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***STUDENTS' ENGAGEMENT AND SUCCESSFUL APPROACH TO
LEARNING: ANALYSING THE IMPACT OF DIFFERENT
TEACHING TECHNIQUES***

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INTRODUCTION

In recent years, the trend of companies spending in employees and management training has been substantially growing, exceeding 130 billion dollars of investments worldwide in 2014 (Bersin, 2014). The reason of this increase relies on the recognition of a skill gap, caused by the fast technology evolution and the business changes that require workers to possess a wider range of skills and to rapidly and flexibly deploy them to answer to the new challenges.

Nowadays, this turbulent environment makes even more necessary to provide the human resources with the capabilities to meet the objectives but also to learn how to interpret and predict markets developments in order to timely change and make the organization sustainable and, mostly, successful. We also know that the quality of education and training is relevant not only for individual businesses but also for one country's wealth and growth (Hanushek & Wößmann, 2007).

Companies already recognize training and development as one priorities, especially concerning management and leadership skills development. Just to cite, in 2007 more than 4000 companies in the world had established their corporate universities (Kolo, et al., 2013) aimed at providing tailored training with higher control and consistency among the different functions, while spreading the company's culture and values. However, one everlasting issue is how to correctly evaluate the effectiveness and returns of the investments related to "intangible" training programs, since they consist in better cognitive, social and technical competences (Stern, 2011). Moreover, training programs are costly not only in economic terms but also referring to the time needed to complete them and sometimes to transfer the acquired competences into the workplace. In other words, investments in T&D are necessary and they are proved to generated higher bottom-line results but also higher job satisfaction, stronger talents' retention and commitment, but at the same time they are very costly. Hence, training programs has to be developed carefully, knowing what are the most effective strategies, in order to reduce this risk and the outcomes uncertainty.

Considering the fact that job and managerial positions are already occupied by those belonging to the millennial generation, and this proportion will increase, it's important to address the above mentioned programs to their needs and characteristics.

Interestingly, a research reported by Forbes showed that training and development, hence growth, learning and career opportunities are the most important values of this category of workers (Bersin, 2016). They search for a skill-building environment, characterized by the possibility to expand one's own competences, to self-manage their job tasks, to cooperate with colleagues in all the organizational level fostering a dynamic and innovative surrounding.

This thesis elaborates on this situation: future workers and managers are setting increasing value to chances of learning, testing their abilities, finding new ways to deal with challenges and creating future opportunities. Then, they should be the primary target of T&D programs and, of course, of universities.

The rising care of companies in having well-prepared and broader-skilled employees posed a harder challenge for educational institutions in order to keep up, and one of the consequences we saw is a boost of corporate universities (Guthrie, 2013). The main problem is a lack of practical experiences and the impossibility to teach what every single organization will require. In fact, academic activities concern more general knowledge and symbolic reasoning instead of situation-specific competences (Resnick, 1987). One helpful action plan, yet increasingly adopted by universities and colleges, is the instauration of partnership with companies, a wider exploration of real cases with students and their dealing with challenging assignments connected with practical application of the theories. Anyway, people cannot fully learn how to efficiently complete job tasks until they found themselves in that job.

Hence, what universities can do, as well as companies training programs, is recognizing students' need for more challenges and mostly for learning how to be adaptive and use skills like flexibility, cross-sectional elaboration and independent regulation of their tasks. These aspects will all make them better prepared for dealing with different requirements and furnished with the ability of capturing, elaborating and exploiting the elements of every experience they will face.

Objective and structure of the thesis

In this thesis what we wanted to explore is if changing the prospective and strategies of teaching in university classes can really help millennial students in growing their cognitive abilities and developing an autonomous attitude toward learning, being then able to continuously apply these skills along their entire career paths.

In the first chapter we are going to present which have been the dominant teaching approaches in past years and current years, then explaining the more recent learner-centred teaching concept as a basis to understand what features an academic context should have to rise those learning-skills and to train self-regulated learners. In fact, in a learner-centred environment students are challenged with critical assignments and problems to solve, they are required to participate actively and they have to take more responsibility in organizing their academic goals and choosing the best strategy to reach them. This approach relates to the active learning techniques, which involve students' thinking and their role-centrality for the evolvement of the lecture, fostering the growth of their cognitive and soft skills.

The second chapter concerns two relevant consequences of the different teaching approaches: boredom and engagement. As we are going to see, both are highly situational dependent, thus they require particular attention when designing the course execution and goals. These elements are somehow interrelated and they rise as a consequence of a more rigid and boring situation requiring just the rehearsal and a superficial processing of information, or instead from a situation asking for more creative and adaptable learning strategies, namely learner-centred. In the latter case, the ability to self-regulate one's own work and objectives enhances engagement, which in turns motivates the adoption of a constructive and participative overtone, so these elements show a reciprocal influence.

Then, in the third chapter this dissertation prosecutes with the description of the lecture approaches taxonomy we developed, starting from the theories analysed in the previous sections. Since one main aspect needed to become a self-regulated learner is the active participation and the autonomous direction, we generated this classification around the distinction between a teacher-centred and learner-centred strategy, one

focused on content covering and the other on eliciting interest and soft skills, and on the presence or absence of in-class interaction, representing the basic condition for participation and subsequent involvement. Thanks to this taxonomy, we were able to conjecture four teaching approaches that then we applied to a university class attending a course on organizational behaviours management. We called the two non-participative techniques *frontal lecture* and *stimulating reasoning*, the first being focused on content retention while the second one on students critical thinking. This same distinction was applied for the interactive lecture approaches, named *checking knowledge* in the first case and *active learning* in the second one.

In the fourth chapter and in the fifth one, we are going to describe which method we applied in order to test the hypothesis of a more engaging and effective environment resulting from the instructor's focus on students' learning as something that they mainly have to experience by themselves, being provided with the necessary materials and resources and the opportunities to collaborate in practicing various solutions. After exposing the research design, the sample, which variables we tried to measure and with which tools, we are going to argue the qualitative and quantitative analysis of the results obtained and the possible interpretation related to the reference theories. Computing the average scores resulting from the questionnaire we submitted in order to measure the level of boredom and engagement related to the different lecture approaches, in addition to the correlations among them, allowed us to see that, actually, the adoption of active learning strategies can improve students' interest, attention and commitment. In fact, the two lectures designed with higher interaction between the teacher and students reported higher levels of engagement in terms of effort, enjoyment and interest in mastering the topics.

Finally, we are going to discuss some practical implications of this experimental research for the academic teaching strategy and, more in general, for the business environment. What mostly emerged from this thesis is the need for an active involvement in learning activities and for the possibility to collaborate with others to discuss the different perspectives and to self-elaborate information. Academic courses structured on group works, debates, problems to be solved can more effectively develop students' learning abilities and their commitment in expanding their knowledge, which could also have more lasting impacts than a passive approach to learning. Importantly,

the preliminary evidences obtained indicate that, after an *active learning* type of lesson, attending students were able to understand and to correctly answer multiple-choice questions concerning theories and definition not explained in class yet. This is an additional confirmation of the fact that stimulating students to process and reason on topics by themselves boosts their capability to independently elaborate and comprehend concepts.

We also found some controversial but interesting outcomes in the other tested lectures. In particular, after the *checking knowledge* lesson, designed with concrete interaction stimulated by questions on new and previously learned topics, students reported both high levels of boredom and engagement. As opposed to the idea that these two elements move in inverse directions, since boredom causes distraction and the focus of cognitive resources on thoughts other than the current activity making it harder to experience interest and involvement, this result seems to disconfirm such supposition. Then, the implication is that, even if a teaching approach lacks of cognitive stimulation and it is mainly content-focused, the formerly fostered motivation and engagement can hinder or at least reduce the deactivating impacts of ennui. In other word, when the instructor is able to place students at the centre of the process of discovering and learning, engagement in terms of behavioural, affective and cognitive efforts arise and its long-lasting effects can even overcome the consequences of more boring situations.

To conclude, we are going also to explain which are the limits and drawbacks we encountered, making further explorations needful.

Chapter 1

LEARNING TO LEARN

To provide a contextual framework of the current educational settings, through this chapter we are going to see briefly the recent evolutions on teaching practices, what current difficulties still need to be faced and the principles underlying a learner-centred teaching approach, that constitute the hinge of this thesis as a tool in soliciting engagement and self-directed strategies in pursue of a lifelong learning orientation.

1.1 Past and existing teaching perspectives

Studies and revolutions of the teaching methods have been a relevant issue for pedagogues and educators since late 1760s. The spreading of free education and the expansion of universities led to a greater interest on the effectiveness of learning techniques, since school and academic experiences employ a major role during the years of people growth and personal development.

More recently, there has been an increasing awareness of a needed transition from education purely intended as the transmission of knowledge to a more flexible and interactive conception (Boekaerts, 1992). This shift has been generated by the expansion of contents to be taught, by the technology development which increases the possibility to get access to information and by the more dynamic labour environment, both in terms of international workforce flows and of faster changes of job tasks, that requires future workers to be ready to adapt to various situations (Resnick, 1987). However, the incremental content of school and academic schedules has often made instructors more concerned about its coverage and completion instead of students' full comprehension. Providing stringent rules and assignments, explaining all the contents, issues and related solutions do not leave room for discussions, collective elaboration and cognitive activation, thus preventing students to self-regulate their learning activities, to develop their self-esteem and motivation. As a consequence, their

knowledge and skills acquisition will only be passive and not really effective in the long-term and for the situations they will encounter outside the classroom.

The new sensibleness to enhancing learners' abilities to be autonomous in developing their knowledge and pursuing their goals brought many contributions to the research of more effective educational practices (Boekaerts, 1998).

One of the most relevant emerged from the Self-Determination perspective (Deci & Ryan, 1985) which recognize that emotions are caused by the learning situation and conditions and in turns they are reflected in the mood, motivation and efforts toward learning, so they cannot be ignored when designing the instructional strategy and program. More specifically, an environment capable of raising enjoyment, interest and motivation provides students with the desire to actively contribute, choose their goals and organize the steps to achieve them. Such academic context has to be characterized by the possibility to compare with others' opinions, to discuss and to share knowledge because cooperation significantly contributes to self and social development and to master soft skills (Slavin, 2004).

Boekaerts (1992) suggested that the main objective of instructors should be to teach learning-fostering skills, otherwise called meta-cognitive skills. In other words they should give not all the notions, rigid tasks schedule and detailed requirements but instead the material, exercises and the expected point of arrival that demand for a student self-organization, exploration, participation and implied involvement, namely social, behavioural and mostly cognitive.

Starting from these brief considerations, we are going to see more in detail Weimer's work (2002) which, in a certain sense, encloses all of them providing practical indications about an effective approach to develop meta-cognitive skill, to stimulate motivation and engagement and to create a long-lasting way of learning.

1.2 Strategies for developing independent learners

Pooling different educational theories, Weimer (2002) provided an exhaustive definition of what a learner-centred teaching should implies: engaging students in

learning and stimulating their reflection; motivating and leaving them more control on learning activities; favouring cooperation and joint growth; giving directives about the learning skills to be developed, meaning the ability to self-organize, to search and integrate information, to be innovative and flexible, to apply theories to practical situations. The basic idea is that an instructor doesn't have to teach and transfer his or her knowledge, but instead teaching others how to gain that knowledge.

More in details, this perspective requires some major changes in five dimensions of typical learning situation, aimed at transforming students into autonomous and active protagonists. Here we will shortly present the feature of such changes.

The first aspect concerns the hierarchy usually characterizing every learning environment where, due to his or her competences and position, the instructor holds all the power to decide the schedule, the content, the way to go through it and the evaluation method and reward. Differently, this power should be partially shared with the audience, letting them the room for advices but also for taking some decisions concerning, for instance, their studying program, which assignments to submit, or the employment of an additional lecture to understand more deeply a particular topic. Clearly, the implications consist in more feedbacks for the teacher on what students need to be taught; stronger motivation and involvement for both parties, since an active and interested audience foster the professor desire to work and collaborate more with them; students' higher responsibility on which behaviour to adopt and on accepting its consequences, also if deciding to not participate to class decisions and activities.

The role of the teacher is a related point that needs some modification: if the instructor acts more as a supporter and a guide, automatically students will need to take some decisions and to participate to the course development. Accordingly, this new relationships will favour interest and attachment. This means that teacher shouldn't always dictate all the expected behaviours to be taken and give all the answers, rather providing the resources and putting students in the condition to find solution by themselves. For this reason, it's fundamental to produce constructive and continuous feedbacks for improvement and adjustments.

Automatically comes the discussion of the third practical issue, related to the responsibility for learning. When, through the points explained above, the learning environment shifts its focus on students, they must accept to become working actors, challenging themselves and developing their self-confidence as independent learners.

Such attitude and efforts investment should come as a consequence of a supportive and stimulating environment, allowing for interaction, flexibility, opinions diversity. The direct effect are motivation, at first, and better cognitive and affective results.

Concerning results, one of the typical impediments for students in adopting an approach focused on their cognitive development is their concern about the evaluation, which usually are based on contents memorization and retrieval. In other words, they will tackle the learning task according to how they will be evaluate. The goal of evaluation should be equally to give grades but also to enhance learning skills, functioning as a feedback on understanding and application of concepts. Additionally, directly involving learners through self-assesment and peer-assessment helps in shifting their focus from the grade to how they learned, which strategies worked more and in which aspects they should improve. Of course this assesment has to be integrated with instructor's evaluations to provide a more objective point of view, but still concentrated on how to better use and grow cognitive skills rather than on the mere performance.

We left at the end the discussion concerning the function of content, because it represent the most direct link to the discussion of the following chapters. Content should be intendend as a mean to interrogate and to pose issues that stimulate students reasoning and their application of creative interpretative strategies, instead of merely memorize and repete it. This aspect is probably the starting point for promoting self-regulated and deep learning approaches but also one of the most difficult to implement: teachers are still often required to cover a certain amount of topics, hence they have difficulties in using them to develop learning-acquisition skills and to allow students to test and practice different strategies. Nevertheless, when this new content conception is succesfully integrated, the main benefit arise from the ability to apply active learning techniques capable of engaging students , through the required use of the content aimed at solving problems, completing group assignments and dealing with in-class confrontation.

We chose to take this perspective as a landmark because it posed the basis for the implementation of an active learnig environment, which will be the object of our experiment. In this kind of situation, students' knowledge is the starting point for

lessons development, in which the teacher provide them with cues to concretely exercise that knowledge, to integrate it with the new information provided, to decide in which way to organize and elaborate them, to discuss and collaborate with the class to reach the learning goals. Through these processes, students are provided with the resources and chances to become self-regulated learners, that are reported to demonstrate higher intrinsic motivation, conceptual understanding and long-term commitment toward exploring and learning (Deci, et al., 1991). As we saw previously, these characteristics are essential not only to succeed in the academic career but primarily to be able to fit future job requirements and to face business challenges in an innovative and more beneficial way, both for individual and the company's development.

An active learning situation, built on interaction, employment of concepts to solve problems and linking of existing knowledge to the new one and to that of peers and the teacher, is the premises of a self-controlled and organized learning because it fosters an autonomous planning of actions and strategies to adopt aimed at the settled goals, and subsequently a self-evaluation of what worked or not in order to adjust for future tasks (Roberts, 2014). This implies that in following situations students will have an existing range of cognitive skills and strategies to adopt and to fit to different goals, then creating a cyclical process of self-regulation, self-evaluation and self-adjustment.

Summary

There are evidences that a teaching approach focused on students' effective learning and cognitive development brings better achievements, higher enjoyment, interest and self-efficacy, meaning students' confidence in their abilities to autonomously organize and successfully perform the academic activities (Schukajlow, et al., 2012; Duncan & McKeachie, 2005). As Weimer stated (2002), the result is that they will learn how to use self-regulated strategies, which in turn leads to a deeper understanding of concepts and to a greater flexibility and creativity in problem solving, qualities that are self-reinforcing and useful in and out of academic environments.

In order to reach such outcomes, she indicated five important areas of intervention which should be modified in order to shift from an instructor-centred perspective to a learner-centred one. First of all, the teacher should no more be concerned about content coverage and focus more on providing students possibilities to be protagonists of the learning process and development. To do so, some kind of decisional power should be shared with students, for example regarding in-class participation rules and the assignment to complete. Also, the content should not be the ultimate goal, rather a tool to interpret assignments and real situations and to practice self-regulation and meta-cognitive skills.

These techniques create more challenging and involving environments that make learners more willing to participate without someone to force them and consequently they will take more responsibility in their decisions and the related consequences. Finally, they will need also to correctly evaluate those decisions and to find the adjustment needed to improve their learning strategy, so it's important to provide them some possibilities of self-assessment and peer-assessment in order to develop constructive criticism abilities.

Chapter 2

STIMULI, ACADEMIC EMOTIONS AND ENGAGEMENT

We've just discussed how implementing a classroom climate which convey interest in learning for its sake has powerful impact on students' performance in terms of understanding and mastering topics, but mostly on their development as active protagonist of their own knowledge-building and of their meta-cognitive skills growth.

The adoption of this or other prospect impacts primarily two elements: students' emotions and students' engagement. As we are going to explain, they are evident signals of which kind of environment and academic tasks they are dealing with.

Among the academic emotions, we will focus on boredom because of its deactivating function and the consequent impediment for commitment to manifest. We are going to describe the most important research contributions for their definitions and the effects they generate, starting from the idea that a lack of cognitive stimuli typical of a teacher-centred approach will spur boredom and disinterestedness, as opposed to the engaging learner-centred situation.

2.1 Academic emotions: the multifaceted identity of boredom

"[...] Emotions may be an essential part of students' psychological life, and they may profoundly influence academic motivation, cognitive strategies of learning and achieving, and resulting achievement." (Pekrun, 1992, p. 360).

In few lines, Pekrun perfectly summarize the importance of considering emotions in learning settings and, in our particular case, in universities. It is undoubted that people feel distinct emotions with various intensities during their life experiences, but what we're interested more in this paper is the relation some specific types of academic emotions (Pekrun, et al., 2002) have with students' behaviours, efforts and approaches to learning and achievement.

