

# Students' self-organised design of educational environments through work-related learning

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## Abstract

The research investigates the learning environments re-designed by students (aged 14-19) at the at Giulio Verne Professional Institute in Rome. The aim was to experiment and identify positive aspects and critical issues to develop a students' self-organised design model to re-design schools' environments, referring in part to experiments by Sugata Mitra regarding the Self-Organised Mediation Environments (SOME; Mitra & Dangwal, 2010). The experiment has been done to motivate students in new way of carrying out work-related learning.

The action-research method with the ideographic purpose has been used: a critical approach induces the participants to reach the objectives through hermeneutic and reflexive modalities.

After the Reform of Professional Institutes in Italy, the learning personalisation and the self-awareness of the students as protagonists of their own learning path have become relevant and this model encourages the autonomous students' learning. The teacher as a mediator must review his role and promote the active and autonomous students' learning.

## Keywords

*ACTION RESEARCH | EDUCATIONAL FACILITIES DESIGN*

## Introduction

Great transformations and rapid developments are present in society. Learning does not take place only at school, but everywhere and in every moment. It is important that students can self-organise their learning path helped by teachers as mentors who accompany the students to develop autonomy, critical sense and ability to collaborate and working in groups.

In the new school curricula of Italian Professional Institutes, teaching must have an inclusive and quality connotation, so that it is able to contain dispersion and school dropouts to offer articulated and dynamic answers to the work demands.

The knowledge must be perceived by the students as useful, significant and found in reality. It is essential to have an accentuated didactic flexibility and personalisation for the different cognitive styles and students' learning abilities to motivate and orientate them in the progressive construction of their educational and working path. In addition, Work-related Learning, in the new name, Pathways

for Transversal Competences and Orientation (PCTO), is compulsory during the three-year period of secondary schools. This must accompany students to confront themselves with the working environment and with their personal attitudes to be able to orientate themselves in their own life project.

## **Context**

The experimentation took place at the Giulio Verne Professional Institute in Rome, founded in 1979, where the courses “Socio-Sanitary Services” and “Commercial in the Tourism Sector” are present. This public school has about 950 students, 45 classes, 120 teachers and 25 school-staff, and is located in the Rome suburbs.

The experimentation started from four assumptions:

- the willingness of the headteacher to identify new design solutions for the school atrium and the teaching-room;
- the desire to make the students experiencing a Work-related Learning in an innovative form that would make them protagonists in a perspective of collaborative self-organised design of learning environments;
- the intent to encourage students’ autonomy for making them responsible for their transversal skills;
- the impossibility for researchers, living in Milan, to follow closely the entire design process of the school being located in Rome.

For these reasons it has been decided to take inspiration from the SOME model (Self-Organised Mediation Environment) by Sugata Mitra (De Toni & De Marchi, 2018; Mitra & Dangwal, 2010), where the mediator is not, as in Mitra’s project, a retired teacher or a volunteer, but a support teacher and researchers (two architects and a pedagogue).

The design process was carried out through peer education which has many positive pedagogical advantages both for the peer tutor who develops greater relational capacity and for the other participants because there is immediate feedback resulting in anxiety reduction and a greater awareness of students in their learning process (Greenwood et al., 1990).

## **Objective of research**

The experimentation has been done to motivate students in a new way of carrying out the Work-related Learning and also to be protagonists in proposing new ideas and solutions for the learning environments.

The objectives are to:

- convert some project proposals into a shared learning environments project design;
- develop self-assessment form for the students about their self-awareness of their learning path, an open-ended questionnaire on students’ self-organised design of educational environments model, a joint school-tutor and researchers ministerial assessment form about transversal skills reached;
- transform the teacher role as mediator to promote the active and autonomous students’ learning;
- construct a design model for all those schools which want to undertake a self-organised learning environments project led by students.

## Methodology

The action-research method with the ideographic purpose has been used: a critical approach induces the participants to reach the objectives through hermeneutic and reflexive modalities (Mertens, 2010). The action-research has two phases: theoretical-design and laboratory-practice (i.e. building furniture through the fab-lab).

