FLIPPED CLASSROOM AND SELF-ESTEEM: TURNING THE CLASSROOM UPSIDE DOWN
TO OVERTURN THE CONCEPT OF SELF THROUGH "KNOW-HOW"

FLIPPED CLASSROOM E AUTOSTIMA: CAPOVOLGERE LA CLASSE PER RIBALTARE IL CONCETTO DI SÉ ATTRAVERSO IL "SAPER FARE"

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Abstract

Self-efficacy is considered a factor of great importance for the self-esteem of young people: in fact, it is part of the architecture necessary for the structuring of a positive level of self-perception. High self-esteem in adolescence is positively related to the tendency to look at everyday tasks as challenges to be overcome, just as adolescents with a great sense of self-efficacy have a higher esteem of themselves and themselves. On the basis of these beliefs, the aim of the study is twofold: firstly, to study the impact of the Flipped Classroom (FC) on the sense of school self-efficacy of a group of adolescents and, subsequently, to investigate the relationship between the levels of self-esteem of the latter and the use of the aforementioned teaching methodology, revealing their views on the strategy itself. The research was conducted through the choice of two homogeneous samples of 100 children each, between 14 years and 15 years of age: the first group (experimental) tested the methodology of the "Flipped Classroom" while the second group (control) continued with the traditional didactic-training approach of the frontal lesson. For the evaluation of the above objectives, the *Multidimensional Self Esteem Test* and the *Study Self-Efficacy Scale* were used in order to compare the two groups and draw the related pedagogical considerations that emerged.

L'autoefficacia è considerata un fattore di grande importanza per l'autostima dei giovani: essa, infatti, fa parte dell'architettura necessaria per la strutturazione di un livello positivo della percezione di sé. L'alta autostima nell'adolescenza è correlata positivamente alla tendenza a guardare i compiti della quotidianità come sfide da superare, così come gli adolescenti con grande senso di autoefficacia hanno una maggiore stima di se stessi. A partire da queste convinzioni, lo scopo del presente studio è duplice: in primo luogo, studiare l'impatto della "Flipped Classroom" (FC) sul senso di autoefficacia scolastica di un gruppo di adolescenti e, successivamente, indagare la relazione tra i livelli di autostima di questi ultimi e l'utilizzo della suddetta metodologia didattica, rivelando le loro opinioni sulla strategia stessa. La ricerca è stata condotta attraverso la scelta di due campioni omogenei di 100 bambini ciascuno, tra i 14 anni e i 15 anni di età: il primo gruppo (sperimentale) ha testato la metodologia della "Flipped Classroom" mentre il secondo gruppo (di controllo) ha proseguito con il tradizionale approccio didattico-formativo della lezione frontale. Per la valutazione dei suddetti obiettivi sono

stati utilizzati il *Multidimensional Self Esteem Test* e la *Scala di Autoefficacia dello Studio* al fine di confrontare i due gruppi e trarre le relative considerazioni pedagogiche emerse.

Keywords: Secondary School; Flipped Classroom; Active Teaching; Self-efficacy; Self-esteem.

Parole chiave: Scuola Secondaria; Classe capovolta; Didattica Attiva; Autoefficacia; Autostima.

Introduction

Although educational research has long highlighted the intrinsic limits of frontal teaching and how these are further highlighted by the transformations of the processes of production and cultural diffusion introduced by digitization (Bligh, 2000; Bruner, 1961/2005; King, 1993; Lage, Platt & Treglia, 2000; McDermott, 2001; Schwerdt & Wuppermann, 2011; Brandford, Brown & Cocking, 2000; Butchart et al., 2009), still today in educational contexts, in particular in the Italian reality, the most widespread teaching practice is the frontal lesson. The needs of today's society, the studies conducted in the educational field and the limits of traditional teaching highlighted by the research – among which are the inadequate interaction and the absence of collaboration between students and between teacher and student, the passivity of students, the non-application of the concepts taught, the inability to respect the different cognitive styles and learning rhythms, assimilation based on listening and repetition, lack of feedback on real understanding, inability to allow students to make connections between fundamental concepts – make it necessary to revisit the land school strategies (Schwerdt & Wuppermann, 2011; Smith et. per. 2005; McDermott, 2001; Cecchinato, 2014 Butchart, Handfield & Restall, 2009; Hake 1998). In fact, despite this, education and training systems are still crystallizing on the traditional model of teaching while today's society loudly demands teaching centered on skills and learning (Meli, 2014; Cecchinato, 2014): it is not surprising, therefore, that institutional and spontaneous initiatives are multiplying, inspired by the need to innovate this model. Despite the diffusion and importance of the theme, however, it is still difficult to find a shared definition of competence (Koenen, Dochy & Berghmans, 2015; Wesselink & Wals, 2011; McMullan et al., 2003; Mulder, 2001); in fact, in his years there are several disciplines that have been questioned, providing different food for thought. The answer found is not univocal but refers to a plurality of levels and meanings that signal that we are faced with a complex and multi-dimensional phenomenon (Malone & Supri, 2012; Koenen et al., 2015; Bergsmann et al., 2015; Gilis et al., 2008). In general, competence is understood as the demonstrated ability to integrate and mobilize knowledge, resources, skills and methodological skills, personal and social, in all situations and contexts of life: work, personal development, study, relationships, activities, problem solving, management of situations; competence is therefore made up of a complex combination of elements and represents, in a nutshell, a "knowledge acted" (Da Re, 2013; Batini, 2013). In this direction, a new learning-teaching methodology has emerged from the experiences of numerous teachers: the Flipped Classroom (FC). In this sense, flipped teaching allows us to overcome the limits of traditional teaching and go in the direction that educational research has longed for (Cecchinato, 2014; Meli, 2014): to move, that is, from an instructionist didactics – characterized by a unilateral transmission of knowledge from the

