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CICLO XXX

EMOTIONS AND STUDENT AGENCY IN CLASSROOM INTERACTIONS

Coordinatore del Dottorato: Chiar.ma Prof.ssa Luisa Molinari

Tutor: Chiar.ma Prof.ssa Luisa Molinari

Dottoranda: Gabriella Canovi

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This doctorate was a new beginning for me, when a lot of colleagues were already thinking of retiring. Studying and researching have accompanied me throughout my life, as well as a thirst for experiences and knowledge. There is a picture of myself when I was only four years old with my first "diploma": that little girl, born in Brazil from Italian migrating parents, looked proud smiling at them. I want to thank my mum and my dad, wherever they might be now, I am sure they are proud, too. My parents migrated from Italy in the 50's in search of a possibility. Unfortunately, both my parents did not have the chance to study because of after-war poverty; still, they always encouraged me to learn and they were my life masters, each one in a different way; they taught me resilience.

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Table of Contents

Acknowledgments 3
Preface 7
Chapter I 9
Theoretical background 9
1. Introduction 9
2. Conceptual frames 10
    2.1 Vygostkij and sociocultural theory 10
    2.2 The system theory 12
3. Classroom emotions in interactions 13
4. Seizing the emergent in interactions 14
5. Student agency 17
Chapter II 20
The research plan 20
1. Method 20
    1.1 The context 20
    1.2 Participants 21
    1.3 Data collection 22
2. Data analysis procedures 23
3. Ethical issues 24
Chapter III 25
Study 1 25
The sound of classroom flow: seizing emotions in lesson mode interactions 25
1. Introduction 25
2. Teacher-student interactions in the classroom 25
    2.1 Lesson modes 27
3. Flow 29
    3.1 Group flow 31
4. Study aims and research questions 32
5. Method 32
    5.1 Materials 32
    5.2 Data analysis procedures 33
6. Findings 34
    6.1 Different lesson modes 34
    6.2 Lesson modes in standard and nonstandard lessons 43
    6.3 Types of flow 44
    6.4 Lesson modes and group flow intertwined 46
7. Discussion 47
Chapter IV 50
Study 2 50
The dynamics of class mood and student agency in classroom interactions 50
1. Introduction 50
2. Mood, emotions and interactions 50

3. Class mood and agency 53
4. Study aim and research questions 54
5. Method 54
5.1 Material 54
5.2 Data analysis procedure 54
6. Findings 56
6.1 Class mood episodes of interpersonal regulation 57
6.2 Class mood episodes of material negotiation 64
6.3 Class mood episodes of resistance 68
7. Discussion 71
Chapter V 74
Study 3 74
What's up on *Whatsapp*? Student agency and emotions in chat interactions 74
1. Introduction 74
2. *Whatsapp* 75
2.1 A group chat as a communicative tool 75
2.2 *Whatsapp* and classroom boundaries 76
3. Student agency in a chat 76
4. Study aims and research questions 77
5. Method 78
5.1 Materials 78
5.2 Data analysis procedures 79
6. Findings 80
6.1 Emotional lexicon 80
6.2 Themes 83
6.3 Student agency in the chats 86
6.4 A school picture 87
7. Discussion 88
Chapter VI 90
Final points 90
1. Strengths and weaknesses of this research 91
2. Practical educational issues 93
References 96

Preface

Been, becoming, belonging

The future is "the infinite Now... not an instant but a becoming"
(Deleuze & Guattari, 1994)

This doctoral project was a challenge. Having *been* a teacher for almost thirty years, I have developed years-long experience in the classroom. However, experience can also become a habit. As a researcher, I had to change the teacher lens I have always worn to relate to the classroom context, in order to see it from a different perspective.

When I decided to choose which themes to focus on in my research, I knew I wanted to explore classroom emotions, particularly those emotions that happen *while* teaching and learning, which have often been underestimated and given scant attention. In schooling, emotions have often been addressed as a hindrance to rational thinking and an interference in learning activities, focusing mainly on cognitive issues. I consider emotions a doorway to understanding interactions: in my view, in the end, learning is always an emotional affair. I also knew I wanted to take a sociocultural perspective in my research, as I believe learning is an infinite *becoming*, a dialogue with what was before to create what has not yet been attained constantly in relation to the context to which we *belong*. Finally, my aim was to look into those emotional aspects related to student agency that have not yet been widely explored or that so far have just been taken for granted in research, and how we, as teachers, can contribute to boosting students' agentic skills.

