

Orienteering: motivation, multidisciplinary and skills. A project in a secondary school in the province of Salerno.

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Abstract

The main objectives of Orienteering methodology are: developing interdisciplinary knowledge and skills, diversifying methods and forms of teaching, using the territory as a classroom and school gym, stimulating a new relationship among man - nature- territory. From the perspective of teaching skills, Orienteering gives students the chance to develop dynamic knowledge and abilities to solve problem situations. Orienteering combined with practice is definitely a fun and sporty structure, which allows an interdisciplinary approach involving the subject through a training course and a new relationship among man-nature-territory. The interdisciplinary nature of Orienteering, leads to: the versatility and interdisciplinary didactics (art, physical education, environmental education, education for health, road safety education, geography, study of the territory represented: as local history); the game as training moment involving the student in his entirety (thought, corporeality, feeling, emotions); the relationships, easily activated during the game (students, teachers); consistent territorial geopolitical choices as this activity promotes the knowledge of natural environments and their problems. This paper discusses about the Orienteering project carried out in the classes of the first two years of the High School "A. Gatto" in the province of Salerno.

Key words: learning plan, Orienteering, environmental education, interdisciplinarity, skills.

Introduction

In a complex society undergoing rapid cultural, science, technology changes, it is essential that young people have not only theoretical knowledge and technical skills, but above all an attitude of openness to change, readiness for continuous learning, taking initiatives, accountability and flexibility. The school must promote amongst young generations competence, understood as the ability to mobilize knowledge and skills in a given context, to solve problem situations. A passive knowledge replaces a dynamic one, which can be used in situation, which leaves out of the static classroom. The school should activate teaching strategies to get competence, so that students can learn in a right, autonomous and responsible way. Teaching skills are based on authentic tasks that, unlike traditional tests, are not algorithmic and focus on process rather than on product. Being authentic tasks, their interdisciplinary nature is another essential prerequisite. Students

must be at the centre of educational action. They should have responsibility and autonomy in the construction of their own learning. But how can we really promote the development of skills at school? Which activities can be used to obtain a teaching skill? From these considerations comes the activity that took place in a state high school Alfonso Gatto in Agropoli in the school year 2016/2017. Maths, science, physical education, drawing and art history teachers of some classes of the first biennium found in the practice of Orienteering, one of the possible responses to an effective and efficient development of competence in their students. Today, with the aim of teaching skills, Orienteering activities allow to: strengthen the way to go from concrete thinking to formal thinking through adequate control of spatio-temporal relations; enhance geographical thinking open to meet environmental diversity, to promote the educational tourism in natural and cultural environments; promote the development of a critical mind to guide knowledge through interdisciplinary research. Orienteering promotes the development of basic skills, cross-curricular and strategic ones. The project starts from the idea that the practice of Orienteering, due to its interdisciplinary value, may provide a practical response to the spread of a teaching skills. Orienteering, through its constant practice, helps to promote contact with the nature and the environment, improving self-control, to develop a sense of order and accuracy, to raise awareness of its own means, to strengthen self-esteem, to improve the habit of respect of things and people, also, and especially, in subjects with SEN (special educational need), to foster collaboration and social relations. The reform of upper secondary school, in Italy, has introduced, among other things, skills certification at the end of the first biennium. Benchmark, in the granting of the certification, referred to the article 4 of the Decree of the Minister of education August 22, 2007, n. 139, knowledge, skills and competences set out in the annex to the Decree. This Decree uses the definitions listed in the European Union's Recommendation September 2006 containing the European Qualifications Framework. In this context, therefore, the competences appear as the ability to use knowledge and skills acquired but also innate abilities (personal) and methodological and social skills. To understand the meaning of this definition it is necessary, firstly, to clarify the relationship between skill and ability. The ability, in fact, is purely the capacity to apply knowledge in an operational context. It cannot be understood as a do but as a can do. A competence, therefore, is acquired only if knowledge can be applied or if it gives rise to other abilities. The latter involve a make whose possibility depends on the acquisition of knowledge and skills. The deal provided for ability is that it can be detected through specific tests. The ability, in other words, involves an elementary do quite easily verifiable through the use of traditional structured tests. What combines competence and ability is just the common operational feature of both these dimensions of learning. Also competence involves a do but, unlike the skill, is a difficult one. A skill, in other words, involves the integrated use of various abilities and knowledge and therefore, the acquisition of a certain level of proficiency. These benefits, however, as opposed to mere ability, do not involve the application of individual knowledge but of an entire complex of knowledge and skills. Skills assessment, therefore, must be accomplished by placing the student in front of a complex task that he can carry out only if he acquired a certain mastery of concepts, methods and tools that make a discipline scientific. Within school debate emerges, then, a new class of multidisciplinary skills, based on the idea that learning becomes significant (Ausebel, 1968), only if knowledge is connected not only inside the discipline but also among the different disciplines. It is needed to create activities that put students in a position to mobilize their knowledge and skills; to plan situations in which knowledge from static becomes dynamic. Orienteering combines disciplinary knowledge and metacognitive, multidisciplinary and motivational skills. So students can get unusual mind linked to their needs (Iervolino, 2015, p.187).

