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Promoting educational success and countering early school leaving. Effects of authentic learning tasks in upper secondary education

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Abstract

This paper presents the results of the second year of the "NoOut 2" project for the prevention of early school leaving, carried out in upper secondary school classes. In its second year, the project focused on authentic learning strategies, aimed at stimulating the students' interest and at promoting their active participation. The hypothesis of the research is that through active and participatory learning, fostered by the use of authentic learning tasks, it is possible to increase motivation and a sense of self-efficacy, to develop competences, skills and study strategies and, consequently, to promote educational success, which is a crucial factor in decreasing the probability of dropping out. The test used to detect the possible effects of the interventions is AMOS (in its 8-15 version for first-year classes), which allows to assess meta-cognitive, strategic, emotional-motivational and cognitive factors.
Results in the experimental groups show a significant increase in both the strategic and motivational dimension related to studying, in both class levels; there is also an increase of the cognitive dimension (results of the study test) in first-year classes.

Keywords: School drop-out, Authentic tasks, Educational Success, Motivation, AMOS.

Estratto

L'articolo presenta i risultati del secondo anno di attivazione del progetto "NoOut 2", svolto nell'istruzione secondaria e finalizzato alla prevenzione della dispersione scolastica. Nello specifico il progetto si è concentrato sulle strategie autentiche di apprendimento, finalizzate a stimolare l'interesse degli studenti e a promuoverne la partecipazione attiva. L'ipotesi di ricerca è che, attraverso strategie di apprendimento attivo e partecipativo, promosso dall'utilizzo di compiti autentici, sia possibile aumentare la motivazione e il senso di autoefficacia, sviluppare abilità, competenze e strategie di studio e pertanto promuovere il successo educativo, che è cruciale per ridurre la probabilità di abbandono scolastico. Il test utilizzato per individuare i possibili effetti dell'intervento è AMOS (nella sua versione 8-15 per le prime), il quale consente di valutare i fattori metacognitivi, strategici, emozionali-motivazionali e cognitivi.
I risultati nei gruppi sperimentali indicano un aumento significativo sia della dimensione strategica, sia di quella motivazionale, legate allo studio, nelle classi di entrambi gli anni scolastici; si registra, inoltre, un aumento della dimensione cognitiva (risultati del test sullo studio) nelle classi prime.

Parole chiave: Abbandono scolastico, Compito autentico, Successo scolastico, Motivazione, AMOS.

1. Early school leaving, educational success and authentic learning tasks.

Early school leaving is still a significant phenomenon in numerical terms, and it has serious consequences on students and communities. The Europe 2020 Strategy target of maximum 10% ESL (early school leavers, i.e. young people, aged 18 to 24, who have not attained any upper secondary school qualification) is still far from being achieved. In Italy, the percentage of early school leavers is 17.6% (MIUR, Ministry of Education, University and Research, 2012), which is far from the above-mentioned percentage as well as from the EU average of 12.8% (Italy is fourth from the bottom in the EU-27 ranking). As it is well known, early school leaving is connected to four main factors: individual, school, family and socio-economic factors. The actions put in place by the NoOut 2 project[1] directly influence the personal and school dimensions and are based on the principle that active teaching, focused on the activation and participation of students, can improve results and foster and facilitate educational success in addition to lowering the likelihood of early school leaving. Factors such as refusal of and resistance to education, disengagement, perception of inadequacy and educational failure correlate with ESL (Dalton, Gennie & Ingels, 2009). According to several studies, higher levels of self-esteem, greater confidence in one's own abilities and the use of appropriate study strategies increase the motivation to study and reduce the likelihood of early school leaving (Batini, 2014; Fan & Wolters, 2014; Renaud-Dubé, Guay, Talbot, Taylor, & Koestner, 2015). Among the motivational components of learning, personal perceptions relating to the theories of intelligence (and confidence in one's own intelligence) and to the learning objectives that were set (mastery vs. performance) are of great importance (Dweck, 1999; Komarraju & Nadler, 2013; Renaud-Dubé *et al.*, 2015). Students' confidence in their own intellectual levels and abilities, as well as the possession of proper study and learning strategies are good predictors of school performance (Alibernini & Lucidi, 2011; Yusuf, 2011; Komarraju & Nadler, 2013; Barbero, Vignola, & Duca, 2016; Hwang, Choi, Lee, Culver, & Hutchison, 2016). If a good self-perception increases the probability of educational success, experiencing educational success allows, in turn, to consolidate all basic and transversal skills (Batini, 2016).

It has been proved that there is a reciprocal relationship between self-efficacy perception and success at school: the effect of previous school results on the perception of self-efficacy is greater than the effect of the latter on school performance (Hwang *et al.*, 2016). On the other hand, studies show that repeating a school year increases six times the probability that students leave school (Batini & Bartolucci, 2016) and that failure has a negative effect on performance (Hattie, 2009). *Selective* failure (educational failure linked to a single subject) causes repercussions on early school leaving (Mata, Monteiro, & Peixoto, 2012): failure in mathematics, in particular, in Italy is strongly correlated to dropping-out (Moscucci, Piccione, Rinaldi, Simoni, & Marchini, 2005); in this respect, weaknesses in primary and transversal skills are also especially relevant (Batini, 2014; 2016).

[1] NoOut is a multi-year project fostered by Fondazione Cassa di Risparmio di Firenze in partnership with the University of Perugia (www.unipg.it), Associazione Pratika Onlus (www.pratika.net), Thélème Srl (www.theleme.it) and Isfol (now in ANPAL). The project aims to prevent early school leaving in two areas of Tuscany (in the Provinces of Arezzo and Florence) at all educational levels and to model actions, by means of an experimental research, so that patterns and tools can be created and used by teachers in order to prevent early school leaving. Materials are open access. See www.dispersione.it

If it is possible to promote educational success through active and participatory learning, which stimulates motivation, self-efficacy perception, and self-confidence - while developing competences, skills and study strategies – then didactics focused on authentic learning strategies (such as those proposed within the NoOut project) can be one of the essential methods to achieve these results.