Current literature has rescued the role of emotions, no longer neglecting, nor separating them from cognitive processes. On the contrary, authors have pointed out the importance for teachers to harness them to increase student participation and involvement. I have been teaching for years in High School, and I know that in this developmental phase of adolescence emotions can be intense, either sustaining learning or interfering with classroom management. In my experience, a lot of tension arises when the classroom does not respond appropriately to planned activities, or when unplanned deviations occur in the lesson. Teachers expect students to follow pre-established scheduled programs, whilst also encouraging creativity and personal contributions (Şahin, 2014). Adolescents look for independency and autonomy, while adults and education impose rules and dominance upon them: from one point of view, we could say that schooling involves giving in to ready-made knowledge. Nevertheless, aiming to develop student agency involves sustaining participation and autonomy (Matusov et al., 2016). This "tension" creates a dialectical perspective in educational processes and this contradiction may influence interactions giving rise to different

reactions. It might not always be an obstacle, on the contrary, it can support student agency allowing students to learn how to deal with opposite views and polarities, sustain critical thinking and help students in their life once out-of-school. As Jerome Bruner once personally told me, we should never be scared of confrontations. Something new will most definitely come out from it: new meanings and new horizons may arise from dialectical processes.

Thus, emotions have an important and relevant role in school life that educationalists should keep in mind to make the most of them and promote quality education.

The ultimate addressees of this research are teachers, since I believe they have the opportunity to enact changes and promote innovations: they are the main actors, together with students, in daily classroom practices (Biesta et al., 2015). Shedding light on classroom interactions will concur to pursue school wellbeing.

As a teacher, I had a question that brought me to this doctoral project:

"How can my research contribute to quality education in our classrooms?"

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CHAPTER I

Theoretical background

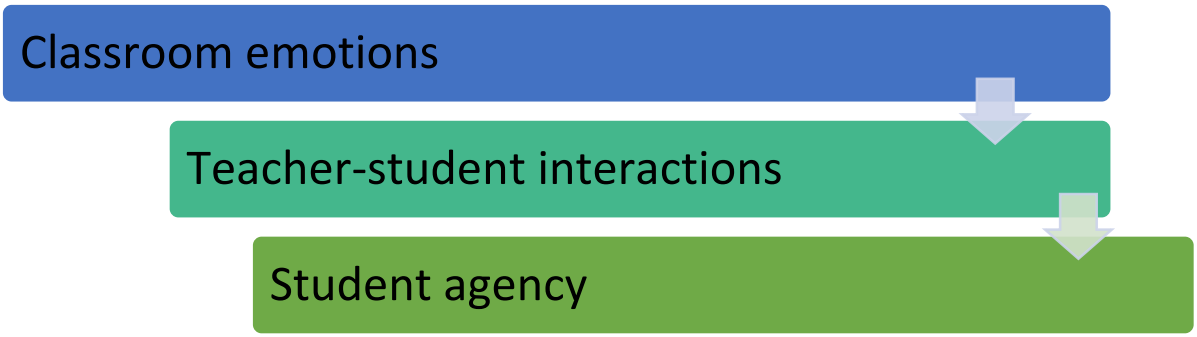
1. Introduction

D'abord l'émotion.
Ensuite, seulement, la comprehension
Paul Gauguin

This dissertation aims to participate in a collective debate on quality education, drawing attention to those emotional aspects in classroom dynamics that have not been widely explored in the literature. Traditionally, classrooms are complex adaptive systems in which interactions are multiple, various, and change moment by moment (Stone & Thompson, 2014); in addition, school context is characterised by collective participation, communication is shared and public (Molinari & Mameli, 2011), and it is ‘‘an inclusive ‘space’ of dialogue within which self and others mutually construct and reconstruct each other’’ (Wegerif, 2008, p. 353).

It is a fact then that school life unfolds through interactivity and is permeated by cognition and emotions, although research has often investigated emotions and cognition separately, implicitly perpetuating Cartesian dualism: indeed, cognition is filtered by intertwined emotional processes (Pianta, 1999; Pekrun, Goetz, Titz, & Perry, 2002; Pekrun & Linnenbrink-Garcia, 2012; Grams & Jurowetzki, 2015; Davy, 2017).

According to these assumptions, the general aims of this dissertation were, first, to investigate *classroom emotions* (Pekrun et al., 2017) not considered individually, but observed in their collective and distributed aspects that foster personal contributions in meaning making (Lemke, 2015; Beghetto, 2013; Matusov & Marjanovic-Shane, 2016). The second aim was to explore the potential of emotions in sustaining *teacher-student interactions* (Stone & Thompson, 2014) and the third was to trace *student agency* in classroom dynamics (Rajala, 2016; Rajala, Martin & Kumpulainen, 2016).



To this purpose, I supported my interest with the consideration that in classroom life there are many emotions influencing participants, nevertheless, since they are not inherent to the scheduled topics, they are not recognised as part of the lesson, but a sort of backdrop against which real teaching takes place. Informal classroom happenings, also observed from an emotional perspective, contain precious opportunities and resources to which research has not paid enough attention so far (Rogoff et al., 2016).

