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## THE PROMOTION OF WELLBEING IN ADOLESCENT MIDDLE SCHOOL STUDENTS: HIGH INTENSITY COMMUNICATION AND SELF-ESTEEM IN SCHOOL ORGANIZED SPORTS

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### Abstract

*Aim:* The project was designed to foster wellbeing in adolescent subjects, using high intensity ICT (Information and Communication Technologies).

*Methods:* Specifically, self-esteem was measured using standardized tests administered to the subjects, ranging in age from 11 to 14 at the beginning of the investigation and again after two years.

*Results:* In our study, we found a high level of wellbeing as regards perceived self-esteem in school and sports among 11/12 year olds, and this is consistent with national studies. However, in contrast with the national situation, overall, we found an increase in perceived wellbeing among 13/14 year olds as regards perceived self-esteem in both school and sports. This finding points to the effectiveness of our intervention.

*Conclusions:* The development of skills thanks to learning methods supported by high intensity ICT, proved to be important in boosting the perceived self-esteem of the participating subjects, enhancing their ability to achieve a greater sense of wellbeing.

*Keywords:* Adolescents, Prevention, Wellbeing, Media, ICT.

### Introduction

On the basis of a recent study focusing on the emotions that adolescents experience in school (Matteucci, 2014a), it would appear that boredom, anger over failure, anxiety regarding exams and fear of making mistakes are the prevalent feelings experienced by this age group. At the same time, adolescents report that the activities that contribute the most to their subjective sense of wellbeing in school are those involving group work, those in practical disciplines (Design and Technology and Art), as well as activities that take place in specially equipped classrooms (Music), laboratories (Science and Foreign Languages) and gymnasiums (Physical Education).

The study points to a need for initiatives promoting the wellbeing of adolescents, with the aim of boosting their motivation in carrying out tasks, helping them to relate to the world successfully and deal with problems effectively. This complex challenge first of all calls for a 'Copernican revolution' that places the adolescent at the center of a constructive project, ready to embark on an active educational journey. Such a revolution will transform the learning process through innovative approaches which are more complex and elaborate than traditional asymmetrical one-way educational processes still widely used in scholastic and athletic settings. In short, we must plan and foster 'participation in the construction of the game'

and 'teamwork,' revising education even in terms of its content, making the path to well-being a fundamental part of all disciplines.

Indeed, according to the Health Promotion Glossary (WHO, 1998), 'health education' must be viewed as an educational process which not only provides information on risks (disease prevention), but also provides support in terms of motivating students, developing their abilities and self-confidence and helping them make healthy choices. In general, students must have adequate health literacy, or rather, a set of cognitive and social skills that enable them to access, understand and use information that is useful for their own personal and social wellbeing. Moreover, they must foster a sense of empowerment regarding their ability to influence and control resources and their surroundings and acquire a set of life skills or habits, i.e. the ability to make choices and "to learn to learn," which allow them to develop positive and effective behaviors when dealing with the demands and challenges of everyday life<sup>1</sup>.

This new approach is a true breakthrough, a clear departure from the normativistic or authoritative model (lay down the rules dictated by experts) and the informative-behavioral model (provide the correct information and reward desirable behaviors), which characterized traditional hygienic-preventative health education programs. The new method calls for promotional

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initiatives and the implementation of projects and is centered on the individual in his/her surroundings. Indeed, according to the World Health

Organization, it is not just a question of developing different and broader health education programs in educational institutions, but rather of making those educational settings into real laboratories of active experience where students can build a sense of wellbeing.

Hence, the realization of a subject-centered wellbeing education program, enhanced by the use of cutting edge communication technologies, is a step in this direction. In fact, in educational settings we are seeing the rapid diffusion of methods, digital tools and procedures (technologies, devices, software and 2.0 and 3.0 processes), which foster innovative constructionist teaching<sup>i</sup>. These methods are in tune with the transformation of the learning process, which is moving towards greater participation of students in the acquisition of knowledge and their more active engagement in this process thanks to their familiarity with these new technologies. Thus, we are witnessing the opening up of the classroom to the outside world, the possibility of distance learning, the sharing and multidirectional exchange of activities and experiences made possible by the Internet.