This is an important issue because few recent studies found that positive emotions, such as enjoyment, enthusiasm, satisfaction or empathy, enhance motivation

to learning which in turn has positive effects on achievement. Moreover, (Goetz, et al., 2008) studied also the inverse relation stating that good achievements and feedbacks positively affect students' self-concept and then their enjoyment in learning activities.

Is then evident the importance of emotions experienced in class and the consequences for teachers and the management of their lectures.

The implication of a higher attention to these aspects through interactive, stimulating, challenging and somehow enjoyable activities is not just to get more attention and better results from students, which of course are fundamental goals, but also to induce them to reason and elaborate information in a more critical and creative way (Pekrun, et al., 2002) and also providing the possibility to develop a self-regulated approach to learning, base for the learner-centred teaching previously described (Weimer, 2002).

The ability to process information critically, to relate different topics, to organize and evaluate oneself tasks and to adapt actions and reactions to them are strongly effective for good academic achievement but, maybe even more important, can give rise to a more interactive environment where students discuss, compare, develop their opinion and find together new ideas and interpretation of the context. Also, the same reasoning can be made for a job environment in which workers become more creative, innovative and purposeful, especially if they have already learned to adopt these more flexible and effective strategies during their academic studies.

Moreover, positive and negative emotions have different and usually opposite effects on motivation and learning strategies, as demonstrate in a very clear way by the table below took from a study on 230 university students (Pekrun, et al., 2002).

<i>Emotion</i>	<i>Motivation</i>		<i>Strategy</i>		<i>Resources</i>	<i>Regulation</i>	
	<i>Study interest</i>	<i>Effort</i>	<i>Elaboration</i>	<i>Rehearsal</i>	<i>Irrelevant thinking</i>	<i>Self-regulated</i>	<i>External</i>
Enjoyment	.62***	.43***	.44***	.04	-.38***	.43***	-.08
Hope	.44***	.49***	.33***	.13	-.40***	.46***	-.07
Anger	-.42***	-.26***	-.21**	.05	.41***	-.13	.27***
Anxiety	-.21**	-.19**	-.22***	.12	.45***	-.26***	.27***
Boredom	-.63***	-.50***	-.26***	-.06	.72***	-.21**	.17*

Table 1. Learning-related emotions: exemplary linkages to components of self-regulated learning (Titz, 2001).

N= 230 university students.

*p<.05; **p<.01; ***p<0.001.

They also propose a useful taxonomy of academic emotions, distinguishing not only between positive and negative moods but also according to the effects on behaviours they generate, resulting in positive or negative activating emotion and positive or negative deactivating emotions.

Positive activating and negative deactivating emotions have respectively an enhancing and reducing effect on motivation, academic achievement, self-regulated behaviours, as well on the adoption of a more creative or a more rigid learning strategy.

For positive deactivating emotions and negative activating ones the relationships is not that univocal: the first ones, for instance quietness and relaxation, can either favour a quiescent so inactive reaction or they can represent an initial stimulus to the experiencing of more positive and activating emotions like happiness and hope.

Negative activating emotions instead, undermine the possibility to enjoy the learning activity and negatively affect intrinsic motivation but at the same time they may foster other types of motivation focused on the outcome to be achieved, as introjected regulation that we're going to describe more in detail in the next chapter.

Similarly, the circumplex model of affect represented in the picture below (Posner, et al., 2005) classifies emotions according to two dimensions: one related to the level of pleasure experienced, otherwise called valence dimension, and the other refers to arousal. We can easily see that also in this case the bi-dimensionality of emotions

refers to their positive or negative valence and their deriving activating or deactivating function, as described above.

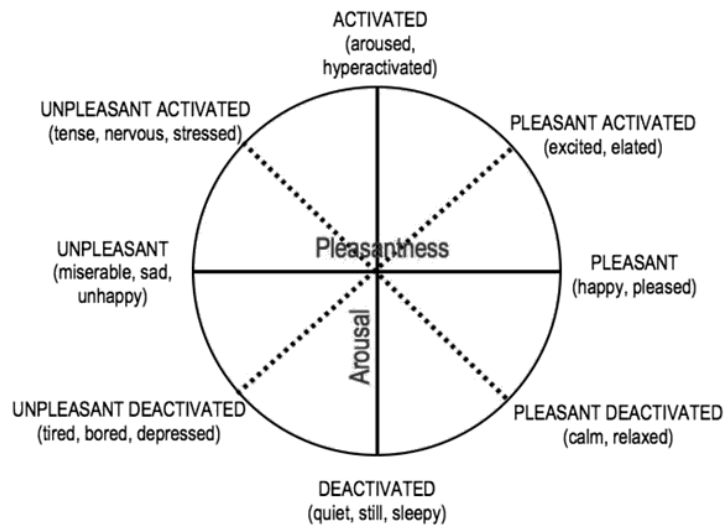


Figure 1: The circumplex model of affect (Posner, Russel, Peterson, 2005).

Among these four categories, we will focus on boredom and its negative deactivating impact since it is “one of the most commonly experienced emotions of students in schools” (Macklem, 2015, p. 1). This is confirmed by the study of Pekrun et al. (2010) in which 323 undergraduate students indicated to feel bored during 42,2% of their academic activities.

The importance of this academic emotions has to be related to its possible sizeable effect on the learning performances, which is determined by the variation of motivation, the use of cognitive resources and the self-regulation perceived and operated.

In boring situations motivation is significantly reduced, particularly intrinsic motivation, or it is directed toward the avoidance of that activity thus reducing the effort and the possibility to experience something interesting and engaging.

At the same time attention falls and cause the actual cognitive processes to worsening, meaning that, as a deactivating emotion, it makes the mental processing to reduce in both flexible or more rigid learning strategies; it undermines an active and

self-regulated approach to the academic task; it leads the attention to more interesting and enjoying activities which turn away cognitive, affective and behavioural resources from the present situation.

Additionally, boredom not only impairs the activity performance but also determines a higher variability of performances in general, making it more difficult for a student, a worker or its manager to have reliable expectations on the outcome and probably generating more anxiety, feelings of incompetence and difficulties in programming future goals.

Since our goal is to understand which classroom context favour better and more effective learning results in order to provide a starting point to better prepare economics and management students, but also to improve companies and management trainings in favour of a lifelong learning approach, we think it is fundamental to take into consideration this academic emotions for all the consequences above mentioned it yields, specially for its effects on engagement and on self-regulated strategies which are needed to create a learner-centred environment.

Recently, studies and researches on boredom have expanded, also because the consequences of this emotion are not straightforward.

For instance, Belton & Priyadharshini (2007) cited some authors who believed that sometimes boredom can spur creativity in order to find alternative solutions and then escape the tedium. It can even be positive if it helps people to relax, ponder, imagine and daydreaming for some instants after which they return to the activity regenerated by this “mind break” (Darden & Marks, 1999; Dawley, 2006; Kracauer 1995; Quindlen, 2002).

Bench & Lench (2013) reported similar conclusions, starting from the distinction between apathy and boredom: both appears when the emotional intensity of a situation trails off, but the first implies a complete absence of hope and motive to find alternative goals, while the latter brings the awareness that there's nothing more being worth and that a reaction is needed. In short “[...] boredom creates a desire for change” (p. 464). In this case they referred to state boredom which means the emotion arises because of the context and the external circumstances, so it is less enduring and pervasive.

Trait boredom is instead originated by internal characteristics and traits, indeed, and it can be linked to boredom proneness, the propensity to feel ennui and distracted

which causes the boredom-prone people to value an activity more boring comparing with other people, thus needing more effort to prosecute the task (Farmer & Sundberg, 1986) and frequently making errors in estimating the time needed to perform it. Consequently, they badly organize themselves and they will have a slower perception of time passing (Macklem, 2015). Neu (1998, p. 160) distinguished between “boredom from within, which tend to colour the whole of life, and [...] reactive boredom, which seems to arise as a response to a more particular object”.

This positive perspective taken by the just-mentioned authors is quite peculiar from the one we saw previously, according to which the consequences of such an emotional state are only negative and sometimes even worse than others, like anxiety or anger, given their activating function.

As we are going to see more deeply, in the development of the Multidimensional State Boredom Scale, Fahlman et al. (2013) defined boredom as the inability to pay attention, to find motivating and engaging aspects in the current activity, feeling time passing more slowly and needing strong effort to stay focused. Thus, here it is not considered a stimulus to escape and solve an unsatisfying situation.

Others stated that boredom is the inability to make sense of the task and to feel it's worth doing (Johnsen, 2016); it implies absence of purpose, stimulation and then dissatisfaction (Shaw, 1996); it is related with unpleasantness, low cognitive arousal and captivation (Preckel, et al., 2010).

State boredom is by definition situation dependent, so the context in which this emotion appears is determining. It is not that clear whether boredom is experienced more by those in under challenging or those in over challenging situations with respect to their abilities. Boredom can be experienced when the students' abilities are higher than the level of difficulty and stimulation of the activity they're doing, but more frequently it is proved to manifest when the cognitive ability is lower with respect to the task and when the perception of control over it is poor (Roseman, 1975).

In the past, the first perspective was the most accredited, believing that this emotion arises when the assignments are too easy for those people affirming to be bored, having no incentive and challenging stimuli. Nevertheless, Pekrun et al. (2002) found that many students self-reported to be bored when they are not able to meet the requirements and they feel less or no control over the situation because beyond their capabilities.

From a study about the boredom perception of college students in these two different situations (Acee, et al., 2010), one of the major finding was a difference in the experience of boredom. In over-challenging situations tedium may have two dimensions: task-focused boredom, referring to the low stimulation and insignificance of a task, and self-focused boredom which relates to dissatisfaction, frustration and ennui, the latter presented with higher levels. This means that when one has not the resources to obtain a good performance, the consequences are lower self-perception, motivation and then achievement, but also higher anxiety and shame. Contrarily, those experiencing under-challenging situations do not distinguish between the two focuses and generally there is no correlation with anxiety.

Clearly the implications are the need to recognize what students can achieve in order to adjust the goals accordingly, specially paying particular attention on not being too demanding too often, since the impossibility to accomplish the tasks can be detrimental for their identity and self-esteem, harming profoundly academic motivation.

As said before, these deductions can be applied not only to the university environment, but also to all the programs of managerial training and development that in the same way pursue captivating, motivating, transforming and enduring effects on participants.

We should care and pay attention to boredom also due to its widely investigated impact on job performances, as well as for the academic performances, and on job satisfaction.

In fact, Thackray et al. (1977) found through an experiment that those workers perceiving a task as more monotonous and boring have longer longer reactions to critical stimuli, greater decrease in attentiveness and increase in strain, higher differentials in irritation and fatigue between the beginning and the end of the activity.

Similarly, Kass et al. (2001), studied the implications of boredom on workers behaviours and their job satisfaction and wrote: "Those high in job boredom possessed significantly greater absenteeism and longer organizational tenure." (p. 317).

Again, two different perspectives can be taken: boredom is trait dependent and then originated by workers characteristics and personality, or instead boredom is an affective reaction to the environment, thus depending on the job and the organization properties (Loukidou, et al., 2009). In the second situation, in which boredom is caused

by poor external stimulation, lack of challenge and low variety of tasks, the effects are aligned to those found for bored students: distractibility, lack of meaning and motivation, lower performances, inattention and then higher probability of errors and accidents. All these elements with high probability will lead to a drop in job satisfaction, hence the chance to have actively participating, creative and cooperating workers is seriously put at risk.

Nonetheless, monotonous and more boring job duties could may function as a temporary way to rest and spare cognitive skills to be exploited when there are more complex task requiring new ideas and problem-solving, as seen previously (cf.: Belton & Priyadharshini; Bench & Lench). This postulation on the utility of boredom refers to a condition characterized by tasks variability and job autonomy in deciding when to engage in more routinary activities and when to put more effort and creativeness. Autonomy, in fact, increases the perception of control over one own actions and results, then favours intrinsic motivation which is opposed to work boredom.

2.2 Engagement: a powerful and lasting way for development

In the previous section we explained how boredom and, more in general, academic emotions are related with motivation and engagement. When the task stimuli are adequate to keep people attention and interest, they are able to absorb and correctly process information, consequently feeling they have the right skills, experiencing intrinsic pleasure stemming from their competence and from positive feedbacks received thanks to the cognitive process, ending up in a sense of appropriateness and motivation that generate engagement (Eastwood, et al., 2012). Conversely, failure in focusing attention is the cause of erroneous information processing, which give rise to negative affects as irritation, tense, inadequacy, low innovativeness, thus hampering engagement.

But why is engagement so important?

Evidences demonstrated that engagement is primarily the premise for a deep learning and cross-interactional elaboration of data and information (Finn & Zimmer, 2012). It is also something that has enduring effects on efforts, self-regulation, skill

development and consequently on results, meaning that once students find proper stimuli and conditions to engage in learning, they're likely to maintain this bond, pleasure and active participation throughout their whole academic career. But recalling our base theory, the learner-centred approach, we need to remember that academic success in terms of points and grades is of course important but it should not be the ultimate goal of university professors. More relevant is the fact that learning-engaged students will likely approach the labour market with an innate interest in a continuous exploration and search for new information, a desire to go through a lifelong learning leading to a dynamic and constant development of their skills, of the team and maybe even of the whole organization in which they will work.

The meaning of engagement, its causes and effects have been widely studied in different context. One of the main contribution is found in Fredricks' et al. (2004) description of the multidimensional aspect of engagement and of the classroom characteristics related to it.

Engagement can be behavioural, affective and cognitive and these three types are likely to be interconnected, even if their determinants and impacts on the outcome could differ.

Behavioural engagement is strictly connected with an active participation in class but also in extracurricular activities, including paying attention, questioning and completing the tasks in time. Jeremy Finn (1989) described these behaviours through four levels of participation, starting from a simple attendance and fulfilment of teacher's requirements to a more autonomous intervention in assignments and activities and an additional involvement in students' institutions. Learning cannot occur without a minimum degree of participation, even if only acted through simple attendance and the comply of duties, and again the higher the commitment and involvement in participation, the higher the outcomes including self-esteem, motivation, future ambitions. Automatically a reinforcing relationship between participation, engagement and motivation will arise.

Affective engagement is a positive emotional reaction to teachers or class activities, resulting in "feelings of involvement in schools [...] and providing the incentive for students to participate behaviourally and to persist in school endeavour" (Finn & Zimmer, 2012, p. 103). More specifically, affective engagement includes

attachment and feelings of belonging, interest, enjoyment, value and thus is strongly related to motivation. However, there is a distinction if we consider motivation as an interior affective impulse stimulating engagement, which instead is exterior and manifested (Boekaerts, 2016).

One important effect of emotional engagement is the lost of time and space perception due to the strong involvement and absorption of skills and attention in the activity (Finn, 1989). We saw previously that, instead, when people are bored they feel time as passing more slowly: finding strategies that provide students with elements and activities they value and to which they give emotional importance can prevent boredom and its negative consequences. In addition, some studies found that the emotional commitment is likely to generate or influence other forms of engagement which in turn affect the academic performance (e.g.: Oester, 2000; Voelkl, 2012).

When the involvement leads to “mental effort such as meaningful processing, strategy use, concentration and metacognition” (Wang, et al., 2014, p. 518) we are talking about cognitive engagement. In particular, what mainly distinguish it from a behavioural effortful participation is the self-directed application in understanding concepts and their correlations, choosing challenging tasks and searching for additional sources and experiences for learning. Students like this hold an intrinsic motivation and set their focus on learning rather than on the performance and grade (Fredricks, et al., 2004). Furthermore, cognitive engagement relates to the deployment of more flexible and innovative problem-solving and of deep-learning strategies by mastering the contents, questioning, connecting topics and situations and searching real-life applications. Then, self-regulated learning strategies and cognitive engagement are strictly connected.

Effects of engagement on achievement are considerably positive and they have been studied mainly for the behavioural dimension, showing that compliance and participation generates higher grades and also that these effects are long-lasting. However, if we want to assess performances stemming from strategic, deep and self-directed learning we have to look more at affective and cognitive engagement as determinants.

Ways to obtain engagement are identified in the satisfaction of people’s need of autonomy, competence and relatedness by involving them in the decision-making

concerning their objectives and schedules, fostering more direct and cooperative relationships among students and between students and teachers, which are favoured by smaller groups (Finn & Zimmer, 2012). This is consistent with the learner-centred strategies and the Self-Determination theory introduced in the first chapter (Deci & Ryan, 1985), postulating that the fulfilment of these three basic need nurture strong motivation and then overall engagement, which are the premises for self-determined behaviours like responsibility, initiative spirit and autonomous decision-making. Embracing such perspective through involvement, interrelationship and autonomy support, the direct consequences are innovativeness, cognitive flexibility and self-esteem (Deci, et al., 1991).

Fredricks et al. (2004) executed a deeper analysis of the classroom environment aimed at observing the connection between some contextual elements and the emersion of engagement. First of all, teacher's support in both academic and personal issues has a direct positive impact on affective and cognitive engagement, meaning the professor displays carefulness on students' growth and development and provides challenging task with a focus on their analysis and comprehension. Some research suggest that this relationship could be bidirectional, since students who show commitment, active participation and real interest give teachers additional motivation to put effort in creating a more engaging environment (Skinner & Belmont, 1993).

Also, peer support is relevant, mainly for socialization and interactions that can increase identification, satisfaction, pleasure in participation and cooperation, or otherwise it can damage these aspects when it's poorly cultivated. As a consequence, also cognitive engagement is reinforced by confrontation, dialogue, reciprocal and constructive criticism of ideas.

The classroom structure, intended as the clarity of the teacher's expectations, of the classroom rules, of feedbacks and rewards or punishments for meeting or not those expectations, is positively connected with all the three types of engagement. This happens because, when procedures, requirements and proper approaches are well defined, students can deploy their time and resources in understanding, solving problems, debate with others, deepen their knowledge. In spite of this, if those expectations and assignments emphasize and value only the memorization of contents, even a clear definition of such tasks cannot stimulate a true interest in master learning which is founding for cognitive engagement. Tasks, instead, should be oriented toward

a deep comprehension, should leave the necessary autonomy, should favour collaboration and integration of different competences.

