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SKILLING FOR TOMORROW AT SCHOOL: A TRAINING PROJECT FOR IVET AND TECHNICAL STUDENTS' SOFT SKILLS

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Abstract

Nowadays, policymakers and stakeholders have been supporting the relevance of aligning schools and workplaces in the field of Initial Vocational Education and Training (IVET). Accordingly, the connectivity offers more opportunities to students to develop and foster work-based skills and competencies that are predictive of a higher level of employability and entrepreneurship with several impacts on the market industries and countries' economic stability. On the one hand, there is still a debate between educational models based on workplace learning and certifications of competences for occupation in the filed. On the other hand, the literature is lacking a conceptual comprehension about how, and to what extent, IVET program can include competence-based approaches to promote interpersonal and transversal skills in students. With the aim to empirically address these current issues, we devised promoted a pilot training project for students of the Italian IVET and technical schools. Thanks to the collaboration of six Italian schools, both technical and IVET schools, and the Veneto Region' authority for the manufacturing and construction industry, the project has been sponsored to help students to develop technical and soft skills (e.g., cooperation within different professional roles) during the secondary level of Italian higher secondary education. Students (n=168) of different professions (e.g., electricians, technicians) were involved in our study and assigned to the experimental group, in which they have been redistributed into six classes. Each student of the classes had to cooperate with their peers to realize a product in 6 months consisting of (i) planning, (ii) organizing and, (iii) building. Therefore, students had the occasion to cooperate with students of different job curricula and to learn by doing in a simulated workplace. In order to assess the effectiveness of the intervention, we have combined quantitative and qualitative methods. Hence, we developed a self-report measure, namely, Scale for Market Industry Competence (SMIC), which has been used in combination with interviews and observations to evaluate the occupational profile reached by students in the experimental groups and the project features. The results seem to confirm that our pilot intervention was effective in sustaining technical and soft skills development. Moreover, the qualitative analysis allowed to map benefits of the project as well as the challenging aspects by which proposing forward projects.

Keywords: *Training project, IVET school, technical school, soft skills, mixed-methods.*

1. Introduction

Since the '80s, the western countries have been recognizing that the creation of alignments between the arena of the world of work and Initial Vocational and Educational Training (IVET) support economic stability and competitivity. Authors and scholars in the field have shown how this connectivity between the labor-market, schools and policies represents a key-path for citizens' employment and work innovation. On the one side, the IVET-students can develop competences and abilities that are related to the current trends of work by having experiences in the workplace. On the other side, stakeholders and employers can ensure their future workforce profiles thanks to the offers of higher-level quality of training and apprenticeship in their organizations (Hooge, 2018; Pantea, 2019).

Nowadays, there are different trends in the way of doing this connectivity. A common classification is made by authors in the field basing on the difference between the model proposed by the US and UK, and the models used in Germany, Austria and Switzerland. In the first case, the institutional policy on IVET and technical schools focuses on the precondition of the certification of the competences. In this vein, the educational offers aim to foster the employability level of the profile curriculum of students. Germany, Austria and Switzerland developed IVET schools basing on the concept, namely, *Berugliche Bildung*, of education for an occupation. This model is based on the concept of work-based learning by which students can foster their competency profile directly in the occupational field (Brockman, Clarke & Winch, 2008). Hooge (2018) argued that these two broad models are representative of the current strands of institutional policies oriented to the connectivity. Although the models can be

seen at the extremes of the same continuum of workplace-school connection concept (Hooge, 2018, Brockman, et al. 2008), both are inherently sensible to foster competence-based approaches relating to the whole person, and including different dimensions, namely; interpersonal competences, self-role accountability and collaboration.

The literature has seen a large spread of contributions on the relevance of integrating transversal and interpersonal competences with the connectivity with the workplace in IVET and technical schools. Mainly, the authors claimed the importance of skilling the future workforce on cooperation and work accountability as an increasingly important issue in educational policies (INAPP et al. 2016; Paython, 2017). Although there are different bunches of research on accountability, in the VET field it concerns the workers', or students, responsiveness of their (forward) professional categories as members of the labor, and industry market (BĽANDA & Urbančíková, 2019; Brockman et al. 2008; Pantea, 2019; Sennet, 2012;). This general definition implies such a mix of competence concerning the self-role awareness of IVET students, the interpersonal competences and the ability to work in cooperation in the market industry (INAPP et al. 2016). However, how, and to what extent the precondition of connectivity between school and workplace can develop and foster these interpersonal competencies linked to professional skills?