The project discussed herein pursued the aim of wellbeing education through the construction of learning environments enhanced by Information and Communication Technologies (ICT). It sought to foster a powerful synergy between the constructivist learning environment and information and communication technologies. Indeed, the learning situations took the form of life experiences based on real cases and as personal identity transformations within a complex guiding logic. Such learning environments are particularly suitable for the learning of wellbeing, a cognitive category that is in fact extremely complex and apparently conditioned by several factors of both physical and psycho-social nature and therefore requiring this kind of multidisciplinary approach.

In this project the school was chosen as the primary setting for the intervention, although organized sports also constituted an important dimension. Wellbeing educational methods enhanced by the use of the new media were employed with the primary aim of developing communicative educational intervention models to promote individual and social wellbeing.

The project set out to monitor the current situation of adolescents and hence to counter the widespread discontent and malaise found in this age group. It focused on young adolescents and their need for wellbeing, adopting a collaborative approach that involved experts, parents and teachers. Several professionals worked simultaneously in their

respective areas of expertise, and activities developed in class were implemented by project coordinators (in the presence of teachers) using 'high intensity' communication technologies<sup>iii</sup>. These activities mainly targeted the students and to a lesser extent, teachers and parents.

### Methods

Wellbeing Education in School is a project that aimed to maintain and enhance wellbeing through three fundamental steps in which new forms of communication and the Internet played a fundamental role. The research focused on the role of wellbeing education and its effect on the perceived wellbeing of adolescent subjects. The project was put into practice using high intensity communicative technologies, and wellbeing was gauged by indicators of self-esteem as regards school and sports.

The general aims of the study were to:

1. Promote wellbeing through the acquisition of useful information and participation in educational activities that foster healthy behaviors (wellbeing literacy)
2. Promote wellbeing through education regarding the consumption of products and services (educating subjects on media messages, informed consumption and responsible purchases).
3. Promote wellbeing through sharing and participation (cooperation on the Web, collaborative learning).

To achieve these aims, the following activities were put into practice:

- a) Application in school of active collaborative teaching methods developing a partnership with the new media in 'technological qualitative learning environments' (Q.T.L.E.)<sup>iv</sup>. Reflection, conversation, building basic knowledge to support wellbeing, with the creation of digital devices (hyper multimedia Health Video).
- b) Education regarding proper responsible consumption (A Healthy School!); prevention of forms of addiction through participation in activities reinforcing self-esteem and self-efficacy (Chatting about Emotions) and by fostering pro-social behavior (The Health Advocate e-book).
- c) Integration of schools, families and institutions through forms of cooperation and innovative involvement on the Web (Resources in the Health Field!); participation of significant others in the children's lives in educational activities through online courses for teachers and parents (Enhancing adult relational skills).



**Health Video**

The activity consisted in the realization and diffusion of a hypermultimedia film made using the materials that the children had been asked to collect after the first informative meeting in their respective classes. These photographic, textual and musical materials constitute the basis for a film on the topic of wellbeing to be used to promote and reinforce healthy behaviors.

**Chatting about Emotions**

The adolescents reflected on the positive and negative emotions that they experienced in everyday life through an analysis of the use of "emoticons" in online chat rooms and texting as a new form of expression. The analysis of online chatting also afforded a good opportunity to consider the social experience of adolescents.

**The Health Advocate**

To encourage the use of an assertive style of communication, the adolescents were shown selected online films that depict critical social situations requiring a response, i.e. a subjective reaction to a problem caused by another person. The adolescents were asked to comment on the situations and to formulate their own response, which was then made public on dedicated blogs and websites. The publication of cartoons depicting these social situations, accompanied by student comments, offered an opportunity for discussion on the three styles of communication: 'active,' 'passive' and 'assertive'.

**Enhancing Adult Relational Skills**

The online course was the product of collaboration among experts focusing not only on the course contents but also on its technological features. The decision to offer the course in an online format offered the advantages of reduced costs and the possibility of reaching adult subjects who might otherwise have been unable to participate.

**Stages of realization**

The project was divided into three stages:

- The assessment phase involved the use of a questionnaire to assess wellbeing levels through self-esteem measures in subjects attending school. The questionnaire was administered to the subjects at the beginning of the investigation and again after two years.
- The planning phase of informative activities, the promotion of wellbeing with the arrangement of informative meetings on risks and the construction of hypermultimedia products; prompting discussion through activities set up on blogs and the creation of dedicated websites.

- The construction phase of new communication and cooperation channels with initiatives promoting wellbeing realized by several individual and collective subjects interconnected on the Web.

