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Traditional and Innovative Tools in Teaching of Geography: A Case Study

Nunziata Messina[a]

[a] Dipartimento di Scienze Politiche e Giuridiche, University of Messina, Messina, Italy
Email: nancyme0881@gmail.com

Abstract

Geography is a discipline particularly suitable for the development and construction of knowledge common to several disciplines; in fact, through the use of many tools, which are based on the use and multiplicity of languages, the pupil builds his own "baggage" of knowledge through a conscious and critical approach. The introduction of technologies in the training courses is essential as it leads the student to learn interactively and Geography lends itself perfectly to this type of approach, as through computer resources it becomes a strategic discipline for teaching. The use of new tools leads the student to simulation experiences, virtual manipulations and graphic representations for a greater assimilation of geographic content. This article is intended to be a contribution in trying to identify the traditional and innovative tools used in teaching Geography. The results obtained, through the administration of a questionnaire to teachers belonging to schools of all levels in Sicily, showed that the use of geotechnology is still not widespread in teaching today, and therefore the future goal will be to involve teachers in an active training in the use of innovative tools that allow a new approach to Geography by students through GIS.

1. Introduction

The educational challenges, especially in the field of teaching, are very complex and involve the teacher who does not follow the traditional methodology, but who qualifies their professionalism with constant research activities, contributing to the progress of teaching of the geographical discipline. The fields of application of innovative tools and technologies of geo-computer matrix make it possible to proceed towards the study of the territory using new resources (Fahy and Ally, 2005). Geography is a discipline particularly suitable for the development and construction of knowledge common to several disciplines. In fact, through the use of many innovative tools, which are based on the multiplicity of languages available, pupils and teachers can open up to creative collaboration, accustomed as they instead are to traditionally living teaching as a transmission of knowledge. With the help of the technological tools available today, a new and autonomous intellectual capacity can develop in schools to

open up their borders, sharing common intentions, interests and objectives (Lazzeroni, 2004).

By means of the administration of a closed-ended questionnaire, conducted on teachers of different orders and grades of school in the Sicilian territory, this survey is aimed at identifying the tools that, also through technological support, can guarantee an enrichment of geographical knowledge. Today's school must develop a stable interaction between the traditional and innovative teaching offer, combining technology and scientific research with the training requirements of the young people of the future.

One of the main objectives of secondary education is to provide students with the ability to translate the challenges of the surrounding environment into an opportunity for growth, so that they can make informed decisions in their future daily and professional life. According to Palladino and Goodchild (1993), geospatial technologies make it easier for students to engage in "higher-order thinking activities that are often so difficult to find", as geospatial technologies can offer the possibility for education to focus on deep learning. "A growing number of educators worldwide have become convinced that the ability to think spatially is key to the development of these competences, and that education with geospatial technologies may contribute to the development of spatial thinking (e.g. Kerski, 2008; Lee and Bednarz, 2009; National Research Council, 2006). However, little is known about the effectiveness of instruction with geospatial technologies" (van der Schee, 2014, p. 225).

2. Methodologies underlying the use of technologies

The International Charter on Geographical Education emphasizes the importance of identifying "teaching strategies" and "teaching methods" that can have positive repercussions in the transmission of geographical knowledge within schools of all levels (De Vecchis and Giorda, 2018).

"To achieve significant learning in the field of geographic knowledge (as in all other areas), some fundamental requirements of the learning process are necessary, first of all the connection to the network of knowledge and concepts. Of vital importance is the inclusion of each new concept and each new knowledge in the cognitive map possessed by each one. The initial phase of the didactic action therefore appears to be very delicate, in which teachers must proceed to ascertain the cognitive matrix of pupils starting from the earliest years of school" (Pasquinelli d'Allegra, 2020, p. 168). The method, centered on the learner, improves the child's safety and autonomy by developing self-assessment techniques. As Gardner (2005) reiterates, the school must reach everyone taking into account the different forms of intelligence and, consequently, must enhance the different styles that each child has in the way of learning.

Intelligence is the ability to understand the world we live in and to solve the environmental, social and cultural problems that we have to face in every moment of our daily life (Messina, 2020, p. 78). In the twentieth century it was thought that intelligence was measurable in all individuals through tests of scientific value (Gardner, 1993).

The studies of Howard Gardner (1993) introduced a new theory, "the Theory of Multiple Intelligences", which stated that there is no common form of intelligence, but different forms, each independent from the others.