In this respect, I devised a research project divided into three studies with the aim of addressing these issues. The first two studies were observational and were based on video recordings in order to investigate emergent emotions in interactions. The third study's aim was to give students their say about school lessons and assess how they expressed agency in their *WhatsApp* chats.

In the conceptual framing of this dissertation, I built on both sociocultural theory and system theory.

2. Conceptual frames

2.1 Vygostkij and sociocultural theory

Through others, we become ourselves
L.S. Vygotskij

Sociocultural theory is the first theoretical background of this research. In his contributions to developmental psychology, Vygotskij (1991) conceptualized education as a social process in which the individual before becoming an *I*, learns from being *Us*; consequently, human development happens in a cultural context through social interactions, affective mediation, educative and sociocultural exchanges (Pontecorvo, 2007). As such, learning implies understanding and appropriating cultural objects (Rogoff, 2003) and takes place thanks to different experiences going through the opportunities offered by the contexts in which the individual grows up and lives. In the

constant mediation between the individual and the context, tension and contradiction arise (Engeström, 2006; Rajala & Sannino, 2016), and from this dialectic dialogue, creative contribution and new meanings are constantly born.

For the purpose of this dissertation, I considered Vygotskij's definition of *perežívanie* as an inspiring concept of my argumentation. According to Vygotskij's definition of pereživanie, emotions have a fundamental role in the framing and interpretation of human experience (Smagorinsky, 2011): "a dynamic meaningful system that constitutes a unity of affective and intellectual processes" (1987, p. 50 in Holzman, 2008, p. 46). This complicated dynamic system includes thinking, as well as a motivational or affective side; intellect, like all higher psychic functions, is subordinated to this system (Leontiev, 1992).

The multidimensional construct of pereživanie, later translated as "experiencing" (Jornet & Roth, 2016) helped Vygotskij to conceptualize this co-presence of cognitive and emotional aspects in human development. This concept fascinated me since, in Vygotskij's theory, pereživanie describes individual experience as a multifactorial combination of environment, personal perception, emotion and understanding. The experience is refracted in the person, considered as a refracting prism, and each person has a different one (Roth & Jornet, 2016). Vygotskian scholars Jóhannsdóttir and Roth (2014) posited that pereživanie constitutes a continuously unfolding process that simultaneously designates the movement from person to environment and from environment to person.

In other words, experiencing is a dynamic construct that represents a psychological learning activity by maintaining the unity of personal and situational characteristics: a social situated event refracts an individual response and at the same time, the environmental stimulus is personally elaborated through emotional and affective filters (Veresov, 2010; Veresov, 2014). In this frame, the environmental factors in themselves do not determine the course of development and learning, but what matters are the same factors refracted through the prism of pereživanie (Gonzalez Rey, 2009). "Pereživanie is a unit where, on the one hand, in an indivisible state, the environment is represented, i.e. which has been experienced…- a pereživanie is always related to something which is found outside the person - and on the other hand, what is represented is how I, myself, am experiencing this, i.e. all the personal characteristics and all the environmental characteristics are represented in pereživanie" (Vygotskij, 1994, p. 342).

In Vygotskij's theory, emotions were the focus of his last works, and in his views, emotions are not only an individual phenomenon, but also simultaneously a matter that needs to be addressed in social terms. This unified approach deals at the same time with individual and social aspects, the ways in which emotions emerge in particular situations, in my case the classroom, how they are

shaped by the context in which they manifest and their implication for individual students' experience in the classroom. Vygotskij's (1987; 1997b; 1999) work allows to embrace simultaneously both the individual and the social aspects of emotions.

2.2 The system theory

Although sociocultural theory permeated my line of research as a general background, systemic principles were suitable to analyse interactions, movements and interpersonal dynamics. System theory allows to grasp the complexity of those collective reciprocal dynamic readjustments that occur in classroom daily practices (Pennings et al., 2014a; Pennings et al., 2014b). Learning produces a simultaneous change, both in the individual who is learning and in the group the individual is interacting with. Therefore, through learning, individual transformation influences the group where social interactions take place, and the reverse process is also at work.

Complexity of interactions were described by the cybernetic approach in general (Sameroff, 1995; von Bertalanffy, 1968) and developmental (Ford & Lerner, 1992) systems theory. In particular, the second cybernetics of the observing systems (von Foerster, 1974) is suitable to discuss classroom dynamics. If we recall the pragmatic model of communication (Bateson, 1972), we can consider the classroom as an open and complex system, where the interactions between participants have a retroactive effect on the entire system understood as a totality, where all members have the same equal rights to intervene. What happens to one member has a reverberation on the others directly or indirectly. According to this theorization, a system cannot just be observed from the outside therefore, whoever is observing also becomes part of the system.

