Project-work approach in initial career guidance:
a case study to improve sustainable skills in Italian high school education

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The labour market is facing accelerated changes on a large scale due to globalisation, technological and digital innovations, societal and demographic developments, and today's global issues (Cedefop, 2021; Inapp, 2021; WEF, 2020), such as an environmental and climate emergency (IPCC, 2022; ASviS, 2021), a pandemic and economic crises (ISTAT, 2021). These challenges, causing significant inequality and youth unemployment, impact all professional sectors in Europe and around the world. Labour changes require the creation of new occupations, the redistribution of jobs and the acquisition of the skills needed (European Commission, 2020a), considering that the occupations of the future will be both technological and social (WEF, 2020). "The best investment in our future is the investment in our people. Skills and education drive Europe's competitiveness and innovation" (European Commission, 2020b). Therefore, we should make sure that people get the skills, training, and education needed to adapt to this rapidly changing world, like learning to learn, self-organisation, and communication. Hence, education and training policies and practices should be rethought (European Commission 2021a). To achieve this overall goal, Europe must strive to halve the gender employment gap and increase the provision of formal and non-formal education in different settings. This would contribute to a reconciliation between professional and personal life, and decrease the rate of young people neither in employment nor in education or training (NEETs), by improving their employment opportunities (European Commission, 2021a). Now, more than ever, the EU needs a paradigm-shift on skills, because the jobs of tomorrow require skills for the green transition (GreenComp, 2022), digital (DigComp, 2022) and STEM (Science, Technology, Engineering and Mathematics) skills which are critical to drive the twin transitions. Beyond technical skills, the labour market increasingly needs entrepreneurial (EntreComp, 2016) and transversal skills, like life skills (LifeComp, 2020).

According to the European pillar of social rights, the aims of the Union are to promote the well-being of its peoples and work for a sustainable future. For these reasons, companies, national and local authorities, social partners, and especially education and training providers, have a key role to support a fair and resilient recovery. Hence, the EU invites public and private organisations to join forces and take concrete action to upskill and reskill people in Europe through the pact for skills, promoting a culture of lifelong learning for all. According to the Copenhagen Declaration, over the years cooperation at the European level developed lifelong learning and education, involving vocational education and training that included lifelong guidance. Today, guidance from the European framework refers to a range of activities enabling citizens of any age and at any point in their lives to identify their capacities, competences, and interests, to make educational, training, and occupational decisions and manage their individual life paths. Initially, the guidance system contributed to the achievement of the European Union goals of economic development, labor market efficiency, and employability through

investments in education, vocational training, and human capital development. In this perspective, education is functional to the knowledge society, but in 2014 the culture of guidance changed towards the enhancement of the person and the ability to make conscious and appropriate choices along the entire life path (MIUR, 2014). Along these lines, the guidance assumed a strategic function to guarantee the right to study and equal opportunities for educational success. For these reasons, pathways for transversal skills for guidance purposes, PCTO in Italian (MIUR, 2019) were implemented in Italian high schools. These pathways involve public and private institutions to increase the connection between schools and labor market, and were based on action learning and situated learning, key to guide students toward future jobs (MIUR, 2019). The PCTO was a teaching strategy integrating periods at school and in the workplace during which the learners maintain their status as students, to make them aware of the educational and training value of work. Thus, the PCTO had many points in common with curricular internships in the workplace, although it focused more on increasing orientation skills. The purpose of these pathways is not to prepare students for specific professional profiles but, instead, to develop a reflective approach towards work, key to prepare students for uncertainties and future challenges. In the PCTO guidelines, it is clear that students need to be at the center of lifelong guidance. This aspect is pivotal to improve cooperation with local contexts and set up effective training courses. For these reasons, the PCTO can be a fundamental change in the Italian guidance system even though it remains fragmented and not sufficiently individualized when compared to other European countries, such as Finland and Spain (Cedefop, 2020).