teacher to the student (the teacher dispenses information that is passively received by the students - Prince, 2004) – to a constructivist and social one – where learning is a process of building meanings negotiated together with others (each student actively seeks to compose an organized and coherent knowledge in cooperation - Mayer, 2004); in this process, it is inevitable to move from an approach focused on the teacher to one focused on the student: therefore, at the center of the classroom processes there is no longer the teacher as a source of knowledge but the student with his own learning needs (Roehl, Reddy & Shannon, 2013; Gilboy et al., 2015; Cecchinato, 2014). The implications of this teaching methodology are very important and among these it is possible to mention: the role of facilitator, support and guidance of the teacher, the activity and independence of the student and the fact that knowledge is considered as a tool rather than a goal (Baeten et al., 2010). In light of this, it is clear that the teaching-learning process in the classroom can only be focused on *active learning* strategies, through which students will have to get involved in the first person, experiment, reflect on what they are doing and obviously take responsibility for it (Prince, 2004; Baeten et al., 2010).

1. The Flipped Classroom

The Flipped Classroom (FC) represents both a didactic practice and a pedagogical model that in a nutshell consists in the reversal of traditional didactic moments, namely the lesson and individual study activities (Cecchinato, 2014; Modica, 2014; EDUCASE, 2012; Bijlani et al., 2013); the term "flip", in fact, refers precisely to the "reversal" of the traditional organization of the methods and times in which the contents are proposed and learning takes place: in practice, what traditionally took place in the classroom (the lesson) is carried out at home and what took place at home (homework) is now addressed in class (Bergmann, Overmyer & Wilie, 2011; Maglioni & Biscaro, 2014; Slomanson, 2014; Bishop & Verleger, 2013). In other words, the FC refers to a didactic design that overturns the classic division of student labor: explanations are followed at home and homework is done at school (Baepler et al., 2014; Bonaiuti, 2012). In this way, students arrive in the classroom already possessing a general pre-knowledge of the topics to be covered and, therefore, the time available in the classroom, no longer having to be used for the typical lesson, can be dedicated to working on the key activities of learning (Bergmann, Overmyer & Wilie, 2011): in this way, not only does it give students the opportunity to follow an exposition of the contents at home and to do it with their own rhythms. and according to your learning style but you also have the opportunity to use the time available in the classroom (now "freed" from the lesson) in a different, more active and personalized way, working to internalize and consolidate learning using *active learning* practices (Bijlani et al., 2013; Roehl, Reddy & Shannon, 2013; Slomanson, 2014). Although it is often defined in a simplistic way as "explanations at home, study at school", THE FC actually represents an articulated and complex approach that allows teachers to implement different teaching strategies in their classes and that can be summarized in four fundamental elements:

1) *Flexible Environment*: refers to the flexibility of the learning environment; to achieve the FC it is in fact necessary to make the organization of the classroom flexible from different points of view:
    - teaching methods (teachers can use the time they have available in the classroom for various activities, such as, for example, individual study, group work, research, etc.);
    - spaces (a different physical layout of the classroom can be envisaged);

- of the times (if on the one hand the teachers engage in a careful planning of the activities, on the other hand they also calculate a certain flexibility in the expectations that the teachers have towards their students, providing times that allow students to interact and reflect on their learning).

Teachers therefore create flexible environments in which students choose independently where and when they learn: this also means that teachers accept and know how to manage a less orderly and noisier class than that of the classic lectures. Simply put, to support learning and mastery, the upside-down learning environment must be flexible, allowing students to choose where and when to learn and, as a result, teachers must adjust their teaching methods;

2) *Learning Culture*: if in the traditional learning model centered on the teacher, the latter represents the primary source of information, on the contrary, in the FC model there is an evident and deliberate shift towards a student-centered model; the time available in the classroom is therefore dedicated to deepening the topics and creating a context rich in stimuli and learning opportunities; consequently, students are actively involved in the construction of knowledge since they participate in their own learning with greater intentionality and awareness;

3) *Intentional Content*: teachers determine which contents (or which part of them) it is appropriate and necessary to carry out in the classroom and which ones can be carried out independently at home; therefore, teachers must make weighted choices taking into account both the level of each individual student and that of the class in general and choose on the basis of these the potentially most strategic and effective teaching methods in order to maximize the time available in class and be able to adopt teaching methodologies of active learning centered on the student. In other words, teachers are called upon to make content suitable and accessible to all students;

4) *Professional Educator*: this role is more important and often more tiring in an FC than in a traditional classroom; during the lessons teachers constantly observe their students, are available to provide them with feedback in real time and evaluate their work, reflect on their work, collaborate with each other to improve themselves, accept constructive criticism, they tolerate chaotic classrooms and also take responsibility for transforming their profession. Although faculty assume a less visible role in FC, they remain an essential part of the educational process and the key ingredient that fosters learning in students.

Ultimately, although there is no single way to overturn the class, we can still necessarily identify two reversals or reversals referring to the two main moments in which the school is articulated: frontal lesson and individual study.

