Kyrgiou & Tsiplakides' study (2011) conducted during the academic year 2008-2009 with first-year university students in the Medical School and Department of Primary School Education at the University of Ioannina in Greece is representative. The research findings showed that family habitus, the uncertain economic positions of the parents' occupation and the restricted economic resources of the family, combined with the general financial context and the labor market conditions, contribute significantly to the "compromises" working-class students make in order to choose their academic destination. So, students from working-class backgrounds, whose families possess a low volume of economic capital, choose a department which leads them to a low-status, permanent occupation in the public sector. Moreover, from the research it emerges that these students are looking for "secure" educational and occupational outlets. This is because they know that their family's limited social capital can activate very few social "connections" in order for them to find a job after graduation. In contrast, middle-class students motivated by the symbolic and material benefits their occupational employment could offer them in the future, choose to study medicine. A strong factor which affects this educational choice is their "disposition" towards medicine, that is to say, it has to do with the sense that this scientific field constitutes a "natural" continuation of their educational course throughout history. That's why the specific students stated that they want to use educational credentials as 'a form of exchange value' allowing them to "exchange their education for prestigious jobs, financial security, social power and cultural prestige" (Labaree, 1997: 31, as cited in Sianou-Kyrgiou & Tsiplakides, 2011: 98).

In the context of current Greek social reality, characterized by the severe social consequences of the economic crisis, there is strong competition among lyceum students in order to enter institutions which seem to guarantee more occupational opportunities, such as Medicine, Law and Polytechnic Schools (Tsikalaki & Kladi-Kokkinou, 2016: 66). In this case, it seems that students who come from socio-culturally advantaged environments have increased their chances for admission to these Schools. That's why their families invest a great volume of economic capital in private tutoring provided to their children outside of the school system. In this way, they aim to transform their economic capital into cultural capital, which is expected to be institutionalized in the form of a prestigious university degree by their children (Bourdieu, 1986, 1994a; Jæger, 2007: 532; Koustourakis & Asimaki, 2011: 615). Although there is increased participation of socially disadvantaged students in the process of entering tertiary education, it is still quite difficult for them to prepare for the entrance examinations because they don't have a family safety net which could support their educational effort (Koustourakis & Asimaki, 2011). So, there is a significant percentage of students in this social category who don't try to enter tertiary education, because their family cannot afford to support their entrance preparation, or the long-term studies which would follow. Furthermore, students from socially underprivileged family environments don't expect to improve their social position through higher level studies because of the high unemployment rates that affect young people who hold tertiary education credentials in Greece (Tsikalaki & Kladi-Kokkinou, 2016: 65-66).

5. Reproductive function of habitus and students' educational-occupational choices

Many studies with a sociological character reveal the effect of cultural capital and habitus on the educational success of young people in relation to their social origin. Such a fact seems to confirm Bourdieu's theory of "cultural reproduction" (see: Davies, Qiu, & Davies, 2014; Kaufman & Gabler, 2004; Mullen, 2009; Noble & Davies, 2009; Sianou-Kyrgiou, 2010; Sianou-Kyrgiou & Tsiplakides, 2009, 2011; Symeou, 2007; Thompson, 2009; Wakeling, 2005; Waters & Brooks, 2010). In particular, it emerges that dispositions children inherit from their families are imprinted on their educational success and on the way they plan their future throughout their educational and occupational choices. This comes about because families can be classified according to their social origin, since it seems that families who belong to the same social class share structurally similar positions within the social world, and internalize similar experiences of

social relations (Maton, 2008: 53). So, young people who come from socio-culturally advantaged environments seem to inherit a habitus which corresponds to the “legitimate culture”. In this regard, the family habitus of the specific young people reinforces them with certainty and self-confidence and guides them to choose higher education studies which usually have a high level of prestige. On the other hand, the family environment of young people from working-class backgrounds doesn't usually provide them with the opportunity to become familiar with educational stimuli. Therefore, they make less ambitious educational choices and as a result when they choose to study in higher education they integrate into lower-status academic institutions (see: Bourdieu & Passeron, 1977; Maton, 2008; Mullen, 2009; Sianou-Kyrgiou, 2010; Sianou-Kyrgiou & Tsiplakides, 2009, 2011; Waters & Brooks, 2010).