The survey conducted within the Wellbeing Education in School project was promoted by several institutions involved in the promotion of wellbeing among adolescents. The intervention lasted for three years and involved 500 adolescents from several schools in Central Italy who participated in the project from the ages of 11/12 to the ages of 13/14. Hence, the sample was composed of students enrolled in their first year of middle school, and subsequently, the same group of students followed up in their third year of middle school. The sample group was selected from six different schools chosen by simple randomized sampling methods. In processing the data, the following variables were considered: gender, age, type of school, grade attended. Self-esteem was assessed twice, with a two-year interval between assessments (2011/12, 2013/14), in the same group of subjects at the ages of 11/12 (first year of middle school) and 13/14 (third year of middle school).

This study aimed to construct an index showing the students' attitude towards themselves. Bracken's Multidimensional test of self-esteem TMA (1992) was used, adapting it to assess self-esteem with respect to scholastic and athletic success. The questionnaire was composed of two batteries of items and was formulated with a fixed set of alternative responses according to the Likert scale or summed scales, which take into consideration the truthfulness or lack thereof of the statement in an item (Table 1). For each statement the subjects could give only one response: true, false, neither true nor false.

Table 1

1. Scholastic success	2. Athletic success
<ul style="list-style-type: none"> <li>• I generally do well in school</li> <li>• I learn easily</li> <li>• It seems like I never have good ideas</li> <li>• Studying is hard for me</li> <li>• I'm not very creative</li> <li>• I'm good at math</li> <li>• I usually study hard</li> <li>• I don't feel comfortable at school</li> <li>• I'm not able to think very quickly</li> </ul>	<ul style="list-style-type: none"> <li>• I generally do well at sports practice</li> <li>• I learn easily in sports games</li> <li>• My ideas about the game don't count</li> <li>• Competing in sports is hard for me</li> <li>• I'm not able to make plays in games</li> <li>• I'm fast</li> <li>• I take part in sports regularly</li> <li>• I don't feel comfortable in sports groups</li> <li>• I'm not able to do physical exercises well</li> </ul>

Positive responses were calculated adding the True responses to positive statements ('I'm good at math') to the False responses to negative statements ('I'm not very creative'). Negative responses were calculated adding the False responses to positive statements ('I'm good at math') to the True responses to negative statements ('I'm not very creative'). Moderate responses were calculated adding all the Neither true nor false responses.

For the data analysis, a software was used to create a calculation sheet. This software allowed us to create tables that automatically calculate the total of the numerical values provided by the user, to print out tables with a clear layout and to create simple graphs. The question areas (scholastic and athletic success) and the three types of responses [T(true), F(false), TF(neither true nor false)] were indicated on the electronic sheet. The number of the questionnaire and the gender and age of the subject were also shown at the top of the sheet. Once all the responses for each class were inserted, we calculated the sums of the points of the positive responses, the points of the negative responses and those of the moderate responses for each student. All the responses were subsequently divided into positive, negative or moderate categories, then summed for each class, for each school and finally for all the schools. The sums that were obtained were then exported to another sheet, so that they could be analyzed more thoroughly.

## Results

The aim of this investigation was to analyze the level of wellbeing, in particular, in terms of the perceived self-esteem of adolescents in scholastic and athletic settings, assessing how these values changed between the first and third years of middle school. In addition to differences in self-esteem that could be attributed to age, we also investigated gender-related variables. Assessments were made before and after the application of the activities of the Wellbeing Education project.

The figures attached to the article report:

- Comparison of the overall data for boys and girls attending the first year of middle school (ages 11-12) with data for the same students attending their third year (ages 13-14) (all the students of the schools that were examined);
- Comparison of the data collected for students in their first year (ages 11-12) with data for the same students in their third year (ages 13-14) differentiated on the basis of gender;
- Comparison of data pertaining to male students with those pertaining to female students differentiated on the basis of age.