Gardner's thinking reaffirms that spatial intelligence is the cognitive matrix of human action in space; the factors that feed human action are: orientation and representation. The child orientates himself or herself in space based on their experiences of daily life, which are conceptualized thanks to spatial intelligence and represented, in cognitive cartography, through continuous interaction with the environment (Gardner, 1993). This synergy demonstrates the close relationship that exists between spatial thinking and the use of spaces, between spatial intelligence and spatial skills. Teaching makes this development concrete in the child, as a filter of knowledge, interiorization and the representation and communication of space. The teaching method becomes the flywheel through which spatial intelligence will be guided in

relation to geography. It must be of a laboratory and active type, capable of acting on the skills and must be systematic and scientific, in order to be able to verify the results achieved by the students (Gardner, 2002).

The teacher must educate the student to be able to observe, analyze and understand all the elements that characterize their space both in a close context (from their home to city and country) and far away (globally) to acquire the awareness that each of us is an active and responsible part of the environment in which we live. To this end, the teacher must guide the student towards the use of the scientific method through comprehension and interpretation activities (Dematteis, 2007). The child will thus learn to be self-critical, to formulate hypotheses and to verify them through a process of research-discovery. As a geographer Andrea Bissanti (1991) reiterates, "the scientific method must be the mental habitus of the future citizen, to which the pupil must be educated".

Among the main theories on learning, constructivism gathers great attention, in which the pupil is the protagonist of the learning process through the active construction of knowledge with the personal interpretation of facts, phenomena and values (Carletti, 2005). The methodology of action research is connected to the theory of constructivism, in which the teachers do not limit themselves to transmitting or imparting contents, but to researching methods and strategies aimed at conquering knowledge, identifying methods, techniques and strategies suitable for pursuing certain educational objectives (Carletti, 2005). Through action research, the pupil begins to represent a known or seen place, directly or indirectly, starting from their personal point of view to show how it was experienced or perceived, underlining the multiple ways of seeing, living and recognizing a territory (Ebbutt, 1985).

An active learning method, which can also be successfully applied in Geography, is Problem-Based Learning (PBL) as the research is based on the identification of real problems relating to the protection of the territory. Problem-based learning allows the pupil to fully participate in the construction of knowledge, as a result of research being motivated by genuine interest

(Filograsso and Travaglini, 2004). Through the Cooperative Learning methodology, students learn any discipline, including Geography with the formation of small groups, in which the members help each other, feeling co-responsible for the reciprocal path and the result (Comoglio and Cardoso, 1996). The teacher assumes the role of facilitator and organizer of the activities, structuring "learning environments" in which students, favored by a positive relational climate, transform each learning activity into a process of "group problem solving", achieving objectives whose realization requires the personal contribution of all.

The centrality of students in the learning / teaching process and the application of information technologies leads to the flipped classroom methodology, one of the many possible resources to meet the school of the future (Maglioni and Biscaro, 2014), to effectively satisfy the educational needs of the "new" students and to deepen the issues related to the knowledge of the territory (Spalatro and Paldino, 2019).

A new methodological-didactic approach is also provided by the "Without Backpack" school as an experimental reality that involved numerous Italian schools by adopting the "global approach to the curriculum" method (Orsi, 2021).

The project is based on a different organization of the classroom space, in which instead of the classic structure made of desks and chairs, different work areas are created, making the class itself a multipurpose environment. The new structure of the learning environment intersects with a school vision that sets out to realize the values and principles of a different way of teaching, in which pupils are the real protagonists. The methodology used in the "Without Backpack" classes reproduces what happens in the workshop of an artisan, in which practical experiences, seeing, illustrating and giving examples and instructions, mean more than words (Puckree et al., 2004).

Geographical education confers knowledge and skills related to mental or cognitive maps, which allow us to organize in space facts, places and phenomena related to both acquired knowledge and daily life (Pasquinelli d'Allegra, 2009). The use of the geographical map leads the student towards significant learning as it is the

main tool of knowledge, investigation and geographical communication useful for an active study that is well connected to the use of new technologies. It is not a question of substituting new methods for traditional ones but of implementing them, identifying alternatives that can further develop reflective and cognitive skills, allowing individual students to respond faster to external stimuli and to the class to interact with a broad involvement (Aydin, 2011).

Geographer Bissanti (1991) again underlines the extreme importance of geographic education, which has a great social purpose: to provide an integrated methodology of tools and materials and above all conceptual ones that allow men and women to read and interpret the increasingly complex territorial reality, to decode it, give it a sense, appropriate it, and, in so doing, not to feel like strangers in their home, in their own territory (at any scale: from the small space close to the whole world).