In further conceptualization of systemic tenets, nonlinear dynamic system theory (Hollenstein, 2011) analyses micro-interactions in the classroom context (Pennings et al., 2014b). Specifically, these approaches postulate the need to focus on process-level accounts of human behaviour and on the context dependence of developmental phenomena. Moreover, they are concerned with the mechanisms that underlie change and novelty, as well as stability, of dynamic systems (Hollenstein, 2013). Over time, behavioural patterns stabilize and become increasingly predictable; when a perturbation occurs, the system tries to return to a previous condition by the principle of self-preservation. However, some perturbations might be able to produce a change or a transformation in the system. This happens when the system adjusts to new ways of functioning, for instance, accepting and incorporating a new emergent pattern.

Based on system theories, a line of research on teacher-student interactions was carried out and several studies have examined the teacher's attitude towards the students. These studies used self-report instruments completed by the teacher or the students to establish their perceptions about the

behaviour of the other participant in the interaction (e.g. Mainhard, Brekelmans, & Wubbels, 2011; Buyse, Verschueren, Doumen, Van Damme, & Maes, 2008). These investigations focused on when and how the teachers behaved towards the students, but did not observe what the students' reactions were (Hamre & Pianta, 2003; Davis & Nicaise, 2011; Pianta et al., 2008; Rubie-Davies, 2007; Yan, Evans, & Harvey, 2011). Some other observational studies tallied the occurrence of the participants behaviour in interaction towards teachers, students or peers (e.g. Booren, Downer, & Vitiello, 2012; Harper & McCluskey, 2003) but did not consider the reciprocity, and the combination of both.

In my discussion, I considered both teachers and students as reciprocally influencing interactions (Pennings et al., 2014a), since the nature of communication in the classroom is public and participated (Molinari & Mameli, 2011), taking place in a social context where interactional exchanges are regulated by mirroring, echoing, and coordination. Consequently, activities provoke a concatenation of reactions in the system that sometimes show reciprocity whilst other times might shift towards uncertainty. Therefore, from these dynamics, continuous readjustments occur creating new kaleidoscopic possibilities and opportunities (Molinari & Canovi, 2016).

3. Classroom emotions in interactions

The very pursuit of Reason is driven by Desire
(Lemke, 2015 p.13)

How can we tell classroom emotions? Since emotions are thought to convey relevant information to cognition, they are valued as essential to the learning process. "Emotions are intimately involved in virtually every aspect of the teaching and learning processes, therefore, an understanding of the nature of emotions within the school context is essential" (Schutz & Lanehart, 2002, p. 67). In learning, emotions affect memory, attentive processes, motivation, the agentic capacity to choose, decision making and social competence (Zhou et al., 2010). In addition, emotions are necessary to be able to apply what is learnt at school to real life situations, in terms of facts and logical reasoning skills (Boekaerts, 2002; Immordino-Yang & Damasio, 2007; Muller Mirza et al., 2014).

Based on the model of affect developed by Russel (1980), Pekrun and colleagues developed a scale to measure emotions in teacher-student interactions (Pekrun, Goetz, Titz, & Perry, 2002; Pekrun et al., 2017). These scholars investigated the possible connections of two dimensions, namely activation and valence, identifying high positive and high negative emotions related to academic achievement and engagement (Pekrun, et al., 2007; Pekrun et al., 2011; Pekrun, 2016; Butz et al., 2015; Gogol et al., 2016; Pekrun et al., 2017). Their findings allow reconsidering classroom positive and negative feelings in a different perspective. On the one hand, school success sometimes might cause harmful effects in situations where students lose interest in learning and fall

back on positive feelings; in this case, positive emotions might demotivate them from pursuing achievement. On the other hand, negative emotions normally lead to detrimental outcomes, but they may also have a stimulating effect. In some circumstances, school failures direct students' attention towards themselves, motivating them to pursue better results: despite a negative emotion having a negative valence with subsequent disengagement, it might incite to overcome difficulties and in this case promote engagement (Appleton et. al, 2008; Valiente et al., 20142).