Phases of theoretical-design experimentation:

- May 2018: school survey made by the researchers.
- September 2018: project presentation to the teacher's board.
- November 2018: questionnaires to teachers, students, parent's class representatives and school-staff involved in the project, to identify the nodal points of the project and to collect reflections and ideas.
- December 2018: two workshops one with twenty students to be trained as peer leader (only six became peer), another one with five teachers, one support-teacher, two parents and two school-workers were organised. The workshops were divided into two parts: first information on the results of the questionnaires and second "practical individual and group activities" through playful exercises on the concept of appropriation of spaces to build spatial competencies, led by architects with the support of the pedagogist.
- April/early May 2019: students self-organised themselves into groups to carry out the planned activities supervised by the teacher-mediator; two Skype meetings were scheduled with the researchers and the peer leader of each group to evaluate the progress of the design and to answer some questions.
- End of May 2019: final meeting with the researchers; the peer leader of each group presented the ideas developed;
- Finally, the self-assessment form and the open-ended questionnaire was completed by students, a ministerial assessment form about transversal skills reached was completed by researchers and mediator; and an interview for evaluating the vision about her role was completed by teacher-mediator.

## Research design

The research is inspired by peer learning and by SOME model by Sugata Mitra who, in 1999, conceived the experiment "Hole in the wall" in a degraded area of New Delhi by inserting a computer with internet connection into a wall adapting to the children's use (Mitra, 2004). Experiments show that children are able to self-organise into working groups without supervision (De Toni & De Marchi, 2018; Mitra, 2003; Mitra, 2004).

However, if they were helped and supervised by an external mediator, they achieved higher results (De Toni & De Marchi, 2018; Mitra & Dangwal, 2010). Moreover, some theories on the self-organisation of schools identified solutions that derive from the participants' collaboration and have greater chances of success (Bain, 2007).

Self-organisation made it possible to find new solutions without constant top-down intervention (Merry & Kassavin, 1995). It is also important for education because concepts such as distributed leadership (Spillane, 2006); community practice (Wenger et al., 2002); and collaboration and school management (Dimmock, 1993; Friend & Cook, 2003) are fundamental to self-organisation (Bain, 2007).

From these considerations, it was decided to propose the self-organised design to a classroom of 31 students, divided into six groups. They decided themselves who would be the peer leader based on

their personal willingness and their own life skills that the students must possess, or develop, problem solving, critical and creative thinking, effective communication, empathy, emotional and stress management, personal and collective effectiveness (Boda, 2001).

## Results and findings

### INITIAL QUESTIONNAIRES

In the initial questionnaires (see Figure 1 and Figure 2), the students and the teachers indicate the school spaces where they do not feel well. The teachers' room and the restroom are the space where they feel bad. Teachers sought a comfortable teachers' room for their wellness and for improving their work. Students don't feel well in the classroom and they wish and need comfortable spaces for reflecting and for have relaxing time. Both students and teachers thought it was important to be involved in the learning environments design.

Figure 1

*Initial Teachers' Questionnaire*

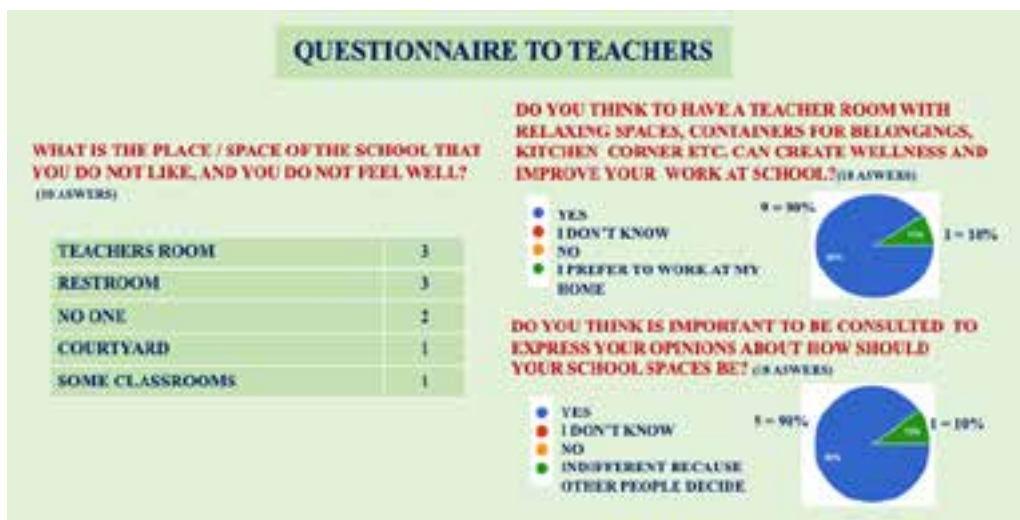


Figure 2

*Initial Students' Questionnaire*



At the end of the experimentation some objectives were reached:

