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BOOK OF ABSTRACTS

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Digital Learning Culture at School: How to Promote it (also) Without Using Technology

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1. Research topic

This paper focuses on two topics: innovation in learning-teaching at school and its implications in students' self-determination towards studying.

2. Theoretical framework

Every day we experience a massive interaction with digital technology that mediates our social and cultural relations. This condition is especially true for the younger generation, who spend an increasing amount of time using digital media (Graafland, 2018). From an educative point of view, one problem of this direct relationship with the overwhelming content available online is the lack of critical thinking skills (Ranieri, 2011), which should be one of the most urgent commitments of educational systems (Chu, Reynolds, Tavares, Notari, & Lee, 2017). A productive strategy to accomplish this task is to consider that the digital environment changes the cognitive skills required for learning and knowledge in the new cultural ecosystem (Gee, 2003; Jenkins, Purushotma, Weigel, Clinton & Robison, 2009; Prensky, 2010). Teachers therefore need to adopt new educational strategies and teaching methodologies focused on leverage and empowering these skills. This commitment does not necessarily imply the use of digital devices at school but the employment of engaging cognitive and motivational strategies that are inherent in new media.

In this paper, a learning-teaching approach that adopts game-based elements to empower active learning methodologies defined as “Challenge Based Learning” (Schwartz, Lin, Brophy, & Bransford, 1999; O’Mahony et al., 2012) is detailed. This approach was developed starting with core learning concepts, like cognitive dissonance (Festinger, 1962; Piaget, 1974), and meaningful learning (Ausubel, Novak, & Hanessian, 1968), actualising them in the context of current Italian schools.

To examine the motivational implications of the above approach, we used the Self-Determination Theory (SDT) (Ryan & Deci, 2000a) as the theoretical framework in a quasi-experimental setting. According to SDT, there is a self-determination continuum from “Amotivation” to “Intrinsic motivation”. Along the continuum, there are four types of “Extrinsic motivation” (EM) varying to the extent that their regulation is autonomous: External regulation, Introjected regulation, Identified regulation, and Integrated regulation (Ryan & Deci, 2000a, 2000b, 2002). The differences between the types of motivation are not about the quantity of motivation (i.e., high levels of motivation), but about the quality of motivation (i.e., the presence or absence of self-determined forms of motivation) (Vallerand, Koestner & Pelletier, 2008; Guay, Ratelle, & Chanal, 2008). SDT allows distinctions between more controlled types of motivation (i.e., Introjected and External regulation) and more self-determined forms of motivation (i.e., Intrinsic motivation; Integrated and Identified regulation) (Deci & Ryan, 2008; 2000; Ryan & Deci, 2000a; 2000b).

3. Methodological design

In this paper we formalise the learning-teaching approach that promotes three main transformations within the overall learning process: from deductive to inductive teaching, from transmissive to constructivist teaching, from summative to formative assessment.

We have introduced this approach to more than 30 Italian schools from Primary to High school in the last six years. We trained the teachers adopting the same proposed learning-teaching approach. The final goal was to encourage teachers to design lesson plans according to the approach.

In one of these High schools, we carried out a study to evaluate the actual motivational results. The study adopted a quasi-experimental research design to analyse the differences in student motivation between an experimental and a control class. We aimed to investigate the implications on the motivation of the proposed approach addressing the following research questions:

Q1. Do students in the experimental class, compared to those in the control class, show differences in the types of motivation, *i.e.* Amotivation, EM External regulation, EM Introjected regulation, EM Identified regulation, and EM Integrated regulation, Intrinsic motivation?

Q2. Overall, do students in the experimental class, compared to those in the control class, show more self-determination towards studying?

The students' motivation was assessed through the Italian version of the *Academic Motivation Scale* (AMS; Alivernini & Lucidi, 2008), consisting of five subscales assessing the variables outlined above and calculating a global measure of students' self-determination towards studying. As many variables did not have a normal distribution and given the limited sample size, to analyse the differences in students' motivation between the two classes we used the nonparametric Independent-Samples Mann-Whitney U Test. Finally, to estimate the size of the differences identified between the experimental and the control class, we calculated effect sizes (*i.e.*, r) using the procedure indicated by Pallant (2007).

In this paper, we introduce the learning-teaching approach, the features of the teacher training activities carried out in schools, and the motivational implications of the proposed approach.

4. Findings

The results highlight how students in the experimental class differ from those in the control class. The Mann-Whitney Test indicated that there were no statistically significant differences ($p > .05$) between the experimental and control class concerning the following variables: (EM) External regulation, (EM) Introjected regulation, and Intrinsic motivation. The results indicated that there were statistically significant differences between the experimental and control class for the following variables: Amotivation ($U = 60$, $z = -3.482$, $p < .001$), Identified regulation ($U = 48.5$, $z = -3.751$, $p < .001$), and Overall motivational orientation (RAI) ($U = 37$, $z = -4.062$, $p < .001$). When considering the effect size estimator, the magnitude of these differences was "large" for all three variables (respectively, $r = .57$, $.62$, and $.69$). The results appear encouraging when considering the effectiveness of the proposed approach in determining the above positive changes in motivational dynamics.

5. Relevance to international educational research

The relevance of this paper lies in: the innovations and the motivational implications of the proposed learning-teaching approach, and the specific features of the teacher training activities. All these research topics are relevant and not specifically related to the Italian context.

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