The key value of PCTO is the integration of curricular with transversal skills and enhancing the transformative role of education, necessary for the integral well-being of humans, and not be separable from sustainable development and guidance towards sustainable lifestyles (OECD, 2019; Margiotta, 2015; Nussbaum, 2011). Often, sustainability is reduced to sustainable growth or green revolution, referring only to the limits of economic growth and environmental issues. Instead, the construct of sustainable development is more complex. An expression of this complexity is the 2030 Agenda for Sustainable Development (UN, 2015), where the emphasis is placed on the principle of integration, promoting a systemic and transdisciplinary view, thus synthesizing the ecological perspective (Giovannini, 2018). This perspective consists of overcoming a dualistic and deterministic approach in favour of a relational-systemic approach (Mortari, 2020). Ecology shows that organisms are connected with each other and with ecosystems through the cooperation principle. Therefore, humans need to perceive themselves as a unitas multiplex in a constant dynamic and dialogical balance (Morin, 2002). Hence, at the core of anti-ecological behaviour there would be errors in our habits. For this reason, what is needed would be a whole new paradigm (Bateson, 1984).

According to this perspective, society needs to review the logic it is founded on. Therefore, the task of education is not only to provide know-how but to facilitate problematisation (Dewey, 2004), learning to learn, reflection on our habitus, and promoting reflective, critical, and systemic thinking that captures the connecting structure (Bateson, 1984). There is an urgent need to promote education in transformative terms in order to shape a new ecological humanism (Margiotta 2015, Bateson 1984). Education and training can play a key role in developing this new paradigm and in achieving the Sustainable Development Goals (SDGs). Furthermore, according to the PISA 2018 results report, in the school curricula of Italian 15-year-olds, global issues such as climate change, migration phenomena, and inequality, are less present than in

the OECD average. Italy is at the bottom of the OECD countries list in terms of students' interest in learning about other cultures, positive attitudes towards immigrants, and activism on global issues (ASviS 2021, OECD 2020). In Europe and around the world, there is a wide range of sustainability education programs. Due to the complexity of the sustainable development construct, these programs can address a single target of the 2030 Agenda or integrate more. They can be included, for instance, in environmental, entrepreneurship, or citizenship education programs (UNESCO 2021, European Commission 2021, Eurydice 2017, 2016).

Currently, in Italy, education for sustainable development in secondary schools is mainly included in civic education courses and also in the PCTO programs, as personal orientation and future skills cannot be separated from the development of this new ecological paradigm. The PCTO guidelines include targets of the Agenda 2030 for sustainable development, namely target 4.4: "increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs, and entrepreneurship", and target 8.5: “achieve full and productive employment and decent work”. The PCTO offered by the Department of Philosophy and Cultural Heritage (DFBC) of Ca’ Foscari University of Venice is focused on problem-based learning using the project work approach. This aims to integrate both the promotion of the new ecological paradigm, based on the integral well-being of human beings and on interrelation and dialogue with others, and the provision of concrete tools to reach value in terms of innovation and sustainability. Both are central aspects to be integrated with personal orientation to create alternative future scenarios. Ca’ Foscari’s PCTO involved 38 students between 16 and 18 years old from five high schools. They were divided into eight teams of 4-5 students, each developing a different project.

Theoretical framework

This PCTO was developed according to the OECD learning compass pedagogical framework. The Anticipation-Action-Reflection (AAR) cycle is highlighted in this framework as an iterative learning process in which learners constantly improve their thinking and act intentionally and responsibly in the interest of collective well-being (OECD, 2019). The phases of the AAR cycle have certain points in common with the "Episodes of Situated Learning" method, EAS in Italian (Rivoltella, 2018). EAS didactics provide a three-way structure: anticipatory, where the teacher uses resources such as a Concept Map, a Short Video, or a Brief Multimedia Presentation as an introduction, and conceptual framework to spark the student's epistemic curiosity; operational, where the students complete a micro-activity to create an artifact; and restructuring phase, where teachers and students carry out metacognitive reflections on what emerged and how it was operated. Also, teachers in EAS didactics assist students in reflecting on lessons acquired and reorganizing their frame of reference, which is required for "transformative learning" (Mezirow, 1996; Cranton,1996).