Even if based on adolescents and not on university attending students, results obtained from Fredricks' et al. investigation (2002) saying that youngsters are attracted by an activity, strive and invest their time on it only if the level of challenge is sufficient to test themselves and to evolve can be easily generalized to every context. Moreover, they need to have the possibility to prove their skills and if succeed there must be a reward, social or intrinsic.

The general implication of this discussion is the fact that engagement is strongly determined by the situation one's experiencing, then suggesting that teachers and professional trainers have the chance to create interactive and challenging environment that spur behavioural efforts, affective connection and cognitive involvement.

Summary

Academic emotions have various effects on people's mood and consequent behaviours and they are defined as the reaction to the situation one's experiencing, hence including university courses. The degree to which students are called into question, involved in decisions and stimulated by assignments, determines their level of boredom or interest into the class activities and the subsequent engagement in terms of behaviours, cognitive effort and emotional attachment.

When one is not able to find motivation and meaning for one situation, it is harder to focus attention and skills in that situation and then engagement is hampered. In turn, stimuli that generate commitment capture the efforts and create involvement preventing people to feel bored. This second situation refers to an active learning environment that directly requires students' participation, exploration and deep elaboration of knowledge leading to cognitive skills growth and to a self-directed learning style.

Since we are looking for an effective teaching strategy able to transform students in independent and autonomous knowledge-searchers, afterwards we are going to explain how, in our preliminary research, we measured students' boredom and engagement understood as the impacts caused by more or less active lectures. The tools

we selected allowed us to separately analyse the different components of boredom and, above all, if engagement stems from an intrinsic interest toward learning or instead for the obtaining of some form of reward, implying very different conclusions.

Chapter 3

DEVELOPING A REFERENCE MODEL

Our experimental research began with the development of the matrix reported in this chapter, which aims at testing the various effects of learner-centred teaching strategies or strategies focused on content coverage and mere memorization. The underlying idea was to design four types of teaching method which differ in terms of level and quality of interaction between the instructor and the students, according to the theories and techniques discussed in the previous section.

We are going to describe the variables distinguishing the four lectures that were designed and implemented in order to measure their impacts on involvement and learning-skills enhancement, then analysing and interpreting possible differences.

3.1 The theoretical framework

When we started to think over to this experiment, we wanted to have a frame of reference which clearly presented the different strategies a professor can adopt and that opposed the basic principles of a learner-centred approach to those of the instructor-centred perspective, focused more on covering all the content, keeping full control and obtaining high students' performance in term of memorization and grade.

One of the main discrepancy between the instructor-centred approach and the learner-centred one is the level of interaction between the teacher and the students and between students themselves in discussing and jointly elaborating opinions and interpretations of the issues (Concordia University, 2012). As seen in the previous chapter, this could favour social and personal benefits, like support, creativity, mental involvement and development, which are the founding ground to reach behavioural, emotional and cognitive engagement.

In our opinion, and in line with some authors (e.g.: Thompson, 1998; Dalton-Puffer, 2007; Crawford Camiciottoli, 2008) the easiest and more diffuse way to enhance

interaction in the classroom is the number and types of questions posed by the professor, because they maintain students' attention but also shift the focus on their understanding, their thinking and they signal an environment in which also students are welcomed in questioning and proposing their view to the class. This is especially true when questions expect an answer, requesting students to think over the topic and to elaborate their response. From another point of view, if they are prone to ask for explanation and clarification it is a clear signal that they have trust on instructor's reactions and answers, preamble for affective engagement, and that they want to know and to understand, meaning that they are starting to nourish a true interest in learning (Dalton-Puffer, 2007).

3.2 Lectures taxonomy

To develop our lectures taxonomy we refer to Susan Thompson's classification of question (2008): the main distinction is between *content-oriented* and *audience-oriented* questions. The first type of questions refers to those questions that do not expect a response, since they usually are employed to introduce new topics or information or to make the audience starting reasoning about a problem without knowing the answer yet. Sometimes this category can be related to rhetorical questions because they just served to focus people attention on a particular issue or because the instructor answers it himself or herself.

Audience-oriented questions, instead, are specifically grounded in a reciprocal dialogue between the teacher and the class: students have the opportunity to answer and discuss. The different sub-categories are defined as: questions to check the audience comprehension or simply if they are able to follow the lecture and to access to the supporting material; questions that evoke the audience response in order to discuss, have their opinions, develop together the explanation and comprehension of the topic; finally, questions that seek to have people confirmation and agreement on the statements.

In order to integrate this classification with the contraposition between a content-centred approach and the learner-centred one, we proposed a little different arrangement

of the questions that should predominate in the four lectures object of our experiment (see Table 2). We maintained the distinction between content-oriented and audience-oriented questions to elicit a response, but then they were both divided into questions that focus information, in other words addressed to the explanation and recalling of definitions and topics, and questions seeking for individual and group reasoning, elaboration and processing of theoretical information but also of ideas aimed at generating a more profound learning and interest which starts from students' themselves. The former type belongs to the category called *retrieval of information*, meaning that the class interaction is solely based on the recalling of concepts already learnt and on rewording the new ones. Contrariwise, questions to stimulate thoughts were classified as *building of information*, so the goal is not to directly provide

definition but to pose provocative issues that should stimulate critical thinking and the search for personal and new interpretations.

	RETRIEVAL OF INFORMATION	BUILDING OF INFORMATION
CONTENT-CENTRED QUESTIONS (no answers expected)	<p>FRONTAL LECTURE: the goal is to transfer knowledge and notions to the students through a frontal lecture; students don't answer or talk.</p> <p>↓</p> <p><i>Content-centred questions to focus information.</i> E.g.: "So what is perception first of all? Again we start with a definition: is a process by which we select, organize and interpret things from the environment."</p>	<p>STIMULATING REASONING: the goal is to pose questions that make students think and reason, even if the teacher himself/herself answers them.</p> <p>↓</p> <p><i>Content-centred questions to stimulate thoughts.</i> E.g.: "This is a very favourable combination, why? Because good relationships, high task structure, high positional power."</p>
AUDIENCE-CENTRED QUESTIONS (eliciting a response)	<p>CHECKING KNOWLEDGE: asking questions related to previous topics or notions that students should already know.</p> <p>↓</p> <p><i>Audience-oriented questions to focus information.</i> E.g.: "So you remember we were talking about the theory...?"</p>	<p>ACTIVE LEARNING: questions are made to stimulate students' reasoning and processing of existing knowledge, in order to jointly elaborate the new information and to teach them how to be independent learners.</p> <p>↓</p> <p><i>Audience-oriented questions to stimulate thoughts.</i> E.g.: "A question for you: can a leader be negative?"</p>

Table 2: lectures taxonomy (personal elaboration).

The *frontal lecture* type presupposes a linear and incessant teacher's discourse, which generally doesn't allow students intervention since he or she is focused only on covering the content. The questions asked are self-answered and always related to notions and theoretical issue. For this lesson we expected higher levels of boredom and lower engagement, specially the emotional and cognitive ones.

Similarly, in a the *stimulating reasoning* lecture there is no or poor classroom interaction, but the questions posed are less related to theories and definitions and more to make students ponder, connect information and elaborate their own opinions, even if it remains untold. In this situation, boredom perception might be still high but the level of cognitive engagement and understanding should increase.

Moving to a more interactive situation, by the term *checking knowledge* we conjectured a lecture in which questions are still related to the topics and to the recalling and interconnection with others previously discussed, but in this case expecting students' intervention. This is a situation in which the audience might understands that the professor looks forward their attention and participation, not only during one lesson but throughout the entire course, thus they are expected to get more engaged at least in a behavioural sense, and the active presence required should harm distraction and ennui.

Finally, we theorized as a more effective approach for learning and transforming student into independent learners (Weimer, 2002) one in which students' knowledge, opinion and elaboration of their existing knowledge is the starting point to organize the course content and evolution. In this lecture type, the teacher promotes *active learning* strategies by steadily asking critical question which force cognitive efforts, stimulating active participation and debates and motivating a creative elaboration. Active learning represents the main point of our investigation, expecting in this case the highest self-reported engagement and information retention, conversely to lower boredom levels.

Such situation can be also related to the so-called problem based learning (PBL), which is usually a group-based technique in which students have to explore and process class material in order to solve a problem by discussing together, while the instructor role is that of a guide for confrontation and a feedback provider (Ahlfeldt, et al., 2005). This method helps in shifting the focus on students learning and development, on their critical thinking stimulation and on their intrinsic interest in gaining knowledge. As we

are going to see in chapter 5, a PBL approaches was actually implemented in the active learning lecture of the experiment.

Summary

Distinguishing between the level of interactivity and the function of questions posed, we designed four different lecture styles that should have different impact on students' interest and engagement, thus determining different levels of boredom and cognitive efforts. Developing this lectures taxonomy, we considered questions as the first step to elicit students participation since they appeals to their attention and to the elaboration of an answer, both orally expressed or not (Thompson, 1998; Dalton-Puffer, 2007; Crawford Camiciottoli, 2008). More specifically, we conjectured two lectures in which questions do not ask for students' intervention but they only serve the instructor to stress some concepts or to reason about particular issues, while other two lectures are structured around learners opinions and collaborative discussions, in one case concerning notions and the integration among new and previously learned theories, in the other case referring to a problem to be solved by finding together the best way to apply contents in order to elaborate a solution.

Our goal was to find which kind of stimuli students need nowadays to get involved and to really grow and strengthen the cognitive skills they will need to succeed in their future careers. The starting point of our research is summarized trough the following hypotheses, concerning each one of the lecture types.

Hypothesis 1: in a *frontal lecture*, with no interaction and a primary focus on content coverage, students' boredom is high and their engagement is significantly low.

Hypothesis 2: in a *stimulating reasoning* lecture, still without interaction but pursuing a deeper cognitive elaboration, students' boredom is quite high but the level of engagement improves compared to the previous situation.

Hypothesis 3: in a *checking knowledge* lecture, in which questions expect students' answer concerning particular topics and definitions, boredom decreases, especially concerning the level of inattention, and engagement is higher than the previous two cases.

Hypothesis 4: in an *active learning* lecture, characterized by the centrality of learners' opinions and participation aimed at providing the ground for the lesson evolvement, students' self-reported boredom is low while engagement is higher than all the previous situations.

Chapter 4

THE RESEARCH: WHICH CHANGES DIFFERENT TEACHING TECHNIQUES CAUSE AND HOW TO MEASURE THEM

After discussing the underlying theories of this paper and the starting framework, in this chapter we are going to see the practical description of the experiment execution: the methodology adopted, the sample, the time schedule and the selected instruments to measure the variable above discussed.

4.1 Method

Retracing the characteristics of an experimental design research, we wanted to test the hypothesis according to which different teaching methods should affect students' boredom and engagement.

This design allowed us to conduct an experimental research within subject, that is without a control group but rather submitting the same subjects to different treatments, the four types of lecture, and then collecting repeated measure of their boredom and engagement for each one of them.

We conducted our study in a small sample of economics and management students attending a course in the area of organizational behaviour, offered by the Department of Economics and Management "M. Fanno" at the University of Padova during the academic year 2016/2017.

Starting from our theoretical framework concerning the lectures approach, we asked the professor to follow and adopt our classification in the course arrangement, with particular care to the interaction with students and the type of questions posed. Our purpose and expectations were to observe lower levels of boredom and higher level of

engagement and surface learning for the lecture that involved more students as active and self-regulated participants, specially through more audience-centred questions.

4.2 Participants

The total number of students participating to the experiment was 32, 18 females (56,2%) and 14 males (43,8%), the majority came from North America and they were participants of an international program in management (37,5%), while the others were German (15,6%), Portuguese (9,4%), Croatian (9,4%), French (6,3%), Romanian (6,2%), Polish (3,1%), British (3,1%), Mauritian (3,1%) and two of them didn't answer (6,3%).

22 students attended the first lecture in which the approach of the professor was a straightforward explanation of theories, and 5 of them left before the end of the lesson.

Again, during the 2nd and the 3rd lecture students attending were 22, while in the last lecture we collected only 16 questionnaires: we thought that the reason of a bigger non-attendance was determined by the concern in preparing a project presentation for the day after. In fact, at the beginning of that lecture we submitted the last questionnaire to 28 students. Anyway, we cannot assert it with certainty, because the cause of this drop in participation could have also been the scarce interest and engagement generated by the previous lecture which was predominately instructor-centred. Then, students maybe expected the following lecture to be as boring and decided to skip it.

All the students who have a mother-tongue different from English have at least a B2 level in English, so we could exclude possible inattentiveness due to difficulties in understanding the language (cf.: boredom in over-challenging situations).

Only one of them is 39 years old, while all the other participants are aged between 20 and 25 years old.

	24/05/17	30/05/17	31/05/17	06/06/17
LECTURE APPROACH	<i>Stimulating Reasoning</i>	<i>Active Learning</i>	<i>Frontal Lecture</i>	<i>Checking Knowledge</i>
TOPIC	Individual differences	Leadership and followership	Leadership and followership	Managing organizational change
ATTENDING STUDENTS	22	22	22	16

Table 3: syllabus of the analysed lectures and number of attending students.

4.3 Procedure

As indicated in the table above, the topics explained during these lectures, in which we manipulated the teaching method, were: individual differences, leadership and followership, the management of organizational changes.

We considered only the lessons starting at 3.30 p.m. and not the ones starting at 12.30 a.m., in order to exclude possible distortions on the responses due to different filling times, meaning diverse concentration and tiredness.

For each one of these lessons we submitted to participants two questionnaires (Figure 2): one at the end of the lecture with 5 multiple-choice questions related to the topics explained and 29 questions about their current mood and boredom level; the other one at the beginning of the lecture of the day after, concerning their level of engagement and interest on the topics and issues discussed, to see if this involvement continued even after the end of the lesson.

At the onset of the experiment, we also submitted only once a questionnaire that measure students' motivation and the different "sources" of motivation related to their approach to study and academic activities.

Participants were told about the purpose of the study, the voluntary nature of their participation, and confidentiality of their responses.

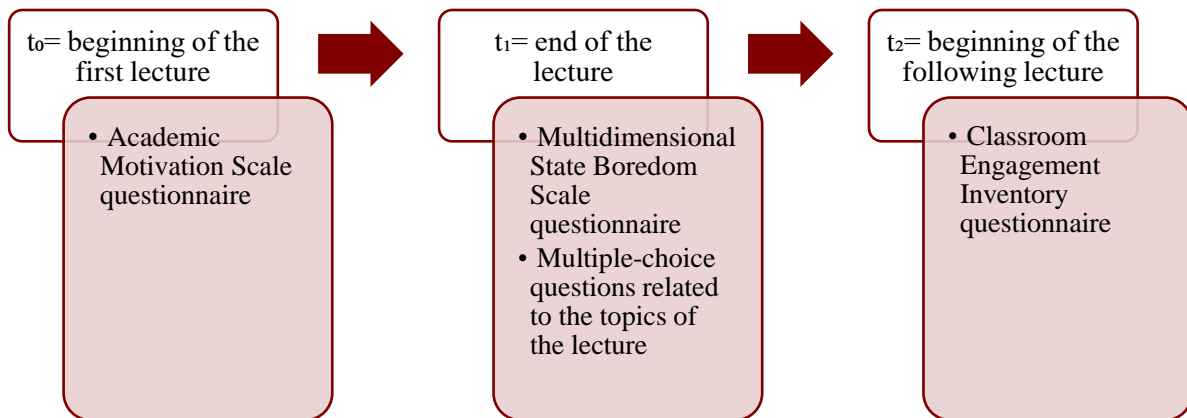


Figure 2: time schedule of the surveys submitted in each lecture.

4.4 Variables assessed

4.4.1 Academic Motivation Scale (AMS)

At the beginning of this experimental design research, students were asked to fill a questionnaire with some personal data and the Academic Motivation Scale, developed by Vallerand et al. (1989) and subsequently translated and validated in English by the same psychology researchers (Vallerand, et al., 1992).

This self-evaluation scale was developed starting from the identification of different “sources” of motivation described by Deci and Ryan (1985) in the Self-Determination Theory we already cited (Figure 4), which postulates that, according to the satisfaction level of the three basic needs of autonomy, competence and self-relatedness, a person can become intrinsically or extrinsically motivated, otherwise amotivated (Ryan & Deci, 2000).

The difference between the former two lays on the goal people pursue through their actions: if this is the sheer pleasure of experiencing something and learning something new, then the motivation is intrinsic, while if the value of an activity is more instrumental and finalized to the attainment of a material or immaterial benefit, the motivation is said to be extrinsic. Instead, when people are amotivated they don't have

particular reasons to perform something or they feel their behaviour as determined by something external to their will.

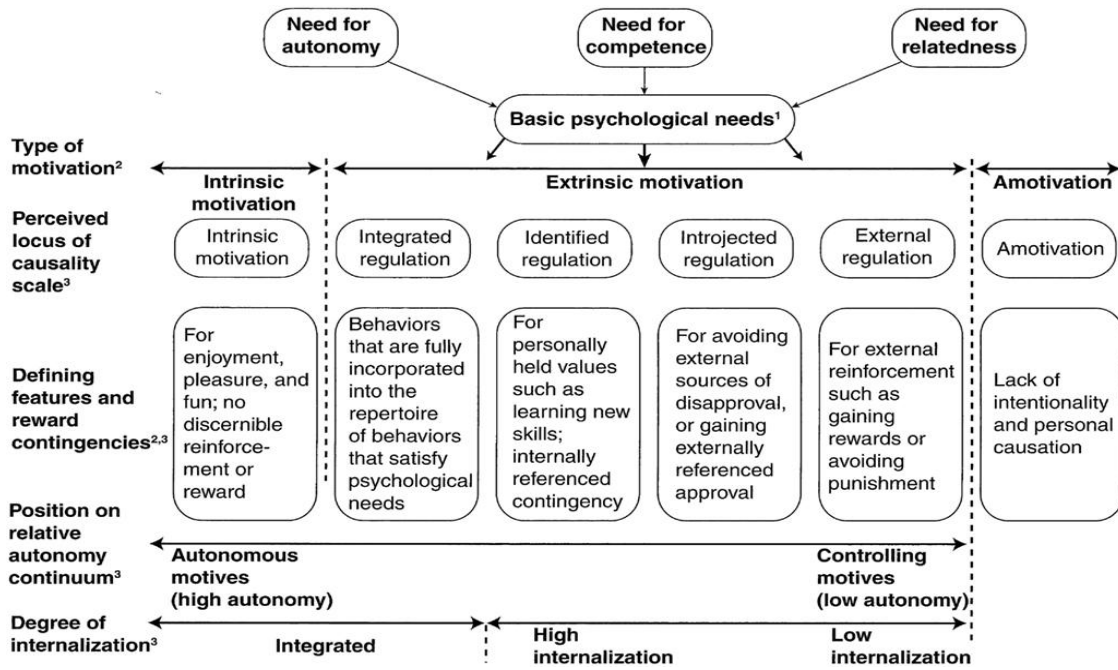


Figure 3: the Self-Determination theory (Deci & Ryan, 1985).

