The Influence of Information and Communication Technologies on the Development of Social and Emotional Intelligence in a School Context

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Abstract—With this work we intend to present a research developed in the North of Portugal, in the field of Information Technologies in Education and to diagnose, understand and quantify personal, emotional and social skills from students in third cycle and secondary level schools. To do so, we will study the metric qualities of the *Emotional Quotient Inventory Youth Version (EQ-i: YV) by Bar-On and Parker*, we will evaluate and analyze Social and Emotional Intelligence (SEI) differences as a function of differential variables. Our research has also the goal of generating scientific knowledge suitable for teachers, giving them the chance to learn how to deal with school conflicts, resorting to student's social and emotional skills while having the support of new technologies, motivating instruments for youth in general.

Index Terms—Education, information technologies in education, social and emotional intelligence, social and emotional skills.

I. INTRODUCTION

Today's society, driven by scientific progress and generalized use of Information and Communication Technologies (ICT), has witnessed changes that reach all areas of human activity, particularly the education field, thus changing the way we teach and learn.

In 1985 with the introduction of computers in schools, and afterwards with the Internet emergence, approximately 15 years ago, significant changes took place in the way we conceive education. According to Graells [1], new learning processes and methods have been created, such as: means of expression, communication channels to access knowledge, interpersonal and cooperative work communication channels, interchange of information and ideas, new management instruments, new diagnosis instruments, new interactive resources, psychomotor and cognitive development. We agree with this author, but we add to His theory emotional and social skills, because nowadays, more than ever, new ways of feeling have to be considered in the learning process, that is, it is necessary that those who act in their environment have the ability to understand and express emotion, so that they can comprehend it and take maximum advantage of it in understanding themselves and the others.

Therefore, taking advantage of the growing motivation towards digital technologies among young people, it would be useful to promote their personal skills, emotional and social, so that in later studies we can build support programs for teachers that will allow them to work on student's assertiveness, thus avoiding school conflicts. In a primary stage, our study will focus on a significant sample of students, ICT users, from several third cycle and secondary schools in the North of Portugal, and will only determine these students emotional and social intelligence. We thus consider Bar-On theory suitable for our study [2]. According to the author, Social and Emotional Intelligence (SEI) is a broad concept, for it comprises a group of social emotional skills associated to social skills, abilities and dexterities, which render the individual capable of reacting to daily requirements and allow him to express himself, relate to others and understand himself and others.

In the following sections we present the objectives of this research, we address the influence of ICTs in education and in the development of social and emotional intelligence among students, we explain the research methodology and we discuss the work developed and the work to be developed in the following months in order to conclude this research.

II. OBJECTIVES

The development of this research has in its aim to take advantage of students ICT use as a predictive factor for risk behavior and, thus, promote student's self esteem as well as the acknowledgement of other people's own value, contributing to the existence of integration policies in Portuguese schools through ICTs. At the same time, it seeks to offer teachers an instrument that allows them to understand if the student is emotional and socially intelligent.

We thus delineate the following objectives:

1) Study the metric qualities of Bar-On and Parker's [3] Emotional Quotient Inventory Youth Version (EQ-i: YV). This is a self-assessment instrument built to measure social and emotional intelligence in children and teenagers between 7 and 18 years old. EQ-i: YV is based in Bar-On's model of social and emotional intelligence. This scale includes 60 items distributed along the following dimensions: intrapersonal, interpersonal, stress control, adaptability, mood states. We normalized EQ-i: YV with a sample of 9172 North-American and Canadian children from both genders, and it contains separate male and female norms, as well as four different age ranges (7 to 9 years old, 10 to 12 years old, 13 to 15 years old and 16 to 18 years old). Our study will focus on the 10 to 18 age range;

2) Evaluate and analyze differences in personal skills and abilities, both emotional and social, among student ICT users, according to differential variables such as gender, age, socioeconomic level, computer-based equipment usage inside and outside of school, and internet usage.

These two established objectives allow us also to understand the influence ICTs have in the development of social and emotional intelligence, a theme we will now address.

III. The Influence of ICTs in Education, in the Development of Student's Social and Emotional Intelligence

The concept of Emotional Intelligence (EI) was first used in the 20th century [4]-[13], although in the 19th century some authors, like Edward Thorndike (1920, quoted by Bar-On) [2], did publish works addressing Social and Emotional Intelligence, describing, defining and evaluating socially adequate behaviors. Golman popularized the term EI in His book "Emotional Intelligence", published in 1995. He later defines EI as the "ability of identifying our own and other people's feelings, of motivating ourselves and managing emotions within us and in our relationships." [14].

The author we intend to highlight as the theoretical stone in our research is Bar-On, an Israeli psychologist who investigated the theme we intend to study. Bar-on defines as intelligence the set of skills, abilities and techniques that will represent the knowledge collection an individual needs in order to actually be able to deal with life. He combines two concepts, Emotional Intelligence and Social Intelligence, in a single concept: Social and Emotional Intelligence (SEI); this model is based in skills that might explain how an individual relates to other people and to the environment he lives in.

We believe that addressing SEI and ICTs as an independent variable, with the power to influence student's emotional behavior is, undoubtedly, a real challenge because ICT use implies adaptation skills, enabling creativity, the development of solutions, group work flexibility, problem solving and respect for interpersonal relationships differences. It is important to note that these are the main Bar-On SEI dimensions.