Mullen's study (2009), which showed that the cultural capital of higher socio-economic status parents plays a significant role in their children's study in elite institutions in the United States, such as an Ivy League university, is indicative. In fact, parents from privileged backgrounds, through their personal experience of study in elite institutions and their acquisition of a strong body of knowledge, inculcate the belief in their children that Ivy League institutions constitute appropriate destinations for studies. On the contrary, parents from socially underprivileged environments who don't have personal experience of higher education studies express doubts about the suitability of high-status academic institutions for their children's studies. Therefore, a number of less privileged young people don't try to enter high-status academic institutions, such as an Ivy League university, because they don't feel comfortable attending them.

In that case, the sense of comfort and familiarity which characterizes young people of middle-class origin concerning the choice of study at university institutions is combined with the statement that university level studies constitute a “natural” continuation throughout their educational course. This is in contrast to the unfamiliarity young people of working-class origin usually feel about their decisions and their choices to study at a university institution (Mullen, 2009; Reay, 1998; Sianou-Kyrgiou, 2010; Vryonides, 2007; Watson, Nind, Humphris, & Borthwick, 2009). Students, whose parents don't ‘bring’ educational-cultural qualifications and experiences of university studies, internalize the belief that the higher education field “is not for them” (Bourdieu, 1984; Bourdieu & Passeron, 1977; Dumais, 2006: 85; Maton, 2008). In this case, they are self-excluded from entrance to academic institutions, a fact which contributes to the reproduction of social stratification. In other words, they function according to self-selection which has characteristics of a “self-fulfilling prophecy” (Dumais, 2006: 85), and which results in their “reconfinment” in family working-class culture (Bourdieu & Passeron, 1964: 110).

6. Transformative function of habitus and young people's educational-occupational choices

Although there are many studies whose findings confirm Bourdieu's theory of “cultural reproduction”, other studies show conflicting results. In this case, it seems that the cultural capital and habitus that young people who come from socio-culturally underprivileged environments have acquired from their family, follow a social mobility model. Namely, they don't follow a reproductive model, as Bourdieu suggests in his theory, a fact which is imprinted on their high educational-occupational expectations and choices (Baker & Brown, 2007; Flere, Krajnc, Klanjšek, Musil, & Kirbiš, 2010; Lehmann, 2009; Watson et al., 2009). It seems that the social environment of socio-culturally underprivileged families, which is limited in opportunities and prospects for development, urges young people to restructure their schemes of thought and perception, and as a result they are guided to higher education choices so as to ensure improved chances and prospects of upward educational, social and occupational mobility in the future (Accardo, 1991; Bourdieu & Passeron, 1977; Swingewood, 1998).

Baker & Brown's research (2007), conducted in 'traditional' UK universities and according to which it emerged that 'non-traditional' students from socio-culturally underprivileged environments have adopted a middle-class "disposition" towards higher education and stand in favour of "good" Universities, is characteristic. These students shaped a habitus which enabled them to pass through social and educational environments, which are significantly differentiated from the experiences they had acquired during childhood within the family environment. In this regard, the structures of young people's habitus are not "set" but evolve in relation to their position within the evolving social field (Accardo, 1991: 91-92; Laberge, 1995; Maton, 2008: 53). So, young people develop evolving ways of thought and action, which are imprinted on 'reversible' educational choices in relation to their social origin (Bourdieu, 1990; Maton, 2008: 53; Swingewood, 1998). It should be mentioned that Bourdieu defines the individual as agent, determined to some extent by objective structures, and as a controlled free and independent subject (acteur) who has an 'infinite' capacity for creative choices. In other words, it concerns the link between the objective and subjective which is imprinted on the practice of social subjects (Asimaki & Koustourakis, 2014: 127).

The difficult social conditions young people from socio-culturally underprivileged environments experience, combined with the 'negative' working experiences of their parents, can lead them to invest in education, using the full extent of opportunities and benefits it offers. They do this so as to transform and/or improve their social structure in the context of existing social stratification (Accardo, 1991; Bourdieu & Passeron, 1977; Lehmann, 2009; Swingewood, 1998). So, in this case, the habitus of young people, which is dynamically productive (Bourdieu, 1984, 1990), can have a collective nature as a product of collective class-based practices, whereas at the same time it can be transformed and adapted. This is because social experiences accumulated in the context of the individual's historic route can contribute to the transformation of his dispositions, expectations and choices about his individual future, affecting his educational and occupational choices (Bodovski, 2014: 392; Bourdieu, 1977b).