An «authentic task» can be defined as a complex and open problem presented to students as a means of promoting and learning how to use knowledge, abilities and personal skills and also evidence the competence acquired (Glatthorn, 1999). According to Wiggins (1998), authentic tasks are characterized by: the demand for a quality product; being known in advance, along with assessment criteria and standards; the link to the real world, i.e. authenticity of the challenge; the challenging aspect, which requires the subject to use personal knowledge and skills in an innovative way; complex tasks; being iterative, that is allowing to repeat over time tasks which are essential for the development of competences; providing direct evidence of one's competence; and giving useful feedback. Authentic learning tasks give students the chance to use their own resources in terms of knowledge, skills, and competences, as well as their creativity. Activities and authentic tasks display as features, among others, (Reeves, Herrington & Oliver, 2002) the fact of *being open to multiple interpretations and the identification of more solutions*: students should not apply procedures they already know but identify personal strategies to reach a solution, which is chosen in turn among a wide range of possibilities. The aim with authentic tasks is to develop skills for activities that have a connection with the real world and which are of interest for individual students and which fit their capabilities. This motivates learning and increases student success expectations. Motivation is further fostered by a final product which is complete and which is valuable in itself.

In the meta-analysis study conducted by Hattie (2009) relating to the factors that affect learning, students' self-assessment and expectations emerge as being the factors with the most significant effects. These two aspects cannot be adequately stimulated through traditional didactics, as it does not provide sufficient space to an active role of students. In fact, traditional teaching is characterized by its focus on lectures delivered by a teacher, which facilitates more superficial learning and limits dialogue among students on their learning (Duschl & Osborne, 2002; Mercer & Littleton, 2007; Alexander, 2008). On the contrary, active teaching, focused on the "dialogical" speech (Bakthtin, 1981), which aims, among other things, to promote both communication *with* and *among* students and the co-creation of meaning, deeply affects the learning process (Alexander, 2008). This is consistent with other fundamental characteristics of authentic learning tasks (Reeves, Herrington & Oliver, 2002), i.e. the fact that they foster collaborating and reflecting on one's own learning, both individually and as a group. Another characteristic of this kind of tasks is their close integration with assessment, which is part of the task, is made explicit in its goals and criteria, is possibly shared with students and gains an authentically educational value. In short, the use of authentic tasks enhances motivation, discussions and dialogue among students, the continuous production of feedback, the relationship between teachers and students, practice over time, the use of meta-cognitive strategies, creativity, problem-solving, cooperative learning in small groups, self-assessment. These are all «high-impact» factors on the learning process (Hattie, 2009; 2012). Thanks to the authentic learning tasks it is therefore possible to foster intellectual commitment, challenge, and the learning experi-

ence, i.e. to stimulate interest, participation and more advanced conceptual thinking, which prompts students to "reinvest" in learning in itself (Hattie, 2012).

In light of the above, learning fostered through active didactics and using authentic learning tasks reflects what Hattie defines «evident teaching and learning». It comes true when learning becomes a clear goal for both the teacher and the student; when the implied challenge is appropriate; when a feedback is sought and given; when there are active people participating in the learning as well as when both try to establish whether and how the goal has been achieved, while students become teachers of themselves. According to the analysis by Hattie, effective teaching-learning is realized when teachers learn from their own teaching, while students become teachers of themselves. At that moment, students acquire self- regulation - self-assessment, self-monitoring, self-teaching – that is the achievement of the most important competence: learning to learn.

Getting these levels of «visible teaching and learning» is not possible through traditional ways of teaching-learning, there is a need for didactic methods in which students are actors, while teachers are «activators» and «evaluators»: they should cause a change and be focused on the effectiveness and the effects of the activation, thus becoming conscious agents of change and directors of their learning (Hattie & Clinton, 2011; Hattie, 2012).

2. Methodology

2.1. The experimental intervention

The "NoOut 2" project is an action research project for the prevention of early school leaving by involving students, teachers and "drop out" youth from the provinces of Arezzo and Florence. The project is characterized by the multi-dimensionality of actions, addressed to both students and teachers, the latter being involved in actions for students as well as in training courses about effective teaching methodologies. We explain here the experimental part of the project, aimed at measuring the effects of the actions addressed to the students of the participating schools, namely upper secondary schools.

The schools involved are the ITIS Galilei Galilei in Arezzo, i.e. a technical and industrial institute; the IIS Leonardo Da Vinci in Florence and the IIS Filippo Brunelleschi in Empoli upper secondary schools. In total nine first-year classes (five of which experimental and four control classes) and six second-year classes (four experimental and two control classes) have been involved.

The control classes followed the traditional teaching methods, while the experimental ones benefited from specific training, during school hours, for a total of 26 hours in the first-year classes and 20 hours in the second-year classes. Actions were carried out by vocational trainers along with the teachers, with the aim of disseminating effective teaching methods, in line with the long-term goals of the project.

As already mentioned, experimental training was based on authentic learning tasks which directly involved students in the activities proposed by their teachers. Activities lasted for a large part of the school year (6 months) and were different for each class; without entering into details, we deem useful to highlight a number of common traits.