The educational scope of Orienteering

It is easy to guess what is the educational value of the Orienteering activity. Primarily, it affects the existence of physical and intellectual engagement; subsequently, the focus moves to the

environment in which we practice the “wood sport”, allowing the rapprochement of man to nature. The inclusion of environmental education in school curricula denotes the attention paid to the issue, conceived not as a new discipline but as interdisciplinary approach, which crosses all levels of education. In the guidelines on environmental education, prepared by the Ministry of Education and the Ministry of Environment, we read that “education for sustainable development is set to become the project in which to promote the skills needed to question the existing models, to improve them and to build new ones. Educating the Italians, our children and ourselves, towards sustainability means to enable total change in behaviour and lifestyles. A new approach to the environment based on values and cognitive elements (Guidelines p. 7). Orienteering is one the activities which promotes the ecological sense to contribute to environmental, ecological, civic learnings. Obviously this kind of education will be essential to show the level of civic cohesion. (Malvasi, 2008).

The educational scope of orienteering does not end with environmental education, in fact this activity contributes to the development of the students personality, stimulating them to autonomy and decisiveness. Orienteering sports promote intellectual development, for example, the athlete who needs to understand the spatial relationships among the references of a map, or to assess what is the most convenient route. We are talking about authentic tasks, which enhance the mobilization of knowledge and skill to overcome a problem situation, which are not algorithmic and that evaluate the process and not the product (Castoldi, 2012).

Riding in the woods helps the motor – physical development through a prolonged effort, but also the coordinative abilities such as jumping ditches, keeping balance on the trunks, proceeding on a rugged terrain. Moreover, we have to think that, being in an effort situation, exercise becomes more challenging and meaningful for the student.

Orienteering promotes in learners skills needed in everyday life: to navigate in unfamiliar places requires the use of maps, which must be read and understood. Navigating with maps and compass in unfamiliar places is part of the cultural background of modern man.

The interdisciplinary value of Orienteering at school

The school of competences is expected to start from a precise and concrete problem situation, which, as regards orienteering, comes true in how to use map and compass to find a way around. The school, the main educational agency that deals with the development of the person, is in the practice of orienteering a good tool to implement its institutional aims. The school tends to promote a unified knowledge and interdisciplinarity. It aims at implementing the synthesis among the various disciplines, so that each of them, with its own language and method, can contribute to the comprehensive analysis of a phenomenon, considered from multiple viewpoints. There is no doubt about the interdisciplinary nature of orienteering, not only regarding the two disciplines that, clearly, are associated with its practice: geography and physical education; but also design and information technology when learners are asked to make maps.

The scale calculation for evaluating distances will involve, however, math, while, for the study of terrestrial magnetism, of North and magnetic north will see concerned Sciences. We could go on with examples: understanding contour lines will start from the study of the shapes of the land and so we will see involved different disciplines such as geography, drawing and science.