Intrinsic and extrinsic motivation are both divided in sub-categories, which are all measured with different questions in the Academic Motivation Scale, with the exception of integrated regulation.

The three types of intrinsic motivation differ according to the reasons that give rise to an action: intrinsic motivation to know, toward accomplishment and to experience stimulation.

The first one includes all the elements generating the desire to learn and to experience something new, like curiosity, intellectuality, exploration and search for meaning.

Intrinsic motivation toward accomplishment relates to the satisfaction reached during the process of accomplishing something rather than to the result achieved.

Finally, intrinsic motivation to experience stimulation is generated from the pleasure, excitement, fun or all the other sensations that push someone to engage in an activity.

Intrinsic motivation is thus an innate interest and engagement in a particular task itself, but there are also external factors which can enhance or block this types of motivation. As the same authors explain through the Cognitive Evaluation Theory (1985), the feeling of competence and the sense of autonomy in performing that task are important elements needed to spur intrinsic motivation.

Translating this concept into the classroom context, a student with an intrinsic motivation to learn a particular subject or to discover new things will be more able to apply and maintain this motivation throughout all the learning activities, if the teacher leaves him or her more control and opportunities to develop self-direction instead of always controlling and dictating what to do.

Differently, the sub-classification of the types of extrinsic motivation is based on the level of self-determination they represent.

External regulation has the lower degree of self-determination because it describes behaviours that are performed to reach a reward or to satisfy an external order or pressure.

The second one, introjected regulation, relates to the internalization of the external expectations and pressure underlying an activity, in order to don't feel guilty or inadequate.

Identification represent a higher level of self-determination, being a sort of evolution of introjected regulation in the sense that the internalized motives, in this case, become real values and important beliefs freely chosen by individuals.

Then, integrated regulation occurs when those values are completely assimilated and cause people to adapt their actions and to integrate them with their other values and needs. This type of extrinsic motivation present high levels of autonomy and self-determination but it is still different from intrinsic motivation because the reason to perform something is always to get some kind of reward, instead of valuing the activity itself.

Anyway, it is important to notice that the latter one is not included in and measured by the Academic Motivation Scale because, probably, learning activities are

always perceived as mandatory or necessary and never present such a strong motives integration, or because students may be too young or do not attended enough years of school to reach this level of extrinsic motivation (Vallerand, et al., 1992).

4.4.2 Multidimensional State Boredom Scale (MSBS)

At the end of each of the four lectures, participants graded the 29 items of the Multidimensional State Boredom Scale (Fahlman, et al., 2013) with a Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree).

These items answered the question “Indicate how you feel right now about yourself and your life” and each of them refers to different boredom components: disengagement (10 items), high arousal (5 items), low arousal (5 items), inattention (4 items), time perception (5 items). The distinction between high and low arousal avail at understanding if the bored student feels more agitated or apathetic, respectively.

The development and analysis of this scale demonstrated that the five factors are a good and valid estimation of state boredom which, as explained in the second chapter, differs from trait boredom because it is determined by the present situation one's experiencing and not by internal traits and characteristics.

Moreover, this measure of boredom and every single factor present a significant correlation with Boredom Proneness Scale (Farmer & Sundberg, 1986), a self-reported measures of inner boredom that can be related to trait boredom, and the total MSBS score has also a significant positive correlation with feelings of depression, anger, anxiety, inattention, neuroticism, impulsivity, conversely to the correlation with purpose in life and life satisfaction (Fahlman, et al., 2013).

Through the submission of this scale, our purpose was to find differences in the value of the five components and of boredom in general when students experienced more or less interactive lectures.

4.4.3 Surface Learning

In addition to the MSBS, for every lesson the professor prepared 5 multiple choice questions related to the topics just explained: the aim was to add an indicator of participants attention in class and of the impact of the teacher's approach on their understanding and memorization of the concepts in the immediate.

Even if the concept of surface learning is intended as a voluntary approach adopted by students, putting the minimum effort necessary to memorize, recall and recite notions without a full comprehension and thus it is always opposed to a deep learning approach (Marton & Saljo, 1976), in our work we cannot make this distinction since they didn't have the time to choose a learning strategy in order to prepare for those questions.

What we mean here is a rote memorization of concepts that stems from listening and attentiveness paid during the lesson, so it should have on one side a positive connection with the level of interest and engagement, on the other side a negative relationship with boredom. This kind of learning can be a consequence of the working memory activation, defined as the retention and manipulation of information in the short period (Crossland, 2010). We thought it is more appropriate to talk about working memory and not short-term memory because the latter only refers to a passive storage of information, while in our case the multiple choices required some kind of encoding and re-elaboration, even if minimal (Dehn, 2008). Hence, our idea here is: attention or distractibility affect the working memory functioning and effectiveness, consequently generating respectively better or worse surface learning scores.

The importance of this process is founded on the inceptive processing of the new information required to answer the questions representing a connection with long-term memory: encoding and elaborating is a first step for the consolidation of contents in the long-term and at the same time it requires the retrieval of knowledge already stored in the long-term memory to better understand and process the new one (Baddeley, 2000). For this reason, surface learning in our preliminary experiment is intended as a meter of the attention level, additional to the one of the MSBS, but also as an early signal of a more consolidated learning, upholding the cause of the need for a teaching strategy able to engage students.

4.4.4 Classroom Engagement Inventory (CEI)

Lastly, we wanted to understand if the differences in attention and learning were only due to the “momentary enthusiasm” or if a more interactive approach and students’

centrality are concretely ways to generate interest on learning and on a deep understanding of the topic.

To this end we chose the Classroom Engagement Inventory (Wang, et al., 2014) that participants were asked to fill after one day, so they had to answer to each item thinking about the previous lecture.

The objective was to discover how strongly students felt their emotions and participation in that particular lecture, both in negative and positive ways, and if after it they continued to think about the topics, they searched for additional details or reflected about some concepts application in their lives. In fact, such behaviours and thinking represent a premises for a self-regulated approach to learning.

The questionnaire asked to think about the previous day lecture and then to grade on a Likert scale from 1 (never) to 5 (always) the mood participant felt during that lesson and with a scale ranging from 1 (not at all true) to 7 (very true) if they studied additional readings or continued to think over the issues after the lesson.

The statements of this evaluation scale correspond to the already known subcategories of engagement: affective (5 items), behavioural (8 items), cognitive (8 items) and disengagement (3 items). We can find a definition of the different types of engagement in Christenson et al. (2012) and in Fredricks et al. classification 2004, already described in the previous chapter.

It must be noticed that in the CEI the behavioural engagement dimension has been divided in two factors, one called “compliance” and the other called “effortful class participation”, according to the different level of interest one could manifest. The former one can be somehow linked to the definition of external regulation seen before in the motivation classification, referring to a respect and fulfilment of the duty but without a real commitment and personal interest, which instead characterizes the second type of participation.

It is useful to separately examine the various facets of engagement because, as Christenson et al. affirm (2012), one can be found to be more engaged according to the behavioural dimension but less in the other two, making an overall evaluation of engagement deceptive.

A tricky issue is the difficulty in understanding if engagement rises from a personal and innate attitude or if it is determined by the situation, the subject or the

relations with the teacher and the other students. Anyway, by submitting the same questionnaire to the same students for four times during two weeks, we can compare them and assume that any difference in the results will be due only to the lecture they refer to.

To adapt the CEI to our research purpose, we converted all the sentences from simple present to past present. (e.g.: “I listen very carefully” turned into “I listened very carefully”).

Since in this academic course there were no assignments, we also had to remove two statements: “I complete my assignments” from the behavioural compliance subscale and “If I make a mistake, I try to figure out where I went wrong” from the cognitive engagement subscale.

Finally, the word “class” used in American high schools and colleges was substituted by “lecture” because more appropriate for the Italian academic context.

Summary

Through the different self-reported measures we adopted, we wanted to collect information about the baseline motivational level for every student toward their academic career, the boredom perceived during the four approaches to teaching and the consequent attention and comprehension of topics, and finally the generated engagement toward the exploration of course contents.

For the first variable, we selected the Academic Motivation Scale (Vallerand, et al., 1992) as a good measure of the reasons that push people to enter an academic course in economic and management in our case, and which might explain differences in their approach toward learning activities. Through this survey we also wanted to investigate possible effects of the motivational levels on boredom and engagement scores that could signal the insignificance of teaching approaches on these variables.

Boredom and its subscales, namely inattention, high arousal, low arousal, disengagement and time perception, were relieved with the Multidimensional State Boredom Scale (Fahlman, et al., 2013). Students filled this questionnaire at the end of

each lecture of our model, indicating how much the lesson capture their attention and elicit enjoyment or the desire for more stimulation. Also, they had to answer five multiple-choice questions aimed at representing an additional measure of attention but also related to comprehension and retaining of information that can be the input for a more lasting learning.

Then, the level of interest, involvement and the wish to cooperate with the class and to autonomously master the lecture topic were measured with the submission of the Classroom Engagement Inventory (Wang, et al., 2014). In this questionnaire each statement refers to one dimension of engagement, thus making it possible to discern between behavioural, cognitive and affective engagement which could take different values, thus entailing distinct implications.

With the above-described questionnaires we collected interesting information about how much a lecture structure and the required or impeded active intervention of students can vary the outcomes for these variables, as we are going to explore in the following section.

Chapter 5

TEXTUAL ANALYSIS AND DISCUSSION OF RESULTS: A NEED FOR INTERACTION

From the questionnaires gathering and analysis, we collected the data in order to evaluate the varying effectiveness of the lectures of our taxonomy. In this chapter we will go through a discussion of these results and possible interpretations by comparing the average scores obtained in every lesson and by looking at correlation statistics among boredom, surface learning and engagement measures, performed with the RStudio software. Additionally, we are going to examine briefly an analysis of the different questions and the terminology used, performed through the AntConc software.

The final aim is to see if adopting a learner-centred strategy in terms of teacher, students and content role, in terms of climate create through a certain language use and in terms of tasks characteristics can effectively incentive engagement and then a lasting learning capability.

5.1 Motivational drives and their variance among gender, national cultures and age

The first information we collected was personal data (age, gender, nationality), the English level and a self-reported level of motivation toward their academic career. The goal was to get some general insights, helpful in analysing possible differences in motivation and commitment due to the culture of origin, for instance, and in understanding if a constant low engagement throughout the four lecture was determined not by different approaches adopted by the instructor, but instead by amotivation or external regulation (e.g.: “I go to university in order to have a better salary later on.”).

The general level of motivation was quite positive, 5.33 on a Likert scale ranging from 1 to 7. Observing the average scores for every subcomponent of the Academic

Motivation Scale, among which amotivation was reverse scored, we saw that this results mainly depends on external regulation, identification, internal motivation to know and substantially low amotivation (e.g.: “I can’t understand what I’m doing at university.”). Then, participants efforts on academic and studying activities are caused mostly by the desire to meet others or social expectations, but also by a stronger self-determined attitude, implying the personal identification with the extrinsic motives like the achievement of a good grade or of better chances in the labour market, and by and intrinsic curiosity to discover, learn, find a meaning. In a certain sense, we can consider this last aspect quite natural since the class were made only by international students, so the fact that they undertook a learning experience abroad is already a signal of their desire for expanding their knowledge and outlook about economics and management.

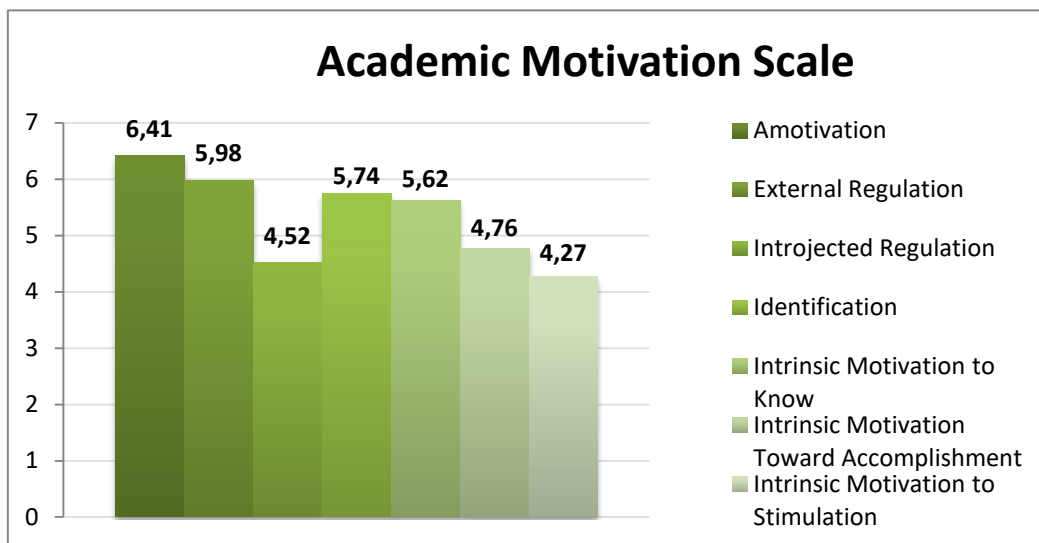


Figure 4: average scores of the Academic Motivation Scale items.

As anticipated, we made an additional analysis of the AMS questionnaires results subdivided by gender, country of origin and age of the respondents, aimed at providing a deeper interpretation of these scores. To make this analysis plainer, we grouped the subcomponents of external and internal motivation in two overall measure.

First of all, we separated between males and females (see Figure 5): the average scores show higher motivation by females in all the three sections, keeping in mind that the amotivation scale in the questionnaire was reverse-scored. However, comparing the grade obtained in the final course exam the evidence is contradictory because males, on average, performed better.

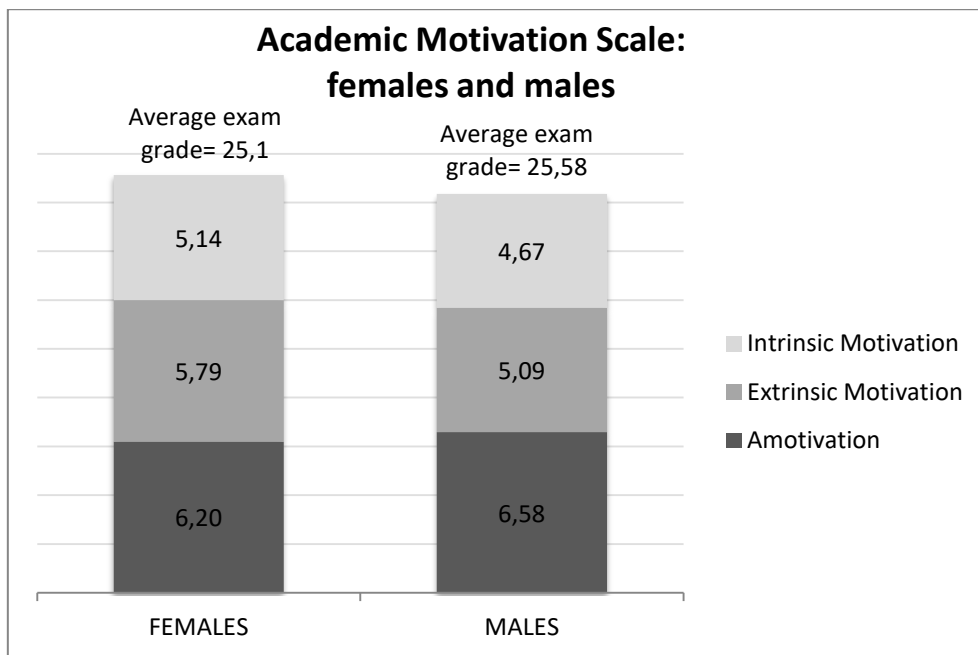


Figure 5: AMS average results divided by students' gender.

According to the country of origin, answers were assembled under three groups: Anglo-Saxon, including American and British students; Latin-European countries, so French, Portuguese and Romanian students; finally, German and Polish participants clustered as central Europe (see Figure 6). We excluded from this analysis Croatia and Mauritius because we only had one detection of this questionnaire. Central European countries reported higher amotivation, even if the difference from the others in this dimension is negligible, and also the highest internal motivation, while Anglo-Saxon overcome it in the external motivation dimension. Nevertheless, also in this case the exam performance seems not to be related with this variable: in fact Latin European

students performed better than their central European colleagues, even if they self-reported lower motivation scores.

We can interpret these motivation divergences using Hofstede's model of national culture, who identified four dimensions first, and then other two, which can be used to approximately understand one country's behaviours (Hofstede, et al., 2010). Each one is described through its two extreme, so we have to keep in mind that there can be intermediate alternatives and that, of course, we cannot use them to predict people personalities and conducts, but only to have a frame of the culture and set of values in which one has grown and lives. National culture is defined by power distance, individualism or collectivism, masculinity or femininity, uncertainty avoidance, long-term or short-term orientation toward society changes and development, indulgence or restraint.

Power distance means how much power inequality is accepted and more concretely if there is a rigid hierarchy with little and strictly formal interactions between high and low positions (Hofstede, 2001)

Individualist societies have few ties among people, since they care of themselves and of those closely related to them. On the contrary, a collectivist society shows wider connections and integration, stronger loyalty and cohesion.