2. Characteristics of the experimental activity

In the research path, 10 secondary schools of the province of Naples were involved, with an experimental group of 100 boys who experienced FC and a control group of as many as 100 boys who, instead, continued with the traditional frontal teaching: the two groups had an average age of 14.7 years (experimental group) and 1 4.5 years (control group) with an equally uniform gender distribution (44% males and 56% females, respectively; 46% males and 54% females). The FC methodology provides for a wide range of *active learning* processes and didactics: what, however, has been adopted in the demonstration of this study is called "*Problem Based Learning"* (PBL). The PBL, or learning based on the analysis and solution of problems, is a collaborative teaching strategy in which an "open" problem is a collaborative teaching strategy in which an "open" problem (*open-*

ended) constitutes the starting point of the learning process and represents a valid, efficient and effective way of learning by working in a group: in fact, it takes place when the teacher submits to the students (usually divided into small groups) a poorly structured problem and asks them to identify possible solutions, to identify elements that support them and to defend their arguments in front of others (Cecchinato, 2014). The whole process takes place under the guidance of the teacher, who assumes the role of facilitator: he supports students in research without ever directly providing them with information for the resolution of the problem and intervenes to stimulate them to engage in forms of progressive questioning (he could ask them questions such as: "What do you already know about this topic? Where could you find this information? What do you think is the next step to take?") (Landriscina, 2005; Marconato & Keymeulen, 2005a; Stefanou et al., 2013; Barron et al., 1998). Just as problems can differ greatly in the number of topics and disciplines involved, so the duration per process is highly variable, from problems that can be solved over a few days to problems that can take a whole semester to solve. In the latter case, the problem is usually divided into sub-problems that are more easily handled (Spence, 2001; Landriscina, 2005).

Description of the experimental activity

The students handed over the release in which the parents agreed to let them participate in the study and after receiving this consent it was possible to continue. Specifically, through the use of the Blend Space platform, the teachers uploaded useful material to solve a real biology problem proposed: "plants at risk: what to do to avoid their extinction".
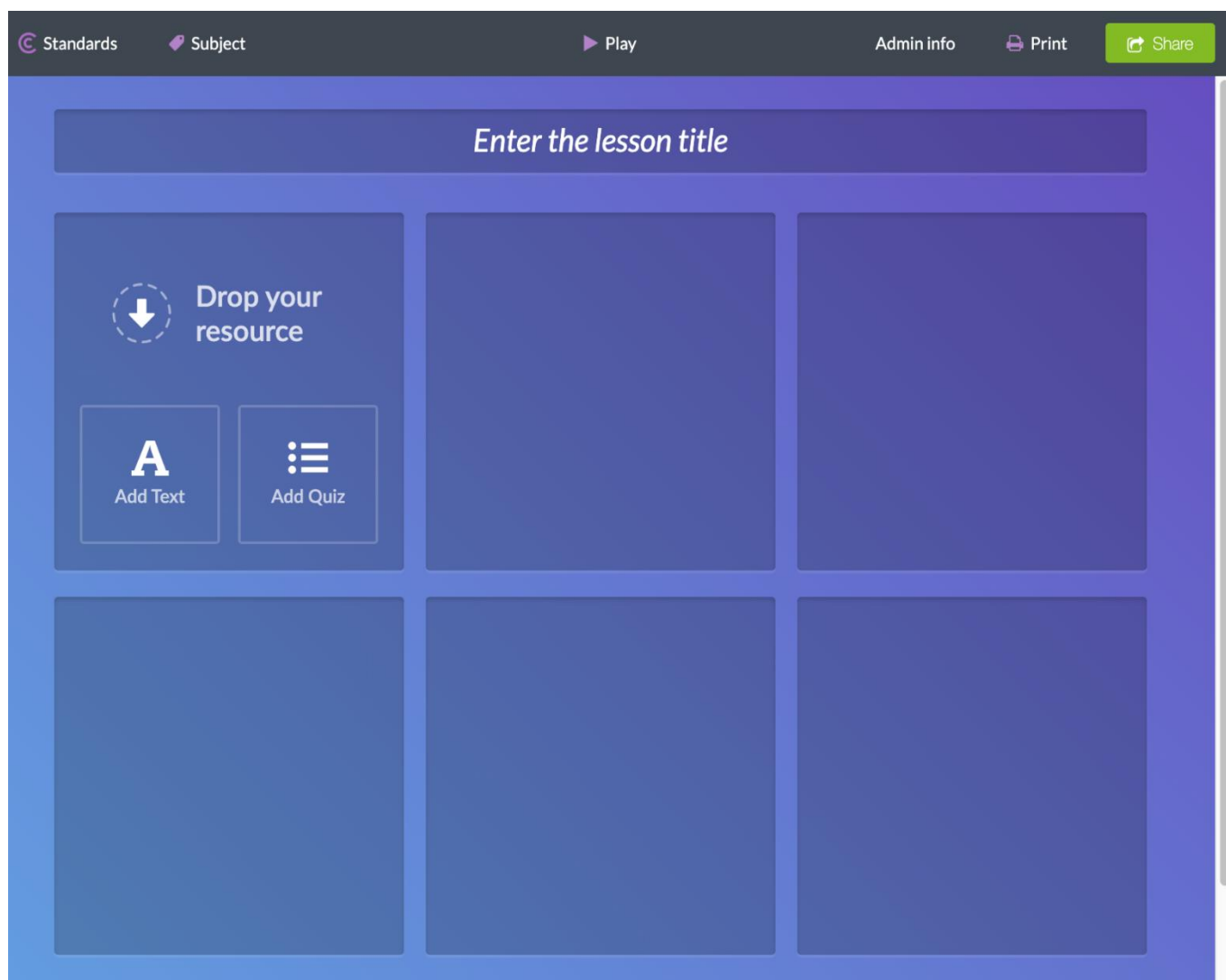
Table 1 – Blend Space Screen

Going to open section by section, it is possible to analyze the structuring of each item, such as:

STEP 1: PLANTS AT RISK	
THE PROBLEM	In your region, some plants are at risk of extinction. Try to understand: - What they are (make a cataloguing); - Because they are at risk; - What to do to save them.
THE OBJECTIVES	1. Biology; 2. Ecology; 3. Territorial sciences.
THE GROUPS	Group A: Marco, Maria, Alessio, Lucia. Group B: Matteo, Eleonora, Luca, Fabio.

	Group C: Cinzia, Francesco, Arianna, Federico. Group D: Luigi, Francesca, Daniele, Alessandra. Group E: Mariangela, Laura, Emilia, Gerardo.
THE TIMES	Everyone will have a month to produce their own resolution of the problem.
FINAL PRODUCT	The final product must contain a graphic cataloguing of the plants (carried out or reported) and a mapping of the risk areas; maybe: - A text file; - A power point; - A web page.