4. Seizing the emergent in interactions

De repente, não mais que de repente
Fez-se de triste o que se fez amante
E de sozinho o que se fez contente

Fez-se do amigo próximo o distante
Fez-se da vida uma aventura errante
De repente, não mais que de repente
Vinicius de Moraes

In classroom life, most of the time, teachers and students follow pre-established scripts (Rogoff et al., 2014) that organize participation in class activities. For both teachers and students, knowing more or less what will go on creates a comfort zone in which the involved social agents share codes and assumptions (Rajala, 2016). Nevertheless, there are also unexpected forms of class interactions and communication that emerge in their moment-to-moment occurrence (Sawyer, 2004; Beghetto, 2013; Mameli & Molinari, 2013; Vass et al., 2014; Molinari & Canovi, 2016). Sawyer (2004; 2006) sustained that improvisational techniques can support teachers and students to seize emergent new possibilities in classroom discussions. In other words, these spontaneous moments in the lessons may give rise to a redistribution of classroom control in talking, giving students their turns to intrvene, thus offering alternative co-construction in knowledge, and fostering a creative flow of interactions. According to Sawyer (2011), disciplined extemporization flexibly combines both planned and unplanned parts of lessons, and gives way to collaborative dialogues that are hybrid forms of communication between scheduled rituals and improvisation of everyday small talk.

Seizing the unexpected (Molinari & Canovi, 2016) calls to mind the concept of imagination in Vygotskian terms, which is intrinsically social as it always taps into reality and experience (Hilppö, Rajala, Zittoun, Kumpulainen & Lipponen, 2016). Imagination is a process that starts from an emotion in the here and now; it might be boredom, curiosity, or desire for something different. These movements (from proximal, the here and now, to more distal expanded experiences) are called loops of imagination (Zittoun & Gillespie, 2016). Through a decoupling mental activity from "the here and now" to an expanded possible experience, new original meanings can be collectively created in the classroom. Therefore, in the combination of already known and new elements, creativity and

imagination need the activation of both emotional and intellectual factors, as in pereživanie (Lindqvist, 2003); also, opportunities to explore them in the classroom are to be considered.

Mameli and Molinari (2013) analysed class interactions observing structural aspects intertwined with emergent interactive micro-processes defining these spontaneous happenings as turning points that offer opportunities to redirect the interactions. The continuous readjustments that the classroom system is called to face can offer interesting input to negotiations, create varied possible chances, and may also bring in different collective emotions whilst maintaining the structural aspects of the lesson. For example, during a lesson, there may be moments in which a sudden question or an opinion may create a crossroads in which the system has a chance to decide whether to move in that direction or not. In both cases, there might be different emergent emotions and interactive opportunities to explore.

Another line of research (Boyd & Markarian, 2011) sustains that it is the teacher's real curiosity that drives class interaction towards thinking together (Wegerif, 2013), thus promoting a meaning making activity, giving space to original contributions and student agency (Kumpulainen et al., 2014). This encouraging attitude could be described as "*I'm really interested in listening to what you have to say"*. In this perspective, students are considered culture and values owners, those who lay the first stone in their own learning process. According to Boyd and Markarian (2011), classroom talk should be based on trying to understand the students' points of view, and on building knowledge from what they say in a precise moment, starting to teach from something they already know. Quoting words from a teacher interviewed by the authors: "I think most learning starts with the learners and goes from there. And so, to start with their reading logs or what they are talking about and try to expand on that and to bring other things into that... when they say something, it might be the perfect opportunity to slide something in" (Boyd & Markarian, 2011, p. 515).

Beghetto (2013) defined these classroom emergent spontaneous happenings *micromoments*, which are opportunities that often arise and permeate classroom life. These spontaneous occasions spring up and sometimes give rise to original contributions, knowing that "creative thinking is much easier to recognize when you see it than it is to define or explain" (Wegerif 2010, p. 3). By involving cognitive, emotional and relational aspects of classroom life, these emergent happenings are potentially highly effective first to explore classroom emotions, second to foster new collective meaning construction and finally, to recognize student agency.

In fact, the notion of micromoments (Beghetto, 2013) is fundamental for grasping learners' creativity (Robinson, 2011; Halim, Kingsbury, & Drage, 2013; Csikszentmihalyi, 2014), defined as "brief, surprising moments of creative potential that emerge in everyday routines and planned activities" (Beghetto, 2013, p. 5). Specifically, micromoments unfold when planned and life curriculum cross each other and new off-script ideas originate (Kaufman & Beghetto, 2009;

Beghetto & Kaufman, 2014). In the classroom, new opportunities often arise from students and can be conceived as signals of something personally elaborated and produced, able to generate a space for teachers and students to explore, learn and experience something unscripted and unplanned (Rogoff, 2016).

Going deeper into creativity analysis, Kaufman and Beghetto (2009) introduced a distinction between Big-C, that is, creativity with a capital C, and little-c, with a lowercase "c". Creativity with Big-C corresponds to an explosive artistic inspiration belonging to only a few gifted people, while ordinary, everyday, self-expression little-c creativity is a quality of participation, emotional involvement and motivation in learning activities that can be found in nearly all people.