When anticipation, action, and reflection phases are combined in a cycle, they can accelerate both agency and co-agency development (OECD, 2019), which is required for students to learn to navigate unfamiliar situations on their own and significantly and responsibly find their way. According to Sen, agency is “what a person is free to do and achieve in pursuit of whatever goals or values he or she regards as important” (Sen, 1985, 203), and an agent “is ‘someone who acts and brings about change, and whose achievements can be judged in terms of her own values and objectives, whether or not we assess them in terms of some external criteria as well’” (Sen, 1999,18). According to Sen’s perspective, agency is also tied to what an individual attaches value to in

autonomy (Alkire, 2005). A person becomes an agent when the following conditions are satisfied: the action's intentionality, which is the outcome of one's own decision; pursuit of their goals and values; and a performative action that changes or contributes to a change in the world (Sen, 1999). Considering these requirements, the meaning of agency must be assessed in reference to its intrinsic relevance, its instrumental contribution, and its constructive role in values and norms (Sen, 1999). In other words, agency is intrinsically evaluable in the sense that it represents a value in and of itself, as it transforms an individual into a morally responsible being capable of living a meaningful life. Moreover, its presence allows an individual to evaluate, decide, and form their own values; and, in this sense, it takes on an instrumental value. In thisview, according to Nussbaum (1998), a fundamental role is assigned to education, which has an instrumental, intrinsic, and social value. It gives individuals the opportunity to realize themselves, both in the individual dimension and by allowing people to be responsible citizens and participate in social choices.

According to these frameworks, PCTO offered by the DFBC was designed into six lessons, each of which including three sections. The first one consisted of self-learning at home to increase students' curiosity, engagement, self-efficacy, and knowledge about sustainability dimensions (based on the Flipped Classroom model). It was followed by an initial online brainstorming session focused on discovering current scenarios, asking questions, and reflecting on short and long-term consequences, thus stimulating problem-solving ability. The second, operational phase, included laboratory activities and project-work development. The third one included collective and individual re-elaboration of experience through metacognitive reflections on what emerged and how it was operated. In addition, tutors and students in the PCTO also are co-agents and co-creators in the learning process. They share educational goals with the idea that agency does not imply operating in social isolation or acting only in one's own self-interest, because people learn and act in social situations. As far as students are concerned, they are surrounded by their peers, teachers, families, and communities, who interact with and guide them towards well-being (Salmela-Aro 2009; OECD 2019). Furthermore, in this PCTO, the tutors' roles changed depending on the EAS phases: in the anticipatory phase, tutor supervises the students' reflection on materials watched, using brainstorming and targeted questions to elicit critical reflection on the contents. During the operational phase, they carry out the laboratory activity, observe the students while they do the activity, and give assistance when needed. During the restructuring phase, they address misunderstandings, analyze the group progress, encourage self-assessment, and manage final feedback.

Project-work approach in PCTO

This PCTO focused on project-work. According to PCTO guidelines, project work is one of the examples of tools to be used. It is not only described as an educational tool but as a complex approach that includes key pedagogical approaches referring to the Education of Sustainable Development (UNESCO, 2018), and it is based on problem-based learning, a currently controversial model (Servant-Miklos 2020, Membrillo-Hernández 2019, Condliffe et al 2017). Kilpatrick was the first one to talk about the project method, echoing Dewey, Froebel, and Pestalozzi. Nevertheless, today it is not easy to identify a unified method concerning problem-based learning, due to the evolutions of distinct educational practices developed in the ‘70s in Canada, the Netherlands, and Denmark, and even more after the ‘90s. In addition, all the programs differed in some points, and their variations depended on a lack of a universally accepted model or theory of learning based on projects due to fragmented innovations in

different Universities, fields, and activities (Servant-Miklos 2020). For these reasons, literature we can find the use of the terms “problem-based learning (PBL)”, or “problem-oriented project learning (PPL)” or “project based learning (PrBL)” (Condliffe et al. 2017), and, in the last years, “Challenge based learning (CBL)” (Membrillo-Hernández, 2019).