As a preliminary step, teachers of the experimental classes were involved in a didactic micro-planning activity of the learning units, in order to identify, together with the trainers, those activities which would integrate at best with the actual situation and general level of individual classes. As regards the proposed authentic activities, and going beyond content peculiarities and differences,

the following characteristics can be highlighted: general objectives and sub-phases were identified in each learning unit (e.g. "recovery and strengthening of basic competences in Language and Mathematics; recovery and strengthening of motivation towards studying and school") and each phase was structured according to specific objectives. Activities included authentic learning tasks (e.g. "creating and performing a strategic role-play relating to the school world") with all the features mentioned when reporting about the literature. Moreover, considerable attention was given to individual and group reflections and suggestions, also thanks to the use of "inspiring readings", specifically chosen to generate a debate on the topics related to the activities. Other characteristics included a constant use of feedback and educational assessment along with time for self-reflection and self-evaluation about what had been learnt during each phase and at the end of the activities (e.g. use of the logbook, self-evaluation tools).

2.2. The tool: AMOS and AMOS 8-15

In order to establish whether the actions carried out in the experimental classes had positive effects, the AMOS 8-15 test (Cornoldi *et al.*, 2005) was adopted in first-year classes and AMOS – second edition – (De Beni *et al.*, 2014) in second-year classes. This tool assesses the skills and the motivation to study of students. The AMOS battery allows evaluating meta-cognitive, strategic, emotional-motivational and cognitive factors. The Questionnaires of AMOS 8-15 are the *Questionnaire on the approach to studying* (QAS); the *Questionnaire on the usefulness and use of study strategies* (QS1 and QS2); the *Questionnaire on opinions* (QC1I, QC2F, QC30) and *attributions* (QA); and the *Study test* (PS). The QAS is composed of a series of 49 statements about which students rate their agreement in a three-point Likert scale. Statements describe 49 study behaviors relating to 7 key areas that characterize an excellent approach to studying: *motivation, organization of personal work, strategic elaboration of the material, flexibility, concentration, anxiety, attitude toward the school.* Each one of these seven areas constitutes a sub-scale of the questionnaire. Scores are calculated separately and, on this basis, a total score of the approach to studying is calculated[2]. The *Questionnaire on the usefulness and use of study strategies* (QS1 strategic usefulness and QS2 strategic use) aims to assess the importance attached to the main study strategies and how often they are used. Each questionnaire is composed of 32 strategies, including 22 functional and ten dysfunctional strategies vis-à-vis learning, and students rate their usefulness (QS1) and frequency of use (QS2) on a four-point Likert scale. The questionnaire makes it possible to assess three indicators relating to the strategic dimension: perception of efficacy of functional and dysfunctional strategies; assessment of the use of functional and dysfunctional strategies; strategic coherence[3]. The *Questionnaire on opinions*

[2] The total scale is the result of the sum of the 7 sub-scales obtained after having converted scores in the area relating to anxiety (Cornoldi *et al.*, 2005).

[3] The first two indexes are calculated as the sum of the items relating to the functional and dysfunctional strategies in QS1, for the perception of efficacy, and in QS2, for the assessment of use. A total index of the strategies has also been added. This results from the sum of the totals of efficacy and use. Besides total scores, it is possible to calculate average scores. *Strategic coherence,* i.e. the correspondence between the opinion on usefulness and the assessment of use can be calculated by comparing and contrasting the averages of the perception of efficacy and those of the assessment of use: maximum coherence corresponds to an absolute difference between averages giving 0 as a result, whereas maximum incoherence corresponds to a difference

and attributions is composed of four short questionnaires relating to the *theories of intelligence* (QC1I), *confidence in personal intelligence and abilities* (QC2F), *learning objectives* (QC3O) and *duties* (QCA)[4].[5]

Finally, the *Study test* (PS) consists of a text to be analyzed (there are two different texts in each survey, with similar difficulties) and three types of tests: *choice of appropriate titles*, *essay questions*, and *true/false questions*. This test provides three indicators concerning the ability to identify the key topics in the text, the ability to highlight its essential aspects, and the ability to remember specific information. The three indicators together result in a general index relating to the test.

The AMOS battery (new edition) instead, is addressed to older students (from upper secondary school to university) and includes the following tools: *Questionnaire on the approach to studying* (QAS), *Questionnaire on study strategies* (QSS), *Questionnaire on perceptions* (QC), *Questionnaire on anxiety and resilience* (QAR), *Study test* (PS), *Questionnaire on cognitive styles* (QSC) and *Learning test* (PA)[6].

The *Questionnaire on the approach to study*ing (QAS) is composed of a list of 50 behaviors relating to 5 areas characterizing students: *organization*, *elaboration*, *self-assessment*, *test preparation strategies*, *meta-cognitive sensitivity*. Students are asked to assess on a five-point Likert scale the frequency of those study behaviors. It is thus possible to obtain a score for the five subscales and a total score relating to the approach to studying.

The *Questionnaire on study strategies* (QSS) consists of thirty-nine study strategies and students are asked to rate their importance on a seven-point scale, and their frequency of usage. The sum of the evaluations of importance provides the *effectiveness evaluation index* about the perception of the effectiveness of the study strategies. The total of the evaluations of use results in the *use evaluation index,* about how often students intend to use the various strategies. Similarly to AMOS 8-15, it is also possible to calculate an index of *strategic incoherence*[7].

The *Questionnaire on perceptions* (QC) generally includes twenty-nine items (Likert scales and pairs of alternatives) and is divided into six parts: *theory of personal intelligence, theory of personality*, *confidence in one's own intelligence, confidence in one's own personality, ability perception* and *learn-*

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of 3 (see Cornoldi *et al.*, 2005).

4 The questionnaire on attributions, although administered both *ex-ante* and *ex-post*, has not been processed because of the high number of incorrect data entry.