The same authors also expanded this dichotomy by proposing the Four C Model of Creativity, with two additional types of creativity: mini-c creativity, which is inherent in the learning process and Pro-c, which represents professional expertise in any creative area. Mini-c creativity can be learned at school, as it is developed day-by-day. Moreover, it is individually, but at the same time, socially developed in a particular collective cultural context. In line with the Vygotskian conception of cognitive and creative development, all individuals have creative potential. It is an internalization or appropriation of cultural tools and social interaction, not so much in terms of imitation but rather as transformation and reorganization of the incoming information and mental structures, based on the individual's characteristics and existing knowledge. In this sense, personal creativity originates from a shared meaning system: it makes sense because it is related to previous ideas, has a social frame, happens in a social environment and is never isolated.

The Pro-c creativity type is synonym of professional expertise, as it helps students to develop little-c creativity. The need to train teachers' ability to respond to unexpected curricular moments has been pointed out by several authors, who emphasize that teaching can support creativity and cheer all the activities that enable thinking "out of the box" (Eadie & Lymbery, 2007; Kirkendall & Kirshen, 2015). With Pro-c, teachers can cultivate classroom awareness and exploit the creative potential of micromoments to promote original learning opportunities.

Thanks to Pro-C, teachers develop the ability to seize the unexpected, transform lessons by including novelties, and respond flexibly to classroom needs by tuning in with the group (Lunkenheimer, Shields, & Arbor, 2012). When ready to grasp the motivational movements and the emotions going underneath and to convert them into learning experiences (Mason, 2002; Averill, 2004), attentive teachers foster *perežívanie* in their classrooms. Whether or not opportunities to nurture students' motivation and curiosity will be addressed or missed, this will have important implications for classroom interactions.

Teachers that are interested in listening to what students are saying boost and encourage student

agency (Kumpulainen et al., 2014). In this direction, common knowledge and understanding are at the core of a collective creative meaning making activity that is fostered by teachers' attitude in their teaching routines.

5. Student agency

Consistently with a sociocultural approach to emotions in teaching/learning processes, agency is seen as an ongoing process that is contextually situated (Lipponen & Kumpulainen, 2011; Hilppö, Lipponen, Kumpulainen and Virlander, 2016). In school context, student agency concerns daily practices and implies the ability to take initiative and express volition in interactions, contributing to create new knowledge and generating changes in the interactive situation (Engeström, 2006; Biesta & Tedder, 2007; Rainio, 2010).

In the sociocultural approach, the importance of student agency is widely recognized (Mercer, 2000) as central to learning processes and existing studies in the educational field have documented various ways through which agency arises. Firstly, it has been primarily associated with student engagement and authorship in knowledge construction (Clarke et al., 2016; Damşa et al., 2010; Greeno, 2006; Gresalfi et al., 2009; Kumpulainen & Lipponen, 2010; Martin, 2016). Martin (2016) claimed that agency can be operationalized according to how individuals in a discourse take responsibility in positioning themselves in interactions. Secondly, some studies have shown that students display agency by managing mutual relationships and providing reciprocal support while working on problems (Damşa et al., 2010; Kumpulainen & Lipponen, 2012; Rajala et al., 2013). Thirdly, agency can be achieved by taking actions that transform classroom interactional events and practices (Bjerke, 2011; Barton & Tan, 2010; Rainio, 2008b; Sannino, 2015; Rajala et al., 2016; Siry et al., 2016), and it has also aspects related to creativity (Awad & Wagoner, 2015). For example, Rajala et al. (2016) showed how students were oppositional to the teacher's authority in order to contest instructional contexts and procedures. Rainio (2008) found that engaging in a collective dramatized play provided open-ended activities that stimulated students' initiatives, permitting creative ways of dealing even with resistance and destructive issues as forms of agency.

Among educational aims detailed in school curricula, incentivizing student agency is suggested to form critical thinking citizens able to make responsible choices (Rajala, Martin & Kumpulainen, 2016; Hilppö, 2016); in order for this to happen, experiences, trials, explorations and ability to make decisions are necessary. In line with other authors (Rainio, 2008; Clarke et al., 2015), the capability of choosing and acting is recognisable not only in *enacted agency* but also in individuals' *sense of agency*, the way they perceive themselves capable to decide and act, and is present from a very early age (Markström & Halldén, 2009; Hilppö, 2016). In another study, Hilppö, Lipponen and

Kumpulainen (2016) analysed children's sense of agency through interviews in which children talked about themselves and their lives. These authors operationalized agency in the way children saw and perceived themselves in terms of wanting, having the possibility to choose, and being capable of doing something. Their analysis demonstrated the richness and elaborateness of children's accounts on their agency. In the interviews, children positioned themselves as persons capable of talking about the aspects of their lives they wanted to pursue, and their determination to strive towards these goals. The children also established themselves mostly as having the competencies to commit to diverse practices. Furthermore, they revealed an implicit understanding of the contradictory nature of agency.