The introduction of technologies in training courses is essential as it leads the student to learn interactively and Geography lends itself perfectly to this type of approach, in which the opportunities offered by the web can be re-evaluated in a strategic key for teaching. The investment of huge resources by the institutes is not required, it is simply necessary to use the equipment and tools already supplied: computer labs and internet connections. The continued use of platforms, such as Google Earth and Geographic Information Systems (GIS) in open source mode, represents a strategy to be adopted to offer added value to geographical disciplines (Kim et al., 2013; Milson and Earle, 2007). "The design of geography lessons with geospatial technologies is also often very different from the design of traditional geography lessons. Lessons with geospatial technologies are often learner-centered, and their designs connect to (socio) constructivistic learning theories" (van der Schee, 2014, p. 228).

In recent years, there has been an improvement in IT structures in schools, through the availability of a wide range of free web applications and teaching materials (Kim et al., 2013). Geospatial technologies have therefore been included in the curricula of multiple countries and many teachers have begun to take a first step (Milson et al., 2012). Despite these innovations, the diffusion of geospatial technologies in schools still faces numerous challenges, one of which consists in ascertaining the effectiveness of lessons with geospatial technologies compared to lessons using analog materials (e.g. paper maps).

"Students need international perspectives and high levels of competency in Geography to understand contemporary issues related to the environment, economy, development, national security, and human rights. In an age of global interdependence, students also need social skills that enable them to interact constructively with people having different cultural backgrounds – and oftentimes very different points-of-view on matters of foreign policy and international affairs. As global citizens, individuals must feel committed to international goals, value multilateral approaches to policymaking, and reject isolationist thinking. In short, global citizenship requires globally oriented hearts, minds, and actions" (Solem, 2007, p. 168).

3. Application of new tools in geography education

The teaching of geography today focuses decisively on the importance of the use of new technologies. Geotechnologies appear indispensable in a teaching / learning process in step with the changing world.

The changes are viewed in positive terms and can be identified in three broad areas. A first area concerns the specific learning achieved, as new technologies have the power to stimulate the development of intellectual skills, including knowing how to reason in order to tackle the solution of a problem, learning to learn and creativity. A second area concerns the motivation of pupils: most of them show greater interest in learning activities based on new technologies rather than on the traditional approach, in which attention and concentration are also greater. A third area of impact concerns the way in which students establish relationships with knowledge and is perhaps the one with the greatest implications (Testa and Amatuccio, 2010). To these an additional area needs to be added, namely that relating to the acquisition of professional skills that can lead to the world of work.

It can therefore be said that technologies stimulate research and cooperation between peers, making students themselves more aware of their knowledge. The use of new tools leads the student to experiences of simulations, virtual manipulations and graphic representations for a greater assimilation of geographic content. From these observations it emerges that the problem is not given by the content but by the process that involves learning, in which the re-elaboration of knowledge must be determined by a series of essential factors, such as: awareness, motivation and critical approach to problems, becoming a consolidated path and not an occasional path in geography teaching. According to Seymour Papert (1993) the learning process is based on designing and creates a building by assembling simple elements in an original way, such as playing with the logo or programming "microworlds". Papert's thinking is based on the idea that knowledge must be built and shared, therefore the teacher who uses the "micro-worlds" becomes a promoter of activities in which pupils plan and learn (Varisco, 1995). The class becomes a community of scientific practice where pupils communicate and share their ideas. Geography "is a hinge discipline par excellence because it allows us to relate economic, legal, anthropological, scientific and environmental issues of considerable importance […]. The comparison of one's own reality (lived space) with the global one, and vice versa, is facilitated by the continuous comparison of spatial representations, read and interpreted at different scales, also using geographical maps, photographs and satellite images, of the terrestrial globe, of materials produced by new technologies related to Geographic Information Systems (GIS)" (MIUR, 2012, p. 56).

The use of new tools and methods of representation of geographical space (remote sensing and computerized cartography) represent for the teacher a wide range of applications, "from those typical of field research to iconic ones, from statistical ones to linguistic-literary ones, from graphic and cartographic ones to modern geotechnologies, which constitute a very varied and well amalgamated background" (Pesaresi, 2012, pp. 109-110).