In this framework, Lehmann's study (2009) conducted in 2005 with students at a Canadian University is representative. The research findings showed that working-class students chose to study at University so as to have the chance of upward social mobility. It seems that the ambitions of their parents contributed to their goals, since they wanted their children to improve their social position by gaining a better future. In fact, the conclusions students from working-class backgrounds reached about the difficult working conditions of their parents and their limited socio-economic opportunities, led them to shape strong dispositions about occupations which diverge from the restricted occupational "pathways" of their parents. So, the choice of university studies constitutes for these students a "vehicle" for upward social mobility.

Therefore, from the studies which reveal the transformative function of habitus it seems that young people who come from socio-culturally underprivileged environments struggle to enter the university field and try to "break" the barriers of their admission to it by transforming the habitus they have acquired from their family (Bourdieu, 1984: 116; Bourdieu, 1993: 74).

7. Concluding observations

According to what we examined above, we come to the following conclusions:

- Family "capital" (cultural capital/habitus, economic and social capital) seems to play a significant role in the formation of the educational-occupational choices of young people in relation to their social origin. In particular, it emerged that the family environment, reinforced with educational-cultural stimuli, which constitutes 'the main "site" of accumulation of different forms of capital and their transmission to the next generation' (Bourdieu, 1994b: 143), combined with the investment of financial resources and the use of an expanded network of social

“connections” for ensuring educational benefits, contribute to the choice process of middle-class young people in favour of educational-occupational options that are high in the social and academic hierarchy.

- According to a series of studies, young people who come from socio-culturally more privileged environments tend to choose prestigious university studies, such as medicine, considering that these choices constitute a “natural” step, a part of their inheritance. In other words, they think that the choice of higher education studies corresponds to their system of dispositions (*habitus*) in the sense that the generative rules within the university field – its unwritten “rules of the game” – are homologous to their own *habitus*. In this case, young people internalize the objective opportunities given in the university field and they come to choose the “fate” that is most likely for them (Maton, 2008: 58). In this regard, it could be claimed that the *habitus* of young people from socio-culturally more privileged environments at elite universities finds itself ‘as “a fish in water”: it does not feel the weight of the water and takes the world about itself for granted’ (Bourdieu & Wacquant, 1992: 127).

- The social environment limited in educational stimuli, benefits and opportunities of the more or less privileged socio-cultural families, which emerges from the findings of some studies, urges young people to transform the system of dispositions they have internalized within the family context, and guides them to higher education choices so as to have the opportunity to move up in educational, social and occupational level (Accardo, 1991; Swingewood, 1998). *Habitus* is the link between the individual and the social (Maton, 2008: 53) and in this case it seems that “negative” experiences internalized during the life course of some young people, who come from disadvantaged socio-cultural environments, are unique and lead them to make decisions and choices which differentiate them from people who belong not only to the same social class but also to the same family.

From this study, which focused on the review of recent sociological literature, concerning the formation of young people’s educational-occupational choices, it emerged that the *habitus* of social subjects affects the way they make their decisions and their choices either through its reproductive or its transformative function. In this case, it seems that the activation of young people’s *habitus* contributes to the maintenance or transformation of their position in the social structure in relation to their social origin (Bourdieu, 1984; Bourdieu & Passeron, 1977; Mills, 2008a, 2008b; Swingewood, 1998).

To sum up, we assume that ongoing bibliographical research focused on the sociological analysis of scientific papers, which are engaged in young people’s educational-occupational choices in relation to family and other institutional factors, which define them, in the context of “free market” countries, is of scientific value. Such countries are the United Kingdom and USA which constitute fields of strong maintenance of social reproduction. In addition, a sociological analysis of scientific papers which examine the transformative function of *habitus* would also be interesting.

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University Education System as a Research Environment for the Training of PhD Students

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Abstract

The present article aims to analyze some aspects of Ph.D. training as a specific basis for intellectual establishment and research support focusing on the following issues: What are the characteristics of Ph.D. students' integration to research activities? How young people evaluate various research processes? What is the department support as an institutional unit to doctoral students? What is the role of the family in the carrying out of Ph.D. process? The analysis focuses on the support that students from the Faculty of Philosophy, South-West University (SWU) receive for their research activity from their families and the institution they graduate. The paper is based on results obtained through quantitative as well as qualitative methods in the course of research projects carried out in 2013, 2015, and 2017 at SWU. The main methods of obtaining information are focus groups and survey conducted with graduate students in the Faculty of Philosophy, SWU. The basic conclusion of the study is that Ph.D. student's research activity is a prerequisite for their future professional identity. The establishment of research skills is directly related to the support that doctoral students receive from the department, by the assistance of their supervisor and other professors who encourage creative activity, applying individual approach and seek active communication based on person-centered pedagogy. Meanwhile, the psychological support of the family is a no less important part of the received support, stimulating the construction of individuality in the process of socialization of young researchers.