In fact, in agency, a contradiction may arise between the individual will and social requests coming from the context; for this reason, contradiction is one interesting aspect of agency that emerges in the classroom (Rajala et al., 2016). Specifically, Rajala, Kumpulainen, Rainio, Hilppö, and Lipponen (2016) outlined the common contradiction between agency and control; inevitably, allowing students to experiment their willpower implies that teachers agree to reconsider classroom control. This implicates that encouraging student agency might be a constant process of renegotiating power, supporting it through a balance of classroom management, instruction and active participation. As a consequence, exploring agency from this point of view allows to investigate also those opportunities arising from a moment of tension. When an uncomfortable state between what is there and what is not emerges, it might open to classroom collective agency and little-c creativity, and evidence from emotions, either hidden or manifested, individually *and* collectively distributed (Stone & Thompson, 2014; Lemke, 2015).

Following these assumptions, we can sustain that agency involves the challenge to stay in this emotional double bind: the will to express oneself and the need to fulfil the context requests, thus feeling included in the group. In the first case, agency could lead to breaking a previously established pattern (Sannino et al., 2016), adding a personal and original *contribution* as an agentic self-expression and in this way enacting agency. In the second case, individuals might follow the indications of the group to which they belong, and thereby renounce to pursuing an individual choice.

Whereas agency entails emotional aspects, the impact of emotions in self-expression and their consequent influence on learning has been analysed much less often (Calhoun, 2007). A greater number of studies have underlined the importance of showing how agency is constructed in social practices, negotiated, and renegotiated in interaction (Kumpulainen, Lipponen, Hilppö & Mikkola, 2014; Rajala, Martin & Kumpulainen, 2016). For example, Hilppö, Lipponen, Kumpulainen and Virlander (2016) consider agency to be a "socially constructed relation between an individual's

capabilities, aspirations, and perceived opportunities and limitations to take action with a given practice" (p.2).

As discussed elsewhere, "Similarly, Ma and Gao (2010) considered that developing agency meant becoming more autonomous in learning and taking charge of one's own learning through negotiation, providing an illustration of this interaction with tertiary students co-determining syllabi in conference with teachers" (Annan, 2016, p.2).

Another line of research analysed how student agency can be developed, and how teachers influence the extent to which pupils are active or passive learners. Citing Annan (2016), "positive teaching approaches have been associated with agentic activity and student well-being (see Seligman, Ernst, Gillham, Reivich, & Linkings, 2009)" (p.4). Studies on agency in students' learning and teachers' practice shed light on how it is possible to create supportive emotional climates for learning (Pekrun, 2014; Fullan, 2013).

As suggested by Rajala, Kumpulainen, Rainio, Hilppö, and Lipponen (2016) agency has a double aspect of control and negotiation, and the ingredients that support student agency are a mix of instruction, classroom management and active participation. Building on this, teachers can encourage students' active participation in learning processes and student agency in the ongoing flow of classroom social interaction (Kumpulainen, Lipponen, Hilppö, & Mikkola, 2014).

CHAPTER II

The research plan

1. Method

"Qualitative research is a set of complex interpretive practices.
As a constantly shifting historical formation, it embraces tensions and contradictions,
including disputes over its methods and the form its findings and interpretations take"
(Denzin & Lincoln, 2011a, pag. 6)

When carrying out research on classroom interaction in the field of psychology of education, and particularly when specific research interests involve the study of *classroom emotions*, methodological issues emerge as critical. In fact, emotions are ubiquitous, as they permeate classroom life, despite being hidden or covert most of the time. Therefore, it is quite difficult to sustain that a person or, in this case, a group is going through an emotionally connoted interaction. To overcome these difficulties, I used a heuristic methodological principle to base the analysis on emergent emotions that are observable and transcribable with reference to specific indicators for each study.

I applied a qualitative observational design for this research based on video recordings and chat analysis. I chose qualitative research since classroom context is complex and this approach allows to explore multiplicity and emergent aspects (Ravitch & Carl, 2015). This research included three qualitative studies, two of which were observational. Study 1 and Study 2 were based on the analysis of lesson video recordings whilst Study 3 analysed *WhatsApp* chats.

For some aspects of my research, I adopted an ethnographic approach with a gradual entry in the field using field notes and video recordings. Data were analysed with a multi-method approach, combining diverse procedures.

1.1 The context

Data collection was carried out between November 2015 and April 2016 in a high school situated in a countryside village in the North of Italy. The school is located in the largest village of a mountainous area, and students come from many smaller neighbouring villages. Some students face a long journey to school by bus and therefore, school is also a place where teenagers can meet up, especially those who do not have many occasions to see each other, in their villages gradually becoming uninhabited,. The area has always been an agricultural zone, and nowadays, is a heterogeneous context where immigrants coming from North Africa, Albania and Ukraine are on the rise, as well as many Southern Italians having moved to the area. Teachers often come from the nearest city and commute every day, either by bus or by car. It is a snowy geographical zone and

sometimes in winter, getting to lessons on time becomes impossible and in some cases, schools even close due to inaccessible roads in bad weather months.