Accordingly, the present contribution intends to present the prelaminar results of a pilot study conducted in Italy between 2018 and 2019. In that period, a pilot training project has been promoted by the Veneto Region' authority for the manufacturing and construction industry in collaboration with six IVET and technical schools and the University of Verona. One of the aims of the study was to address the current issue on competence-based approach in connectivity training projects. In the following section, the project will be outlined in order to present the core aspects of our training, with which the objectives of our studies are reported. Then, results and implications are described by the authors in order to discuss forward implications for authors and IVET and technical schools' educational polices.

2. The Italian background and project scope

In the past decade, the Italian institutions on technical and IVET schools have supported the connectivity between schools and workplaces, according to the European trends. However, although reforms and actions have initiated the Italian schools to access the work system and industry, there is still a lack of a common system for devising this kind of projects. This is to say that the current uncertain condition can lead to huge results both at the level of schools and supporters. On the one side, the lack of a normative way of building this connectivity as well as the lack of evidence of effective programs could result in poorer training offers and, hence, affecting the educational level of students. On the other side, the lack of a financial and regulatory framework cannot be addressed online by the regional authorities and local bodies in the view of coordination and promotion of large educational programs (CNOS-FAP, 2017). In this plethora of different factors, therefore, projects comprehending different collaborations and networks – schools, regional authorities and universities – are welcomed to shed light on the current gap about creating a normative and arranged system of connections between schools and workplaces.

Therefore, the present study reports the tentative made to address (a) the quest for connectivity project and (b) answering the questions on competence-based approach in IVET and technical schools by devising a pilot project for students work-based training. As previous noted, although the promotion of innovation of training in this sector, the Italian government is missing guidance and regulatory frameworks for connecting regional authorities, IVET and technical institution and social partners. Hence, exploratory research could help to inform about effective approaches and perspectives. Moreover, both the two models of UK-US and German, Switzerland and Austria, aim to foster interpersonal competence, however, they are still facing problems about to what extent this competence might be fostered.

According to the aims, we devised a pilot project turning on school-based and work-based pathways, combining training and learning in the workplace. In this vein, we developed the project according to the definition of competences of Mulder and Winterton (2017) by who the notion of competence is seen as a holistic notion, relating to the whole person and including different dimensions. By explicitly applying this definition to the area of IVET and technical schools, the student competences regard the personal and interpersonal abilities as well as market industry accountability and work categories orientation which can be fostered and developed by learning in the workplace (Brockmann et al., 2008; Mulder and Winterton, 2017; Hooge, 2018).

Thanks to the collaboration of six Italian schools, both technical and IVET schools, and the Veneto Region' authority for the manufacturing and construction industry, the project has been sponsored to help students to develop technical and soft skills (e.g., cooperation within different professional roles) during the secondary level of Italian higher secondary education. The promoters named the project *100+ 100* since it involved students for at least 100 hours both in the classroom and in the workplace. Students (n=168) of different professions (e.g., electricians, technicians) participated in our study, likewise, n=12 teachers of each school were involved to conduct the project as school subject teachers or as coaches. They were assigned to the control group and to the experimental group, in which they have been

redistributed into six classes. Each student of the classes had to cooperate with their peers to realize a product in 6 months consisting of (i) planning, (ii) organizing and, (iii) building under the supervision of a teacher (n=6) and coaches (n=6). Each stage of the training occurred in different contexts with one teacher and coaches who helped the students in the learning processes. The stages take place in the classroom (for planning), in the workplace (for the building stage) and both at school and in the workplace for the organizational stage. Therefore, students had the occasion to cooperate with other peers of different job curricula and to learn by doing in a simulated workplace. The target of the student was to realize a studio flat consisting of two rooms and a bathroom.

2.1. Methods

The main focus of our study was to evaluate the effectiveness of our project, as well as, to explore the benefits of students in the development of their competence-profile. The project was administrated by teachers and researchers as a pilot study in order to propose forward normative instruments and projects characterized by high effectiveness to promote students learning. Hence, the two objectives were to (a) evaluate the outcomes of students and teachers involved in the study and (b) to define the limitations of our project procedure and propose forward applied implications. The evaluation of the effectiveness consisted of the use of mix-methods involving qualitative observations and interviews and quantitative instruments for students' competence assessment.