Keywords: Ph.D research activity, university, quality of support, departmental environment.

1. Introduction

In the present times serious changes are taking place in all the fields of politics, economics, culture, education, international relations; deep and dynamic situations of restructuring and globalisation are developing (Beck, 1992; 1999; Nedyalkova, et al., 2005). Globalisation is putting forward the question of the place of science and the growing importance of research work and skills (Giddens, 2009), of the way they become a part of a person's professionalism and his/her placing in society. In that context university education is attaining a central role as it provides key skills to students and it is focused on obtaining knowledge and qualification which are specialized and science centred.

The university is the institution that provides unity of training and research and in this sense focuses its efforts on the formation of Ph.D. students such as social actors who ensure the continuity of scientific work and research activities. The issues related to doctoral training are particularly important and current today. They include the quality of doctoral studies, the qualifications of the supervisors, the skills of Ph.D. students, the development of teamwork and various forms of collaboration, the enhancement of publishing activities and the creation of research networks of Ph.D. students from different national and European universities. All this variety of research and training activities shows the necessity of symbiosis in theoretical, practical and methodological level in understanding the status of Ph.D. students and the process of their formation as future scientists.

1.1 Objectives

The present article aims at analyzing several important aspects of rationalizing university education as an environment of intellectual and research transmission putting an accent on the following questions:

- Which are the characteristic features of the initiation of Ph.D. students to research work?
- What qualities research activity develops?
- How the trained Ph.D. students behave towards different research activities?
- What is the attitude of colleagues and the Department environment related to doctoral training and formation as researchers?

This article is an analysis of the Ph.D. students and their point of view on the current inclusion in different research activities.

2. Materials and method

The analysis is based in empirical plan on several sociological surveys, used quantitative and qualitative methods, and covers the period 2013 - 2017.

- The survey “Integration of social- psychological sciences in a globalized world” conducted in 2013 in South-West University (SWU) with team leader prof. Valentina Milenkova. Two methods were used: structured interviews and focus groups. The sample was unrepresentative and included 290 students from various faculties of the university; the sample was made under an experimental design scheme. The other method used was a focus group. There were three focus groups carried out with students and Ph.D. students from Sociology, Psychology and Political Science specialties of SWU.
- A survey “Cultural universals in academic milieu” was carried out in 2015 at SWU with students and Ph.D. students from Social study specialties: Sociology, Political Sciences, and Psychology; there were conducted 5 focus groups. Team leader of the project was prof. Valentina Milenkova.
- A survey in 2017 carried out under the project “The Role of Ph.D. students in modern research process: towards creating highly qualified and proactive staff” in the Faculty of Philosophy at the South-West University with team leader prof. Boris Manov. The study aimed at showing the place of Ph.D. students in the contemporary research process, as well as the improvement and support of their academic work by their thesis supervisor, department, and the family. In the process of the survey 51 Ph.D. students

from the Faculty of Philosophy were questioned anonymously and they were from the majors Psychology, Sociology, Political Science, and Philosophy. The age range was from 24 to 66 years of age. The number of women was 36, and men were 15, which raises the problem of feminization of Ph.D. studies as a degree in the educational and academic training of researchers.

Apart from Ph.D. students, 130 B.A. and M.A. students from all majors of the Faculty of Philosophy were also questioned. B.A. students were 53, and M.A. students were 77. The research team added the opinions shared by B.A. and M.A. students to the information obtained about Ph.D. students because it was important to study the readiness of B.A. and M.A. students from the teaching programs of the faculty to engage in research activities; whether they had been involved in such activities; do they wish to continue their education in a Ph.D. program; do they receive support from their milieu – colleagues, friends, and family.

The main methods of information gathering were focus groups and survey conducted with graduate students, bachelor and master students in the Faculty of Philosophy, SWU.

3. Results

University education is connected with teaching knowledge, qualification and competence, creating a base for the successful realisation of individuals. Higher education corresponds to personal needs for deep knowledge about humans, nature and society, which form the ability of orientation in the world, of the identifying of a personal place within social structures, of the inclusion in social relations. Higher education is important in social plan, because it is connected:

- With acquiring of skills for life in a community, expressed by creation of attitudes and readiness of the individual to communicate and cohabit with his/her coevals, in order to turn into an active participant in the life of the education institutions, to assimilate abilities, shaping his/her practical activities and orientation. Team work as well as “life in community” (Jackson, 1968) is ability, meaning the necessity to conform to the others, to respect them and even to renounce your own desires, to make compromise with your moods, which is formed within the organisational surroundings of the educational institutions since their earliest forms (Durkheim, 1934; 1956).