Despite differences developed in all these declinations, these models discuss on some common educational principles. All are built on the constructivist education theory (Vygotskij 1992) and experiential learning (Dewey, 2004). For this reason, some authors argue for integrating these models (De Graaff et al. 2003) but others disagree, believing that problem-based learning is based on specific educational practices rather than principles. These practices depend on the nature of problems, teachers roles, specific activities, assessment, and curriculum structures (Servant-Miklos, 2020). However, given the same educational principles we can find some similarities referred to the learning process:

- organization of learning in small groups, useful to develop collaboration, personal and social competences
- focus on student-centered and self-directed learning, although with some differences in terms of tutors’ role and problematization
- a problem as starting point of the learning process, where learners learn inductively. They don’t necessarily need to have prior knowledge about the subject matter. Instead, they actively construct their knowledge in response to the problem, which can be real-life or hypothetical
- interdisciplinarity and complex approach to problems to acquire deeper learning.

In our program, we proposed a project-work approach over the course of six sessions to guide students' actions from a real-world local problem to a long-term alternative solution. Firstly, we requested all students to identify an ecological problem close to themselves to share with others during the online class through a photo taken by them. This activity increased students’ motivation and engagement and allowed us to create teams based on similarities among students’ interests and problems identified by them. In this way, learning was self-determined and based on personal experiences, hence on situated learning (Wenger, 2006). Students were divided into eight teams of 4-5 students, which had to develop a different project, based on photos chosen by them. The project-work was designed in three phases: problem definition, problem-solving, and project presentation. Each phase included several activities to be presented in online classes and completed by each team on their own. In each group, students had a different role, identified together with the other members. These were the researcher, in charge of finding sources and contents on the chosen topic, the journalist, who had the responsibility to administer interviews, the artist, who had in charge of finding final graphic presentation, the speaker, who would show it to the other teams, and finally the facilitator, responsible for timing and managing relations between team members. The separation of roles is important to share responsibility for the result and to satisfy personal inclinations. Working in groups promotes communication skills and collaboration for a common purpose, a key aspect to co-agency development. Furthermore, it is deemed necessary to increase professional skills such as teaming up, accepting diversity, listening actively, and working together (EntreComp, 2016).

The first step, that is problem definition, was split into four activities: problem posing, context analysis, needs analysis, and stakeholders’ interviews. Problem posing is important to develop system thinking to extend problem framing. During context analyses, students could improve their previous knowledge and critical thinking,

necessary to evaluate research sources and contents. This activity is also important to manage their own learning and be curious and open-minded about changing their viewpoint based on new information, acquiring awareness of sustainability values, supporting fairness, and promoting nature. Furthermore, by analysing the needs of people involved in the problem, each team was able to develop their empathy and evaluate the correctness of their analysis through interviews with them. Conducting the interviews helped students further develop their ability to reflect on ideas through active listening and acceptance of different cultures, to improve their entrepreneurship, and to face their own emotions in new experiences. Finally, even just by asking questions, they encouraged the interviewees' reflection on sustainable development.

The second step is problem-solving. It promotes a growth mindset and responsible mobilization of resources, thus making the most of student's own time (Entecomp, 2016). This step was divided into four activities: brainstorming, solutions analyses, decision making, and planning. Well-conducted brainstorming of ideas can enhance creativity and innovation, and it is possible if students are open to imagining new possibilities and new solutions, without judgment among group members. This allows the expression of every idea that comes up, even the most unrealistic ones. After that, it was important to analyse every proposed solution, identifying their pros and cons. In this way, students could develop critical thinking, personal flexibility in questioning the proposed solutions, and effective communication in order not to upset the feelings of those who proposed the solution. After this, it was important to choose which solutions to develop in the project work based on the impact and feasibility of the proposals. These latter two activities are possible if the group embodies sustainability values and is oriented towards personal and collective well-being, considering the systemic perspective of the problem and of the proposed solutions. Choosing an innovative proposal was key to improve decision-making in teams, designing value, and reflecting on resources. This activity, concerning an ecological problem, helps to contribute to collective action and co-create future literacy. Finally, planning first steps to develop the project contributed to improve strategic thinking and manage learning, considering the solution's realization and the different aspects composing the problem.