5 QC1 is composed of 4 statements relating to the changeability of intelligence about which students are asked to state whether they agree or disagree on a four-point scale. Following correction criteria, a single score is obtained in which the highest value (maximum, 16) corresponds to a dynamic incremental theory of intelligence, in which one profits from learning situations, and the lowest value (minimum, 4) corresponds to a static theory of the entity, which supports motivation to learn to a lower extent.
QC2F is composed of 3 pairs of statements. Students choose their level of confidence and then the degree of truthfulness of the statement. A high score (maximum 12) corresponds to high confidence in their intelligence and abilities, while a low score (minimum 3) corresponds to a low level of confidence.
QC3O has five statements and students express to what extent they agree/disagree or an order of preference. A high score (maximum, 20) corresponds to an idea of learning based on competence goals, whereas a low score (minimum, 5) corresponds to a concept of learning based on performance objectives.

6 The last two questionnaires have not been used.

7 In this version of the tool, contrary to AMOS 8-15, strategic incoherence is calculated only for the functional strategies as the sum of the absolute differences between the total score of the usefulness and the total score of the use of the strategy itself. The higher it is, the more students claim to use strategies that they consider quite ineffective and/or they do not use strategies that they consider efficient. (see De Beni et al., 2014).

ing goals.

The *Questionnaire on anxiety and resilience* (QAR) consists of fourteen statements, seven of which concern anxiety and seven resilience; students should express their agreement based on a five-point Likert scale.

Finally, the *Study test (PS),* even in this version of the battery, consists of a text to be analysed and four tests: choice of *critical sentences,* choosing and *organizing events*, *essay questions* and *true/false questions.* Scores in these sub-tests can be summed up so as to obtain a total test score. The model underlying this instrument is the meta-cognitive multi-componential model, whose central components, affecting study processes and then learning, are *opinions*, *self-regulation* and *strategic acting* (Cornoldi *et al.*, 2005). In short, in this model the main weight in the implementation of study processes is attributed to the set of self-regulative processes (motivation, organisation of personal work, strategic elaboration of materials, study flexibility, concentration, management of anxiety, attitude towards school) that interact with the strategic dimension (determined by the knowledge and the use of strategies as well as by their coherence). Both are affected in turn by the set of emotional-motivational meta-cognitive components (the ideas that students have about their learning mind and their confidence in their own abilities, two aspects that influence their goals and the way by which they explain successes or failures) (De Beni & Moè, 1995).

This tool is sophisticated because it assesses several dimensions, and it has been chosen in particular due to the need to evaluate some of them in the intervention. Two elements are especially interesting: Motivational and emotional aspects, due to their importance as incentives for learning, and the development of study strategies as a possible consequence of a teaching approach that inspires students to identify personal strategies to tackle tasks instead of simply applying procedures they already know .

The tests of the AMOS battery have been investigated and studied in order to verify their application in various school contexts (Cornoldi *et al.*, 2005). Several studies have used the AMOS battery as a tool to assess the effects of specific *training actions* aimed at developing skills and study strategies. This included its administration for initial and final assessments (Zamperlin, Malaman & Codogno, 2005; Ianes, 2016; Pelizzoni, 2017), to investigate the connection between motivation and school attitude and performance (Barbero Vignola & Duca, 2016), or to describe changes in the development of different school classes (Puiatti, 2003; Burbello, 2004; Tiziani, 2004; Barbero Vignola & Duca, 2016).

3. Results

In order to verify the effectiveness of the intervention, we used the method of comparing and contrasting the effect size of experimental and control groups, for each class level, by means of ANOVA 2x2 (time by group). Before performing the ANOVA, we checked the pre-test scores of groups in order to exclude any fundamental differences in scores. Data were processed in SPSS. Graphs show the average increment (or decrement) in scores by subtracting for each subject the scores of pre-tests from

post-tests, as indicated by Nieuwenhuis, Forstmann, & Wagenmakers, 2011.

The experimental and control groups were respectively made up of 53 and 52 students in first-year classes, and 50 and 25 students in second-year classes. The preliminary analysis of the baseline (Tables 1 and 2) shows homogeneity of initial averages in both the experimental and the control group, in both class levels[8].

In first-year classes (Figs. 1-3) there is a statistically significant difference in the following subscales: *motivation* (Df 1,104; F = 5,063; p < 0,05) of QAS; *total Use* (Df 1,104; F = 4,802; p < 0,05) and *total Strategies* (Df 1,104; F = 5,063; p < 0,05) of QS; *confidence in one's own personal intelligence and ability* (Df 1,104; F = 13,694; p < 0,001) of QC; *essay questions* (Df 1,104; F = 5,435; p < 0,05) of PS. The other scales do not show a significant difference in the *effect sizes,* however there is a relevant increase (compared to the control group) in the total scale of the approach to studying (QAS), in one of the functional strategies (QS) as well as in one of the learning goals (QC).

In second-year classes (Figs. 4-7/) there is a statistically significant difference in the following subscales: *organisation* (Df 1,74; F = 7,670; p < 0,01), *elaboration* (Df 1,74; F = 5,753; p < 0,05) and *total Approach to studying* (Df 1,74; F = 9,092; p < 0,01) of QAS; *strategic incoherence* (Df 1,74; F = 4,430; p < 0,05) of QSS; *ability perception* (Df 1,74; F = 4,528; p < 0,05) of QC. A significant increase, compared to the control group, is noticeable even in the scales relating to the use of functional strategies and to the total scale of the strategies (QSS).