## Perceived self-esteem for boys and girls at different ages

Figure 1

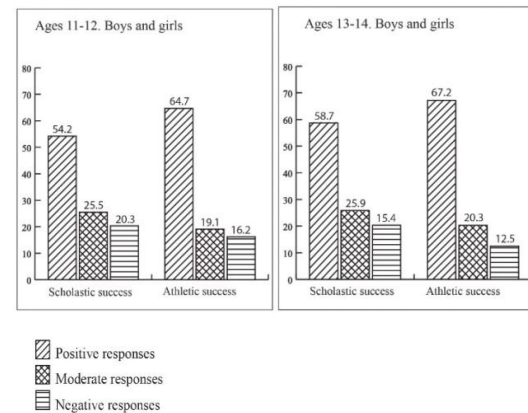


Fig. 1 shows the results regarding perceived scholastic success. We can observe that third-year students (ages 13-14) showed a greater number of positive responses than did students in their first year of middle school (ages 11-12). Indeed, in the first year, 54.2% of the students gave positive responses as regards scholastic success, whereas two years later, in the second administration of the survey, the percentage rose to 58.7%, an increase of 4.5%. Likewise, in the 2013/14 school year (second administration), we can observe a slight increase in moderate responses, which rose from 25.5% to 25.9%, a 0.4% increase. On the other hand, negative responses decreased significantly from 20.3% to 15.4%, a 4.9% drop.

As regards perceived athletic success, 67.2% of third year students gave positive responses, up 2.5% from the 64.7% measured among the same students in their first year. Third-year students also showed a 1.2% increase in moderate responses (from 19.1% to 20.3%). Finally, there was a 3.7% drop in negative responses (from 16.2% to 12.5%) among third-year students.

In the scholastic and athletic spheres, students showed a high level of perceived wellbeing in both their first and third years of middle school. In fact, we can observe that scholastic success (+4.5%) and athletic success (+2.5%) improved over the two-year period between the first and third years. This finding is extremely interesting in light of the fact that nationally published research data generally show a decrease in positive values in wellbeing indicators among young children as they get older (data HBSC-Italy, 2010; data BES-Italy, 2013).



### Perceived self-esteem data by gender

Figure 2

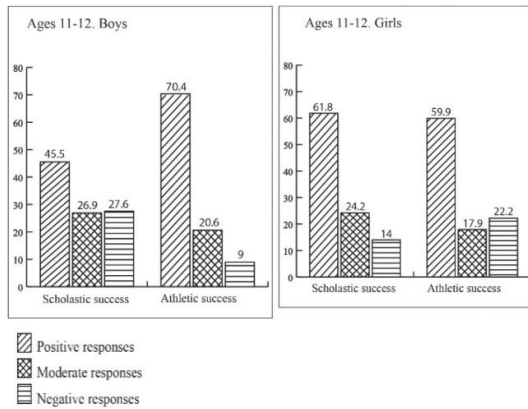


Fig.2 shows data on perceived scholastic and athletic success based on a survey of school children ages 11/12 differentiated according to gender. With respect to scholastic success, boys had a lower percentage (-16.3%) of positive responses (45.5%) compared to their female counterparts (61.8%), while showing higher percentages (+2.7%) of moderate responses (26.9%) and negative responses (27.6% = +13.6%) compared to girls, who showed percentages of 24.2% and 14% respectively.

Regarding athletic success, it can be observed that boys showed a higher number (+10.5%) of positive responses (70.4%) and a higher number (+2.7%) of moderate responses (20.6%) compared to girls, who showed percentages of 59.9% and 17.9% respectively. On the other hand, boys showed a lower number (-13.2%) of negative responses (9%) in comparison with their female counterparts (22.2%).

Hence, among first-year middle school children, we note that boys enjoy a high level of perceived self-esteem with regard to athletic success. Indeed, boys' perceived self-esteem in this regard was found to be higher than that which was measured in girls (above all, we can observe the significantly lower number of negative responses). Females, on the other hand, had a high level of perceived self-esteem with regard to scholastic success, which was higher than that measured for boys (above all, we note the higher number of positive responses).

Figure 3

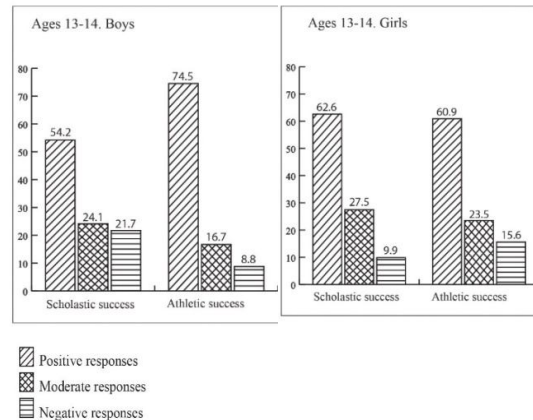


Fig. 3 shows data from the same survey administered two years later to the same subjects, now aged 13/14. The results, differentiated by gender, show that in terms of scholastic success, boys showed a lower number (-8.4%) of positive responses (54.2%) and a lower number (-3.4%) of moderate responses (24%) compared to their female counterparts, who showed percentages of 62.6% and 27.5% respectively. Conversely, boys showed a higher number (+11.8%) of negative responses (21.7%) than did girls (9.9%).

