

# The use of group work and exercises in teaching for the training of support teachers

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## Abstract

Initial teacher training courses provide for literacy in courses in educational technology and educational innovation (and ICT). The courses include 75 hours of lessons divided into modules of 5 hours, where group activities and didactic simulation are planned alongside theoretical lessons. The virtual classroom is a particular type of group that has the purpose of learning from a cognitive, social, and emotional point of view. To accomplish this, the virtual environment must be rich in resources and skills. The purpose of this article is to demonstrate the effectiveness of group activities even in online lessons when it is possible to combine them with virtual simulation practices. The subjects involved in the study are 160 teachers of the initial training course (ITC) (f = 153) in whom it was possible to detect an improvement in terms of both academic achievement and teaching satisfaction with questionnaires built ad hoc to measure. To pursue this objective it is necessary to provide didactic actions of an experiential nature and oriented towards the active role of the students.

## Keywords 1

teamwork, simulation, virtual learning environment, ICT, teacher training

## 1. Contextual Introduction

In training courses for teachers who have ICT as their object, even at a distance and with the use of new technologies in the didactic organization, it is good to provide a blended modality, even if only in the initial moments, because carrying out a course entirely at a distance risks distancing and tiring teachers and losing those experiential elements that characterize training (which are not only the contact between the teacher and the student, but also the relationships in the class group between professionals in training, who by exchanging experiences create a real learning community) [1].

When the phrase ‘didactic technologies and educational innovation’ is used, it refers to the use of tools (PCs, e-learning) to change the teaching and learning processes in the school. To achieve this goal, ad hoc learning moments are needed for teachers. The training of teachers should be configured as a “training of trainers”: teachers in fact acquire the skills to be able to train other people, in an augmentative dimension [2].

For each ICT course we have to foresee 75 hours of activity. The courses are developed simultaneously in the different classes (childhood, primary, middle school and high school) and have similar declinations, even if not exactly identical between one course and another; there will be some examples, specifications, or anchors of the discipline relating specifically to the teaching context in which you are going to work or in which you already work if you are a teacher.

The 75 hours cannot be of face-to-face telematic teaching, because that would not make much sense, given that the course is on digital technologies and new innovative teaching methodologies, and because

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one of the principles that is fundamental to know when working with technologies is the theory of cognitive load, or workload [3].

The cognitive development of the child is influenced by social interactions, which play a fundamental role in individual learning. In fact, progress is recorded starting from the socio-cognitive conflict that is activated in social interaction. This process is valid for cognitive development, with the same results also in adult learning [4]. Social interaction also allows the development of second-level skills, such as metacognition, which is divided into a knowledge dimension and a process dimension. Metacognitive knowledge concerns the impressions, beliefs, and experiences of subjects, while metacognitive processes allow planning, accompaniment, and monitoring of didactic experiences.

Table 1 Elements of Metacognition

<b>Metacognition</b>	knowledge dimension
	process dimension
	management of behaviours
	implementation of problem-solving strategies

Although social interaction has a fundamental role in the development of a mental process, it is metacognition that plays a major role in the management of behaviours and in the implementation of problem-solving strategies [5].

## Group Work and Simulation in Virtual Classrooms

The virtual classroom is a particular type of group that has the purpose of learning from a cognitive, social, and emotional point of view. To accomplish this, the virtual environment must be rich in resources and skills; that is, it is necessary that students perceive that for their development, only the skills of others, the resources available, and the learning environment are necessary. The role of the teacher in this virtual learning environment is to enhance all the students and continuously enhance the resources produced by the group. The substantial difference between group work and lies precisely in the relational climate created by the teacher: in group work, the activity is simply divided into group members; on the other hand, in group everyone collaborates to reach the resolution of a problem. Naturally it is possible to switch from one working mode to another through the functions and the segmentation that the teacher gives to the group itself. To achieve this goal, the learning group must have three characteristics [6]:

1. Clarity, delimitation, and definition of the purpose;
2. Congruence between the purpose of the group, its realization, and the relations and communications within the group;
3. Awareness and activation of individuals and of the group.

The formation of a class group [7] passes through a process of at least four phases:

- Phase of inclusion or forming: individuals adopt behaviours that favour acceptance and inclusion in the group;
- Control or storming–distancing–centring phase: this is the most conflictual phase, since we are committed to the distribution of responsibilities and roles;
- Affectivity or norming phase: emotional ties are strengthened; therefore the members share and respect common norms and thoughts;
- Performance phase: the group is trained and can devote itself to pursuing a purpose.

The formation of Group I did not follow relational or profiling criteria, but rather, considering the heterogeneity of the components, the choice was to rely on a random criterion (the 160 members were divided into 16 groups).

In relation to the specificity of the class group, some scholars [8] have pointed out the importance of the teacher. In fact, the teacher assumes a main role in the construction of groups. Also, in this case the dynamics have been broken down into three phases:

1. Phase of dependence on the teacher (the initial phase of structuring the group, when members are still disoriented);
2. Phase of independence and conflict (the members distance themselves from the teacher and try to assert their role);
3. Phase of interdependence (the relationships of reciprocity are structured, and the group is oriented toward the purposes of learning).