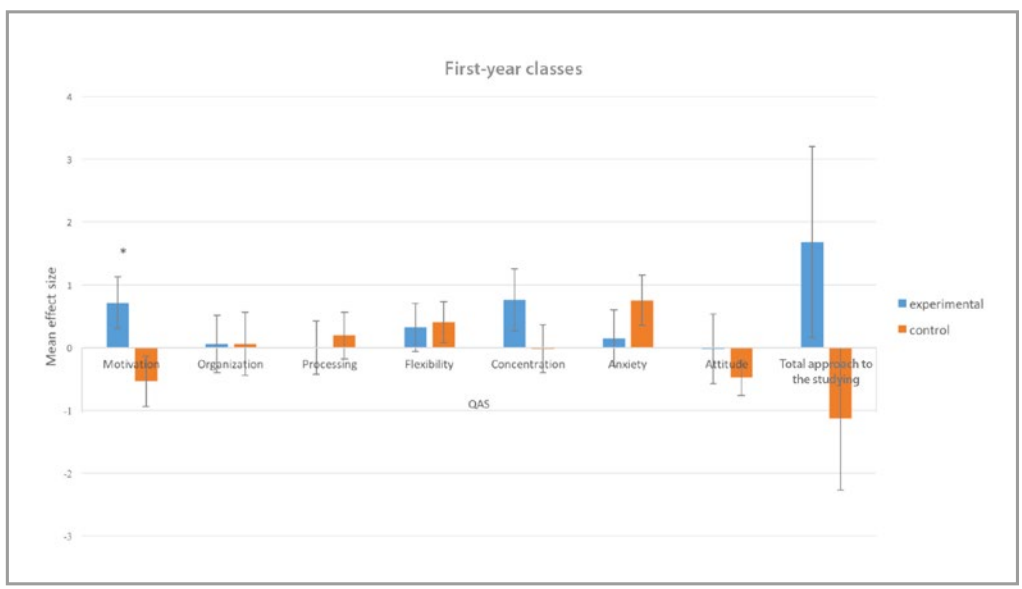

Fig. 1 - *Results of the Questionnaire on the approach to studying (QAS) in first-year classes. Comparison of effect sizes in experimental and control groups. ANOVA 2X2 (time x group): *p < 0,05.*

[8] In the battery sub-scales, which show a significant difference between the averages of the experimental and the control groups in the baseline, the percentage change of standardized scores was examined and this confirmed the significance results of the effect sizes comparison.

The figure shows a statistically significant increase in the experimental group for what concerns the motivation area. In this sense, data confirm what we found in literature, as active learning surely sparks motivation in students.

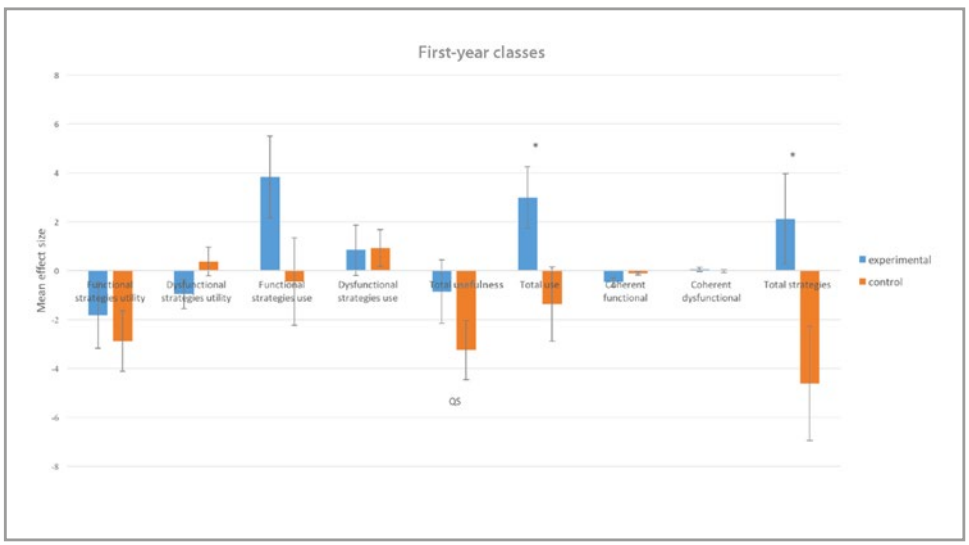

Fig. 2 - *Results of the Questionnaire on usefulness and use of study strategies (QS) in first-year classes. Comparison of effect sizes in experimental and control groups. ANOVA 2X2 (time x group): *p < 0,05.*

Motivation, as the graph shows, definitely stimulates students to find and use different and new strategies in studying, whereas control groups seem to reduce consistently over time the use of strategies.

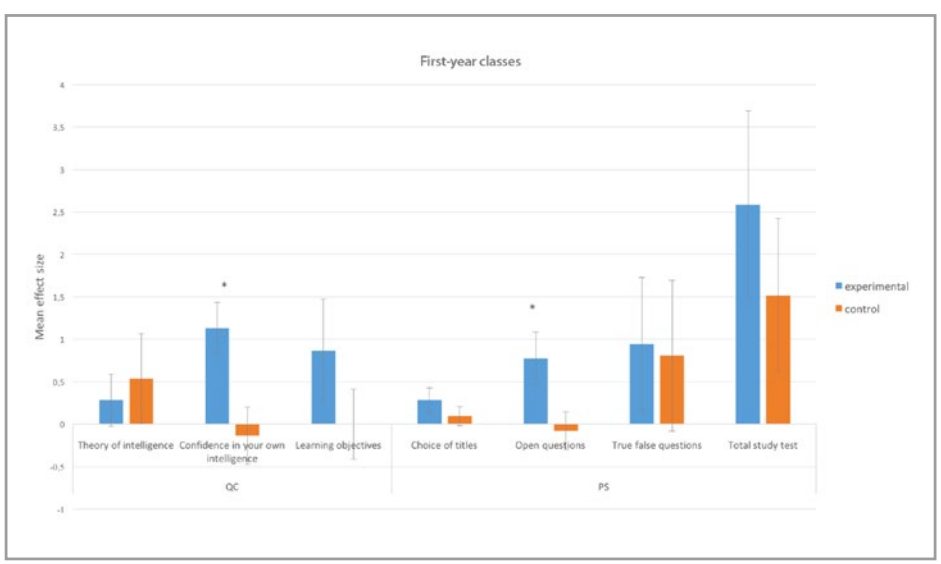

*Fig. 3 - Results of the Questionnaire on perceptions (QC) and Study test (PS) in first-year classes. Comparison of effect sizes in experimental and control groups. ANOVA 2X2 (time x group): *p < 0,05.*

All those effects have a significant impact on the perception of students, who increase their scores relating to their confidence in their intelligence, and all study strategies proved effective as for the results of the text comprehension test.