4. Field research and results

Among the tasks of teaching is that of developing tools to allow the effective use of academic research in learning, in relation to the age of the students and the territorial context in which the school operates.

This survey, addressed to teachers belonging to schools of all levels in Sicily, aims to be a contribution in identifying the tools used in teaching Geography, highlighting the use of innovative ones in particular.

The Survey Research was used to organise the questionnaire, which is a very important branch of the research that aims to collect information on qualitative and quantitative variables under investigation (Guidicini, 1995). The survey consists of a pre-established sequence of written questions addressed to individual teachers who teach Geography, and who have been asked to give precise answers. The close-ended questionnaire was administered using the Google platform in order to involve a vast pool of users operating throughout the region and to collect information on the professional and training career of teachers, highlighting the use of traditional and innovative tools in the teaching of the geographical discipline.

The survey was conducted on a sample of 300 Geography teachers (52% of upper secondary school, 22.7% of first degree and 25.3% of primary school) operating in Sicily in a diversified territory (Provinces of Messina, Catania, Enna and Palermo), both for the socio-cultural and economic context.

From the completed questionnaires it emerged that 37% of respondents are aged between 46 and 55 and only 21% are between 25 and 35 years of age[1] (Figure 1).

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[1] If we look at the countries of the European Union, from the latest Eurydice report, Teaching Careers in Europe: Access, Progression and Support, it emerges that 9% of EU teachers are over 60 years of age with a higher percentage in Italy equal to 18%; it is therefore noted that most of the teaching staff in service reaches fairly high thresholds, related to age.

The Figure 2 shows that 60% of the reference sample, belonging to the three levels of school, has a degree and 23% of teachers continued their studies obtaining a second level master and / or research doctorates (PhD)[2].

Assuming that education is a strategic factor for the development of a nation, the element that can make the difference for its economic and social growth are the teachers called to face the increasingly complex problems relating to education and to the training of young people, guaranteeing high learning outcomes and good outcomes in the education of the future citizen. The improvement of a school system, therefore, passes above all through a policy of good interventions towards teachers, aimed at ensuring that competent and motivated professionals work in the school (Maude, 2018). In today's school, new teachers are about to enter and this may represent the moment to launch new school policy measures that place teachers at the center of attention, becoming an opportunity for a profound renewal of professionalism and of the school itself (Gianferrari, 2009, p. 4).

The teaching of Geography in primary school is carried out by the curricular teacher who deals with all school disciplines, while in lower secondary school Geography is a subject included in the linguistic-literary field. In the upper secondary school, the geographical discipline is attributed to those who have obtained the qualification in this class of competition. 86% of respondents attribute a "very" high value to Geography for the growth of students in the training course.

Referring also to some research conducted on four different countries (Finland, Germany, the Netherlands and Sweden), within the GeoCapabilities project which identifies the aims and values of geographic education at an international level, the educational value offered by Geography helps young people develop the human skills they need to live a life they consider valuable.
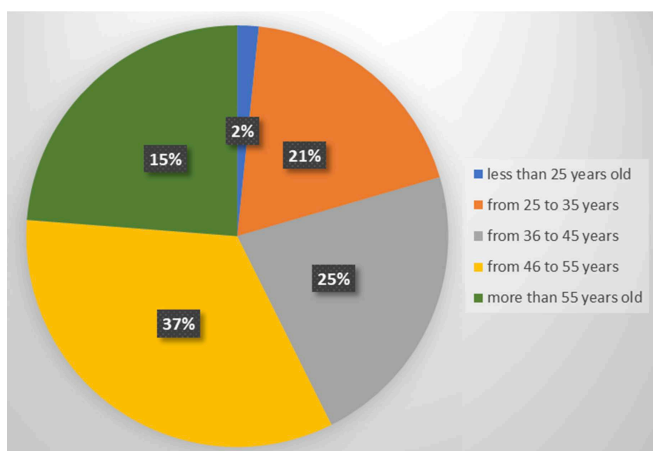

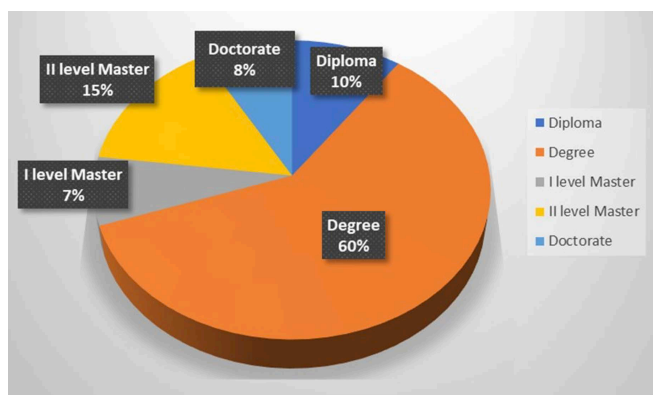Figure 1. Age of the teachers involved in the study. Source: Author's elaboration.