Regarding athletic success, boys showed a higher number (+13.6%) of positive responses (74.5%) than did girls (60.9%). On the other hand, boys showed a lower number (-6.8%) of moderate responses (16.7%), as well as a lower number (-6.8%) of negative responses (8.8%) than their female counterparts, who showed values of 23.5% and 15.6% respectively.

Among third-year middle school children we can observe that boys showed a higher perceived self-esteem with regard to athletic success than girls of the same age. Conversely, girls have a good level of perceived self-esteem with regard to scholastic success compared to their male counterparts. Hence, the tendencies already highlighted in the 11-12 age group were largely confirmed in the 13-14 age group.

### Perceived self-esteem by age

Figure 4

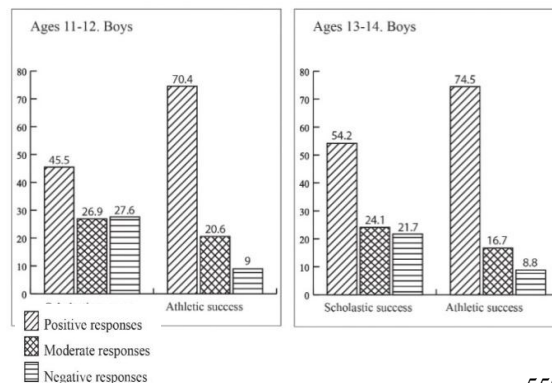


Fig. 4 shows the results of our survey for boys ages 11-12 and 13-14. The subjects showed a significant increase in positive responses with regard to both scholastic and athletic success. Specifically, with regard to scholastic success, there was an increase of 8.7% in positive responses between the ages of 11-12 and 13-14 (from 45.5% to 54.2%). Likewise, positive responses for athletic success increased by 4.1%, from 70.4% to 74.5%. There appears to be a more marked improvement in perceived scholastic success than in perceived athletic success. The result of the positive responses was tempered by a drop of 2.8% in moderate responses. Nevertheless, this drop from 26.9% to 24% was counterbalanced by the significant 5.9% drop in negative responses, which fell from 27.6% to 21.7%, in particular with regard to scholastic success. The values regarding perceived athletic success remained higher than those for scholastic success and were less subject to variations.

Figure 5

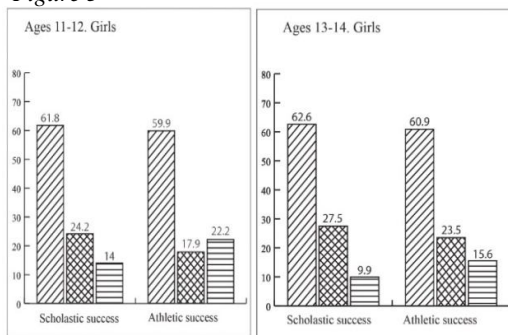


Fig. 5 shows the results of our survey for girls ages 11-12 and 13-14. Girls showed a moderate increase in positive responses for both scholastic (+0.8%: from 61.8% to 62.6%) and athletic success (+1%: from 59.9% to 60.9%). With respect to scholastic success, there was a 3.3% increase in moderate responses (from 24.2% to 27.5%), while there was a 4.1% decrease in negative responses (14% to 9.9%). Interestingly, with regard to athletic success, moderate responses showed the biggest increase (from 17.9% to 23.5% = +5.6%), whereas negative responses decreased (from 22.2% to 15.6% = -6.6%). These results show a positive trend in both scholastic and athletic success, with an overall increase in positive responses and a decrease in negative responses.

Examining the last two figures (Fig. 4 and Fig. 5) and comparing the changes that occurred in both boys and girls over the two-year period between the surveys, we note that the positive values remained very high, and actually increased for both athletic and academic success for both sexes. Moreover,

there was greater stability in positive values in girls than in boys over time, while moderate and negative values appear more variable for girls. However, the changes were always positive, i.e. there was an increase in moderate responses and a decrease in negative responses. Interestingly, as subjects grew older, the differences between genders decreased significantly with regard to scholastic success. Indeed, the difference between genders with regard to positive responses went from 16.3 percentage points (61.8% vs. 45.5%) at ages 11-12 to just 8.4 percentage points (62.6 vs. 54.2%) at ages 13-14. On the other hand, there was an increase in the difference between genders for positive responses as regards athletic success: from a 10.5% difference (70.4% vs. 59.9%) to a difference of 13.6% (74.5% vs. 60.9%).