Qualitative data have been collected during the lessons, in the class and the workplaces using interviews coupled with the document analysis and observations. Students and teachers have been interviewed by the researchers about their experience in the study. Likewise, they have been observed by the researchers during the lessons and in the workplace taking notes about the teachers practices and students' activities. Moreover, qualitative methods aimed to understand the features of the project as resulted by the experiential contents, and the comparison with the documents made by teachers and authorities involved. Accordingly, the data collected structured the evidence concerning the profile curriculum developed and the project features (i.e., benefits and challenges). The evaluation approach of Vergani (2004) has been used as core-methodological perspective. Vergani proposed a system of qualitative evaluation based on viewing the prospects of participants of training activities and creating the evaluation system itself. Indeed, Vergani suggests to considering the point of view of the evaluated rather than applying a standardized system and making inference on the effectiveness of the training programs (2004). By the explicit comparison between all the data collected, i.e., documents, interviews and observations, the evaluation of the pilot project emerged and core aspects of the students' competence developed.

Quantitative methods have been used in order to assess student's interpersonal competence development. As noted, among the competence expected by the apprenticeship at the workplace concern the interpersonal relation, peer-collaboration and professional category responsiveness. Therefore, we developed a new self-report questionnaire for students, namely, *Scale for Market Industry Competence* – SMIC. According to the aim of the study, the SMIC has been developed by the researchers in order to have an easy and reliable instrument by which evaluating the students. Our instruments consisted of 11 items on 1-5, Likert scale of agreement. Students had to report if the sentence was representative or not of their current knowledge. The self-report measure consisted of three main categories; (1) awareness of the proper professional category; (2) awareness of being member of the market industry; (3a) interpersonal relation and (3b) the connected work accountability. Before submitting the questionnaire, the instrument has been evaluated by the teachers of the VET schools whose opinions have helped to review the items. Finally, a classical experimental design has been used to collect quantitative data. Students completed the questionnaire, *pre-* and *post-* training. Moreover, a control group has been involved to compare the results of the experimental group.

3. Results

163 students were involved in the study (average age, 16 years old, SD=1.19, 5.9% female). 135 attended the training project while the other students composed the control group. Students in experimental group belonged to different classes (2nd, 3th, and 4th) and equally from the 6 different VET schools of Veneto Region. After the preliminary observations and interviews of students (n=20), teachers and coaches (n=6) and schools leaders (n=9), the researchers decided to shed light on two main categories concerning each of the two groups of participants. On the one side, the qualitative methods have been used to look at the benefits of students according to their answers and the observations as well as basing on teachers' opinions. On the other side, in line with the nature of the project, interviews evaluated the challenging features of our piloted training. Finally, all the data collected have been compared with the document analysis in which we have found the central characteristics of the project. The compared analysis helped us to understand the researchers' observation notes and interpret the interviews.

In this vein, qualitative data have been divided into two groups according the two groups of participants; teachers and students according the two broader groups of *project benefits* and *projects challenges*. Qualitative data analysis of students shown three mains categories of (a) active engagement, (b) unity and collaboration and (c) work accountability, among which, work accountability inherently represents a challenge according to the aim of the project. In fact, although students showed to be able to cooperate between each other, not all the students recognized the activities as linked to the market industry suggesting the needs for a specific training module. However, according to the document analysis, one of the central characteristics of the IVET profile and technical students market industry accountability is represented by the interpersonal competences and active engagement. As for teachers, they reported to have many difficulties in dealing with all the tasks required both in classrooms and in the workplace. In fact, they recognized the opportunity offered by the core aspects of the project to enhance students focused activities and fostering their knowledge. However, teachers reported the need for specific training in order to promote best didactical practices in line with the aim of the project. Moreover, the researchers noted that some of the problems reported by teachers were linked to their accountability of the project. This suggested that note all the teachers acknowledged the main aim of the pilot project.