Masculinity and femininity refer to the orientation toward competition, success and excellence in the first case, while toward harmony, cooperation, caring in the second one.

The degree to which one culture avoid risky and unknown situation and rely on rules and procedures to escape them or instead deal the future with curiosity and acceptance is described by high or low uncertainty avoidance.

The long-term versus short-term orientation represent how much a society stays stick on traditions and norms or focus on changes and future opportunities.

The last added dimension is indulgence opposed to restraint in terms of norms and life enjoyment, the former allowing gratification and life enjoyment, the latter imposing stricter rules and control of human needs.

US, UK, Germany and Poland are all categorized as individualist and masculine countries, meaning that their inhabitants tend to care more about themselves and about people close to them and that they are more concerned by achievement, success, competition and personal rewards. Conversely, France, Portugal and Romania usually

adopt a more collectivist view of the society and, as feminism prevails, they attempt to build cooperation, harmony and pursue life quality.

Relating these elements to our learning case, individualist societies are expected to have greater interest in improving knowledge and competences and in continuous education as a way to develop oneself (Hofstede, 1986). The masculine perspective implies stronger sense of competition among students and the relevance of failure and success for the personal image and self-esteem. On the other side, students belonging to those countries classified as collectivist and feminist are on average more concerned about education and results aimed at gaining reputation and prestige in the society, even if big disparities among people are discouraged. Hence, what we expected to observe from the AMS results is average higher motivation, both intrinsically and extrinsically stimulated, for the Anglo-Saxon and the Latin Europe cluster, and indeed is what data demonstrate. Anyway, as said before our intent is not to give this conclusion as an absolute rule because every student's personality and attitude has to be considered individually and also because we are evaluating a small sample, so wider analysis should be made.

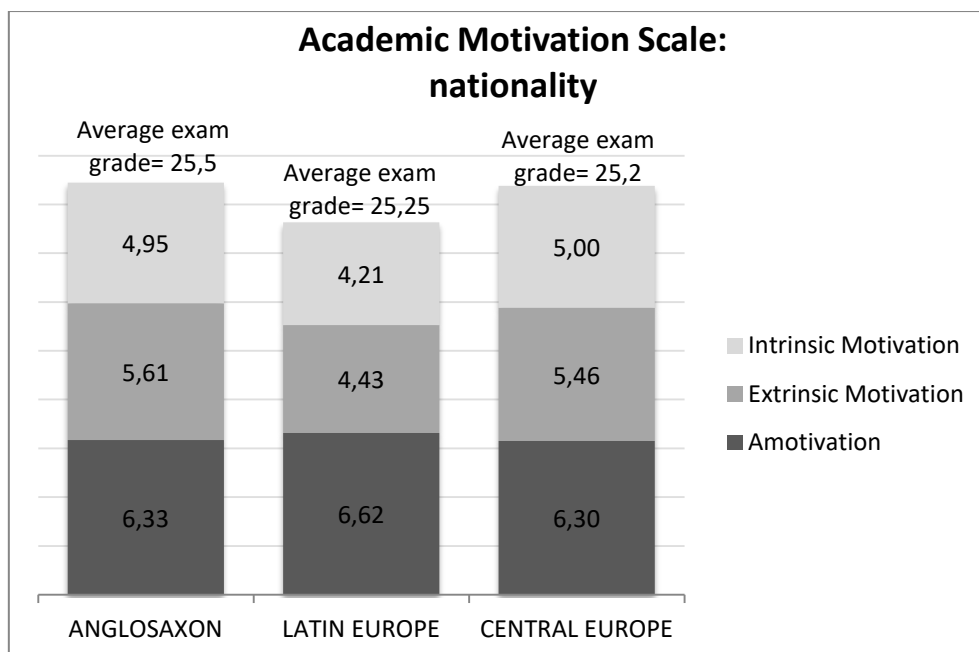


Figure 6: AMS average results divided by students' country of origin.

The last partition we applied was according to age groups (see Figure 7): the first two groups are very closed in term of year of birth, and likewise the AMS results are very similar, averaging at 5,59 for the younger ones and 5,44 for those between 23 and 25 years old. More significant is the gap with the student aged 39 who reported greater motivation in all the three dimensions.

We can assume that, having a longer academic or job experience, one became more aware of the importance and the pleasure to learn, to find new way to interpret situations and, in our specific case related to managerial development, to understand that it is even more important to grow and keep up with markets and organizational changes. This is consistent with the consideration made by Vallerand et al. (1992), in particular related to the “identification” component of external motivation in which, indeed, the scores between younger and older students have the biggest differences. The sole case in which the middle group overcome the older student refers to the intrinsic motivation to experience stimulation.

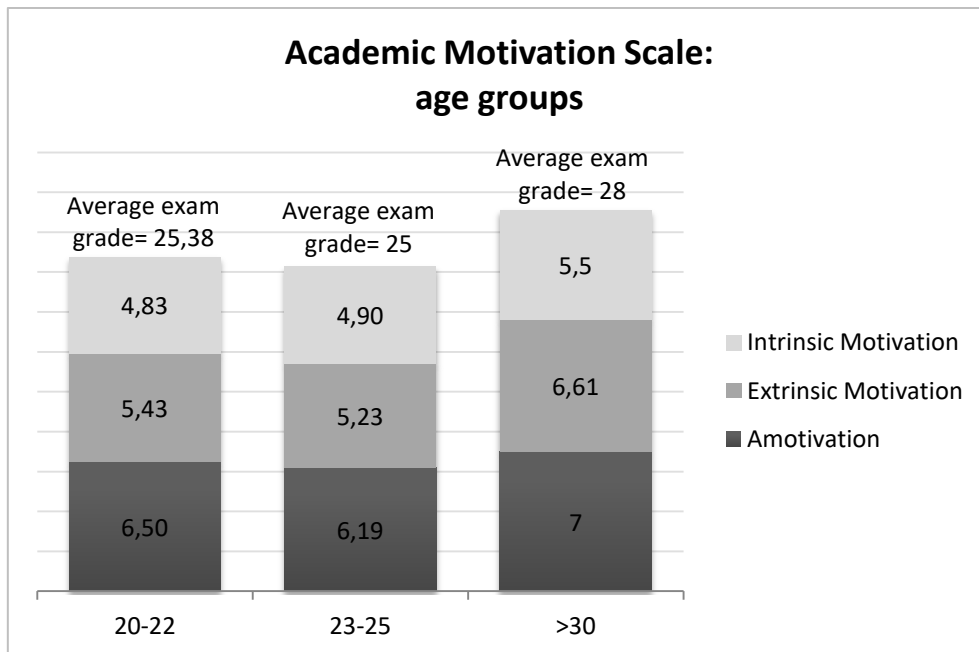


Figure7: AMS average results divided by students' age.

As anticipated, one objective of this survey was also to understand if the teaching techniques do actually affect academic boredom and engagement or if the resulting scores of these two variables are only the consequence of a higher or lower motivation. From a simple comparison summarized through the tables below (from 4 to 6), we can conclude that the various degrees of motivational drives determined by differences in terms of gender, country of origin or generation cause higher or lower scores on boredom, engagement and surface learning, as collated with the other groups. Even so, it is also clear that the different strategies concerning interaction and teacher or learners centrality have a concrete impact on these variables because no group, neither the more less amotivated, presented a constant level of boredom or commitment across the four lectures. Hence, we obtained an additional confirmation of the fact that students care about how learning activities are structured and which is the teaching style, reacting according to stimuli they receive and the tasks they are assigned.

FEMALES				
	STIMULATING REASONING	ACTIVE LEARNING	FRONTAL LECTURE	CHECKING KNOWLEDGE
BOREDOM	2,95	2,69	3,2	3,37
ENGAGEMENT	3,48	3,63	3,49	3,46
SURFACE LEARNING	3,43	3,23	3	3,4

MALES				
	STIMULATING REASONING	ACTIVE LEARNING	FRONTAL LECTURE	CHECKING KNOWLEDGE
BOREDOM	3,12	2,84	3,38	3,51
ENGAGEMENT	3,16	3,37	2,79	3,39
SURFACE LEARNING	3,5	3,19	2,6	3,38

Table 4: comparison between females and males of the average results obtained from the MSBS, the CEI and the multiple-choice questions submitted for each lecture technique.

ANGLO-SAXON				
	STIMULATING REASONING	ACTIVE LEARNING	FRONTAL LECTURE	CHECKING KNOWLEDGE
BOREDOM	3,06	2,47	3,23	3,3
ENGAGEMENT	3,52	3,64	3	3,38
SURFACE LEARNING	3,42	3,18	3,25	3,42

LATIN EUROPE				
	STIMULATING REASONING	ACTIVE LEARNING	FRONTAL LECTURE	CHECKING KNOWLEDGE
BOREDOM	2,04	3,1	2,92	3,67
ENGAGEMENT	2,49	3,27	3,34	3,65
SURFACE LEARNING	4	4	3	3,5

CENTRAL EUROPE				
	STIMULATING REASONING	ACTIVE LEARNING	FRONTAL LECTURE	CHECKING KNOWLEDGE
BOREDOM	3,10	2,56	3,53	3,66
ENGAGEMENT	3,31	3,59	3,13	3,23
SURFACE LEARNING	3,33	2	3,2	3,6

Table 5: comparison between respondents' national culture of the average results obtained from the MSBS, the CEI and the multiple-choice questions submitted for each lecture technique.

20-25 YEARS OLD				
	STIMULATING REASONING	ACTIVE LEARNING	FRONTAL LECTURE	CHECKING KNOWLEDGE
BOREDOM	3,15	2,78	3,28	3,61
ENGAGEMENT	3,27	3,55	3,24	3,34
SURFACE LEARNING	3,5	3,05	2,78	3,46

39 YEARS OLD				
	STIMULATING REASONING	ACTIVE LEARNING	FRONTAL LECTURE	CHECKING KNOWLEDGE
BOREDOM	1,48	1,63	1,33	1,3
ENGAGEMENT	4,12	4,53	3,94	4,63
SURFACE LEARNING	3	4	4	4

Table 6: comparison between generations of the average results obtained from the MSBS, the CEI and the multiple-choice questions submitted for each lecture technique.

5.2 Does discourse structure matter?

Before going deeper through a quantitative exploration we executed a linguistic analysis in order to verify if the lectures execution complied with our experimental model, adopting two ways: a classification of the questions posed during the lecture accordingly to the matrix explained in the third chapter of this paper; the measurement of the time students' talked during the lesson compared to the professor and contextually we used the software AntConc which return a text analysis helpful for observing the predominant use of some words and sentences and the differences among the various lecturer's approaches.

Related to the questions classification, we did not consider those not matching any category of our lectures taxonomy because they would not have changed the resulting proportion, so in this way the discussion is going to be more straightforward.

First of all, we observed that in all the four situations, the prevailing type was audience-centred questions to stimulate thoughts (see Table 7), and we can make two suppositions about why it happened: students were particularly interested in the course topics and they always wanted to discuss, ask clarifications and give their perspective, maybe because the class was mainly of American incoming students who are accustomed to more participative and competitive classes. This is also in line with a study indentifying American people as having a converging learning style, which means that they have good abilities of abstract conceptualization, so thinking, analysing, developing ideas and applying concepts (Yamazaki, 2006). Secondly, it was hard for the teacher to maintain a non-interactive policy for the entire duration of the lectures named *stimulating reasoning* and *frontal lecture*, as she told she encountered difficulties in preventing students to express their opinions and let them freely get bored without caring about it. This may be a signal of an already existing propensity toward a learner-centred teaching, or it can be related to the agreeableness (carefulness about the others) trait of Big Five Model of personality, or also to other traits of personality which we know is relatively stable and enduring thus we could not expect her to completely change her manners in few weeks.

Detaching this aspect, we can see that actually the majority of questions asked in each one the experimental lectures corresponds to our theoretical framework: during the *frontal lecture* and the *stimulating reasoning* lecture, the teacher poses content-centred

question to focus information in the first case, so concerning theories and notions explanation, to stimulate thoughts in the second case, meaning they present critical situation asking for students' deeper reasoning. For the *checking knowledge* lecture and the *active learning* one the questions asked are audience-centred, so expecting an explicit answer from students, but the purpose in the first situation is to focus information, while for the latter type of lecture is to stimulate thoughts.

LECTURE APPROACH	CONTENT-CENTRED QUESTIONS		AUDIENCE-CENTRED QUESTIONS	
	TO FOCUS INFORMATION	TO STIMULATE THOUGHTS	TO FOCUS INFORMATION	TO STIMULATE THOUGHTS
Stimulating reasoning (tot= 41 questions)	3 (7,3%)	8 (<u>19,5%</u>)	7 (17,1%)	23 (56,1%)
Active learning (tot= 15 questions)	0	0	7 (46,7%)	8 (<u>53,3%</u>)
Frontal lecture (tot= 41 questions)	12 (<u>29,3%</u>)	8 (19,5%)	2 (4,9%)	19 (46,3%)
Checking knowledge (tot= 29 questions)	2 (6,9%)	5 (17,2%)	6 (<u>20,7%</u>)	16 (55,2%)

Table 7: frequency of asked questions during the four lecture approaches, classified according to our taxonomy presented in the third chapter.

Measuring the time spent by students talking during the lessons, we found a significant difference only for the *active learning* class which was organized around a debate between two groups, 42,7% of the time participants spoke and discuss. Concerning the other three lectures, there are no relevant variations since the time measured is approximately 10% in all of them. What we can pull out from these percentages is that simply asking questions is not enough to get students' opinions and active contribution to the lecture development, even if they are audience-centred to explicitly get a response.

Hence, we wanted to deepen this analysis through the software AntConc in order to have an indicative measure of the quality of the lecture conversations, signalling a class environment more cooperative and favouring an interpretation of students and the teacher as a group who jointly work for developing the formers' knowledge as the learner-centred teaching perspective propose, or instead if the class is characterized by a hierarchical division between the professor and the students and then the transfer of knowledge is unidirectional. The following results are not scientific indicators of a learner or teacher-centred strategy, but rather a way to see how words can be used to create a climate in which learners feel more welcomed to express their opinions and in which they feel the teacher and peers' support. As previously discussed, this can stimulate affective and cognitive engagement (Fredricks, et al., 2004).

For this purpose, after transcribing the recorded lectures for a total amount of 38.707 words, we ordered the terms used according to the frequency through AntConc software and then extracted data related to subject and object pronouns, possessive pronouns and possessive adjectives. We carried out the same procedure also dividing teacher's discourses from students' ones. The active learning lecture differentiates from the other because it is the only one presenting a higher percentage in the teacher's use of first-person plural pronouns and adjectives. Generally speaking, we can interpret this data as underlying a change on the instructor approach in favour of a more cooperative class climate and the stronger orientation of a supportive instead of a directive role, following our framework but maybe also for the higher motivation generated from students' participation and involvement. Perhaps, an additional consequence has been the decrease in the proportion of students' use of the first-person singular in favour of more "you" and "we".

This superficial analysis served only as an additional element that distinguish a learner-centred environment that distinguish from others through its openness to communication, confrontation and cooperative learning opportunities.

5.3 Stimulating reasoning: compliance or engagement?

The first lecture subject to our manipulation dealt with theories about individual personality, traits, attitudes, perceptions and the implication in organizations. Following our frame, in this situation we asked the professor to limit students' interventions by mainly asking challenging questions aimed at making students reason about the topic just explained, its application in organizational environment and the personal opinion about it, but then she answered herself (e.g.: "So the first mistake that we do when we perceive things is that we see with the first impression. And is a mistake why? Because we get, again, just a piece of information."; "It can be also a positive aspect in some situation. When? When within a group you need a person able to outline the critical aspects of a situation").

With an initial general analysis (see Figure 8), we can observe a moderate level of boredom (the average is 3,05 on a 5-points Likert scale), due in particular to high inattention and perception of the time as passing slowing. This data can be related to the scarce interaction of students, even if the content-centred questions proposed were more endearing. The level of engagement is quite positive according to the emotional dimension (3,55) and the behavioural compliance of norms and of what they are expected to do (3,50), so it's more related to extrinsic motivation and less with a self-regulated approach to learning.

This preliminary evidence is quite conflicting, since an affective engagement should correspond to a loss of perception of time passing related to the involvement in the lecture. Also, inattention is expected to determine lower score on the multiple-choice questions submitted at the end of the lesson, while the surface learning indicator average 3,47 out of 5. Maybe this is a consequence of the compliance dimension: students are expected to behave in a certain way and to listen and remember some concepts, also because they were in a new academic context, they didn't know precisely what are the rules of conduct and they may had perceived more pressure.

However, this fact could be somehow helpful for creating interest and involvement, in the sense that the instructor can exploit the initial attention and behavioural compliance to immediately arouse students' engagement and giving them an important signal of the type of lectures they are attending. Not starting with confrontation, discussions aimed at understanding the class level of knowledge and cognitive skills or creating situations for

collaborative and self-directed learning (e.g.: group works assigned with an established outline but the topic is chosen by students) can generate ennui, mind wandering and a passive approach to that course, making it more arduous to elicit engagement in future lessons

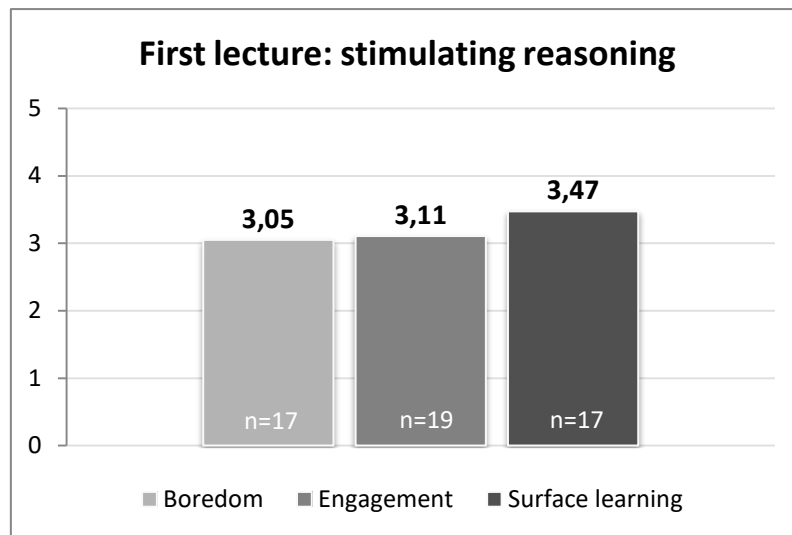


Figure 8: questionnaires average results obtained from the *stimulating reasoning* approach.