Penuel, Korbak and Cole [15] advocate that ICTs should require high cognitive abilities in the education field, so the individual can build skills that will allow him to develop projects in his life. We thus consider that most theories regarding ICT use in the education field are limited, in the sense they don't recognize that, besides developing cognitive skills, an individual must develop his SEI. This is a fundamental aspect for his growth as an individual, capable of integrating a group, making himself respected and respecting others, a group that is also able to develop itself.

IV. Research Design

The sample includes students with an age range between 10 and 18 years old, randomly selected from several 3rd Cycle and Secondary Schools Education Establishments located in the North of Portugal. The student's participation is voluntary, so we will try to gather as many participants as we can while visiting these locations.

We will use EQ-i:YV to identify personal skills and abilities, so we later can create strategies that will enable the development of skills and abilities that are necessary for the individual to understand his and other people's emotions, to be more assertive, to be capable of solving problems, to handle stress, to increase his self-esteem and to deal with other in better terms. The variables in study are: 1) Gender, Male and Female; 2) Age, 3) Socioeconomic Status (SES) defined by scholarity level and parent's occupation, based on the standards proposed by the CNP , and divided in five categories: high e medium-high, medium, medium-low and low; 4) Computer usage outside the home, divided in two categories: yes, no; 5) Scholarity, divided in six categories: 7th grade, 8th grade, 9th grade, 10th grade, 11th grade and 12th unfinished grade; 6) ICT frequency of use, divided in two categories: yes, no; 7) Internet usage at school and at home.

The formulated hypotheses are the following:

H1. Social and Emotional Intelligence (SEI) is more developed among boys who have Access to ICTs, when compared with girls in the same conditions.

H2. An older age among student ICT users corresponds to a better developed Social and Emotional Intelligence.

H3. Social and Emotional Intelligence is better developed among students who access the computer at home, compared to those who don't.

H4. Computer usage time influences the development of Social and Emotional Intelligence.

H5. Students whose families have a higher socioeconomic level, and with an easier access to ICTs, are socially and emotionally more intelligent when compared to students with a lower socioeconomic level and a limited access to ICTs.

Bar-on and Parker have developed the EQ-i: YV (Emotional Quotient Inventory: Young Version), described as a self-assessment measure for social and emotional behavior, skills that enable a social and emotional intelligence evaluation for the individual. This approach involved four basic stages: the identification of fundamental factors related to an effective social and emotional behavior; the definition of these factors in the clearest sense possible; the construction of a psychometric instrument; the normalization and validation of that instrument.

The EQ-i: YV test showed effectiveness, influencing positively the individual's capacity to deal with adverse daily situations, both personally and in the education field.

V. Research Methodology

Because A fidelity study will be performed with Cronbach's Alpha, in order to obtain scale homogeneity. Through factorial analysis we will study validity, without pre-defining the number of factors, and with a varimax rotation to achieve optimal factorial solutions. As for the sensibility study, we seek a descriptive study that will allow us to register mean and proximal median values, where minimum and maximum values can ensure a good dispersion of results in the scale, as well as the obtaining of acceptable asymmetry and kurtosis values, so the scale can be applied.

We will also use a Sociodemographic Questionnaire (S.D.Q.), to be administered afterwards with the EQ-i: YV and that will allow us to identify relevant variables for the characterization of the sample. This study will use both qualitative and quantitative approaches. After data collection we will use the Statistical Package for the Social Sciences (SPSS) software program, to study the psychometric qualities of the instruments and run correlational analysis between the groups in study. We will perform multivariate analysis to study the group of dependent variables and confirmatory factor analysis to reduce the number of interval/ratio correlated variables.

VI. Final Remarks

The research we have been developing should lead us to perceive ICTs as instruments capable of performing their mission, as global knowledge access engines, and, at the same time, capable of helping students to develop social and emotional intelligence.

It is also important to consider teachers a significant part of this research project, since social and emotional intelligence is cross-sectional to all subjects and to several circumstances in the student's life. With this in mind, we organized training actions for teachers, approved by the Scientific and Pedagogical Council for Continuing Training of the Ministry of Education, with the ICTs as main theme. From these training actions we retrieved relevant qualitative information, that we used to build the socio-demographic questionnaire to be administered with the EQ-i: YV test and that will also be included in later works we plan to develop.

After we performed the bibliographic review, we concluded that limitations will be encountered, both in literature – that will not be enough to substantiate the theory we have been developing concerning the influence of ICTs in the development of social and emotional intelligence – and in the study of the scale we intend to use to assess that influence, because it has not yet been studied in Portugal for 3rd Cycle and Secondary School contexts. We thus hope to find sufficient psychometric qualities in order to adequately measure the SEI concept, so we can later reach the second goal we aim at: to determine significant differences according do relevant variables, namely ICT usage-related variables.

Putting the present research in context, both in space and in time, it is important to note that we performed a recent bibliographic review capable of sustaining the theoretical field, we requested all necessary permissions to use the EQ-i: YV instrument, we built the S.D.Q., we planned the teacher's training actions, submitting them to the approval of the Scientific and Pedagogical Council for Continuing Training of the Ministry of Education and obtaining this approval.

This way, and with the protocol established between the University Lusófona and the Maria Pais Ribeiro (A Ribeirinha) Schools Grouping, Vila do Conde County (a grouping that will take part in the research), the mentioned actions will be administered in this area, reaching other counties such as Penafiel and Póvoa de Varzim.

Finally, and in a short-term period, we will be performing the first EQ-i: YV pre-test and S.D.Q. and we will present the results for the instruments metric qualities, so we can later administer the questionnaires and perform the differential analysis that will confirm or infirm our hypothesis.

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