The Orienteering activity in upper secondary school

Analyzing a planning of Orienteering activities for high school, regarding the educational values, orienteering favors an appropriate relationship between man and nature; develops decision making, autonomy, reflection, planning, reasoning; aims at the education to competition considered as improvement of abilities compared to others.

The disciplines involved are: geography, science, maths, design, physical education.

When a teacher has to plan orienteering activities it is essential to have clear objectives; interdisciplinary and specific objectives.

For the upper secondary school, the specific objectives can be summarised as follow:

- To be able to recognize and understand the travel map orientation (colors and symbols)
- To be able to compare a map with the territory
- To be able to use conduction lines for orientation
- To be able to orientate on short distances
- To be able to evaluate and calculate distances
- To be able to make a simple choice of location and plan complete routes
- To be able to use the compass to orientate the map
- To be able to orientate using small references
- To Know the symbolism of the description of the points
- To understand the shapes of land with contour lines
- To orientate using contour lines
- To know rules and behave in an orienteering race
- To participate in the Championships.

The interdisciplinary objectives can be summarised as follow, referring to the disciplines mentioned before:

- Geography: to know the difference between North and magnetic north; to be able to define the geographical coordinates: meridians and parallels, latitude and longitude; to be able to describe the azimuth angle; to be able to classify maps and to know their essential symbolism; to recognize the different types of terrain (Alpine, Nordic River-Alpine, continental, flat, waterfront, glacial, ect.) and vegetation (montana, hilly, Mediterranean, continental); to recognize the elements of human settlements of the territory by the Cartographic analysis.
- Science: to learn about the influence of magnetic field on the compass, magnetic declination and inclination; to orientate with the Sun and the Stars; to recognize the most common forest trees (spruce, larch, pine, beech, oak, chestnut, birch, ash, etc.); to learn about the cardiovascular system and respiratory system, muscular system, nervous and skeletal relating to physical-motor-sports activities.
- Maths: to understand the scale as a relationship; to calculate scale: from the distance to the real graphics and vice versa, with different scales and units of measure; to build a multiscale graduated scalebar; to build and populate tables and matrices for calculating and detecting measures (mapping) and times (race), even with simple electronic spreadsheets.
- Design: to use primitive tools and methods for surveying (compass, rib, Gruosi, theodolite); to detect and draw in small scale environments with computer graphics systems; to build plastic models from maps and plants; to build learning materials for orienteering (lanterns, punches, control cards, etc.).
- Physical education: to master the following basic movement patterns and, thus, to be able to: run uphill, downhill, on coast, on steep terrain and springs, run by overcoming obstacles, jump, dodge and change direction, stop, climb, fall and roll around, climb over, coordinate eye and foot; to learn about the sport of orienteering and its rules; development of social and civic sense.

At this point it is necessary to focus on the methodology to be used to develop the objectives listed above. Also in the upper secondary school, the method is global: it uses mainly the game, without providing technical guidance; for orienteering technical learning, the teaching/learning method is analytical, structuring, aimed at the acquisition by each student, of certain technical skills, which are intellectual-conceptual type. Moreover, there are moments of synthesis consisting of classic routes, games, tests and races.

The methodology for teaching/learning of orienteering technique could be divided in four phases:

- I. Conceptual Mastery: theoretical understanding of the technique to be learned through the explanation of the reasons that led to that solution.
- II. Experimental Mastery: practical application through exercise, so as to allow the student to experience the technique acquired conceptually and master it, even if not yet effectively.
- III. Automatic Mastery: master the technique with high output, efficiency and speed through the repetition of the exercises.
- IV. Tactics Mastery: application of the technique to the situation within a global context using paths, test of synthesis and races; collective and/or individual discussion about routes and techniques used.

The first two phases can be reversed, depending on the choice of favoring the inductive method (from experimentation to conceptualization, whereby the second phase will precede the first) or deductive (from concept to practical application).

The evaluation, which, on the basis of its specific dimensions, will be divided into: initial, intermediate, final. The initial evaluation will include, first of all, the mastery of the necessary prerequisites to tackle orienteering technique, which are: the understanding of spatial relations represented graphically and of a scale; intuitive guidance capacity using a simple map or map of a small space.