These contradicting data can be discussed also through the correlation performed with the software RStudio: considering a p-value of 0.01, all the correlations are significant except those between disengagement, high arousal and low arousal from the *Multidimensional State Boredom Scale* and those among affective and the two factors of behavioural engagement from the *Classroom Engagement Inventory* (Table 9). As theoretically forecasted, the correlation between affective engagement and inattention is negative but it is not strong (see Table 8). Even more in the case of inattention and behavioural engagement – compliance: given a value lower than 0.1, we can say that there is no a linear correlation between these two variables.

In our opinion, the cause of this emotional involvement could have been the topic explained during this first lesson, namely individual personality. Even if the lecture execution lacked of interaction, it was based on the self, the characteristics of people's personalities and the implication from a managerial perspective, so students got somehow involved and perceived teacher's speech referring directly to them.

	DISENGAGEMENT	HIGH AROUSAL	LOW AROUSAL	INATTENTION	TIME PERCEPTION	AFFECTIVE ENG.	BEHAVIOURAL ENG. -COMPLIANCE	BEHAVIOURAL ENG. -EFFORTFUL PARTICIPATION	DISENGAGEMENT.2	COGNITIVE ENG.	SURFACE LEARNING
DISENGAGEMENT	1	0.77	0.78	0.49	0.22	-0.24	0.21	0.012	0.36	0.22	-0.29
HIGH AROUSAL	0.77	1	0.66	0.42	0.35	-0.16	0.19	0.17	0.25	0.28	-0.39
LOW AROUSAL	0.78	0.66	1	0.18	-0.12	-0.11	0.24	-0.09	0.14	0.28	-0.24
INATTENTION	0.49	0.42	0.18	1	0.19	-0.25	-0.03	-0.15	0.58	0.20	0.15
TIME PERCEPTION	0.22	0.35	-0.12	0.19	1	-0.28	-0.09	0.09	0.07	-0.28	-0.23
AFFECTIVE ENG.	-0.24	-0.16	-0.11	-0.25	-0.28	1	0.72	0.65	-0.1	0.55	0.06
BEHAVIOURAL ENG. -COMPLIANCE	0.21	0.19	0.24	-0.03	-0.09	0.72	1	0.68	-0.174	0.66	-0.18
BEHAVIOURAL ENG. -EFFORTFUL PARTICIPATION	0.012	0.17	-0.09	-0.15	0.09	0.65	0.68	1	-0.36	0.48	-0.13
DISENGAGEMENT.2	0.36	0.25	0.14	0.58	0.07	-0.1	-0.17	-0.36	1	0.23	-0.10
COGNITIVE ENG.	0.22	0.28	0.28	0.20	-0.28	0.55	0.66	0.48	0.23	1	-0.29
SURFACE LEARNING	-0.29	-0.39	-0.24	0.14	-0.23	0.06	-0.18	-0.13	-0.1	-0.29	1

Table 8: correlation coefficients between the MSBS and the CEI, stimulating reasoning lecture.

	DISENGAGEMENT	HIGH AROUSAL	LOW AROUSAL	INATTENTION	TIME PERCEPTION	AFFECTIVE ENG.	BEHAVIOURAL ENG. - COMPLIANCE	BEHAVIOURAL ENG. - EFFORTFUL PARTICIPATION	DISENGAGEMENT.2	COGNITIVE ENG.	SURFACE LEARNING
DISENGAGEMENT	NA	0.0004	0.0003	0.05	0.40	0.38	0.43	0.96	0.17	0.42	0.27
HIGH AROUSAL	0.0004	NA	0.005	0.11	9	0.54	0.47	0.53	0.35	0.29	0.13
LOW AROUSAL	0.0003	0.005	NA	0.51	0.67	0.69	0.38	0.74	0.61	0.29	0.38
INATTENTION	0.05	0.11	0.51	NA	0.48	0.34	0.91	0.58	0.02	0.45	0.59
TIME PERCEPTION	0.40	0.19	0.67	0.48	NA	0.3	0.73	0.73	0.8	0.29	0.38
AFFECTIVE ENG.	0.38	0.54	0.69	0.34	0.3	NA	0.002	0.006	0.72	0.03	0.81
BEHAVIOURAL ENG. - COMPLIANCE	0.43	0.47	0.38	0.91	0.723	0.002	NA	0.004	0.54	0.005	0.51
BEHAVIOURAL ENG. - EFFORTFUL PARTICIPATION	0.96	0.53	0.74	0.58	0.73	0.006	0.004	NA	0.17	0.06	0.63
DISENGAGEMENT.2	0.17	0.35	0.61	0.02	0.8	0.72	0.54	0.17	NA	0.38	0.71
COGNITIVE ENG.	0.42	0.29	0.29	0.45	0.29	0.03	0.005	0.06	0.38	NA	0.28
SURFACE LEARNING	0.27	0.14	0.38	0.59	0.38	0.81	0.51	0.63	0.71	0.28	NA

Table 9: significance of the correlations, stimulating reasoning.
In red the correlations that are not significant ($p < 0.01$).

5.4 Active learning: when collaborative discussion boost critical thinking and involvement

The second lecture introduced the topic of leadership and followership but it was structured around a debate between two groups, that we can also relate to the PBL technique: one made by students asserting that people born as a leader, the other was composed by students believing instead that people can be trained to become leaders. Both of them had to decide together how to defend and find evidence about their position and then they had to present it to the class. Consequently, half of the lesson was leaded by students, and from the previous case we observed higher scores in all the dimensions of the CEI, and lower score in the components of boredom (see Figure 9), except for time perception which is equal and high arousal that is quite higher, probably because of the feelings of competition, turmoil and nervousness that a debate can bring. Referring to time perception, instead, there were some students present in class but not really participating actively, leaving the other teammates doing all the assignment. Perhaps we can connect the social loafing consequence of group work, which describes the situation of one person reducing its effort and contribution when included in a group, knowing that there will be others doing the job.

An important consideration has to be made referring to the surface learning indicator: as for the other lectures, at the end students were asked to answer five multiple choice questions about the topics discussed shortly before, but in this case the specific theories and concepts about leaderships were not explicitly told by the professor. The class only performed the debate and then they jointly reason on the points emerged and their organizational and professional implications. In spite of this, students did not completely fail to answer these questions, actually they reached a higher average than the previous test. Hence, it can be a prominent sign of the fact that is not important how well a teacher explain the course contents to make students understand and recall them, at least in the short term. It can be more effective to put students in the condition to ponder, to find issues, to question theories and eventually develop themselves an answer or a solution that in the end will be connected to the theoretical explanations.

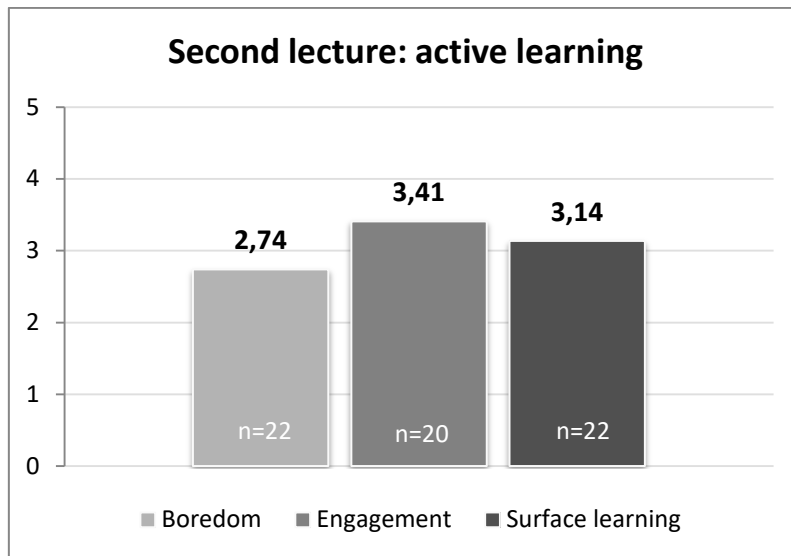


Figure 9: questionnaires average results obtained from the *active learning* approach.

From a statistical point of view, preliminary evidences of our experiment show again that the correlation between low arousal and disengagement, between low arousal and high arousal and between compliance and affective engagement lack of significance, with a significance level equal to 0.01 (see table 11). We found effortful participation and affective engagement to have a quite strong positive correlation (table 10), meaning that, probably, leaving students wider possibility to have control on their academic activity and to adopt a self-directed approach is a powerful way to get them more emotionally committed as they feel trusted and equally trust the teacher, they are motivated and enjoy learning.

Strangely, surface learning results seem to have a significant negative correlation with affective engagement, behavioural effortful participation and cognitive engagement. Howsoever, these relations are not very strong (between 0 and -0.1) so we can assume that they are not really indicative of the correlation trends. Or maybe, an alternative interpretation can be made thinking that, giving a little less emphasis to notions, definition and their memorization during the lecture enable students to focus their cognitive and emotional resources on participating, enjoying and actively contribute to the discussion development.

	DISENGAGEMENT	HIGH AROUSAL	LOW AROUSAL	INATTENTION	TIME PERCEPTION	AFFECTIVE ENG.	BEHAVIOURAL ENG. - COMPLIANCE	BEHAVIOURAL ENG. - EFFORTFUL PARTICIPATION	DISENGAGEMENT.2	COGNITIVE ENG.	SURFACE LEARNING
DISENGAGEMENT	1	0.83	0.61	0.28	0.58	-0.65	-0.57	-0.15	0.34	-0.04	-0.15
HIGH AROUSAL	0.83	1	0.62	0.42	0.58	-0.57	-0.35	-0.04	0.38	0.17	-0.27
LOW AROUSAL	0.61	0.62	1	0.21	0.47	-0.5	-0.45	-0.25	0.43	0.31	0.14
INATTENTION	0.28	0.42	0.21	1	0.36	-0.38	-0.17	-0.44	0.51	0.14	-0.19
TIME PERCEPTION	0.58	0.58	0.47	0.36	1	-0.52	-0.13	-0.22	0.3	0.14	0.03
AFFECTIVE ENG.	-0.65	-0.57	-0.5	-0.38	-0.52	1	0.6	0.58	-0.12	0.28	-0.09
BEHAVIOURAL ENG. - COMPLIANCE	-0.57	-0.35	-0.45	-0.17	-0.13	0.6	1	0.55	-0.36	0.35	0.04
BEHAVIOURAL ENG. - EFFORTFUL PARTICIPATION	-0.15	-0.04	-0.25	-0.44	-0.22	0.58	0.55	1	-0.48	0.17	-0.02
DISENGAGEMENT.2	0.34	0.38	0.43	0.51	0.3	-0.12	-0.36	-0.48	1	0.23	-0.3
COGNITIVE ENG.	-0.04	0.17	0.31	0.14	0.14	0.28	0.35	0.17	0.23	1	-0.05
SURFACE LEARNING	-0.15	-0.27	0.14	-0.19	0.03	-0.09	0.04	-0.02	-0.3	-0.05	1

Table 10: correlation coefficients between the MSBS and the CEI, active learning lecture.

	DISENGAGEMENT	HIGH AROUSAL	LOW AROUSAL	INATTENTION	TIME PERCEPTION	AFFECTIVE ENG.	BEHAVIOURAL ENG. - COMPLIANCE	BEHAVIOURAL ENG. - EFFORTFUL PARTICIPATION	DISENGAGEMENT.2	COGNITIVE ENG.	SURFACE LEARNING
DISENGAGEMENT	NA	1,95E+07	0.007	0.25	0.01	0.004	0.01	0.56	0.17	0.88	0.55
HIGH AROUSAL	1,95E+07	NA	0.006	0.08	0.01	0.01	0.16	0.86	0.11	0.49	0.27
LOW AROUSAL	0.007	0.006	NA	0.41	0.05	0.03	0.06	0.31	0.08	0.20	0.59
INATTENTION	0.25	0.08	0.41	NA	0.14	0.12	0.5	0.07	0.03	0.58	0.46
TIME PERCEPTION	0.01	0.01	0.05	0.14	NA	0.03	0.59	0.39	0.23	0.59	0.9
AFFECTIVE ENG.	0.004	0.014	0.03	0.12	0.06	NA	0.009	0.01	0.64	0.26	0.72
BEHAVIOURAL ENG. - COMPLIANCE	0.01	0.16	0.06	0.5	0.59	0.009	NA	0.02	0.14	0.15	0.89
BEHAVIOURAL ENG. - EFFORTFUL PARTICIPATION	0.56	0.86	0.31	0.07	0.39	0.01	0.02	NA	0.04	0.49	0.94
DISENGAGEMENT.2	0.17	0.11	0.08	0.03	0.23	0.64	0.14	0.04	NA	0.35	0.22
COGNITIVE ENG.	0.88	0.49	0.2	0.58	0.59	0.26	0.15	0.49	0.35	NA	0.85
SURFACE LEARNING	0.55	0.27	0.59	0.46	0.9	0.72	0.89	0.94	0.22	0.85	NA

Table 11: significance of the correlations, active learning. In red the correlations that are not significant ($p < 0.01$).

5.5 Frontal lecture: the interfering power of boredom

During the following lesson, the teacher resumed the debate between the two groups in order to introduce a merely theoretical explanation of historical studies about leadership and followership, the different styles and their application and consequences for companies. According to our model, the professor should have avoided to ask questions with an answer expected (i.e.: audience-centred) and only proceed with the topics explanation through self-answered queries strictly concerning definitions and notions, not giving students the chance to talk or intervene. As anticipated, this resulted quite hard for her but, in any case, the majority of questions posed, abstracting the last category, correspond to the content-centred to focus information. Our hypothesis then is that students will feel more overdriven, distracted, isolated and as a consequence without motivation to commit in such a situation.

Questionnaires outcomes are in line with these expectations: all the dimension of the MSBS, namely disengagement, high and low arousal, inattention and time perception, averaged above the scores obtained from the previous lecture. Accordingly, the emotional and behavioural engagement dimensions, in terms of effortful participation, resulted lower because they didn't felt their contribution to be valued and needed, so probably they perceived the lecture developed only around the contents and what the teacher had to say (see Figure 10). As a consequence, also the level of disengagement emerged from the CEI is higher than the same item in the active learning lecture, instead the effort in deep understanding and creative processing measured by cognitive engagement scored lower. The immediate aftermath was the lowest proportion of correct answers to the multiple-choice test among all the four lectures of our experimental research (2,82 out of 5).

If we compare the just mentioned factors with the *stimulating reasoning* lecture approach, we see reversed results. Considering the fact that the day before they spent time and effort debating about the same topics, I think that this represents a possible explanation for the lower disengagement and a slightly better cognitive engagement: students still felt directly involved in the argumentation, they want to understand if their conjectures and the idea they presented were correct or not and which alternative view could have been adopted or integrated.

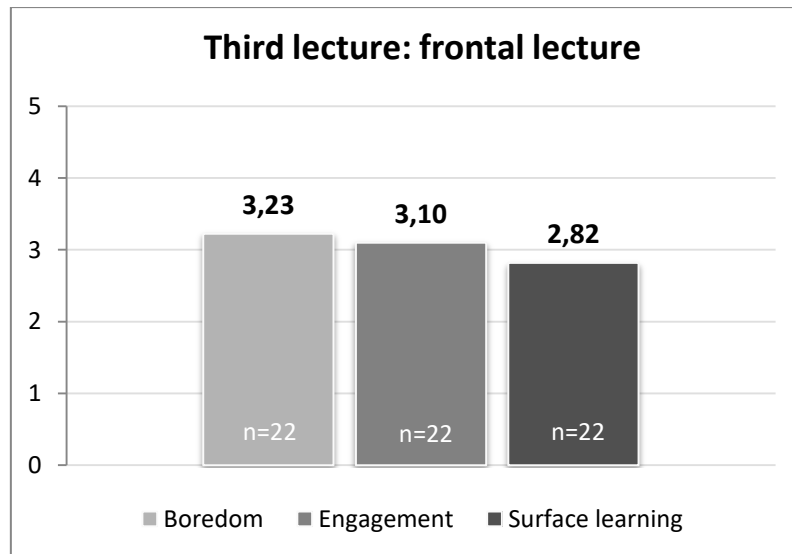


Figure 10: questionnaires average results obtained from the *frontal lecture* approach.

Observing the correlation matrix (table 12), the negative correlation between affective engagement and the MSBS measures of disengagement, low arousal and time perception are consistent with our discussion. Quite conflicting are instead its positive correlations with high arousal and inattention, even if they are weak: again, probably the greater ennui, turmoil, difficulty in focusing attention due to the monotonous path of the lecture did not completely hamper students desire to deepen their knowledge about the topic.

Also, the cognitive dimension of engagement is negatively correlated with disengagement, time perception and in this case with high arousal, while the relations with low arousal and inattention is positive, especially in the former case. We can adopt the positive judgement about boredom effects (Belton & Priyadharshini, 2007; Bench & Lench, 2013) to interpret these preliminary evidences: letting the mind wandering a bit and “resting” from the cognitive effort of the day before may allowed learners to focus their mind resources to later went back to the information gained, to reorganize and re-elaborate what they’ve learned and perhaps to collect extra information (e.g.: “I went back over things I didn’t understand”; “I’ve searched for information from different places and think about how to put it together.”).

Pretty logical are the inverse correlations among surface learning and inattention and among surface learning and the disengagement dimension of the CEI questionnaire, as the positive ones of surface learning with affective and cognitive engagement, which are weak but significant.