Table 2: The problem

STEP 2: SUGGESTIONS
The working group can begin the reconnaissance by making contact with: - The departments of botany of the University of Naples Federico II; - The offices of the State Forestry Corps; - Environmental protection associations.

Table 3: Suggestions

STEP 3: SITEOGRAPHY
Some useful internet addresses: • Working Group for the Botanical Gardens and Historical Gardens of the Italian Botanical Society: *www.horti.unimore.it/cd/Testiita/obsbi_lista_i.html* • Nature Conservation Group of the Italian Botanical Society: *www.societabotanicaitaliana.it/laygruppo.asp?IDSezione=14* • Agency for Environmental Protection and Technical Services: *www.apat.gov.it* • Regional Agencies for Environmental Protection: *www.ambiente.it/utility/arpa.htm* • The portal of the Italian Parks: *www.parks.it* • National Association of Science Museums: *www.anms.it* • Ministry of the Environment: *www.minambiente.it*

Table 4: Siteography

STEP 4: INTERNATIONAL BODIES
➢ Planta Europa, the European network for plant conservation: *www.plantaeuropa.org* ➢ International Union for Conservation of Nature IUCN: *www.iucn.org* ➢ Red list of Threatened Plants, 1997 IUCN: *http://www.unep-wcmc.org/species/plants/plants-da-taxon.htm,* in which the country code to be inserted is Italy.

Table 5: International organizations involved in plant conservation

2.1 Evaluation

As anticipated, the objective of this study is twofold:
1) First, to study the impact of the "Flipped Classroom" (FC) on the sense of school self-efficacy;
2) Subsequently, investigate the relationship between self-esteem levels and the use of the aforementioned teaching methodology.

To do this, two evaluation tools were used respectively:
1) The *Study Self-Efficacy Scale;*
2) The *Multidimensional Self-Esteem Test*.

Thinking about a future task, you feel that you have the ability to...			
	1 = little or not at all capable	2 = quite capable	3 = very or completely capable
Collaborate with other comrades			
Organize the work of a small group			
Argue your ideas within the group			
Relate effectively even with those who do not have the same ideas			
Focus your energies on the work at hand			
Respect working hours and times			
Achieving your goals			
Learn new methods of study			
Complete the assigned work			
Conduct new research independently			

Table 6 – Study Self-efficacy Scale

	1 = false	2 = quite true	3 = true
I know well my best virtues and main flaws.			
If I receive compliments... I don't accept them, I don't believe it.			
I suffer the comparison with others: it often seems to me that they are "more".			

If cosmetic surgery were very safe and inexpensive, I would modify more aspects of my body.			
I tend to accept the opinion of others, even if I do not share it.			
If someone criticizes me, I struggle to pass over it: I remain bad, even too much.			
I often feel a little too indecisive			
Dancing and moving in public... two things I just don't like.			
In questions at school, I give less than I am actually worth.			
If I don't understand something, I ask questions regardless of how many people they listen to and what they may think of me.			

Table 7 – TMA

For both, the boys were left independently to read the instructions themselves and then proceed to the compilation. In any case, if difficulties had emerged in understanding some questions, it would have been possible to specify and clarify the doubts, but be careful not to guide the examiner in the answer: it is in fact allowed to explain any unfamiliar word using simpler ones without however attributing positive or negative connotations because there are no right or wrong answers; the other, it is important that both tests are filled in in full without forgetting any item, for this reason it is necessary to carefully check that all the answers have been given, inviting the boy to complete the missing questions if there were omissions: the time spent in the compilation reflects the effort invested and, therefore, it is important to take into account if this is too short because it may reflect little interest and superficiality as well as excessive time could indicate an exaggerated concern in trying to provide the right answer. Since the data were processed anonymously, in both tests students reported only gender, age and class.

2.2 Results and their discussion

Thinking about a future task, you feel that you have the ability to...		
	BEFORE	AFTER

	1 = little or not at all capable		2 = quite capable		3 = very or completely capable		1 = little or not at all capable		2 = quite capable		3 = very or completely capable	
	F	M	F	M	F	M	F	M	F	M	F	M
Collaborate with other comrades	6	14	18	24	20	18	4	10	15	26	25	20
Organize the work of a small group	4	18	17	20	23	18	2	14	14	22	28	20
Argue your ideas within the group	8	16	22	20	14	20	6	12	15	23	23	21
Relate effectively even with those who do not have the same ideas	12	18	14	21	18	17	8	14	12	22	24	20
Focus your energies on the work at hand	3	25	17	16	24	15	3	20	14	17	27	19
Respect working hours and times	1	22	22	20	21	14	1	18	16	16	27	22
Achieving your goals	10	20	12	16	22	20	5	13	10	20	29	23
Learn new methods of study	20	30	10	17	14	9	12	18	12	19	20	19
Complete the assigned work	2	10	20	26	22	20	2	8	16	24	26	24
Conduct new research independently	0	27	16	13	28	16	0	18	11	15	33	23