1. **Design proposals for school spaces:** each group presented the project proposals focused on school areas identified by them as “areas of intervention” for logistical and strategic issues and poor maintenance.

The students’ proposals focussed on:

- *Atrium:* it must become the school’s calling card. They proposed to install a monitor that concentrates all the service communications to avoid the effect of “posters hanging everywhere” and chairs to create a welcoming environment;
  - *Bar/cafeteria area:* planned in a space little used at the entrance in the current auditorium. For the students designing the bar interprets a desire for relationship spaces;
  - *Space for listening-relaxing:* students need a space for studying and relaxing open to all, including teachers;
  - *Anti-panic/anti-fury room:* students need a space with pingball dedicated to their frequent moments of fragility (crisis of fury/crying, panic attacks, desire to be alone);
  - *Teachers’ room:* it would be positioned adjacent to the entrance, but the position is to be assessed, it needs re-organisation and refreshed furniture;
  - *Outdoor spaces:* the school has very large outdoor spaces in very poor condition: garden, soccer and tennis field. They proposed to reactivate involving the whole school community: students, teachers, parents;
  - *School as Civic Centre:* the school be used by the community even outside school-hours because there is a library open to the community.
2. **Self-assessment form:** in the application of the self-evaluation of the projects, all the schemes contain four levels of quality or competence, arranged in descending order: scale of 4 to 1 from ‘excellent performance’ to ‘insufficient performance’. Additionally, a final general self-assessment of its own work in the self-organised design with five levels arranged in descending order: scale of 5 to 1 from ‘far exceeding expectations regarding own performance’ to ‘do not exceed expectations regarding own performance’. Finally, the peer leaders’ general self-evaluation of its own work is arranged in five levels in descending order: scale of 5 to 1 from ‘I actively and constantly contributed and managed to organise the team’s work’ to ‘I didn’t contribute and failed to organise the team’s work’.

- Part One
  - Group work: contribution to the group; collaboration with the group
- Part Two
  - Critical thinking: self-criticism about one’s own work
  - Problem-solving: contribution to solving problems
- Part Three
  - Communicative aspects: relationship with others
- Part Four
  - General assessment of one’s work in self-organised design

The results of the analysis of the self-assessment form on their work, completed by 20 students and four peer leaders, were positive in almost all the items present. The self-assessment of the students is based on the Values 3 and 4, with only few students giving Value 2, stating that they needed the help of their peers to continue the design work. Only in one case the student wrote he was not able to carry out the planned work also with peer leader help because he had difficulties to work in group.

The peer leaders' self-assessment stands at grades 3 and 4. It had the same result for the specific question for the contribution as a guide to recognise group dynamics and for the awareness of their role in their relationship with others (Gnemmi, 2004).

3. **Questionnaire:** All students answered the questionnaire. The majority of students considered the experience very positive; they experimented a new way of “making school” and felt them protagonists able to find autonomous solutions and new ideas on learning environments.

Only two students disagreed – for them, the design with the use objects for representing spaces and furniture was too childish and they complained about a poor integration in the group because some school-friends did not engage and slowed the work.

Almost all students would have preferred more external support from all teachers of the class. Most students considered mediation via Skype useful, but they would have preferred more meetings.

The students appreciated the mediation of their teacher-mediator who changed her role: she didn't have a didactic approach, was a real mentor to reinforce the difficulties, and guided the students in finding solutions in an autonomous way. The peer leaders liked their role, although they considered it complex and difficult to coordinate a group of 5-6 students. The results of the final evaluation of the project model by the student collaborators and student peer leaders can be seen in Figure 3 and Figure 4. Values are provided in descending order from 5 to 1, from 'very satisfied because expectations have been exceeded' to 'expectations not satisfied'.