	DISENGAGEMENT	HIGH AROUSAL	LOW AROUSAL	INATTENTION	TIME PERCEPTION	AFFECTIVE ENG.	BEHAVIOURAL ENG.- COMPLIANCE	BEHAVIOURAL ENG.- EFFORTFUL PARTICIPATION	DISENGAGEMENT.2	COGNITIVE ENG.	SURFACE LEARNING
DISENGAGEMENT	1	0.67	0.37	0.2	0.72	-0.23	-0.34	-0.35	0.34	-0.19	0.06
HIGH AROUSAL	0.67	1	0.32	0.17	0.55	0.05	-0.27	-0.11	0.2	-0.01	0.31
LOW AROUSAL	0.37	0.32	1	0.04	0.54	-0.11	0.06	0.08	-0.22	0.46	0.22
INATTENTION	0.2	0.17	0.04	1	0.24	0.18	-0.07	0.09	0.24	0.07	-0.48
TIME PERCEPTION	0.76	0.55	0.54	0.24	1	-0.32	-0.3	-0.28	0.06	-0.28	-0.17
AFFECTIVE ENG.	-0.23	0.05	-0.11	0.18	-0.33	1	0.65	0.71	-0.29	0.6	0.06
BEHAVIOURAL ENG.- COMPLIANCE	-0.34	-0.27	0.06	-0.08	-0.3	0.65	1	0.79	-0.66	0.71	-0.11
BEHAVIOURAL ENG.- EFFORTFUL PARTICIPATION	-0.35	-0.11	0.08	0.09	-0.28	0.71	0.79	1	-0.68	0.73	0.001
DISENGAGEMENT.2	0.34	0.20	-0.22	0.24	0.06	-0.29	-0.66	-0.68	1	-0.49	-0.25
COGNITIVE ENG.	-0.19	-0.01	0.46	0.07	-0.28	0.6	0.71	0.73	-0.49	1	0.2
SURFACE LEARNING	0.06	0.31	0.21	-0.48	-0.17	0.06	-0.11	0.001	-0.25	0.2	1

Table 12: correlation matrix between the MSBS and the CEI, frontal lecture.

	DISENGAGEMENT	HIGH AROUSAL	LOW AROUSAL	INATTENTION	TIME PERCEPTION	AFFECTIVE ENG.	BEHAVIOURAL ENG. - COMPLIANCE	BEHAVIOURAL ENG. - EFFORTFUL PARTICIPATION	DISENGAGEMENT.2	COGNITIVE ENG.	SURFACE LEARNING
DISENGAGEMENT	NA	0.005	0.15	0.46	0.002	0.4	0.19	0.18	0.20	0.48	0.82
HIGH AROUSAL	0.005	NA	0.23	0.52	0.03	0.87	0.31	0.69	0.45	0.96	0.25
LOW AROUSAL	0.15	0.23	NA	0.88	0.03	0.67	0.83	0.77	0.41	0.08	0.42
INATTENTION	0.46	0.52	0.88	NA	0.38	0.51	0.78	0.74	0.38	0.79	0.06
TIME PERCEPTION	0.002	0.03	0.03	0.38	NA	0.22	0.27	0.29	0.83	0.29	0.54
AFFECTIVE ENG.	0.4	0.87	0.67	0.51	0.22	NA	0.007	0.002	0.27	0.01	0.83
BEHAVIOURAL ENG. - COMPLIANCE	0.19	0.31	0.83	0.78	0.27	0.007	NA	0.0003	0.005	0.002	0.69
BEHAVIOURAL ENG. - EFFORTFUL PARTICIPATION	0.18	0.69	0.77	0.74	0.29	0.002	0.0003	NA	0.004	0.001	0.99
DISENGAGEMENT.2	0.20	0.45	0.41	0.38	0.83	0.27	0.005	0.004	NA	0.06	0.35
COGNITIVE ENG.	0.48	0.96	0.08	0.79	0.29	0.01	0.002	0.001	0.06	NA	0.45
SURFACE LEARNING	0.82	0.25	0.42	0.06	0.54	0.83	0.69	0.99	0.35	0.45	NA

Table 13: significance of the correlations, frontal lecture.
In red the correlations that are not significant ($p < 0.01$).

5.6 Checking knowledge: discordance between interaction and a content-focused approach

Finally, the class experienced the *checking knowledge* lecture. The theme was about how to effectively manage organizational changes and the majority of asked questions, not considering the audience-centred to stimulate thoughts, was about theories and notions that were discussed throughout the entire university course, hence expecting students to be able to recall and to interconnect them (e.g.: “Do you remember we were talking about one theory...?”). The frequency of interactions between the teacher and the students and among students was thus higher than the first and the third lecture of this experiment, but not as high as for the active learning one, neither the resulting engagement (see Figure 11) since these exchanges of knowledge was mainly based on given definitions and did not require learners to strive in search for a meaning or a personal interpretation.

As a matter of fact, the items of the engagement questionnaire all resulted lower than the correspondents when collected for the active learning situation, while compared to the stimulating reasoning and frontal lecture they are higher. The only exception observed was the emotional engagement of the first lecture being higher than in this case: as previously supposed, the cause may rely on the different interest toward that particular topic. Additionally, it has to be noticed that during this last class students were a lot concerned about the workgroup presentation they would have made the day after, at the beginning of which they filled the CEI, thus the sum of this two influences on mood could have affected the points assigned to statements like “I felt happy” or “I had amused”. Our preliminary evidences are in line with this explanation, because the average points resulted from these two statements are actually higher only to those of the frontal lecture, consistent with the overall affective engagement scores.

Analysing the boredom scale, we got results that are in contrast to the previous ones according to which lower boredom generally leads to higher engagement. Indeed, the average boredom level is 3,47 out of 5, the highest observed, even if also the engagement is quite good. In particular, data show an increase in time perception, signalling the desire to feel time passing faster maybe caused by the need to leave the class and concentrate on the assignment exposition.

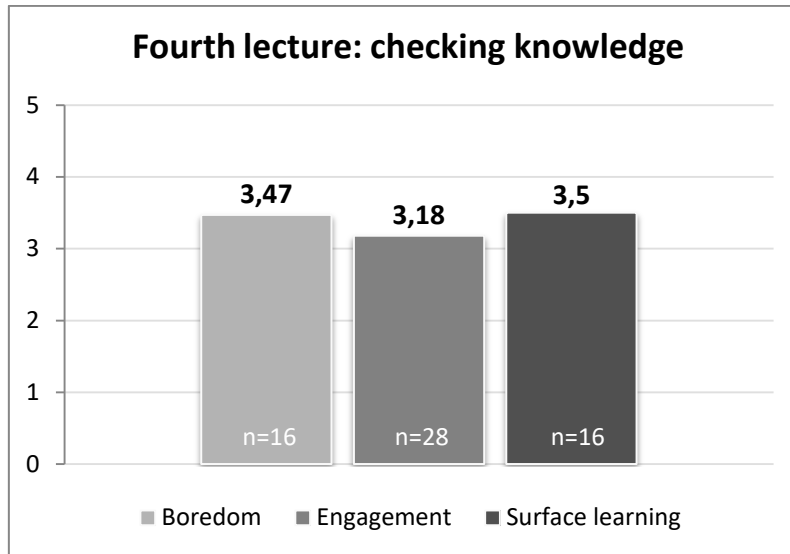


Figure 11: questionnaires average results obtained from the *checking knowledge* approach.

Coherently, affective engagement resulted negatively correlated with all the MSBS components, but the same is true for both compliance and effortful participation items (see Table 14). With higher boredom we should have obtained lower behavioural engagement, but this is not the case.

The two behavioural elements are positively related, meaning that they move together in favour of a higher or lower engagement, so we can say that in this situation paying attention for a sense of duty helped to get more involved in the class discussion and activities, because students stopped to think about other things and focus on the current situation and positive stimuli of the lecture. If these stimuli in terms of demanding participation and stimulating students to answer were absent, almost surely, they would have returned to mind wandering.

Also, the performance on the multiple choices was the highest among the four experimental treatments, positively affected by the active approach to the lesson.

We should also consider that, even if the evaluation method we adopted regard a situation dependent notion of engagement, it is not something that a teacher can totally elicit in just one lecture. It is more presumable that, when students repetitively perceive a supportive environment in which there are no strong hierarchy and every kind of contribution is welcomed, without consequences on the grade since the ultimate goal is to learn how to be independent learners (Weimer, 2002), then they will truly become

engaged with more lasting consequences. Through this perspective, we may explain why at the end of the experiment students reported great involvement, despite the level of boredom. Cognitive engagement seems to have the same orientation, with an increasing trend interrupted only by the frontal lecture outcome: it can be assumed that time and perseverance give a contribution also to the mind commitment.

The divergence from affective engagement may rely on the higher situational dependency and variability of emotions which determine this dimension. As a matter of fact, and as we discussed above, emotions were found being a reaction to a certain situation which is relevant for the one who's experiencing it, they have various durations, intensity and frequency (Pekrun, 1992; Hascher, 2010).

	DISENGAGEMENT	HIGH AROUSAL	LOW AROUSAL	INATTENTION	TIME PERCEPTION	AFFECTIVE ENG.	BEHAVIOURAL ENG. - COMPLIANCE	BEHAVIOURAL ENG. - EFFORTFUL PARTICIPATION	DISENGAGEMENT.2	COGNITIVE ENG.	SURFACE LEARNING
DISENGAGEMENT	1	0.75	0.57	0.3	0.71	-0.32	-0.22	-0.27	0.55	-0.17	-0.12
HIGH AROUSAL	0.75	1	0.66	0.35	0.71	-0.37	-0.18	-0.17	0.24	-0.14	-0.06
LOW AROUSAL	0.57	0.66	1	0.26	0.21	-0.16	0.29	-0.04	0.18	0.32	-0.36
INATTENTION	0.3	0.35	0.26	1	0.46	-0.47	-0.29	-0.09	0.44	0.16	-0.24
TIME PERCEPTION	0.71	0.71	0.23	0.46	1	-0.33	-0.49	-0.33	0.32	-0.23	0.17
AFFECTIVE ENG.	-0.32	-0.37	-0.16	7	-0.31	1	0.63	0.66	-0.29	0.38	0.07
BEHAVIOURAL ENG. - COMPLIANCE	-0.22	-0.18	0.29	-0.29	-0.49	0.63	1	0.55	-0.35	0.65	-0.11
BEHAVIOURAL ENG. - EFFORTFUL PARTICIPATION	-0.27	-0.17	-0.04	-0.09	-0.33	0.66	0.55	1	-0.25	0.60	0.13
DISENGAGEMENT.2	0.55	0.24	0.18	0.46	0.32	-0.29	-0.35	-0.25	1	-0.07	-0.64
COGNITIVE ENG.	-0.17	-0.14	0.32	0.16	-0.23	0.38	0.65	0.6	-0.07	1	-0.12
SURFACE LEARNING	-0.12	-0.06	-0.36	-0.24	0.17	0.07	-0.11	0.13	-0.64	-0.12	1

Table 14: correlation matrix between the MSBS and the CEI, checking knowledge lecture.

	DISENGAGEMENT	HIGH AROUSAL	LOW AROUSAL	INATTENTION	TIME PERCEPTION	AFFECTIVE ENG.	BEHAVIOURAL ENG. - COMPLIANCE	BEHAVIOURAL ENG. - EFFORTFUL PARTICIPATION	DISENGAGEMENT.2	COGNITIVE ENG.	SURFACE LEARNING
DISENGAGEMENT	NA	0.0007	0.02	0.26	0.002	0.23	0.41	0.32	0.03	0.54	0.67
HIGH AROUSAL	0.0007	NA	0.006	0.19	0.002	0.16	0.5	0.53	0.36	0.61	0.83
LOW AROUSAL	0.02	0.006	NA	0.33	0.4	0.55	0.28	0.89	0.51	0.23	0.17
INATTENTION	0.26	0.19	0.33	NA	0.07	0.06	0.27	0.74	0.09	0.54	0.37
TIME PERCEPTION	0.002	0.002	0.4	0.07	NA	0.21	0.05	0.21	0.23	0.4	0.53
AFFECTIVE ENG.	0.23	0.16	0.55	0.06	0.21	NA	0.009	0.006	0.28	0.15	0.79
BEHAVIOURAL ENG. - COMPLIANCE	0.41	0.5	0.28	0.27	0.05	0.009	NA	0.03	0.19	0.007	0.7
BEHAVIOURAL ENG. - EFFORTFUL PARTICIPATION	0.32	0.53	0.89	0.74	0.21	0.006	0.03	NA	0.35	0.01	0.64
DISENGAGEMENT.2	0.03	0.36	0.51	0.09	0.23	0.28	0.19	0.35	NA	0.81	0.007
COGNITIVE ENG.	0.55	0.61	0.23	0.54	0.4	0.15	0.007	0.01	0.81	NA	0.66
SURFACE LEARNING	0.67	0.83	0.17	0.37	0.53	0.79	0.7	0.64	0.007	0.66	NA

Table 15: significance of the correlations, checking knowledge.
In red the correlations that are not significant ($p < 0.01$).

5.7 Comparison and exploration of the preliminary effects on learning

To summarize what we observed through this preliminary experimental design research, the following three graphs represent a direct comparison of the four lecture approaches. In bold we highlighted the overall average score resulted from the questionnaires submitted. As in the previous analysis, for every lesson we also indicated the number of students who completed the questionnaires.

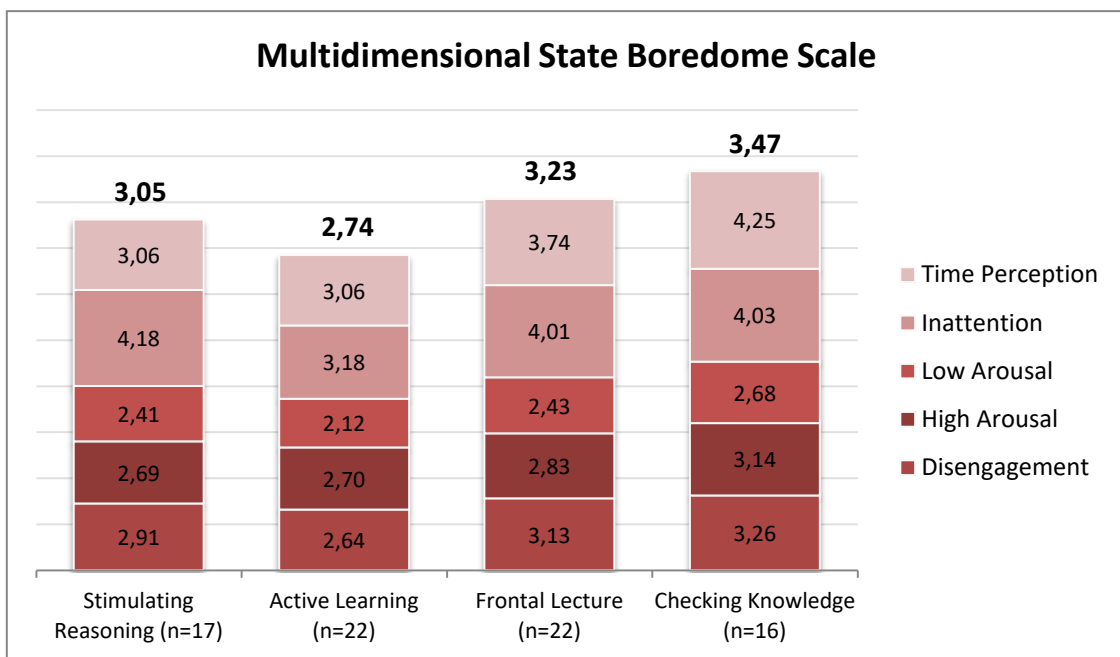


Figure 32: comparison among the four lectures approaches of the MSBS subscales results.

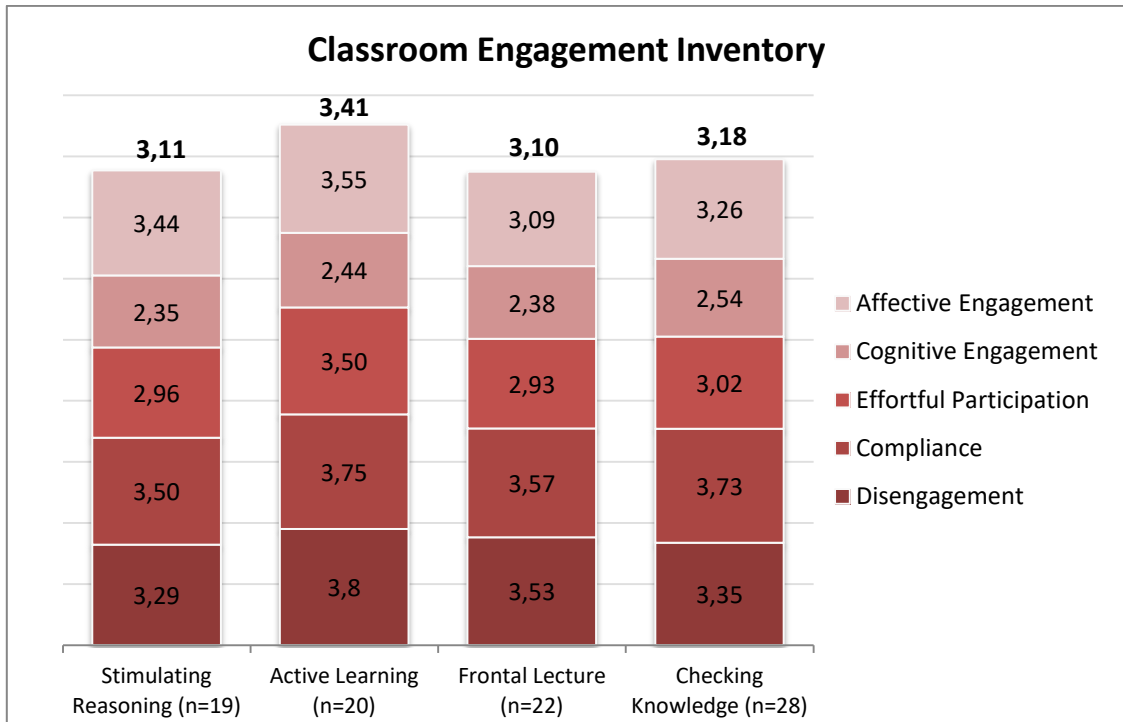


Figure 13: comparison among the four lectures approaches of the CEI subscales results.