Table 8 – Experimental - **Group Results in the Study Self-efficacy Scale**

	BEFORE	AFTER

	1 = false		2 = quite true		3 = true		1 = false		2 = quite true		3 = true	
	F	M	F	M	F	M	F	M	F	M	F	M
I know well my best virtues and main flaws.	22	15	12	17	10	24	16	7	14	19	14	30
If I receive compliments... I don't accept them, I don't believe it.	14	27	15	19	15	10	17	33	17	18	10	5
I suffer the comparison with others: it often seems to me that they are "more".	9	18	20	23	15	15	16	28	18	18	10	10
If cosmetic surgery were very safe and inexpensive, I would modify more aspects of my body.	10	33	14	13	20	10	17	38	10	10	17	8
I tend to accept the opinion of others, even if I do not share it.	24	6	13	27	7	23	16	4	10	25	18	27
If someone criticizes me, I feel bad, even too much.	2	31	19	21	23	4	15	38	15	14	14	4
I often feel a little too indecisive	11	31	15	12	18	13	22	21	14	21	8	14
Dancing and moving in public... two things I just don't like.	25	30	7	15	12	11	21	35	9	10	14	11
In questions at school, I give less than I am actually worth.	18	29	13	13	13	14	23	34	12	14	9	8
If I don't understand something, I ask questions regardless of how many people they listen to and what they may think of me.	19	8	13	16	12	32	10	4	16	16	18	36

Table 9 – Experimental - Group Results in TMA

Thinking about a future task, you feel that you have the ability to...												
	BEFORE						AFTER					
	1 = little or not at all capable		2= quite capable		3= very or completely capable		1= little or not at all capable		2 = quite capable		3= very or completely capable		
	F	M	F	M	F	M	F	M	F	M	F	M
Collaborate with other comrades	8	12	20	26	18	16	10	14	22	21	14	19
Organize the work of a small group	5	20	21	20	20	14	8	18	24	26	14	20
Argue your ideas within the group	13	18	14	22	19	14	16	20	17	19	13	15
Relate effectively even with those who do not have the same ideas	8	16	22	24	14	14	12	19	17	22	17	13
Focus your energies on the work at hand	6	21	23	18	17	15	11	24	27	15	8	15
Respect working hours and times	3	15	17	20	26	19	5	18	25	13	16	23
Achieving your goals	8	18	12	15	26	21	16	20	14	15	16	19
Learn new methods of study	21	32	11	12	14	10	25	34	17	15	4	5
Complete the assigned work	6	12	18	26	22	16	8	18	26	30	12	6
Conduct new research independently	7	20	28	16	11	18	17	22	33	20	4	12

Table 10 – Control - Group Results in the Study Self-efficacy Scale

	BEFORE						AFTER					
	1 = false		2 = quite true		3 = true		1 = false		2 = quite true		3 = true	
	F	M	F	M	F	M	F	M	F	M	F	M
I know well my best virtues and main flaws.	20	15	13	17	13	22	22	7	14	19	10	30
If I receive compliments... I don't accept them, I don't believe it.	15	28	16	22	15	4	14	30	19	18	13	6
I suffer the comparison with others: it often seems to me that they are "more".	10	18	20	21	16	15	12	23	21	21	13	10
If cosmetic surgery were very safe and inexpensive, I would modify more aspects of my body.	10	29	19	13	17	12	8	31	21	13	17	10
I tend to accept the opinion of others, even if I do not share it.	28	12	10	21	8	21	30	16	11	19	5	19
If someone criticizes me, I feel bad, even too much.	4	27	19	18	23	9	6	29	19	14	21	11
I often feel a little too indecisive	13	32	15	11	18	11	17	27	14	17	15	14
Dancing and moving in public... two things I just don't like.	23	28	10	13	13	13	19	33	12	15	15	6
In questions at school, I give less than I am actually worth.	16	27	15	12	15	15	12	29	18	16	16	9
If I don't understand something, I ask questions regardless of how many people they listen to and what they may think of me.	19	10	16	17	11	27	22	13	12	20	12	21

Table 11 – Control - Group Results in TMA

As can be seen from the results, before introducing the teaching methodology of the FC, there were no statistically significant differences between the scores of the two groups, which, on the other hand, can be seen well in the data recorded at the end of the trial: therefore, the administration of these two tools to evaluate the school self-efficacy and self-esteem proved to be particularly suitable since it made it possible to highlight the correlation of these constructs.

Since in this particular moment of life the boys experience the transition to adolescence, the beliefs of self-efficacy play a crucial role and becomes a central part in the construction of life events (Caprara, Steca, Gerbino, Paciello, Vecchio, 2006). Specifically, in order to analyze the data collected more thoroughly, the use of both evaluation methods has allowed to bring out gender differences with regard to the use of the FC methodology on the sense of *school self-efficacy*: in fact, girls score significantly higher than their opposite-sex peers, a result fully in accordance with a recent study conducted by Caprara and colleagues (2008) in which girls showed a greater sense of scholastic self-efficacy that contributes to regulate performance and to improve performance in this area (Pastorelli, Caprara, Barbaranelli, Rola, Rozsa, Bandura, 2001).

Among the various aspects characterizing this phase of growth, another factor of great importance, that emerged from the study, is certainly the concept of body identity; in this period of their lives, in fact, both boys and girls are particularly attentive to their bodily changes (Ata, Ludden, Lally, 2007) that inevitably impact on their concept of self-esteem: in this regard, particularly sensitive in identifying this aspect is the TMA, from which it emerged that they are boys to present a higher self-esteem than girls, in accordance with what has been found in the literature (Ata, Ludden, Lally, 2007; Lakes, Pallini, 2008). This could reflect the enormous importance that our society attaches to the female body (Laghi, Pallini, 2008) in addition to the numerous messages that are constantly transmitted by the media, by relationships with family and companions (Ata, Ludden, Lally, 2007).

Some possible criticalities of this study could lie in the small sample, in the choice of only one of the many active teaching strategies that are part of the FC methodology, in the small number of items used as the state of the art of the research has not yet arrived at the preparation of a specific evaluation method for secondary school. Ultimately, however, it can be said that through this experimentation the usefulness of the teaching methodology of FC during the path of personal growth has been confirmed in general, in particular with regard to the increase in the sense of self-efficacy and the existence of the mutual influence of the latter on the sense of perceived self-esteem. Therefore, in the light of what has emerged, this research could prove useful for the development of programs aimed at promoting the self-esteem of the student, his well-being and his academic performance with the involvement of the adults of reference.