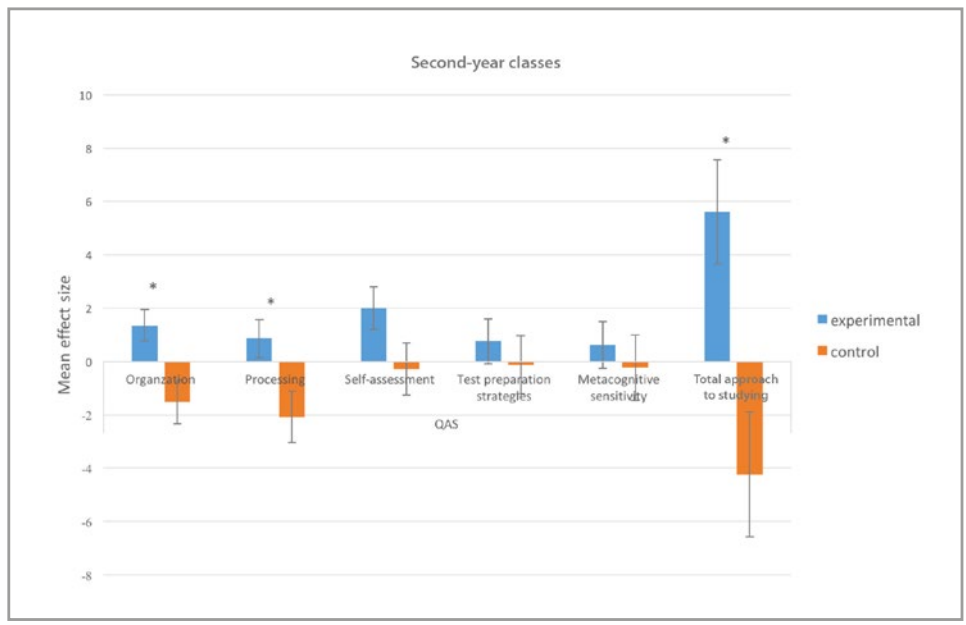

*Fig. 4 - Results of the Questionnaire on the approach to studying (QAS) in second-year classes. Comparison of effect sizes in experimental and control groups. ANOVA 2X2 (time x group): *p < 0,05.*

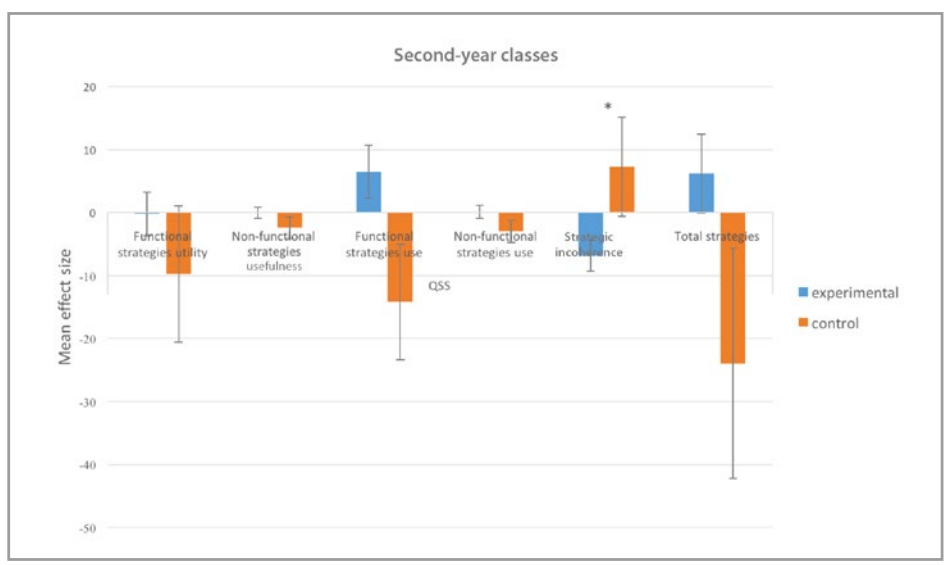

*Fig. 5 - Results of the Questionnaire on study strategies (QSS) in second-year classes. Comparison of effect sizes in experimental and control groups. ANOVA 2X2 (time x group): *p < 0,05.*

In second-year classes, it is evident that active learning makes students more aware of their own possibilities. This improves their organization and processing when studying, decreases their strategic incoherence and increases their ability perception.