Figure 3

*The Student Collaborators Results*

THE RESULTS OF FINAL EVALUATION OF THE PROJECT MODEL BY THE STUDENT COLLABORATOR (VALUES FROM 5 TO 1)						
EVALUATION SCALE	5	4	3	2	1	NUMBER OF STUDENTS TOTAL
DESCRIPTION	VERY SATISFIED BECAUSE EXPECTATIONS HAVE BEEN EXCEEDED	EXPECTATIONS VERY SATISFIED	EXPECTATIONS SATISFIED	CLOSE ENOUGH TO SATISFACTION	EXPECTATIONS NOT SATISFIED	
NUMBER OF STUDENTS	2	9	12	2	0	25

Figure 4

*The Student Peer Leaders Results*

THE RESULTS OF FINAL EVALUATION OF THE PROJECT MODEL BY THE PEER LEADER (VALUES FROM 5 TO 1)						
EVALUATION SCALE	5	4	3	2	1	NUMBER OF STUDENTS TOTAL
DESCRIPTION	VERY SATISFIED BECAUSE EXPECTATIONS HAVE BEEN EXCEEDED	EXPECTATIONS VERY SATISFIED	EXPECTATIONS SATISFIED	CLOSE ENOUGH TO SATISFACTION	EXPECTATIONS NOT SATISFIED	
NUMBER OF STUDENTS	2	1	3	0	0	5

4. **Ministerial assessment form transversal skills reached (for each student):** the competences acquired by the students for the activities carried out in “Work-related Learning” were evaluated by the company tutors (researchers) and in this case, also by the school tutor (teacher-mediator). The competences evaluated for student collaborators are: Analytical skills, Relationship skills, Problem solving skills; Communication skills, Self-organising work skills, Time management skills; Ability to adapt to different situations; Stress management skills; Teamwork skills; Enterprising spirit; Flexibility. For student peer leaders two competences more: Decision-making skills and Ability to understand the overall view. The Ministerial assessment form contains ten levels of quality or competence, arranged in ascending order from a scale of 1 to 10 from ‘very insufficient performance’ to ‘excellent performance’. Level 6 is ‘just sufficient’ and Level 5 is ‘just insufficient’.

The results of the student collaborators and peer leaders were quite positive (see Figures 5 and 6). Based on the scale, almost all student collaborators stand on the values between 6 and 9. Only in very few cases there is a value of 5, which is not entirely sufficient. The peer leaders achieved very positive results, with a rating of 7 to 10 on the scale (statistical data collected by professor Maria Evelina Di Maio).