Figure 2. Degree of education of the teachers involved in the study. Source: Author's elaboration.

In this research, teachers and trainers were asked if geography plays a fundamental role in improving the "human potential" of students. Despite the marked differences in the legal and structural background in each country, great similarities were found in the curricular thinking of teachers and educators in relation to the contribution of geography and the future well-being of students, as "powerful disciplinary knowledge" (Uhlenwinkel et al., 2017).

The GeoCapabilities approach seeks to enhance the teaching of Geography by encouraging dialogue between the school subject and its academic counterpart on the one hand and by allowing teachers to decide what is important for the development of their students' abilities on the other. "To achieve this it emphasizes the importance

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[2] The reference sample is made up in particular of first and second grade secondary school teachers and among the teachers working in primary school only a very low percentage (10%) is not yet in possession of a degree, as in the past the access to this role was also possible just with a diploma.

of a knowledge-led curriculum, what Young and Lambert (2014) describe as a progressive 'Future 3' curriculum (see also Lambert, 2016)" (Uhlenwinkel et al., 2017, p. 339). GeoCapabilities supports curricular thinking by offering teachers the opportunity to reflect on the impact of geographic discipline and on the development of students' skills. It does this by treating the subject as powerful disciplinary knowledge and highlighting how teachers will "activate" the curriculum in relation to objectives and content.

A turning point on the educational value of Geography came with the International Charter on Geographical Education, approved by the General Assembly of the International Geographical Union at the Congress held in Beijing in 2016. The conclusions state that Geography as an area of study is an essential key to understanding our place in the world and how people interact with each other and their environment. Geographical research and education promote and broaden cultural understanding, interaction, equality and justice at the local, regional and global levels.

A fundamental element is the updating of teachers which represents one of the main aspects for the transmission of geographical knowledge (Giorda and Pettenati, 2018, p. 91). Updating and in-service training are two fundamental aspects for the school; in fact, training constitutes an indispensable strategic lever for the professional development of the teacher and for supporting the innovation processes in progress; the Figure 3 shows that 49% of the interviewees participated in specific training[3] also carried out by the constant action

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[3] SOFIA (Operating System for Training and Refresher Initiatives) is the online platform through which all tenured teachers have the opportunity to freely choose from a series of training initiatives proposed in the online catalog by schools and training bodies accredited by MIUR (Ministry of Education, University and Research) pursuant to Directive 170/2016.
Loescher courses, through a well-structured training offer, aim to stimulate reflection on teaching practices and to share knowledge and experiences in the classroom.
The DeA School allows you to design and implement lessons in a multimedia environment by accessing a vast array of useful resources as an integration to the book and as a database for the construction of digital didactic objects.

of geographical associations. "The well-trained teacher appears to be the keystone of all educational-teaching innovations, therefore a determining factor for the quality of the school. Indeed, every important educational innovation requires an external push, but implementation, albeit slow, requires the intelligence, preparation and active will of the teachers" (Chang, 1997, p. 612).
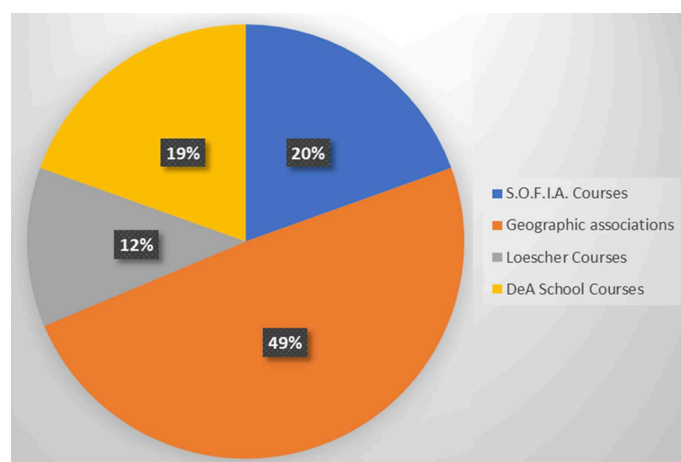

Figure 3. Participation of the teachers in refresher courses. Source: Author's elaboration.