The questionnaire has been administered pre-training in the experimental group and post- training in the both groups. In order to verify the hypotheses concerning the differences between the measures, a preliminary analysis concerns the reliability of the questionnaire. It resulted to be highly significant both at time 1 (α=.84) and time 2 (α=.82). Our results indicated that it is possible to aggregate the results in unique synthetic measure of SIC. Therefore, the quantitative analysis verified the hypotheses that the experimental group' post measures would show significant higher results if compared (H1) with the pre-measures and (H2) with the control group post- measures of the aggregated items of SIC. Time 1 measures resulted to be significantly lowers than the time 2 measures, $t(135)=-11.25$, $p<.001$, with an higher effect size, Cohen's $d=.99$, by the paired sample *t*-test. Likewise, the independent sample *t*-test reported that time 2 measures of the experimental group were significantly higher than of the control group, $t(163)=-5.114$, $p<.001$, with an higher effect size, Cohen's $d=1.08$.

4. Discussion

The turbulent time for work and employability of the first decade of the third millennium has prompted the Italian government to create a renovate its initial VET system (CNOS-FAP, 2017). However, schools and industrial institutions are still lacking a normative way of doing and many steps are needed to reach the European and international standards (INAPP, et al 2016; Hooge, 2018; CNOS-FAP, 2017). In this vein, we proposed a training project with the aim to address the current Italian issues and the current debates on the competence-based approach in the field. As we noted, there is still a lack of agreement between what twist and turn will take the Anglo-Americans and Germans' models concerning the interpersonal competences. Our project explicitly advocated for a suitable couple of work-based learning and competence-based approach stressing the importance of peer-collaboration for professional curriculum accountability of students. Whereas it was just a pilot study, our project seemed to confirm what is discussed in the literature on VET and interpersonal competences.

Firstly, the alignment between schools and workplaces allows students to promote their technical and manual knowledge (Tacconi & Messetti, 2018). Our project was not a real example of integration between work and school. Indeed, students worked and studied together in the classroom during the stages of planning and organizing, at the end of which, they worked together in a simulated workplace environment at the building stage (Perini & Pentassuglia, 2018). However, our results confirmed the development of self-role awareness as seen by the qualitative and quantitative results, although, we did not involve measures of the skills development and self-role performance. As a core limitation, this aspect calls for the inclusion of other measures as students' grades, and teachers' evaluations.

Secondly, one of the objectives of our study was to comprehend methods able to foster interpersonal competence and students' role-accountability. As Sennet (2012) outlined, unity and similarity are straightforward of collaboration and responsiveness. In our project, we followed this assumption by explicitly creating teams and co-workers giving them an objective as well as meeting occasions for sharing their knowledge and opinions. According to our results, we found that students in the experimental group reached higher significant level in core dimensions of the SIC measure than the control group and the *pre*-measures.

Based on the data collected, the preliminary findings of the study revels promising opportunities for IVET and technical schools. The impact on the interpersonal competences and a self-role awareness as shown by the qualitative and quantitative data includes teachers experience. Simultaneously these results suggest possible forward implications in order to offer a higher impact training both for teachers and for students. Firstly, the teachers quest for instructional module for dealing with the project calls for a renovated project with a specific focus on teachers and trainers. Moreover, an explicit inclusion of the teachers in the organization stage of the project is suggested in order to foster the sense of belonginess in

teachers by which trying to increase their engagement. Secondly, students work accountability and self-role awareness were not resulted to be concretely fostered as seen in the qualitative data. Therefore, two main suggestions can be made. Students of IVET and technical schools do not receive teaching modules on market industry basing on the Italian program. Hence, preliminary meeting about the project could promote the self-awareness of students thanks to rise of students' knowledge and literacy. Secondly, the rise of the number of hours and months of co-work suggesting a long-term project could promote both cooperation, collaboration and the sense of unity with class.

5. Conclusion

As the literature pointed out (Brockmann et al., 2008; Hooge, 2018; Pantea, 2019), the alignment of workplace and school plays an important role countries economic stability and competitivity. As noted, this connectivity between the labor-market, schools and policies represents a key-path for citizens' employment and work innovation. In this project we have tried to promote a feasible training program for students and schools. Indeed, the project also aims at offering an evidence for forward perspectives and Italian institutional policies on IVET and technical schools, with a specific focus on soft skills for the workers of the industry of tomorrow. Finaly, this is to say that the current VET institution policies in Italy support the realization of project for connectivity and in the literature there are other similar expamples. However, there is a lack of a regularatory system by which local bodies, schools and region authorities can based their projects to turn school into an innovative paths of education.

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