Figure 5

*Ministerial Assessment Form – Results from Student Collaborators*

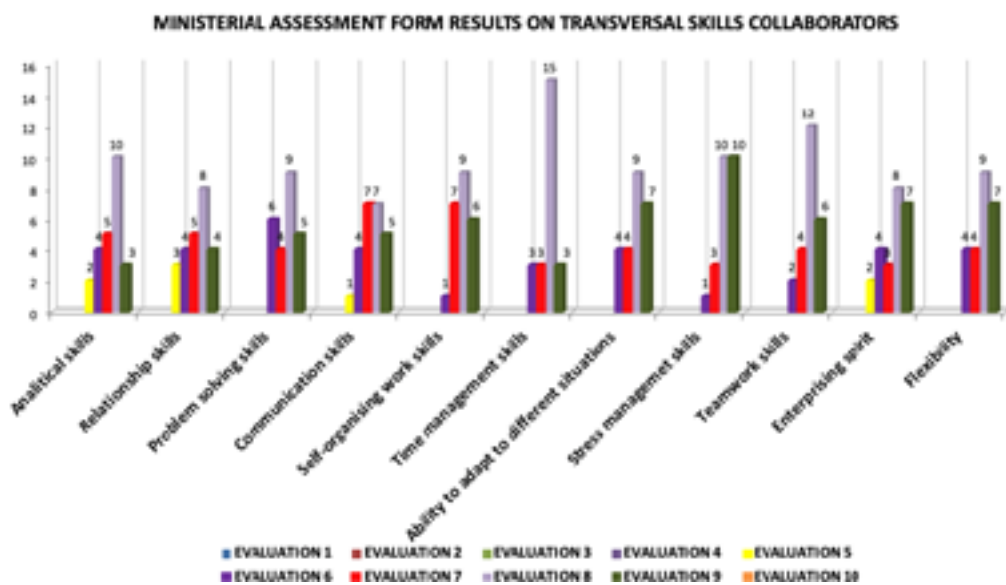
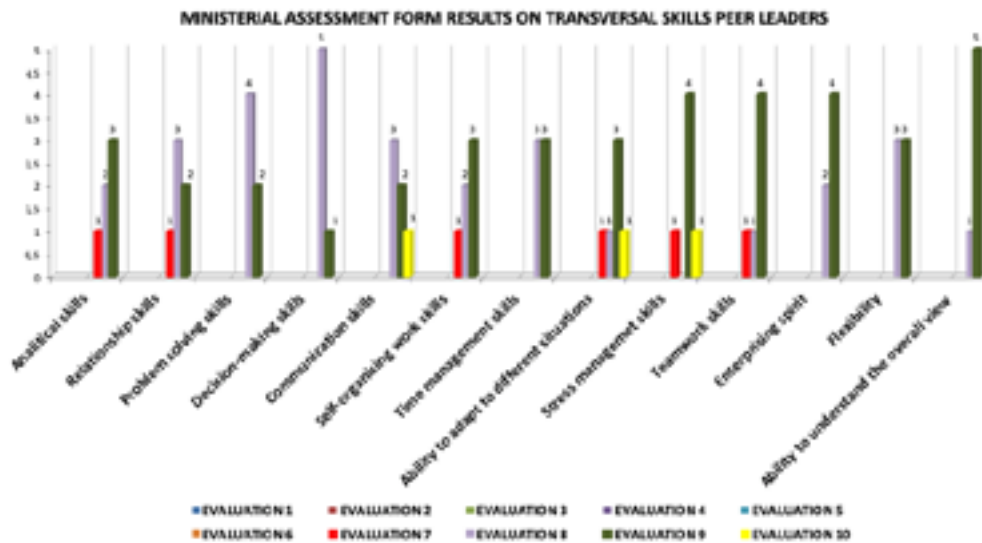


Figure 6

*Ministerial Assessment Form – Results from Peer Leaders*



5. **Interview of teacher-mediator:** the teacher-mediator pointed out how important it is to abandon one's role as a teacher to get in empathetic contact with the students. It was essential to listen to students actively, helping them to achieve the objective. It was essential to be recognised as a 'helper', and not as an 'evaluator', to support students to rework reflection with previous knowledge not immediately apparent to them.

## Conclusions and Significance

When drawing up a replicable model, there are three considerations on the experience to keep in mind: positive aspects, critical points, attentions.

### POSITIVE ASPECTS

This experience had a strong educational value for transversal skills improved and in terms of personal growth, empowerment towards oneself and other students and positive perception of themselves. Even if some of them have not always shown active participation, the students' impression of their performance influenced their self-assessment (Pope et al., 2002).

The peer leaders were faced with a difficult role because they had to organise and guide the group in autonomy and put into practice the indications obtained in the preparatory workshop. In the groups, positive socialisation and significant collaboration have been created spontaneous 'positive interdependence' and 'appropriate collaborative skills', characteristics of cooperative learning (Dishon & O'Leary, 1984) that favoured the solution of complex problems.

The teacher-mediator changed his didactic approach with a transition to educational methods stimulating students' autonomy and helping them to access and process information (Imms, 2016), rather than giving solutions. To make this transition, the teacher ability and quality is fundamental; it is the key to making learning meaningful (Rowe, 2003) and to building learning community (Wald & Castleberry, 2000).



### CRITICAL POINTS

Students need to improve their ability to organise themselves and to express their ideas, which they are not used to exercising their creativity freely. All classroom's teachers, even if not participating as mediators, should give external support and their approval to the project because it would help students to increase confidence in this experimental path.

### ATTENTIONS

Students must have a clear understanding of the objective of their work. The request for more meetings with researchers, while reassuring them, would also make them less responsible for their work. The results of this experimentation represent a useful point of view about students' self-organised design of educational environments through Work-related Learning, but for the construction of a replicable model in each school, there is still a need to experiment and investigate this approach more in a heuristic way.

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