Today, the awareness that in-service training is an integral part of the so-called knowledge society has become even more profound, since the possession of specific skills, even in the geographical field, makes it possible to face the uncertainty of a constantly changing reality and that, most likely, it will ask our students, citizens and future workers of tomorrow, to change themselves several times in the course of their professional and working life.

All community documents, from Maastricht (1992) onwards, highlight the importance of in-service training that is lifelong and allows the school to keep pace with the changing society. Continuous training, to be carried out through formal channels (training-refresher courses, seminars, conferences, books, etc.), but also informal (newspapers, cinema, concerts, internet).

In our society, updating is required to be understood as a mindset and willingness to seek improvement that must characterize the entire professional life. Only in this way can the teacher

be constantly updated on the evolution of science, technology, pedagogical, psychological theories, methodology and teaching towards continuous in-service training. The teacher, who experiments and innovates, is a teacher who grows in professionalism, who improves pupils' performance by moving towards new ways of teaching, who, by publicizing the results of their research, favors the training of their colleagues and the growth of the entire school community. In this direction, the school of autonomy is built, the school of research and innovation, the "ideal training ground" for exercising continuous teacher training in service (Caruso, 2015, p. 44). Training therefore constitutes the strategic lever for the professional growth of teachers, to direct us towards the pursuit of the objectives of change and towards the innovation of the school community itself.

Analyzing the data collected in schools of all levels, in relation to the question "What are the tools that are used for teaching geographic discipline in the classroom?" (Figure 4), it emerges that, having the possibility to indicate more than an answer, the teachers, as depicted on the Y axis of the graph, indicated the textbook as the most used tool. Particularly in primary and lower secondary school the use of maps is also highlighted, while for upper secondary school there is also the use of Geobrowser and IT tools.

Multimedia tools maintain a fairly high percentage in upper secondary school even if the difficulty, on the part of the teaching staff, is evident in maintaining control over the complexity introduced by the dynamism and multiplicity of experiences that multimedia tools potentially offer (Anderson and Elloumi, 2004).

Geography must be well understood and taught according to modern methods and the teacher must create in the pupils the restlessness of knowledge, the essential basis of any pedagogy (Brouillette, 1962, p. 14). In order to promote knowledge in this particular area, it is necessary to "resort to a wide range of teaching techniques: research, choice and processing of statistical data; construction of graphic and cartographic representations; reading of geographical, chorographic and topographic maps, plans and maps; reading of aerial and non-aerial photographs, slides and films; simulations

etc. etc." (Bissanti, 1991, p. 115). The hours of Geography should transform the school into an experimental workshop and an engaging environment, leaving room for initiative and personal imagination, directing these attitudes in the right directions through the use of appropriate models and tools. This type of approach finds it difficult to take root in a capillary way as can be seen in the results of a questionnaire, entitled *The perception of geography and the use of some of its tools*, submitted to 187 students enrolled in the first year (2010-2011) in several university courses of the Sapienza University of Rome. The questions asked made it possible to evaluate the frequency with which some applications, such as Google Earth and statistical data, were used at school and in home searches, highlighting a very low percentage (11.7% and 8%) of constant use of these tools, finding a higher percentage in the use of maps and atlases (Pesaresi, 2011b, p. 97).

As the international literature points out (Keiper, 1999; Lemberg and Stoltman, 1999; McClurg and Buss, 2007) there are several reasons that push us to use Geographic Information Systems in an educational key. In particular, GIS helps to carry out studies on a small and large scale, highlighting conditions, changes and problems of each examined context, favoring comparisons and stimulating reflections.