The last step in a project-work approach could be the project realization but, in our program, we ended with the project presentation due to time constraints. During this activity, each team was able to show their own project to other groups and the speakers could improve their public speaking competence and initiative. In this session, everybody could contribute to enrich other projects by expressing constructive feedback to improve critic formulation and reaction. This phase promoted reflection on policy and collective agency toward sustainable development and raising common interests.

In this PCTO program, we evaluated skills acquisition through self-assessment questionnaires of initial and final competences based on skills identified in PCTO guidelines, and observations by the tutors. In the final self-assessment, we administered a specific questionnaire on project-work approach, composed of 3 general items regarding timing and tools offered, and 16 items on skills acquisition based on PCTO guidelines. In these items, we employed a Likert scale ranging from 1 to 5, where 1 stood for "not at all" and 5 for "very much". 31 students out of 38 answered these items. According to the learners' perceptions, the project work was useful for them to develop listening to others' ideas, which is crucial to the development of an ecological perspective, their communication skills, and civic responsibility, which can be considered the first step towards co-agency. Furthermore, learners developed better abilities to

express their ideas and understand the perspectives of different cultures. They improved their capacities to collaborate with others, critical thinking, personal awareness, and initiative, which are fundamental aspects in choosing their future life path. None of the competences investigated through the questionnaire showed negative values. Creativity was the competence with the lowest values, with an average of 3.41, therefore in the future could be useful to reflect on tutor's role during the brainstorming activity aimed at generating innovative solutions. Active participation, an aspect that helps develop co-agency, recorded an average value of 3.53. It could be improved if students had the time to concretely implement the projects they proposed, increasing the relationship with companies and local authorities we invited during PCTO offered by DFBC. Some authors argue that the project work approach carried out with 15-18-year-old students is more difficult to implement due to a lack of prior knowledge and a minor awareness of self-learning management (Servant-Miklos 2020). For these reasons, it is necessary to carefully reflect on the role of tutors. We do not believe that they should become experts on all the problems chosen by the learners. In this way, students maintain their interest and engagement on the topic chosen. Instead, tutors need to have skills that help learners to manage time, self-learning and guidance.

Conclusion and future research

The PCTO model offered by DFBC engages students in an orientation and investigation process combining action and reflection. This happens by focusing on skills that allow greater self-knowledge, understanding others and the surrounding world, learning to face the unexpected and navigating an ocean of uncertainties, and finally modifying their lifepaths, in order to achieve self-realization and common well-being. Students transferred their PCTO expertise by extending it from the setting in which it was learned to new contexts through project work. Therefore, investigating the role of the project-work method in first career guidance in Italian high schools as a case study was beneficial. Project-work development was shown to allow an improved cooperation with the local context, in line with personal interests and attitudes of learners (MIUR 2019). In addition, face-to-face classes could improve the relationship between tutors and learners and also students' engagement and motivation. This approach proved to enhance vocational guidance in line with the ecological perspective and responsibly aware actions necessary to contribute to sustainable development in daily life (UN, 2015). Moreover, the project-work approach facilitated problematisation and reflection on personal and collective values, promoting reflective, critical, and systemic thinking and collective actions on global issues (UNESCO 2018). This approach could enhance proactivity, interdisciplinarity and co-agency, which are key aspects to create alternative future scenarios and transformative changes (OECD 2019, Mezirow 1996). This is tightly related to life and green skills and transformative competences development. In the future, conducting research to investigate the project-work approach in high schools could be necessary to define the role of prior knowledge of students and to identify tools direct their self-learning. Another limitation in this case study was found in the assessment based on students' perceptions. Therefore, future research should address the improvement of qualitative and quantitative skills evaluation, to better monitor skills acquisition. For these reasons, qualitative and quantitative international studies regarding project work practices in lifelong guidance would be extremely useful.

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