## 2. Working Groups

We have a heterogeneous class, in which there are people who have achieved the support title for primary school and students who will have their first training experience at our university. There are educators, teachers, and so many other professionals who come into this class and who can, by coming into contact in peer education processes, help each other by sharing experiences to enrich themselves on the training path we are putting in place.

- n. 7 males
- n. 153 females

Being in front of a screen for five hours straight and hearing someone speak is not exactly consistent with what we know about the functioning of the human mind and our ability to memorize and process information. So, although it is not ideal to carry out the course entirely in e-learning mode, but necessary due to the pandemic and the urgency of the course, we will try to exploit the online dynamics to articulate the course with a series of fragments which overlap with one another and then form an overall framework made up of frontal teaching interventions, that is, a teacher speaking to the audience of the class, and moments of more laboratory teaching within the platform.

Therefore, within the same lesson module (5 hours) there will be alternated a direct training intervention and one instead articulated on more active teaching, in which you will be the protagonists and will be called to produce material and activities. The course includes 15 lesson modules for a total of 75 hours for each grade of school.

## 3. Simulations in a Digital Environment and Results in Terms of Learning

To provide an example of the conceptualization of learning processes in which group work represents a didactic potential, we propose the analysis of the exercises carried out during the TFA support academic year 2019–2020 (July–September 2020).

Table 2 Tutorial list

EXERCISES
1. GOOGLE MODULES EXERCISE (questionnaire and evaluation tools);
2. EXERCISE THE AUTOBIOGRAPHIC METHODS
3. SKILLS CERTIFICATION EXERCISE
4. INTERVIEW AND VIDEO INTERVIEW EXERCISE
5. SPECIAL EDUCATIONAL DESIGN EXERCISE
6. DESIGN OF A GAME
7. PORTFOLIO EXERCISE
8. ASSISTIVE TECHNOLOGY EXERCISE (for motor, visual, hearing, and cognitive disabilities)

The learning group in this specific case is both the whole class and the 16 subgroups into which the class itself is divided. The theoretical model at the base of the exercise is a fusion of two the most accredited models of group work for teaching: the cooperative model and the competitive model. Positive interdependence is highlighted by the cooperative model (1), since students are aware that individual success and failure depend on the success and failure of the group itself, as is the heterogeneity of the groups (2), since the subjects have different personal characteristics and abilities to carry out the assigned task. From the competitive model, on the other hand, the comparison and the dimension of rewards and punishments are excluded, but the need to show what was produced to other groups made the subjects more responsible (3) with respect to the work done [9].

Table 3 teamwork

Characteristics of teamwork		
Positive interdependence	Group heterogeneity	Product responsibility

The setting reflects the teacher's organizational plan: the environment is organized in such a way as to promote emotional-affective, social cognitive, and ultimately metacognitive dynamics. The spatial organization is characterized by the use of an e-learning platform in which a virtual room is created where the teacher is present, the group returns, and brainstorming phases are proposed, and rooms dedicated to an activities group can only be accessed by the members of the group. Within these rooms the groups are moderators and can manage their task independently. The organizational dimension also concerns the preparation of tools and materials that implicitly mark and guide the phases of teaching activities [10]. Depending on the type of exercise, the teacher predicts whether it will be more useful to find structured materials or to delegate research to individual groups. Very functional in this perspective is the structuring of tasks as in Chinese boxes with an ever-increasing degree of complexity. Again, timing is important, because time management allows for self-regulation to emerge in subjects. And finally, the individual and group tasks, since the latter must involve a greater commitment than individual tasks, both on a cognitive, emotional, and motivational level and in terms of answers to the same problem, and therefore it becomes indispensable for the subject to work in the internal groups to achieve the goal [11].

#### 4. Conclusioni

The class is a complex organism, and read in terms of a learning group, it encompasses the relationships, rules, and roles between all the subjects of training. Group activities must not only have a cooperative dimension but also be oriented towards solving a real problem. The effectiveness of educational success is linked to the promotion of a positive relational climate that allows an evaluation of group work that establishes strong relationships. The teacher has the role of organizing the work prior to simulation activities, such as the setting, timing, materials, role distribution, and assessment [12]. The evaluation of results in terms of academic achievement appears very high for all members of the groups (compared to the evaluations of the previous year in the same ICT course). At the same time, the measurement of the perceptions and satisfaction of the trainees (by means of evaluation questionnaires) is above all the expectations of the training planners [13]. The role of the teacher is fundamental, especially in the introductory parts to set up the exercises, the ongoing monitoring and the final evaluation. The work of the groups is autonomous, but it is always the teacher who leads and remodels all the didactic activities. The concept of simulation is strongly debated in contemporary specialist literature [14], as it refers to at least three different interpretative models: (1) a systemic model, in which a simulation constructs learning environments whose parts are related and can provide feedback to players; (2) a dynamic model, in which the situation experienced by the player is not static but reacts dynamically to the player's behaviours because the system and behaviour evolve in real time; (3) the simplified model, an incomplete reproduction of reality which still represents its main characteristics, is functional to the required learning, and finally is functional. Although it is a simplification of reality, the designer must choose which characteristics to reproduce faithfully in order to predict the results in terms of training

(precision). As for the concept of validity in the specific domain of the research methodology, here Garris et al. [15] referred to the degree of uniformity and coherence with the contextual specificities of the represented reality.

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