These learnings also guarantee immediate feedback on training needs, opening up a new didactic scenario with an education oriented towards the enhancement of collaborative learning and an active involvement in the definition of objectives, ones linked to the reality of the students and basically multidisciplinary, with the formation of heterogeneous, flexible, compact and well-organized working groups. With the use of innovative tools, new teaching models are experimented which presuppose continuous levels of interaction, in which the teacher is configured more as a guide and facilitator than as a provider of knowledge. Therefore, even primary and lower secondary schools must draw on new tools to involve the student in an active and innovative teaching projected towards the future.
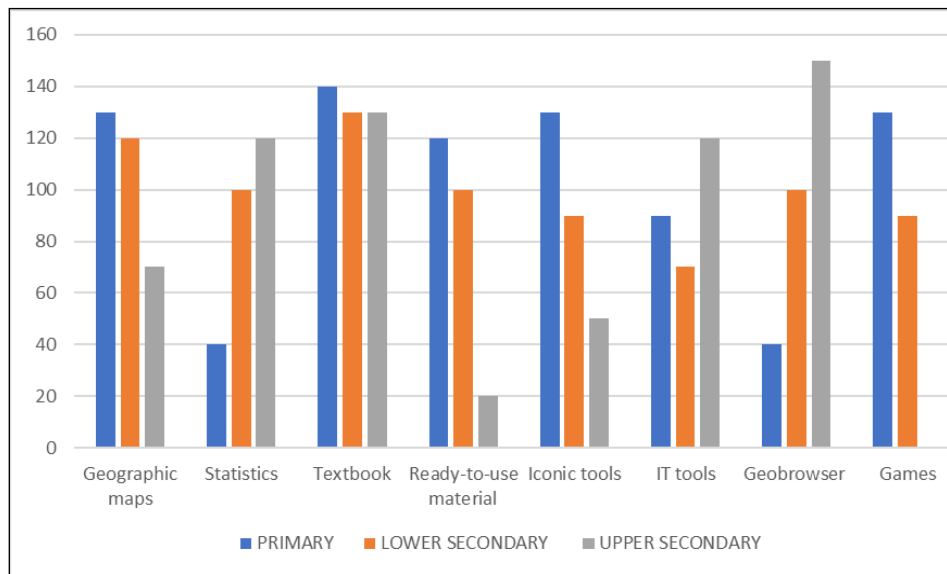
Figure 4. Materials and tools used in the different orders and grades of school by teachers involved in the study. Source: Author's elaboration.
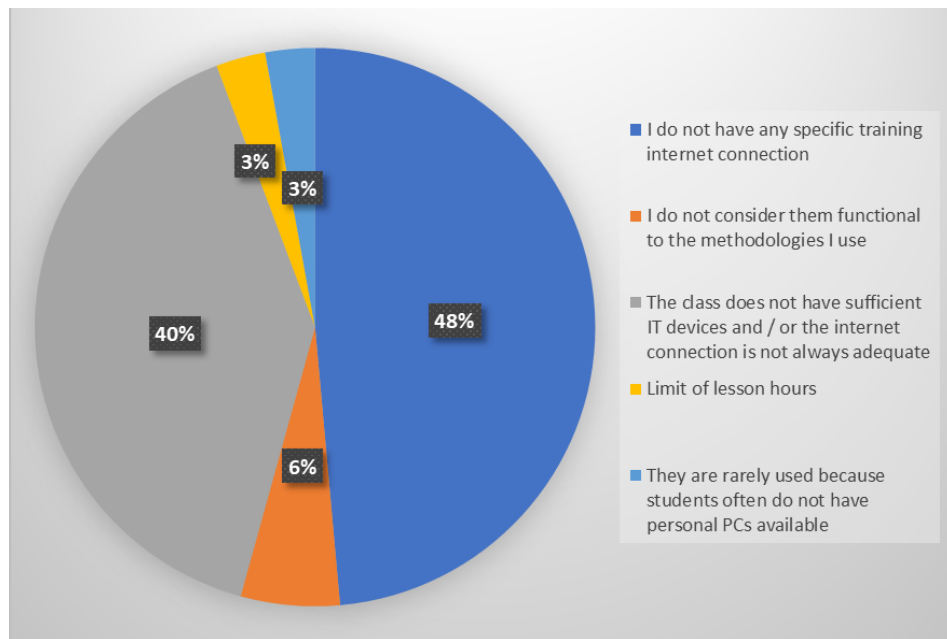

Figure 5. Why teachers involved in the study do not use Geobrowsers. Source: Author's elaboration.