Conclusions

Despite the fervent debate of recent years, it still seems impossible to confirm that the logic of skills has established itself in education and training systems (Struyven & De Meyst, 2010; Wesselink et al., 2010). In the Italian school, in fact, as already widely emphasized, the traditional teaching is mainly centered on the contents and on the transmission of knowledge, is based primarily on the action of the teacher and aims to achieve knowledge objectives, allowing in the best of cases to bring back good knowledge and to promote possibly only some skills (Da Re, 2013). In short, in traditional practice, the learning objectives consist of contents that, throughout the year, are addressed in the

classroom through an enunciative didactics. Traditional teaching, in fact, can be represented according to a *one-size-fits-all* model (Rutherfoord & Rutherfoord, 2013; Roshan, 2011): theoretically addressed to everyone, the frontal lesson is taught according to the contents, times and rhythms imposed by the teacher and it does not take into account the heterogeneity of the class (Cecchinato, 2014; Meli, 2014). In other words, in traditional teaching it is the teacher who takes most, if not all, of the decisions concerning learning and the students are called to learn and then be subject to subsequent verification of the knowledge acquired: the evaluation, therefore, will only establish the degree of retention and possibly understanding of the contents (Batini, 2013). In this scenario, students are passive individuals, exposed to a "collection" of pre-established knowledge, transmitted asymmetrically and unidirectionally, in a context consisting mainly of hetero-direct activities by the teacher in which they do not feel the learning objectives as their own and are not incentivized to act independently. To really enter into the logic of competences, however, it is necessary that teaching aims to acquire, develop or consolidate new knowledge, skills and competences and that it is centered on the self-no but action of the students (Kuijpers, Meijers & Gundy, 2010; de Jesus & Moreira, 2009; Koenen et al., 2015; Wesselink, de Jong & Biemans, 2010): it is from the latter, in fact, that one must start to identify the appropriate didactic actions (Wesselink, de Jong & Biemans, 2010; Koenen et al., 2015; Da Re, 2013). In a didactics of this type, it is necessary to proceed with a careful and complex design work (Bergsmann et al., 2015) and establish what are the most appropriate actions and experiences in order to facilitate the development of skills-objective (Da Re, 2013). A didactics by skills consists mainly of group activities independently conducted by the students, with the support, guidance and mediation of the teacher (Koenen et al., 2015; Kuijpers et al., 2010; Wesselink, de Jong & Biemans, 2010): students, therefore, are actively involved and the degree of their involvement increases progressively (Koenen, Dochy & Berghmans, 2015) because a didactic approach centered on skills stimulates the participation of all the actors involved. Since, as already mentioned above, competence represents an "acted knowledge", the first requirement to achieve the aforementioned purpose is to prepare didactic moments that have a closeness to real situations and that put students in a position to act, or to make experiences (Malone & Supri, 2012; Wesselink, de Jong & Biemans, 2010; Wesselink et al., 2010). In addition to explanations, consolidation of procedures, exercises, it is therefore necessary to provide for group work, discussions, case studies, problem solving, implementation of significant tasks (Da Re, 2013; Koenen et al., 2015). Byvirtue of what has just been said, it is evident that THE FC can play a very important role in the framework of didactic planning for skills that, although complex in its realization, is facilitated with it (Maglioni & Biscaro, 2014; Cecchinato, 2014; Meli, 2014). The methodological approach proposed by the FC seems to make an important step: students have teachers at their side at the very moment when they need it most, or when they are called to perform complex cognitive tasks: the in fact, the flipped teaching allows the teacher to be present when the students are committed to achieving the educational goals corresponding to the highest levels of Anderson and Krathwohl's taxonomy. In traditional teaching, teachers introduce and explain new topics in the classroom but, in doing so, ask pupils to achieve the simplest educational objectives (remember, understand): consequently, although they can benefit from the presence of the teacher, students are called to put into play the cognitive processes of a lower level (Williams, 2013). In flipped teaching, on the other hand, exactly the opposite happens: since the FC reverses the traditional teaching method, moving the exposure of the contents home and bringing to the classroom the study activities, homework and

exercises, it is the result that the methods, times and places of the didactic objectives - traditionally ordered in remember, understand, apply, analyze, evaluate and create - they are turned upside down (Kim, Kim, Khera & Getman, 2014). In fact, students, being called to view, familiarize and study the material recommended and / or produced by the teacher at home, are responsible for independently achieving the simplest educational objectives and therefore putting into play the cognitive processes of a lower level (Rutherfoord & Rutherfoord, 2013; Williams, 2013; Brame, 2013). The pre-class phase of content exposure is carefully designed, taking into account what students can independently master in an individual and structured way in order to help them acquire knowledge of the contents and prepare for their application in the classroom (Gilboy, Heinerichs & Pazzaglia, 2015). In the classroom, on the other hand, pupils and teachers work together on the most complex educational objectives: it is therefore here that students are called to put into play the highest cognitive processes, with the added value of being able to benefit from the help and guidance of the teacher (Brame, 2013; Williams, 2013; Rutherfoord & Rutherfoord, 2013). Since the classroom phase is designed to apply the knowledge acquired in the pre-class phase, the strategies used are those of active learning centered on students (Gilboy, Heinerichs & Pazzaglia, 2015; McLaughlin et al., 2014) that allow them to approach knowledge through experience and to acquire knowledge, skills and competences by integrating theory and practice. In fact, the reflections, concepts, ideas produced by the students' activity are contextualized, anchored to reality and experience, put at the service of a problem to be solved, proposed through didactic mediators capable of capturing the interest and mobilizing and resources of the children: the In this way, they acquire value and meaning in their eyes, satisfy the need to make sense of their work and produce meaningful and stable learning. Valuing the autonomous and responsible experience and putting the students in a position to act, the FC offers not only the opportunity to mobilize what is known but also to acquire new knowledge and skills, as well as skills; in fact, the experience is not to be understood as a simple putting into practice of knowledge but must be contextualized so that the boy, individually and / or in groups, acts independently and responsibly to solve problem situations and carry out projects. The experience must always be sustained by repeated individual and collective reflections, which precede, accompany and follow the action. It is clear that the FC maintains its validity also within the framework of the objectives of the European community;   In fact, beyond the skills that can be pursued by specific disciplines, the FC represents a fertile ground for the development of the other key competences indicated: *active learning* methodologies, the fact that students are called to take responsibility for their own learning and to organize it independently – also according to the available time, one's own strategies and one's own method of study and work – the interdisciplinarity, personalization and individualization of teaching, the   individual and collective critical reflections that accompany the experience, the resolution of problems and the realization of projects, favor the acquisition, development and consolidation of the skills to learn to learn, of spirit of initiative and entrepreneurship and the improvement of social and civic skills. In conclusion, a fundamental characteristic of FC is the essential centrality of the learner: in the didactic context of the FC, the student is no longer considered a subject to whom to transfer knowledge, but becomes a creator and active builder of knowledge, configuring himself as an actor who autonomously makes choices, formulates hypotheses, asks questions, negotiates with other purposes and methods, acts and interacts by actively contributing to the construction of knowledge. The centrality of the learner is declined in an increase in scholastic self-efficacy and consequently in the increase of self-esteem and one's own means. It is evident that