- University education is connected with learning knowledge, qualifications and competences, building the cultural and the intellectual mainstay of society. Thus the connection between dominating demands and their mapping through training and education of individuals is supported. University introduces actors in a world of publicly developed meanings whenever the circumstance of a possibility that in certain cases their relative character can manifest itself.

In accordance with its basic activities: training and education, the higher education system is aimed at shaping of definite personal qualities and that might be conscious or not, purposefully or not sought by various agents included into running interactions. But the formation of social consciousness through the training process is not always evident, meaning that the educational system acquires also one hidden function, which is revealed through the interdependence between personal formation and the structure of power realities and relations. That is, higher education, while performing its specific activities concerning the educational process, at the same time realizes its social function of preservation and support of the existing social structure and relations.

Universities socialize through knowledge they teach, by specific rules and values they legitimize, by contacts and sub-cultures they develop and draw individuals into different relations; they socialize also through the basic agents of their influence – professors and lecturers. All those

sides of the socialization impacts accumulate definite experience in themselves and they become bearers of particular purpose and engagement devoted to shape in accordance to social pattern which determines them. University education should present a unity of training and research and it is necessary for the research process to be realized through student's participation.

That is important, because the inclusion of Ph.D. students into research activities:

- (a) Increases the acquired qualification and their professional skills;
- (b) Gets students near to laboratories and to the processes of constructing knowledge;
- (c) Contributes to acquiring competences through their inclusion into diverse activities (“learning by doing”);
- (d) Creates attitude towards learning and adoption of new skills and new knowledge.

Through research work:

- doctoral students become more active and interested in training;
- they apply in practice the matter for instruction at lectures and exercises;
- they learn new things and turn into a corrective of professors' work, because they pose questions as well as they ask for additional specifications.

Another important consequence of the participation of doctoral students in research activities is the promotion of their motivation to continue their studies in order to defend their Ph.D. thesis, as well as to continue their academic and research activities in the future.

An important moment in the research is the selection of topic of the Ph.D. thesis. The topic is of a significant importance because it assures that the research potential of the scholar is developed through it. All Ph.D. students who participated in the survey in the Faculty of Philosophy in 2017 confirmed that the topic of their theses and their academic interests coincide. Also a half of the Ph.D. students shared that their Ph.D. thesis is a continuation of their Master's thesis. This means that there exist succession and continuity in the research work undertaken. This is a prerequisite for deepening the interests in the respective research area but it also means that there is a process of discussing and consideration of the views and plans of the Ph.D. students with respect to support and co-operation from the staff within the separate departments in the Faculty of Philosophy.

Research work in itself is significant, because it aims at complex personal development as from the point of view of obtaining specific skills and competence, as well as concerning qualities necessary for the construction of general attitude towards knowledge. Here are some of the qualities, promoted by research activity:

- Criticism and self-reflection;
- Openness to changes;
- Aptitude towards perfection;
- Ambition and creative approach;
- Higher professionalism;
- Drive towards increasing of qualification.

How do Ph.D. students describe their inclusion into research activities or what are the specific meaningful associations through their view, when they speak about their participation in research work? Shared opinions at the focus groups within the university surveys carried out in 2013 and 2015 were used.

Respondents pointed at:

- Inclusion in research projects;
- Participation in conferences and round tables;
- Writing articles on different topics;
- Elaboration of creative presentations.

It can be noticed that for Ph.D. students actual participation in research activity was associated mainly with activities bearing in themselves the store of a specialized scientific activity, understood as part of professional occupation with science. At the same time, however, we can add that along with that conception, shared among doctoral students, one has to bear in mind that their incorporation to research work takes place through routine and everyday training practices at classrooms and auditoriums as well, which is connected with:

- assigning specific tasks at lectures, seminars and exercises, literature studies on definite topic, elaboration of papers, making presentations, writing essays, preparation for Ph.D. students' exams.