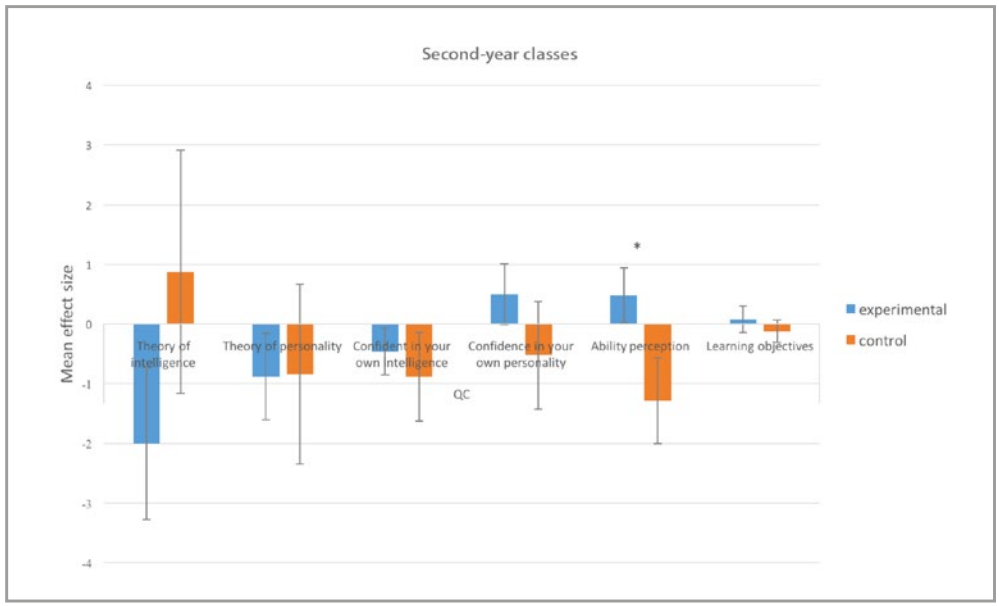

Fig. 6 - Results of the Questionnaire on perceptions (QC) in second-year classes. Comparison of effect sizes in experimental and control groups. ANOVA 2x2 (time x group).

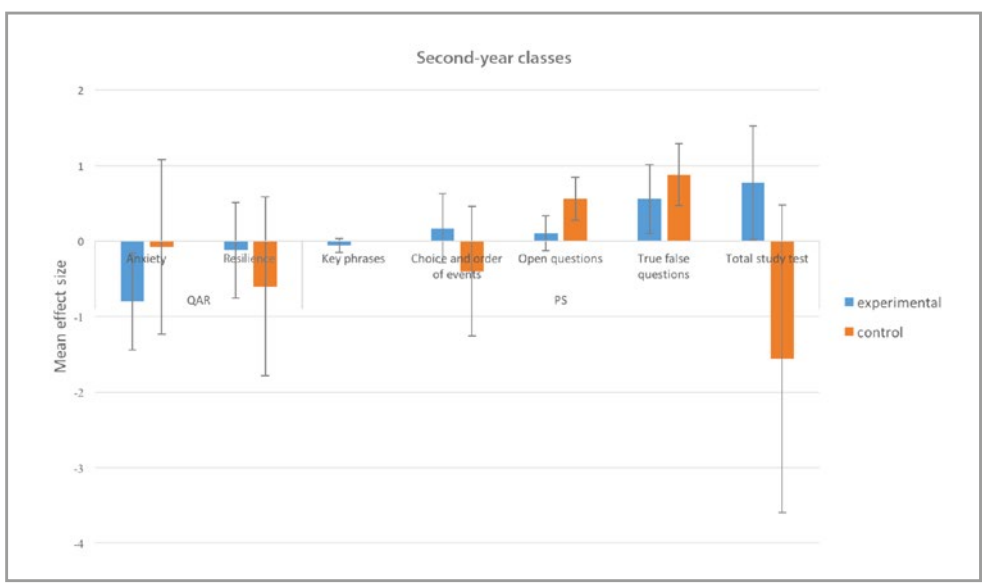

Fig. 7 - Results of the Questionnaire anxiety and resilience (QAR) and Study test (PS) in second-year classes. Comparison of effect sizes in experimental and control groups. ANOVA 2X2 (time x group).

	Group	Mean	Std. Deviation	Sign. t-test for Equality of Means
Motivation	experimental	14,113	2,6140	,804
	control	14,231	2,2017	
Organisation	experimental	14,453	3,4113	,861
	control	14,346	2,7998	
Elaboration	experimental	14,925	2,4087	,165
	control	14,308	2,1008	
Flexibility	experimental	13,755	2,6305	,943
	control	13,788	2,1993	
Concentration	experimental	13,566	3,2729	,767
	control	13,731	2,3441	
Anxiety	experimental	13,434	3,0097	,531
	control	13,077	2,7995	
Attitude	experimental	13,981	3,6663	,975
	control	14,000	2,2579	
Total Approach to studying	experimental	99,358	13,7744	,989
	control	99,327	8,7531	
Usefulness of functional strategies	experimental	57,528	11,3113	,673
	control	58,365	8,7985	
Usefulness of dysfunctional strategies	experimental	23,170	3,9794	,385
	control	22,500	3,8881	
Use of functional strategies	experimental	50,660	12,5590	,633
	control	51,750	10,6511	
Use of dysfunctional strategies	experimental	20,755	5,6224	,934
	control	20,673	4,4180	
Total Usefulness	experimental	34,358	10,4773	,422
	control	35,865	8,5819	
Total Use	experimental	29,906	9,2825	,526
	control	31,077	9,5606	
Functional coherence	experimental	,839	1,0783	,012
	control	,437	,3414	
Dysfunctional coherence	experimental	,355	,3320	,986
	control	,356	,2873	
Total Strategies	experimental	64,264	18,3284	,420
	control	66,942	15,4265	

	Group	Mean	Std. Deviation	Sign. t-test for Equality of Means
Theories of intelligence	experimental	9,887	2,2417	,231
	control	10,481	2,7900	
Confidence in one's own intelligence	experimental	8,300	2,4096	,282
	control	8,740	1,5624	
Learning goals	experimental	11,615	3,3616	,614
	control	11,288	3,2257	
Choice of titles	experimental	,74	,788	,072
	control	,47	,680	
Essay questions	experimental	1,64	1,851	,559
	control	1,45	1,459	
True/False questions	experimental	2,36	3,768	,502
	control	1,82	4,362	
Total Study test	experimental	4,74	5,016	,041
	control	2,83	4,400	