the multidimensional perspective adopted in the present work has made it possible to trace the basis for future research regarding the identification and study of several components of the students' vision in the period of adolescence: from the development of social skills, to scholastic self-efficacy up to one's own bodily experience. In light of what has just been said, it can certainly be said that the analysis of these indicators could be particularly useful in the school environment especially for teachers, as it can provide them with an effective tool to highlight any problems of the student and find strategies for resolution.

References

Anderson, L. W., & Krathwohl, D. R. (2001). A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives. Longman.

Baepler, P., Walker, J. D., & Driessen, M. (2014). It's not about seat time: Blending, flipping, and efficiency in active learning classrooms. Computers & Education, 78, 227-236.

Baeten, M., Dochy, F., Struyven, K., Parmentier, E., & Vanderbruggen, A. (2016). Student-centred learning environments: an investigation into student teachers' instructional preferences and approaches to learning. Learning Environments Research, 19(1), 43-62.

Baeten, M., Kyndt, E., Struyven, K., & Dochy, F. (2010). Using student-centred learning environments to stimulate deep approaches to learning: Factors encouraging or discouraging their effectiveness. Educational research review, 5(3), 243-260.

Barr, R. B., & Tagg, J. (1995). From teaching to learning - A new paradigm for undergraduate education. Change: The magazine of higher learning, 27(6), 12-26.

Barron, B. J., Schwartz, D. L., Vye, N. J., Moore, A., Petrosino, A., Zech, L., & Bransford, J. D. (1998). Doing with understanding: Lessons from research on problem-and project-based learning. Journal of the learning sciences, 7(3-4), 271-311.

Bergmann, J., & Sams, A. (2012). Flip your classroom: Reach every student in every class every day. International society for technology in education.

Bergmann, J., & Sams, A. (2012). How the flipped classroom is radically transforming learning. The Daily Riff, 2012, 1-3.

Bergmann, J., & Sams, A. (2014). Flipped learning: Gateway to student engagement. International Society for Technology in Education.

Bergmann, J., Overmyer, J., & Wilie, B. (2013). The flipped class: What it is and what it is not. The Daily Riff, 9.

Bishop, J., & Verleger, M. A. (2013, June). The flipped classroom: A survey of the research. In 2013 ASEE Annual Conference & Exposition (pp. 23-1200).

Boekaerts, M. (1999). Self-regulated learning: Where we are today. International journal of educational research, 31(6), 445-457.

Cecchinato, G. (2014). Flipped classroom: innovare la scuola con le tecnologie digitali. Italian Journal of Educational Technology, 22(1), 11-20.

Cecchinato, G., Aimi, B., & Papa, R. (2014). Flipped Classroom": intervento in un liceo della provincia di Parma. QWERTY, 9(2), 15-29.

Chen, Y., Wang, Y., & Chen, N. S. (2014). Is FLIP enough? Or should we use the FLIPPED model instead?. Computers & Education, 79, 16-27.

Connor, K. A., Newman, D. L., & Deyoe, M. M. (2013, June). Self-regulated learning and blended technology instruction in a flipped classroom. In 2013 ASEE Annual Conference & Exposition (pp. 23-1060).

de Boer, H., Donker-Bergstra, A. S., Kostons, D. D. N. M., Korpershoek, H., & Van der Werf, M. P. (2012). Effective Strategies for Self-regulated Learning:: A Meta-analysis. Groningen: GION onderzoek/onderwijs.

Deci, E. L., & Ryan, R. M. (2002). Handbookof Self-Determination Research. Rochester, NY.

Delfino, M., Dettori, G., & Persico, D. (2009). Imparare ad imparare con le tecnologie. Italian Journal of Educational Technology, 17(1), 51-51.

Doménech Betoret, F., & Gómez Artiga, A. (2011). The relationship among student basic need satisfaction, approaches to learning, reporting of avoidance strategies and achievement.

Doménech-Betoret, F., & Gómez-Artiga, A. (2014). The relationship among students' and teachers' thinking styles, psychological needs and motivation. Learning and Individual Differences, 29, 89-97.

Effeney, G., Carroll, A., & Bahr, N. (2013). Self-Regulated Learning: Key strategies and their sources in a sample of adolescent males. Australian Journal of Educational & Developmental Psychology, 13.

Foschi, L. C. Flipped classroom: un' analisi delle componenti motivazionali e autoregolative.