### Discussion

With the Wellbeing Education in School project we have added to our body of knowledge regarding wellbeing among adolescents and helped to provide motivation which can foster processes designed to help maintain and enhance adolescents' sense of wellbeing in their academic and athletic pursuits. In the project, we adopted educational methods involving participation in the construction of knowledge, the creation of individualized learning pathways, participation in online initiatives, all made possible by the complex application of digital communication tools. In this intervention, the new media and the Internet became partners in the construction-dissemination of wellbeing knowledge and information, with the aim of fostering and promoting behaviors that give rise to a sense of wellbeing and prevent malaise.

On the basis of our results on perceived self-esteem, it can be deduced that the sense of wellbeing among adolescents reaches high levels with regard to both school and sports. This can be observed in all the schools that were included in the study among both first and third-year middle school students. Indeed, not only did levels remain high during the three years of middle school, they actually appeared to rise over time. These results are in line with those of national studies, in particular with regard to sports activities, in which adolescents are the most active participants of any age group. Indeed, in a 2010 study, Aspects of Everyday Life, carried out by the Italian National Institute of Statistics (ISTAT), young people between the ages of 11 and 14 were found to be more involved in sports than any other age group, with a participation rate of 82.6%. The percentage dropped slightly to 78.9% for the 15-17 age group, while for those between the ages of 18 and 24, the participation rate dropped considerably to 72.5%.



Nevertheless, regarding the state of adolescents on a national level, two concomitant trends warrant attention. The first is the drop in the percentage of adolescents that report a medium-high level of satisfaction with their lives, a decrease that is found in the 13-15 age group, together with the perception of their own health which, though still high, decreases in positive values as subjects get older, in particular among females (data HBSC-Italia, 2010). In our study, taking into consideration all the schools, we found a high level of wellbeing as regards perceived self-esteem in school and sports among 11/12 year olds, and this is consistent with national studies. However, in contrast with the national situation, overall, we found an increase in perceived wellbeing among 13/14 year olds as regards perceived self-esteem in both school and sports. This finding points to the effectiveness of our intervention.

Comparing the data differentiated by gender, overall, among boys in both the first and third-year of middle school, there was a higher level of perceived self-esteem as regards athletic success than there was among girls of the same age. This difference has been highlighted in other studies (Marsh 1989, 1998, 1999) conducted on an international level with young people of the same age group. These studies showed that 11-year olds have a positive physical concept of themselves, although this tends to diminish in subsequent years. Moreover, girls generally have a less positive physical concept of themselves compared to their masculine counterparts, and these discrepancies are larger among girls who do not practice sports. In a study conducted by Tomik in 2008 to assess attitudes in various athletic settings, it was observed that boys have a more positive attitude towards participating in sports than do girls.

In our intervention boys seem to have acquired a more positive attitude towards themselves in the scholastic sphere. This was also true for the athletic sphere, where we measured an increase in values, which in the case of boys, were already very high. In fact, sports can foster restructuring and acceptance of the adolescent's new body image generating motivation and a sense of competence, allowing the adolescent to experience new physical skills that provide him/her with a sense of balance and confidence in the perception of his/her body. The acquisition and consolidation of new physical abilities in turn foster the development of the much sought after perception of self-efficacy and independence. Physical activity can be a means to promote a positive image of one's own body, and, in many situations, this improvement is accompanied by increases in general self-esteem values. The effects tend to be more apparent for those who start off with low self-esteem, although such individuals

are less likely to be attracted to programs promoting physical activity. (Fox, 2000). Our data also showed that, even in the case of girls, there was a slight increase in positive self-esteem values regarding both scholastic and athletic success as they got older.