The ability to race (resistance) should be also assessed in order to divide students involved into homogeneous groups for organizing the departures during exercises and for the evaluation of the relationship between technical skills and physical abilities, in the individual assessment of chronometric performance tests and races. At the end of the development of every technical level, it can implement an evaluation with the purpose to ensure the acquisition of technical skills.

It may provide three bands of skill:

- First band: understanding the symbology, orientation along lines of conduct, guidance on sight over short distances;
- second band: simple route choices, march to azimuth and precision orientation;
- third band: orientation with contour lines.

As it is not possible to observe the student during the orientation exercise, the time test or orienteering performance race, cannot be the only criterion. Chronometer time is affected not only by the orientation capacities, but also by physical-athletic ones. The evaluation should therefore be supplemented by an individual interview about the progress of the race/test (error assessment) in order to establish the possession or lack of the techniques required.

Project description

The didactics offer of the High School “Alfonso Gatto” in Agropoli, in the school year 2016/2017, has been enriched thanks to the project prepared by the Department of sports science “Orienteering ... in the colours of Cilento”.

The project, signed by Maria Rosaria Santarsiero and Marina Granato Conte two referents professors, involved all the students of the second biennium, of the different types of liceo: scientific, linguistic, applied sciences, classical, musical and it took place on curricular and extracurricular activities. At the beginning, the number of participants was 228, then, has been substantially reduced, reaching 176 units, including 109 women and 67 girls, divided as follows:

- 1[^] A Musical course: 12 students
- 1[^] B Classic course: 21 students
- 1[^] A Sciences Applied course: 26 students
- 1[^] C Scientific course : 28 students

- 1[^] B Linguistic course: 30 students
- 2[^] A Classic course: 16 students
- 2[^] A Scientific course: 20 students
- 2[^] A Sciences Applied course: 23 students

The project was carried out by a professor David Pecora, expert, master of Orienteering, tracker, cartographer, technical trainer F.I.S.O. The project stems from the belief that the practice of Orienteering, due to its interdisciplinary value, may provide a practical response to the spread of teaching skills.

Orienteering, through its constant practice, helps to promote contact with nature and the environment, improving self-control, developing a sense of order and precision, to raise awareness of its own means, to strengthen the self-esteem, to improve the habit to respect of things and people, especially in SEN students, to foster collaboration and social relations.

Finalities of the project were:

- acquisition of healthy lifestyles, respecting the body and mind;
- to increase and enhance future opportunities with respect for nature.

Measurable objectives were:

- to be able with the help of paper and compass to orient themselves in environments never visited before;
- to be able to calculate the distance between two places indicated in seconds on any scale;
- to be able to recognize all the orienteering symbols;
- to be able to participate and qualify in a federal race Orienteering;
- to be able, to calculate dimension differences from one point to another using a map (level curves).

Participating students, with the help of map and compass, learned the first bases of orientation in natural and urban environment. They learned the basics of calculating the distance between two places indicated on any map in scale. They started to recognize the complete orienteering symbols. The activities were carried out in extra-curricular activities, except for the presentation seminar of the project, which took place, both at classic and scientific, and musical and linguistic Liceo, in curricular activities.

The students were asked, at the end of the activities, to answer to six questions, using Google forms.