Franchini, R. (2014). The Flipped Classroom (le classi capovolte). Rassegna CNOS, 1, 83-98.

Furtak, E. M., & Kunter, M. (2012). Effects of autonomy-supportive teaching on student learning and motivation. The Journal of Experimental Education, 80(3), 284-316.

Giannetti, T. (2006). Autoregolazione dell'apprendimento e tecnologie didattiche. Italian Journal of Educational Technology, 14(1), 49-49.

Gilis, A., Clement, M., Laga, L., & Pauwels, P. (2008). Establishing a competence profile for the role of student-centred teachers in higher education in Belgium. Research in higher education, 49(6), 531-554.

Gok, T. (2013). A comparison of students' performance, skill and confidence with peer instruction and formal education. Journal of Baltic Science Education, 12(6), 747.

Guay, F., Ratelle, C. F., & Chanal, J. (2008). Optimal learning in optimal contexts: The role of self-determination in education. Canadian psychology/Psychologie canadienne, 49(3), 233.

Jenkins, C. (2012). The advantages and disadvantages of the flipped classroom. The Lecture Tools Blog, Posted by Chelsea Jenkins.

Kaye, A. (1994). Apprendimento collaborativo basato sul computer. Italian Journal of Educational Technology, 2(2), 9-9.

Kim, M. K., Kim, S. M., Khera, O., & Getman, J. (2014). The experience of three flipped classrooms in an urban university: An exploration of design principles. The Internet and Higher Education, 22, 37-50.

Lage, M. J., Platt, G. J., & Treglia, M. (2000). Inverting the classroom: A gateway to creating an inclusive learning environment. The journal of economic education, 31(1), 30-43.

Lynn, L. N., Cuskelly, M., O'Callaghan, M. J., & Gray, P. H. (2011). Self-regulation: A New Perspective on Learning Problems Experienced by Children Born Extremely Preterm. Australian Journal of Educational & Developmental Psychology, 11, 1-10.

Maglioni, M. (2014). La classe capovolta. Edizioni Centro Studi Erickson.

Meli, V. (2014). La Flipped Classroom: una vera innovazione. Retrieved, 3(30), 2015.

Modica, E. (2014). Flipped Classroom. La lezione capovolta. Retrieved, 6(30), 2015.

Niemiec, C. P., & Ryan, R. M. (2009). Autonomy, competence, and relatedness in the classroom: Applying self-determination theory to educational practice. Theory and research in Education, 7(2), 133-144.

Novak, G. M., Patterson, E. T., Gavrin, A. D., & Christian, W. (1999). Just in time teaching.

Pavarani, A. (2014). Flipped classroom. Illustrazione del modello di insegnamento e resoconto di un'esperienza didattica.

Pavarin, D., & Scorzoni, P. Didattica per competenze e ambienti di apprendimento.

Penney, S. (2012). Bloom's taxonomy pyramid. Indiana State University Faculty Websites.

Puustinen, M., & Pulkkinen, L. (2001). Models of self-regulated learning: A review. Scandinavian journal of educational research, 45(3), 269-286.

Roehl, A., Reddy, S. L., & Shannon, G. J. (2013). The flipped classroom: An opportunity to engage millennial students through active learning strategies. Journal of Family & Consumer Sciences, 105(2), 44-49.

Roeser, R. W., & Peck, S. C. (2009). An education in awareness: Self, motivation, and self-regulated learning in contemplative perspective. Educational psychologist, 44(2), 119-136.

Rutherfoord, R. H., & Rutherfoord, J. K. (2013, October). Flipping the classroom: Is it for you?. In Proceedings of the 14th annual ACM SIGITE conference on Information technology education (pp. 19-22).

Rutkowski, J. (2014). Flipped classroom–From experiment to practice. In Smart Digital Futures 2014 (pp. 565-574). IOS Press.

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. American psychologist, 55(1), 68.

Saulnier, B. M., Landry, J. P., Longenecker Jr, H. E., & Wagner, T. A. (2008). From teaching to learning: Learner-centered teaching and assessment in information systems education. Journal of Information Systems Education, 19(2), 169.

Simon, B., Esper, S., Porter, L., & Cutts, Q. (2013, August). Student experience in a student-centered peer instruction classroom. In Proceedings of the ninth annual international ACM conference on International computing education research (pp. 129-136).

Slomanson, W. R. (2014). Blended learning: A flipped classroom experiment. J. LegaL educ., 64, 93.

Tucker, B. (2012). The flipped classroom. Education next, 12(1), 82-83.

Warter-Perez, N., & Dong, J. (2012, April). Flipping the classroom: How to embed inquiry and design projects into a digital engineering lecture. In Proceedings of the 2012 ASEE PSW section conference (Vol. 39).

Williams, B. (2013). How I flipped my classroom. In NNNC Conference.

Winne, P. H. (2004). Students' calibration of knowledge and learning processes: Implications for designing powerful software learning environments. International Journal of Educational Research, 41(6), 466-488.

Winne, P. H. (2005). A perspective on state-of-the-art research on self-regulated learning. Instructional science, 33(5/6), 559-565.

Winter, L. C., Kopeinik, S., Albert, D., Dimache, A., Brennan, A., & Roche, T. (2013, August). Applying pedagogical approaches to enhance learning: linking self-regulated and skills-based learning with support from Moodle extensions. In 2013 Second IIAI International Conference on Advanced Applied Informatics (pp. 203-206). IEEE.

Zappe, S., Leicht, R., Messner, J., Litzinger, T., & Lee, H. W. (2009, June). "Flipping" the classroom to explore active learning in a large undergraduate course. In 2009 Annual Conference & Exposition (pp. 14-1385).

Zimmerman, B. J., & Bandura, A. (1994). Impact of self-regulatory influences on writing course attainment. American educational research journal, 31(4), 845-862.