The finding that emerged from our study, namely that girls generally have a higher perceived self-esteem in the scholastic sphere than boys, is usually accounted for by the fact that boys and girls have very different attitudes towards school. Girls express greater satisfaction for cognitive functions and the culture and knowledge that they have acquired, while boys have a greater appreciation for the social function, i.e. their relationships with their classmates. It follows that there are fewer cases of grade repetition among girls, low drop-out rates, shorter time necessary to finish school, as well as better performance on final exams at the end of middle school and high school. In boys, aged 11-14, there is already a predominantly male 'subculture of fun,' characterized by forms of socializing outside of the family, which occur above all in organized sports activities and in non-institutional meeting places. On the other hand, 'academic subcultures' are predominantly female and privilege forms individual expression and creativity that are achieved through reading, listening to music, writing diary entries and letters (Pozzi, 2007). Other studies (Cei, 1998, Weinberg, 1999) show that for males, learning technical skills and abilities is an important motivation for engaging in sport, whereas for females, being in good shape is the primary motivation. For both males and females, experiencing fun, excitement and pleasure in sporting activities is crucial.

The data that vary according to gender were in part confirmed by the results of our intervention, reflecting a situation in which the influence of stereotyped gender socializing precludes some opportunities and provides others on the basis of gender. At the same time, in our culture, there is almost always an opposition between school and sports, which tend to be in competition with one another, with the assumption that one excludes the other. In particular, it is with the passage from adolescence into adulthood that the two complementary worlds clash, and interest in practicing sports and other physical activities wanes among older teenagers and adults. Nevertheless, in our research, in both the first and third year of middle school, among girls and boys, perceived self-esteem in school and sports showed very similar and very positive trends. Moreover, the gender differences regarding self-esteem values in school were reduced, providing a glimpse of the positive results yielded by our intervention based on participation and collaboration, rather than



competition between the two sexes and between the two educational areas: school and sports.

### Conclusions

Our wellbeing enhancement project, supported by 'high intensity communication,' appears to have contributed to the positive results measured in the sample group, constituting an important added value for both male and female middle school students. In fact, the digital era has transformed the way in which young people communicate, enter into relationships, look for help, access information and learn: we must recognize that they are now an online population that can be reached through a variety of technological tools.

### Notes

<sup>i</sup>«Health education comprises consciously constructed opportunities for learning involving some form of communication designed to improve health literacy, including improving knowledge, and developing life skills which are conducive to individual and community health. Health education is not only concerned with the communication of information, but also with fostering the motivation, skills and confidence (self-efficacy) necessary to take action to improve health. Health education includes the communication of information concerning the underlying social, economic and environmental conditions impacting on health, as well as individual risk factors and risk behaviors, and use of the health care system. Thus, health education may involve the communication of information, and development of skills which demonstrates the political feasibility and organizational possibilities of various forms of action to address social, economic and environmental determinants of health. In the past, health education was used as a term to encompass a wider range of actions including social mobilization and advocacy. These methods are now encompassed in the term health promotion, and a more narrow definition of health education is proposed here to emphasize the distinction». WHO, 1998: 14.

<sup>ii</sup>Constructivism is as a complex theoretical archipelago that sprung from the collapse of the rational linear epistemic model and the idea that knowledge can be thoroughly 'represented' using logical hierarchical models (Calvani, 1998). Constructivism, distancing itself from the previous behavioral and cognitive paradigms, views knowledge as complex, multiple, particular, subjective, negotiated, shared by people in a particular culture and society, at a certain moment in time, in the interaction of a certain number of linguistic games (Varisco, 1995).

Hence, it is necessary to provide young people with relevant up-to-date learning experiences in line with their life experiences outside of school. Indeed, it has been widely shown that learners are motivated and involved in the learning process when concepts and abilities are supported by technology. The development of skills in the areas of comprehension, participation, building knowledge and assimilating information regarding wellbeing, thanks to learning methods supported by high intensity communication technologies, proved to be important in boosting the perceived self-esteem of the participating subjects, enhancing their ability to achieve a greater sense of wellbeing.

<sup>iii</sup>The new information and communication technologies can be defined as 'high intensity' in a cognitive sense, offering multiple representations of reality or fostering a nonlinear multi-perspective approach to reality. They are also considered high intensity because they incorporate reticular and complex mental structures, both rational and emotional, and make those structures visible. In addition, the Internet – information and communication technology of high connective intensity, based on a standard protocol, universal and open – is the most pervasive form of technology capable of bringing about deep changes in the configuration of well-established models in the social sphere.

<sup>iv</sup>A Q.T.L.E. (Qualitative Technological Learning Environment) is a quality learning environment in which learning strategies based on the most innovative hypotheses of the functioning of the mind (no longer viewed as a static repository of information, but rather as a complex, plastic dynamic system) and cutting edge technological communication tools are applied. (Matteucci, 2014b).

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