The survey shows that among the teachers belonging to primary and lower secondary schools who declared that they do not use Geobrowsers, 48% do not use them as they do not have adequate training and 40% declare that the class does not have adequate IT devices and / or internet connections that can support the use of these tools (Figure 5). At the same time, of all the teachers belonging to the three school levels, 54.9% found Geobrowsers very motivating for students and 44% quite motivating. Surely the new technologies can contribute to an educational

scenario that allows a collaborative construction of knowledge, in which everyone will be able to develop new knowledge regardless of their presence in a given space and at a given time. Through multimedia technologies, students are involved in new forms of learning and their active involvement increases curiosity and the desire to explore. The school is the first training agency that fulfills its task also by equipping students with the necessary tools. 56% of teachers believe the use of innovative tools to be "very" important for the involvement of students in learning geography and 44% consider them "quite" basic to increase the motivation for the development of geographic knowledge. Technologies in themselves do not qualitatively improve the educational offer or the levels of learning but simply represent tools: it is up to the teacher to discover their potential, insert them within a broader methodological and didactic framework, as well as consider them useful devices to convey the theoretical part transmitted in the classroom during lectures (Pesaresi, 2011a, pp. 136-140). In this way, geospatial technologies have the potential to radically enhance the way of teaching and learning in the classroom (Baker and White, 2003; Kerski, 2003; Sinton and Lund, 2007).

5. Conclusions

The application of teaching methods and techniques allows the development of each segment of the curriculum for the acquisition of knowledge, skills and competences. Today's school is projected towards a real change to respond to the new training and decoding needs that the pupil needs (Rocca, 2010). The UN has placed education in the foreground as an agent of change. In fact, the goal of the 2030 Agenda is to ensure that all students acquire the knowledge and skills necessary to promote sustainable development with the enhancement of cultural diversity and the contribution of culture to development, for a more equitable, sustainable and inclusive society. With this in mind, it is necessary to use innovative teaching methods and multimedia materials, to provide outdoor activities through the active involvement of students in learning planning. In recent years, there has been an increasing demand for training courses aimed at paying particular attention to geographical issues, in an attempt to re-evaluate the current role that this discipline plays in relation to others (Lambert et al., 2015).

The subject of the survey was the numerous aspects relating to the importance of teaching geography in schools of all levels, underlining the didactic value of this discipline for the development of the pupil and the fundamental function that the updating of teachers fulfills for effective teaching, especially for an ever-evolving discipline such as geography.

From the analysis of the data collected, the priority of encouraging the training of teachers engaged in teaching the geographic discipline emerged with actions in support of educational improvement and innovation. The same law No. 107 of 2015 underlined the importance of training and updating all school staff as an essential prerequisite for the professional role of each educator.

"The role of Geography in recent years has been placed in the background, especially in secondary schools, where the weekly hours of Geography have been reduced from 3 to 2 (Riforma Gelmini Act No. 133/2008). These regulations, which diminish the role of Geography, are absolutely not constructive and attentive to a country that is increasingly becoming multi-ethnic, which claims to be a world tourism "power" and which seeks to maintain a non-secondary role in the Mediterranean geopolitical quadrant" (Messina, 2020, p. 156).

The data that emerged draw a line on the effective use, by teachers operating in the reference territorial context, of the innovative tools in the teaching path and it is clear that the textbook is the most used in all educational stages, supported by the use of other tools and materials that differ in relation to the age of the pupils. In relation to the reference sample, it clearly emerges that the school is mainly linked to traditional tools, neglecting in part the potential offered by innovative tools. In primary school the use of geographical maps, ready-to-use material (paper, cardboard, felt-tip pens, billboards), iconic tools (photographs, graphic-pictorial works, remote sensing and more, and filmography), of games (puzzles, naval battle

and electronic and sensory-motor games) and the use of computer tools. In lower secondary school, in addition to the use of these tools, there is also the use of static data to detect population density, economic development and the production of a given territory. In the first cycle school, the use of Geobrowser, such as Google Earth, NASA and Google maps are less used tools; on the other hand, in the upper secondary school the Geography teachers interviewed make more use of statistical data and Geobrowser.

The results obtained highlighted that some didactic tools are more used than others, with limited use of the innovative ones. Today, the inclusion is needed of methods and tools that speak a modern language and that can highlight the more complex aspects of geography. In this direction the school is working towards the creation of training-updating plans also on a telematic basis, such as the SOFIA platform (Operating System for Training and Updating Initiatives), in order to raise awareness of an ever-increasing number of teachers belonging to different orders and grades of school.

Participation in training courses was more assiduous for the disciplinary areas related to the linguistic-mathematical axis and less for the other disciplines, such as Geography, but the work carried out by the geographical associations is producing its rewards. In fact, the last national remote refresher course, the "Educational workshops", totaled over one hundred participants, who declared that they had received important stimuli for their work in the classroom. Moreover, in the Sicilian territory in recent years, refresher courses have been organized on the use of new methodologies and innovative tools in teaching in the face of an extended and global vision of the geographical discipline.

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