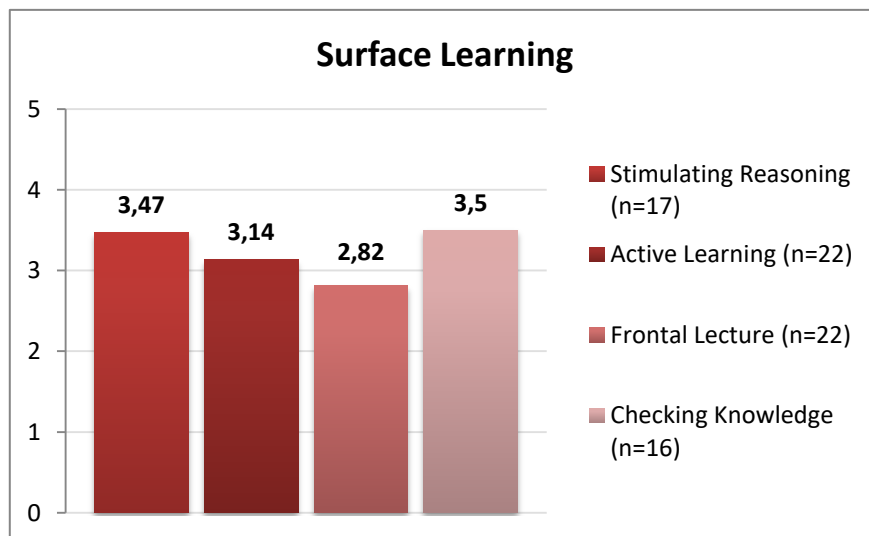


Figure 14: comparison among the 4 lectures approaches of the multiple - choice questions results.

From our hypotheses we expected a lower level of boredom and higher engagement during the active learning lecture. This preliminary experiment confirms our hypothesis (see Figure 12 and 13), suggesting that talking with students, putting them at the centre of the knowledge-building process and starting from their ideas and their existing acquaintance to establish the lesson progress can be a powerful and effective way to pursue their development as independent, committed, enthusiastic and self-regulated learners. The related performance on the multiple choices question is not the best among the four treatments, but we have to remember that in this case students didn't have discussed yet about the notions asked. Besides, memorization of concepts is not the primary goal of a learner-centred approach and of our perspective: instead we aim at a full understanding and autonomous organization and elaboration of information, enabling students to test their cognitive ability, to find motivation and consequently nurturing a real engagement in continuous learning and search for new perspectives.

Conversely, a lesson like the third one made up only by the professor's discourse and explanation of topics should come with greater boredom hampering both the assimilation of contents and the rise of engagement. These conjectures are disconfirmed only in regard with the boredom level, overcome by the checking knowledge lecture discussed in the previous paragraph.

For the "stimulating reasoning" and the "checking knowledge" approaches to lecture the issue is less linear: in one situation there is poor interaction of students but the question posed are more thoughtful and should put students in the condition of elaborating and finding a response by themselves before the teacher gives the solution; on the other side learners have the possibility to talk and provide their ideas but these are strictly related to definitions and theoretical concepts.

In our case data seems to be in favour of this second method: even if it caused a higher boredom, and we already discussed possible reasons of such outcome, the final result was a higher short-term retaining of concepts and above all greater engagement. Then, even if the retrieval of information technique is more boring, we can presume that allowing students to actively contribute, to speak, to question and to discuss together is what really impacts on their effort, interest and subsequent stimulation of meta-cognitive skills. As a matter of fact, in this lecture and in the active learning one at least 70% of the asked queries belong to the audience-centred type (table 4), implying the

solicitation of an answer. During the first lecture this category exceeded the content-centred questions as well, but again it was unlikely to immediately observe a strong engagement if we think that students were in a new course and they didn't know the professor or the subject yet.

A final consideration related to the surface learning item has to be made: as explained in the fourth chapter, this variable is dependent by the function of the working memory, which in turn can be interrupted and made less efficient by periods of inattention. Coherently, in this exploratory study we can see that the correlation among these two measures is almost always negative. The only exception resides in the first lecture, but it would not be unusual to assume some distortion of students' answers due to their fear of evaluation for the beginning of the experiment.

Additionally, even if replicating this experiment on a wider sample is necessary to test the validity of these results, correlations among the multiple choices score and the final exam grade are all significant and positive except for the *stimulating reasoning* lesson, apparently confirming a possible connection between surface and lasting learning (Table 16 and 17).

	STIMULATING REASONING	ACTIVE LEARNING	FRONTAL LECTURE	CHECKING KNOWLEDGE	EXAM GRADE
STIMULATING REASONING	1	-0.05	-0.31	-0.15	-0.21
ACTIVE LEARNING	-0.05	1	0.24	0.08	0.31
FRONTAL LECTURE	-0.31	0.24	1	0.21	0.15
CHECKING KNOWLEDGE	-0.15	0.08	0.21	1	0.1
EXAM GRADE	-0.21	0.31	0.15	0.1	1

Table 16: correlation coefficients between the multiple choices results of the four lectures and the final exam grade.

	STIMULATING REASONING	ACTIVE LEARNING	FRONTAL LECTURE	CHECKING KNOWLEDGE	EXAM GRADE
STIMULATING REASONING	NA	0.87	0.3	0.55	0.41
ACTIVE LEARNING	0.87	NA	0.36	0.74	0.16
FRONTAL LECTURE	0.3	0.34	NA	0.4	0.5
CHECKING KNOWLEDGE	0.55	0.74	0.4	NA	0.62
EXAM GRADE	0.41	0.16	0.5	0.62	NA

Table 17: significance of the correlations between the multiple choices results of the four lectures and the final exam grade.

5.8 Practical implication and further research: letting students experiencing knowledge discovering

Clearly, the experiment performed and described in this thesis presents some limitations.

The experimental research design fitted our aim to submit the same group of roughly homogeneous people to sequential manipulated lectures and measuring their motivation, boredom, surface learning and engagement even without a control group: participants are their own control group. Moreover, repeated measurements allow to conduct a study on few subject and to make statistical inference.

Anyway, the significant low number of filled questionnaires we collected doesn't consent to give proved conclusion, as demonstrated by the correlation coefficients which don't display a univocal behaviour among the four lectures. As we discussed previously, we also have to consider that the topics discussed during these lessons were related but not equal, then variations on students' mood and engagement could have been caused or in part affected by this fact.

This method presents some other negative aftermaths: after the first time students completed the questionnaires, they may have filled subsequent questionnaire related to different treatment being influenced by the answers they gave the first time (cf.: carryover effect).

Also, to comply with all the condition of an experiment we should have manipulated lectures all about the same topic, in order to exclude possible differences in questionnaire responses due to influences other than the teaching method,. It could have happened, for instance, that higher or lower boredom levels were a consequence of the interest on the topic discussed and not because of question types and interactivity. However we didn't have the possibility to isolate such effect, and then we only relied on the fact that all the theme are similar and lying under a unique macro-area of organizational behaviour management.

That said, we cannot generalize our considerations to all the academic and job environments. Hence, further research is needed to eliminate the possible distortion and to verify the validity and possible applications of our model.

However, we can still take some preliminary evidences as a starting point for further researches, aimed at finding more significant results and in studying longer term effects of different teaching approaches on boredom, engagement, achievement and learning-skills and development.

What mostly emerged from this research is that actually an active learning techniques seems to generate on average better engagement levels, being behavioural, cognitive and emotional. Quite relevant is also the fact that, even if in the active learning situation students were not provided with mere notions or textbook to learn, after collaborating with peers, thinking critically to the assignment and elaborating a solution they were able to understand and independently find the right answers for the multiple choice questions.

Even in less stimulating environment (i.e.: *checking knowledge* lecture) one essential condition for universities, as for corporate training programs, is to create interaction with the teacher but mostly among students since cooperative learning and personal development reinforce each other reciprocally. This means, however, that learning group should not be too large, making it harder for everyone to contribute, to establish a constructive relationship with the class and for the teacher to provide assignments fitted to students abilities.

Also, in effective learner-centred environment the focus will shift from an instructor centrality to a more cooperative learning climate, in which his or her role will be to provide the basis for dealing with the materials and the assignments of challenging tasks that fosters cognitive efforts and soft-skills activation. More and more teaching and training should be grounded on students experiencing of real problems and difficulties to be solved in order to gain confidence on trying alternative strategies and accepting the consequences, as also critically self-assess themselves in the pursuit of a continuous development. In this context they are encouraged to take the lead of their decisions, of their academic goals setting and programming, so they should automatically nurture a self-supporting attitude toward actions and outcomes as a higher commitment for exploration and active contribution.

More in details, the practical implication is the need for a constant attention to students in-class participation, meaning that they should be challenged more often by questions and problems to solve, like debates, brainstorming, group discussions, role-plays, researches and so on. To be more effective, the questions posed, when possible,

should be used to discuss about their opinions, their proposed solutions and the reasoning process they undertake to reach those solutions (cf.: *audience-centred questions to stimulate thoughts*). In other words, conducting a lecture without any sort of interplay with the audience is no more effective to capture its interest and to obtain deep comprehension, because, nowadays, learners need to experience in first person the discovering of knowledge.

As we discussed at the beginning of this work, the present mutability of work environments and business challenges jointly to the students' desire to find more opportunities to test themselves, to experience and to develop their capabilities can be coped with educational settings able at training them on how to use their existing knowledge and to exploit external resources in order to meet this situation.

The final results of adopting a learner-centred teaching perspective can be the growth of students, the future workers and managers, in their willingness to actively expand their knowledge base and flexibly exploit it to interpret and codify the context, their ability to adapt to different situation, to find creative solutions and to autonomously understand changes needed and future directions to undertake. It is evident how such effects can be positive not only for individual academic and career achievement, but also for companies innovativeness and performances.

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APPENDIX

The Academic Motivation Scale (AMS)

Using the scale below, indicate to what extent each of the following items presently corresponds to one of the reasons why you go to university.

	Does not correspond at all	Corresponds a little	Corresponds moderately	Corresponds a lot	Corresponds exactly		
1. Because with only a high-school degree I would not find a high-paying job later on.	1	2	3	4	5	6	7
2. Because I experience pleasure and satisfaction while learning new things.	1	2	3	4	5	6	7
3. Because I think that a university education will help me better prepare for the career I have chosen.	1	2	3	4	5	6	7
4. For the intense feelings I experience when I am communicating my own ideas to others.	1	2	3	4	5	6	7
5. Honestly, I don't know; I really feel that I am wasting my time in university.	1	2	3	4	5	6	7
6. For the pleasure I experience while surpassing myself in my studies.	1	2	3	4	5	6	7
7. To prove to myself that I am capable of completing my university degree.	1	2	3	4	5	6	7
8. In order to obtain a more prestigious job later on.	1	2	3	4	5	6	7
9. For the pleasure I experience when I discover new things never seen before.	1	2	3	4	5	6	7

	Does not correspond at all	Corresponds a little	Corresponds moderately	Corresponds a lot	Corresponds exactly			
10. Because eventually it will enable me to enter the job market in a field that I like.	1	2	3	4	5	6	7	
11. For the pleasure that I experience while I am surpassing myself in one of my personal accomplishments.	1	2	3	4	5	6	7	
12. Because of the fact that when I succeed in university I feel important.	1	2	3	4	5	6	7	
13. Because I want to have “the good life” later on.	1	2	3	4	5	6	7	
14. For the pleasure that I experience in broadening my knowledge about subjects which appeal to me.	1	2	3	4	5	6	7	
15. For the satisfaction I feel when I am in the process of accomplishing difficult academic activities.	1	2	3	4	5	6	7	
16. To show myself that I am an intelligent person.	1	2	3	4	5	6	7	
17. In order to have a better salary later on.	1	2	3	4	5	6	7	
18. Because my studies allow me to continue to learn about many things that interest me.	1	2	3	4	5	6	7	
19. Because I believe that a few additional years of education will improve my competence as a worker.	1	2	3	4	5	6	7	
20. For the “high” feeling that I experience while reading about various interesting subjects.	1	2	3	4	5	6	7	

	Does not correspond at all	Corresponds a little	Corresponds moderately	Corresponds a lot	Corresponds exactly		
21. I don't know; I can't understand what I am doing at university.	1	2	3	4	5	6	7
22. Because university allows me to experience a personal satisfaction in my quest for excellence in my studies.	1	2	3	4	5	6	7
23. Because I want to show myself that I can succeed in my studies.	1	2	3	4	5	6	7

Table 18. Amotivation subscale: items 5,21.

External regulation subscale: items 1, 8, 13, 17.

Identification subscale: items 3, 7, 10, 19.

Introjected regulation subscale: items 12, 16, 23.

Intrinsic motivation to know subscale: items 2, 9, 14, 18.

Intrinsic motivation toward accomplishment subscale: items 6, 11, 15, 22.

Intrinsic motivation to experience stimulation subscale: items 4, 20.

The Multidimensional State Boredom Scale

Please respond to each question indicating how you feel **right now** about yourself and your life, even if it is different from how you usually feel.

	Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
1. Time is passing by slower than usual.	1	2	3	4	5	6	7
2. I am stuck in a situation that I feel is irrelevant.	1	2	3	4	5	6	7
3. I am easily distracted.	1	2	3	4	5	6	7
4. I am lonely.	1	2	3	4	5	6	7
5. Everything seems to be irritating me right now.	1	2	3	4	5	6	7
6. I wish time would go by faster.	1	2	3	4	5	6	7
7. Everything seems repetitive and routine to me.	1	2	3	4	5	6	7
8. I feel down.	1	2	3	4	5	6	7
9. I seem to be forced to do things that have no value to me.	1	2	3	4	5	6	7
10. I feel bored.	1	2	3	4	5	6	7
11. Time is dragging on.	1	2	3	4	5	6	7
12. I am more moody than usual.	1	2	3	4	5	6	7
13. I am indecisive or unsure of what to do next.	1	2	3	4	5	6	7
14. I feel agitated.	1	2	3	4	5	6	7
15. I feel empty.	1	2	3	4	5	6	7
16. It is difficult to focus my attention.	1	2	3	4	5	6	7

	Strongly disagree	Disagree	Somewhat disagree	Neutral	Somewhat agree	Agree	Strongly agree
17. I want to do something fun, but nothing appeals to me.	1	2	3	4	5	6	7
18. Time is moving very slowly.	1	2	3	4	5	6	7
19. I wish I was doing something more exciting.	1	2	3	4	5	6	7
20. My attention span is shorter than usual.	1	2	3	4	5	6	7
21. I am impatient right now.	1	2	3	4	5	6	7
22. I am wasting time that would be better spent on something else.	1	2	3	4	5	6	7
23. My mind is wandering.	1	2	3	4	5	6	7
24. I want something to happen but I'm not sure what.	1	2	3	4	5	6	7
25. I feel cut off from the rest of the world.	1	2	3	4	5	6	7
26. Right now it seems like time is passing slowly.	1	2	3	4	5	6	7
27. I am annoyed with the people around me.	1	2	3	4	5	6	7
28. I feel like I'm sitting around waiting for something to happen.	1	2	3	4	5	6	7
29. It seems like there's no one around for me to talk to.	1	2	3	4	5	6	7

Table 19. Disengagement subscale: items 2, 7, 9, 10, 13, 17, 19, 22, 24, 28.
 High arousal subscale: items 5, 12, 14, 21, 27.
 Low arousal subscale: items 4, 8, 15, 25, 29.
 Inattention subscale: items 3, 16, 20, 23.
 Time perception subscale: items 1, 6, 11, 18, 26.

The Classroom Engagement Inventory

Thinking about the lecture you attended yesterday, please fill the following questionnaires.

	Never	Hardly Ever	Sometimes	Often	Always
1. I felt excited.	1	2	3	4	5
2. I felt interested.	1	2	3	4	5
3. I felt happy.	1	2	3	4	5
4. I felt proud.	1	2	3	4	5
5. I had amused (smile, laugh, have fun).	1	2	3	4	5
6. I listened very carefully.	1	2	3	4	5
7. I paid attention to the things I am supposed to remember.	1	2	3	4	5
8. I got really involved in lecture activities.	1	2	3	4	5
9. I formed new questions in my mind as I joined the lecture activities.	1	2	3	4	5
10. I didn't want to stop working at the end of the lecture.	1	2	3	4	5
11. I actively participated in lecture discussion.	1	2	3	4	5
12. I worked with other students and we learned from each other.	1	2	3	4	5
13. I let my mind wander.	1	2	3	4	5
14. I just pretended like I was working.	1	2	3	4	5
15. I was "zoned out", not really thinking or doing lecture work.	1	2	3	4	5

	Not at all true	Usually not true	Rarely true	Occasionally true	Often true	Usually true	Very true
16. After the lecture, I went back over things I didn't understand.	1	2	3	4	5	6	7
17. I asked myself some questions as I went along to make sure the work made sense to me.	1	2	3	4	5	6	7
18. I thought deeply when questions were asked in that lecture.	1	2	3	4	5	6	7
19. After the lecture, I searched for information from different places and thought about how to put it together.	1	2	3	4	5	6	7
20. After the lecture, if I was not sure about things, I checked my book or use other materials (like the video or optional readings indicated by the professor).	1	2	3	4	5	6	7
21. After the lecture, I tried to figure out the hard parts on my own.	1	2	3	4	5	6	7
22. I judged the quality of my ideas or work during the lecture.	1	2	3	4	5	6	7

Table 20. Affective engagement subscale: items 1, 2, 3, 4 ,5.
 Behavioural engagement – compliance subscale: items 6, 7.
 Behavioural engagement - effortful class participation subscale: items 8, 9, 10, 11, 12.
 Disengagement subscale: items 13, 14, 15.
 Cognitive engagement subscale: items 16, 17, 18, 19, 20, 21, 22.

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