Tab. 1 - *AMOS 8-15 test baseline in first-year classes.*

	Group	Mean	Std. Deviation	Sign. t-test for Equality of Means
Organization	experimental	29,980	5,3280	,002
	control	34,160	5,6397	
Elaboration	experimental	29,260	4,7972	,087
	control	31,240	4,3806	
Self-assessment	experimental	32,120	5,3553	,334
	control	33,400	5,3929	
Preparation strategies	experimental	31,600	4,8529	,618
	control	32,200	4,9497	
Metacognitive sensitivity	experimental	31,180	4,9926	,361
	control	30,080	4,6630	
Total Approach to studying	experimental	154,140	13,3768	,079
	control	161,080	16,7877	
Usefulness of functional strategies	experimental	144,760	25,2211	,394
	control	139,680	21,8912	
Usefulness of dysfunctional strategies	experimental	21,640	5,9958	,518
	control	20,720	5,3270	

	Group	Mean	Std. Deviation	Sign. t-test for Equality of Means
Use of functional strategies	experimental	135,820	28,5333	,842
	control	134,840	13,9573	
Use of dysfunctional strategies	experimental	20,040	7,1399	,765
	control	19,560	5,0915	
Strategic incoherence	experimental	19,700	18,3417	,092
	control	12,840	11,5278	
Total Strategies	experimental	280,580	47,4303	,568
	control	274,520	32,6779	
Theory of personal intelligence	experimental	30,600	8,2214	,633
	control	31,520	7,0067	
Theory of personality	experimental	20,600	5,3299	,105
	control	18,560	4,5007	
Confidence in one's own intelligence	experimental	11,640	3,4803	,569
	control	11,120	4,1364	
Confidence in one's own personality	experimental	10,200	3,5283	,808
	control	10,400	2,9439	
Ability perception	experimental	16,880	4,1238	,565
	control	17,417	2,7333	
Learning goals	experimental	1,820	1,3805	,701
	control	1,958	1,5737	
Anxiety	experimental	20,320	6,7565	,600
	control	19,520	4,8659	
Resilience	experimental	21,420	3,6872	,676
	control	21,800	3,7081	
Key sentences	experimental	,170	,6747	,081
	control	,000	,0000	
Choice and organization of events	experimental	2,330	2,5707	,606
	control	2,680	3,1054	
Essay questions	experimental	1,440	1,6557	,044
	control	,640	1,4686	
True/False questions	experimental	1,320	2,0745	,005
	control	,320	,9452	
Total Study test	experimental	5,260	4,8057	,602
	control	6,240	8,6664	

Tab. 2 - *AMOS test baseline in second-year classes.*

4. Concluding remarks

In first-year classes, the experience of authentic learning tasks seems to significantly affect the QAS sub-scale relating to motivation; the total scale of the approach to studying also shows a relative increase compared to the control group. The area of motivation in QAS provides data relating to the motivational-emotional factor, which is confirmed by the significant results relating to the sub-scale about *confidence in one's own intelligence and ability* of QC as well as by a significant increase in one of the learning goals.

Results are even more significant if we take into consideration that the control group, at the end of the school year, shows a decrease in both motivation to study and confidence in one's own cognitive skills. The intervention seems to have had positive effects on perceptions, thus increasing motivation. Results pertaining to the strategic dimension are also relevant, with a significant increase in the total index relating to the opinion about the use of study strategies and also in the total scale of the strategies (usefulness + use). In line with what was highlighted by Cornoldi *et al.* (2005), it is also possible to "read" an increase in the indicator of the use of strategies as an increase in metacognitive knowledge, presumably stimulated by the metacognitive self-reflection activities of the experimental training, which help recognize specific learning strategies to a significantly higher extent compared to the control group.

Finally, remarkable results also involve the cognitive dimension, with an increase in the performance specifically related to the essay questions, which are the most complex part of the study test.

Similar results are obtained in second-year classes, both with reference to motivation and strategy. There is, in fact, an increase in the total scale of the approach to studying, with significance also in the related sub-scales of *organization* (ability to plan and organize one's own time and study activities) and *elaboration* (extent of personal elaboration and analysis of study materials). As for the effects on the strategic dimension, the improvement in comparison with the control group reaches statistical significance in the item of *strategic incoherence* which, as we hoped, decreases.

Studies show that this index is a predictor of school success, in fact, the presence of incoherence between «willingness to be» and «being» characterizes students who do not accept themselves very much, who are in a situation of discomfort and have difficulties at school (De Beni *et al.*, 2014). The scores in the use of practical strategies and the total scale of the strategies increase in the experimental group, while they decrease in the control group. Finally, as in the case of first-year classes, there is an improvement also in the motivational-emotional area, with a significant increase in the sub-scale of the *perception of one's own abilities* of QC.

These results show exciting effects on the meta-cognitive and motivational dimensions, in both first-year and second-year classes.

Literature shows that students' confidence in their own intellectual levels and in their skills, as well as the possession of correct self-learning strategies, are good school performance predictors and reduce the likelihood of early school leaving (Henderson & Dweck, 1990; Alibernini & transparencies, 2011; Yusuf, 2011; Komarraju & Nadler, 2013; Batini, 2014; Fan & Wolters, 2014; Renaud-Dubé, *et al.*, 2015; Barbero *et al.* 2016; Hwang *et al.* 2016). Moreover, confidence in their own cognitive abilities is strictly connected to the willingness of the student to get involved in learning situations (Cornoldi *et al.*, 2005).

In conclusion, the assessment of the effects on the educational success of a didac-

tic approach focused on authentic learning tasks constitutes a field of research that should be further studied, possibly also by means of additional tools and especially taking into consideration the long-term effects on both performance and the percentage of early school leaving.

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