At every one of the indicated activities, implemented within the framework of training and assigned to doctoral students by their professors a specific research effort, connected with theoretical and exploratory work, with coordination of the team and distribution of the engagements of every one of the members, making of generalisations and presenting the results from theoretical and/or practical work are presumed. Those are all the important everyday efforts, which are necessary, but in fact doctoral students perceive them mainly as training and not as research activity. That is why it is important to accentuate on the fact that the participation of Ph.D. students in research work is connected with the quality of education, the preparation of lecturers themselves, their research engagements, their participation in different scientific nets, with lecturers' and students' readiness to work together.

3.1 *Group environment*

One of the important topics studied during the survey of 2017 was connected to the support received by the Ph.D. students from their milieu – colleagues, family, and friends. In this discourse a special attention is paid to social capital.

The basic idea of social capital is that social contacts and nets have their value and influence individuals' and groups' achievements. As a concept social capital has a long history, connected with different accents and interpretations from its contribution to solidarity and democracy to its importance for the community as a factor to the creation of confidence and the individual free choice (Ferragina, 2012). That is one of the reasons for social capital to generate such a vivid interest in an academic context¹. Bourdieu (1985) introduced and developed the concept, in the context of “forms of capital” showing how social capital creates and reproduces inequalities, based on directly and indirectly use of public contacts to provide individuals with access to power positions (Portes, 1998).

Contemporary consideration of social capital enforces a debate on the relation between confidence, solidarity and social development, making a synthesis of the values of communal and individual approaches, set in the “rational choice theory”. Social capital is generated collectively thanks to the presence of communities and social nets, but individuals and groups are those who use it. Individuals can exploit social capital of their contacts and connections

¹ J. Dewey first used the term in 1899 in his book *The School and Society* (John Dewey) without giving him a definition.

in order to fulfill their own tasks. In that sense analysis put an accent on dichotomous approach: “communality” vs. “individualism” (Ferragina, 2012).

Social capital is built on the basis of trust which is a relation between social actors. According to Coleman, social capital is not a personal possession but a collective good which is formed due to social relations in the group (Coleman, 1988). Trust between members of the group has a key role. Trust creates security of the expectations for the behavior of the group’s members, for fulfilling of the commitments undertaken, for honesty, loyalty, empathy. Thus interpersonal trust also becomes a means of reducing risk and uncertainty which come out of complex and unexpected circumstances external for the group. A significant part of the milieu is the family.

The **family** has a strong impact on dispositions towards life, future, self-image, work. It creates a specific environment and the total set of conditions related to understanding and care; it is a specific social capital that is inherited in the course of interaction between actors (Coleman, 1988).

Social capital in the family is the relations between all family members but mostly between parents and children. When the *human capital* (comprising education, skills, and knowledge) possessed by the parents is not complemented by social capital embodied in parent-child relations, the full family socialization is damaged (Coleman 1988).

The family and the parental style of communication have a decisive impact on the relationships that are built within the family and on the personal self-esteem; the latter depends on the degree of autonomy given to the individual and the support it receives from the family. Conversely, the more this style is marked by control, restrictions, poor communication, lack of encouragement for adaptation, the lower self-esteem. Upbringing is not a leveling but a differentiating process and a child from a well-to-do family has better chances for development and mobility than its poorer coevals (Sherman, 1996: 12). In the family an individual assimilates those assessments, definitions, and dispositions towards the world, those forms and styles of thought, which define the central orientations and statuses. In this way are legitimated the ways of connecting to the world, knowledge, ways of speaking (Bernstein 1958; Bernstein, 1975).

Family capital is connected with creating traditions and a life style, linguistic maturity and predispositions, complemented by the dimensions of family cohesion (a style of upbringing style and family relationships); family support becomes an important *prerequisite for the formation of a positive attitude to social relations and self-esteem, to confidence and communications*. That is why children with a damaged family socialization – including violence at home, lack of supportive environment and relationships – display greater liability.

Family strength defines power of society, its vitality and sufficiency of every person. In connection with this it is important to emphasize that attitude towards research work of doctoral students is something which is constructed and family plays its role in this process, important are individual inclinations and natural abilities as well. All Ph.D. students in the surveys of 2013, 2015 and 2017 declare that they have full support from their families which itself turns into an important element of the ongoing work on the Ph.D. thesis connected to the co-operation of the family in an emotional, social, and economic plan directed to the future development of the Ph.D. students.

The attitudes of colleagues and the overall milieu, in which Ph.D. students’ training and formation as researchers take place, is significant for the complete work of Ph.D. students. In this context a special role is played by the thesis supervisor who is the direct tutor and advisor of the Ph.D. student, with whom all basic ideas of the Ph.D. thesis are being discussed, and who follows the progress of the research work. 91.5% of the surveyed Ph.D. students in 2017 have stated that they receive full support from their thesis supervisor.