To the first question, "What do you think about the course?": the 88.9% of participants answered, "very interesting", the 11.1% "quite interesting", no one chose the option "no interesting". The second question: "Do you think that the course has been helpful to your training?"; the 94.4% of the students answered it was very useful; they had the chance to learn a lot of things in a short period of time (32%); they had to put into practice their knowledge and skills to better face the challenge (42%); because it will be useful for orientation in the future and then, like all sports, it has helped to socialize and get to know many interesting people (15.2%); because it allowed to orientate in open spaces, but also to make new friends and experiences (5.2%); 5.6% of students involved answered that the course was not very helpful because, thanks to the technology, it is not essential to learn to navigate with map and compass. To the third question, "What difficulties did you find?", the 50% answered "no one"; for the 27.8% the difficulties were due to the structure of the project, while for the 16.7% of students activities time highlighted critical issues; for the 5.5%, instead, time was the real difficulty. The project took place in various scenarios and environments, so the fourth question concerned about the environments which had better captured their attention. The 72.2% answered "natural environment", the 16.7% "historic center"; the 11.1% "cluster of houses". No student chose "in gym". The fifth question, linked to the previous one, gave answers consistent with them. To the question "Which activities do you want to deepen?", the 72.2% answered "in natural environment", the 22.2% in historic center and the 5.6% in cluster of houses. The last question, "Would you like to participate again in the project next year?", the 88.9% answered positively

while the 11,1% negatively. From the analysis of the responses provided by the participants, it is clear that the core of the project was the opportunity to use in a real context knowledge learned at school. Students were able to transform a passive into a useful knowledge to solve a problem situation; the aggregation factor and a healthy competition have also helped to make the experience challenging and exciting. One of the weaknesses, however, was afternoon activities. Many students, especially students of the Musical High School, were unable to participate in the project, being engaged in educational activities in the afternoon.

Conclusions

The activity was highly motivating and involving, both for teachers and for students, particularly the experience showed its educational and motivational elements during outings. The final assessment activity of the project was the promotional competition held at the Oasis Dunale in Paestum; students had to orientate for the first time in the pine forest, to mark all the checkpoints, lanterns, arriving at the end tired but really happy. The choice of the Oasi Dunale, managed by Legambiente, has allowed students to discuss issues such as environment, landscape, heritage land, which are civic skills and active citizenship. It is important to motivate students, encourage them and give them the chance to discover movement, sport, group activity, highlighting competition, cooperation, creativity (Moliterni, 2013).

The study of literature on the subject showed the great potential of this practice but, also that everything is still entrusted to the good will and personal skills of some “enlightened” teachers.

References:

- Ausebel, D.P. (1968). *Educational Psychology. A cognitive View*. New York: Holt, Rinehart and Winston Inc.
- Biella, R. (1997). *Orienteering nella scuola*. Milano: Edi-Ermes.
- Carlotto, G. (2015). *Soft skills. Con-vincere con le competenze trasversali e raggiungere i propri obiettivi*. Milano: Franco Angeli.
- Castoldi, M. (2011). *Progettare per competenze*. Roma: Carocci.
- Castoldi, M. (2012). *Valutare a scuola*. Roma: Carocci.
- Commissione Europea (2007). *Competenze chiave per l'apprendimento permanente. Un quadro di riferimento europeo*. Lussemburgo: Ufficio delle pubblicazioni ufficiali delle Comunità europee.
- Galliani, L. (cur.). (2015). *L'agire valutativo. Manuale per docenti e formatori*. Brescia: Editrice La Scuola.
- Iervolino, D. (cur.). (2015). *E-learning: tra nuova didattica e innovazione tecnologica*. Giapeto Editore.
- Linee Guida Ministero dell'Ambiente. Available: http://www.minambiente.it/sites/default/files/archivio/allegati/LINEE_GUIDA.pdf
- Liuzzi, M. (2006). *La formazione fuori dall'aula. Concetti, metodi e strumenti per un nuovo modello formativo multidimensionale*. Milano: Franco Angeli.
- Maddalena E. (2010). *Orienteering*. Milano: Hoepli.
- Malvasi, P. (2008). *Pedagogia verde. Educare tra ecologia dell'ambiente ed ecologia umana*. Brescia: La Scuola.
- Moliterni, P. (2013). *Didattica e Scienze Motorie. Tra mediatori e integrazione*. Roma: Armando Editore.
- Scelza, A., Maolucci, E., Dalla Palma, M. (2010). *Outdoor. Pensare – Agire – Sopravvivere*. Milano: Hoepli.
- Siess, D. (2017). *La mente nella scuola. Una teoria costruttivista dell'apprendimento*. Roma: Armando Editore.