Regarding support from the department, 91.5% expressed the opinion that they receive support from the department in which their Ph.D. training takes place.

In this sense we can summarize that Ph.D. students at the Faculty of Philosophy of the South-West University in the current moment have the support, co-operation for work and achieving their goals. This support comes from both the family and their colleagues and the educational institution itself as an intellectual milieu and possibilities for research work.

3.2 Bachelor and Master students about academic work

In the survey undertaken in 2017 an important moment was the rethinking of the problem of the relation of students (who are not Ph.D. students) to science and research work, as well as their possibilities to continue their training in Ph.D. programs.

Bachelor and Master students (130) from all majors of the Faculty of Philosophy (Psychology, Sociology, Philosophy, and Political Science) were surveyed.

Answering the question: “if they have interest in academic work”, more than half of the surveyed Bachelor students state firmly that they would not deal with academic work.

From the Master students from the majors mentioned in the survey almost 65.0% share that they express interest in academic work. We should especially emphasize that all Master students in Philosophy respond positively. Among Master students in Sociology the greater part (more than 80%) responds positively. A similar distribution we may find among students in Psychology.

To the question whether they would apply for a Ph.D. program the greater part of the Master students from the Faculty of Philosophy respond “Yes” – 58.4%. In addition, asked whether they have plans to develop further their Master thesis into a Ph.D. thesis, almost 2/3 (68.8%) from the Master students surveyed respond positively.

All quoted results are indicative for the attitudes of young people studying in the Social Sciences and Humanities in the faculty, which are that the greater part of students have positive attitude to research and more than the half of the students from both Bachelor and Master programs are inclined to continue their academic activities on a higher structural level. In this connection it is important to reveal the attitude to science in general of all the studied persons (Ph.D., Master and Bachelor students) express their positive attitude to science and research.

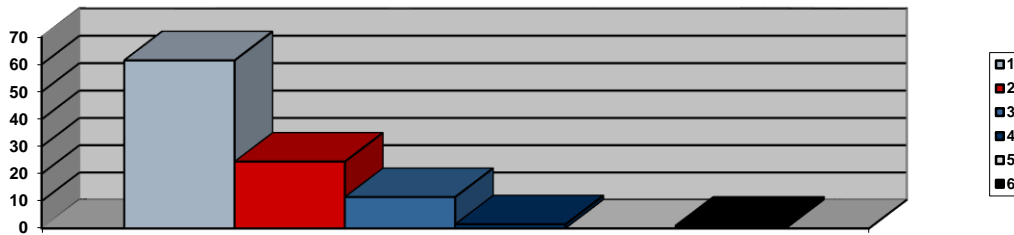
In addition it is interesting to follow: What does attract students in research activity taking place in university environment?² First of all that is *team-work* i.e. “the possibility to discuss different things with the other young people during classes”, “the appearance in front of the other colleagues”, “field work”. It was observed that the majority of students finds attractive the social aspects of research work, namely possibilities for discussions, for establishing of contacts, so that sociability might be considered one of the motivations for including students in different research activities.

In connection to the formation of research attitudes with students the relation *education - creative attitude* has to be taken into consideration too.

Students participating in the research inquiry carried out in 2013, declared that: “*Education has to develop creative attitudes*”: 86.0% of the respondents expressed *agreement* with that statement: 1 - fully agree 61.5%; 2 - agree: 24.5%; 3 - neither agree, nor disagree: 11.5%; 4 - disagree: 1.5%; 5 - fully disagree: 0%; 6 - don't know 1% (Graph 1).

² The results are from focus groups carried out in projects under 2013 and 2015.

Graph 1. Education must develop creative attitudes

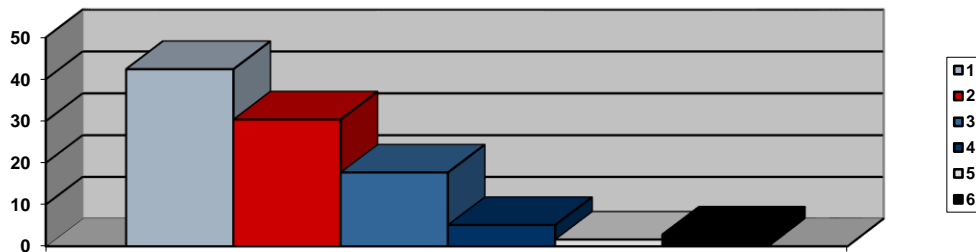


Besides, according to students, education is important for a success in life nowadays in our country (Table 1 and Graph 2).

Table 1. How important is education for success in life nowadays

Extremely important (1)	Very important (2)	Important (3)	Not quite important (4)	Absolutely non-important (5)	Don't know (6)
39.5	31.5	17.5	7.5	1.5	2.5

Graph 2. How important is education for success in life nowadays



It can be noticed that 88.5% of respondents have indicted education as an important condition (“extremely important”, “very important”, “and important”) for individual mobility. All that comes in support of the thesis that education is not only a value in itself; it is actually mapped on educational aspirations and strategies of the Bulgarians. Bringing out of education as a mobility factor shows the realization of its prestige and significance as a stimulus for prosperity as education is not a value in itself, but it is important in view of realization in society, taking high statuses and reaching welfare.

3.3 Estimation of training

Students did not estimate highly the state of the educational system nowadays. During the inquiry (in 2013) to the question: “What is the state of our educational system?” respondents answered by estimation through a ten-degree scale from 00 – “very bad” to 10 - "very good"; responses were as follows (Table 2).

Table 2. Estimation of the state of education

	00	01	02	03	04	05	06	07	08	09	10	Don't know
General estimation	7.8	8.7	9.3	12.9	10.5	19.5	7.4	5.7	2.6	1.6	1.5	12.5

One could observe from the data that for the general estimation of education in this country basic answers were accumulated in the first half of the scale, showing rather a negative estimation. The reasons for that might be sought out in the absence of overall vision on the reforms going on in Bulgarian education, the lack of continuity between the different teams at the education ministry, leading to disorganisation and to piece-work. From their part that presumes imposition of double standards and net of relations. All that reflects on the institutional surroundings, on the specific situations, connected with difficult realization of the young people, with decline the quality of education and training, with discrepancy of marks and the actual knowledge, with mismatch between knowledge, skills and realization. These are serious problems of the educational system. On the other hand, the important question is: what exactly personal qualities Bulgarian education is forming and it has to form?

4. Discussion and conclusions

One of the substantial conclusions of that article is that participation of Ph.D. students in research activity is a prerequisite of achievement of different goals of cognitive and social character, connected with the inclusion of young people in specific nets and structures within the framework of the educational institutions, allowing for displaying of their qualities, attaining qualification and competence, important in personal and in professional plan as well and contributing to their performance. In this context one can conclude that in order to get skills for research, one person has to be connected with another, because those others are exactly the main source of creation of preconditions for the involvement activities. That is why the teams of Ph.D. students enter on the base of interests they share and activities they execute are greatly important. In the long run, research skills and habits acquired through university training, become a substantial characteristic feature of the personal potential and its perfection and those are different sides of the acquisition of social experience and individual significance. It is important to emphasize that the formation of skills for a Ph.D. program is a long lasting process connected to a great extent to the educational institution itself and to the environment which it creates.

Challenges to university education in view of providing research skills to young people are connected with:

- Curricula and study programmes, which have to stimulate more creativity and individual approach, and to correspond to person-centred pedagogy.
- Curricula have to show higher mobility and to include more free-chosen disciplines.
- The opening of universities towards older generations, which might turn the universities into real “life-long learning institutions”. It is necessary in connection with that distance training forms to be developed further on.
- The activation of project work at universities level as well as an accent on assigning of different creative tasks to students in the process of training.

Young people do not always express readiness for inclusion in a creative work. Quite often they are inert and non-interested, passive. At the same time they need expression and research work attracts them by: team-work, creativity, performance in front of others - that exactly

has to stand in the vase of the university approach to youth. However as a whole the inclusion of students in research work depends on the quality of education, on preparedness and the activity of lecturers. In that sense the inclusion of students in research activities is an important element of personal development and realization under the conditions of globalisation. It depends on the specific structure, organisation and purposefulness, based on running models of training and education, the participation of young people in research activities is a prerequisite for their individual prosperity and at the same time it is an indicator of the development of university education and its perspectives.

Ph.D. programs in the Bulgarian conditions are an important factor for the formation of academic staff. They are a period of several years during which Ph.D. students develop their research skills connected to analyticism, creative thinking, sharing ideas, discussions, conducting empirical work. It is namely this period which is important for the future research work and a more active and responsible attitude is needed in an institutional plan to the development of Ph.D. students because the future of science depends on their qualities and responsibilities.

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