Despite being a small countryside village, interest for school quality is very high, and stakeholders collaborate to pursue school quality. Being a teacher in that area, one of the aims of my research was to share the research project, as much as possible, with the local teaching community. Therefore, at the beginning of my doctorate, I decided to translate and share my findings in dissemination activities and meetings with educationalists of the area that hosted my research.

1.2 Participants

Four classrooms participated in this study and a total of 89 students were enrolled of which 48 females and 41 males, all between 16 and 19 years of age, as well as their 4 humanities teachers. I chose to observe humanities lessons because having reviewed the literature, most studies focused on the scientific area (Aguiar et al., 2003; 2006; Hilppö, 2016; Rajala, 2016; Hofmann & Mercer, 2016). Moreover, in Italy, teachers of humanities usually are those that have the largest number of lessons in each class in high schools, since s/he normally teaches not only Italian Literature but also History and Latin in schools where it is part of the curriculum. I organized this research by first involving the Headmaster of the Institute, as well as the local authorities working on education issues to share my project.

I opted to recruit students from the second year of high school that were already well blended in the classroom, since in first year students may have adaptation issues that could emotionally interfere with social interactions. It was not easy to enroll the participants. The headmaster invited all the teachers of the institute to participate in my project, and extended the invitation to the project presentation to all the parents involved. In order to go on with the research, I had to inform the entire teaching team of the Institute. Once I had decided which classes responded to my selection criteria, according to school subjects and grade, I illustrated the research plan to the teachers. However, two of these teachers decided not to participate as they did not want to waste time, therefore, I had to select other two classes. After having finally identified the four classrooms, I explained the project to all the students and gave them a parental informed consent form to take home. In one classroom, the parents of one student did not accept. Therefore, I had to choose another classroom. Once recruitment was complete, the participants of my research included four classes and their respective teachers. I also asked teachers to sign an informed consent and I read the research plan to the students, asking them to subscribe an agreement in which they consented to be the subjects of the research. I committed myself to inform the participants of all the steps of the research, until the communication of the findings. Among the teachers, three were female and one was male.

I named the classes with the names of their teachers, assigning fantasy names.

Class Neri: in this class, Teacher Neri, female, was the Italian Literature, Grammar and History teacher. It was the second year of Accounting High School with students aged 16.

Class Viola: Teacher Viola, female, was the Italian Literature and Latin teacher in this class. It was the second year of Science High school with students aged 16.

Class Verdi: Teacher Verdi, male, was the Italian Literature and History teacher in this class. It was the third year of Accounting High School with students aged 17.

Class Rossi: Teacher Rossi, female, was the Philosophy teacher in this class. It was the fourth year of Science High School with students aged 18.

1.3 Data collection

Data were collected in four steps. First, I went into the classroom to get acquainted with the context. I observed 6-7 lessons in each classroom. This paper-and-pencil phase allowed me to focus on the classroom emergent emotions dynamics I wanted to observe. Once I felt I was part of the field and students no longer changed their behaviour as I entered the classroom, I used my mobile phone to create short flash videos of interactions. In this way, the classroom gradually got used to being recorded. I also systematically took field notes and regularly wrote a diary after each lesson making notes of my ideas.

Second, I introduced two video cameras pointing towards students and recorded *two regularly scheduled lessons* in each class that I called "*standard lessons*". I chose not to point the video camera at the teacher, to allow s/he free to decide whether or not to be on or off-camera. I chose to use two cams in order to have a complete field-of-view of all students.

Third, I recorded *two extra lessons* that I called "*nonstandard lessons"* in which teachers were asked to change the common practices of everyday school life. In one lesson, teachers were asked to change the spatial arrangement of the classroom, whilst in the other lesson, they were asked to introduce a technological device. In both cases, the important thing was not to follow a predictable script during their lesson.

Fourth, after each video-recorded lesson, I asked students to interact with me as a moderator on a *WhatsApp* chat. I created a group chat for each class; I set out conversation ground rules and asked the students how they felt during the lesson and what they thought about it.

At the end of data collection, the material included *16 lessons*, about 13 hours of video recordings (including flash videos taken with a mobile phone) of humanities lessons divided into 8 standard and 8 nonstandard lessons and 16 classroom chats.

A brief description of nonstandard lessons

In changing classroom spatial arrangement, Teacher Neri decided to take away the students' desks: she asked students to bring in a blanket from home. Then, she gave her Literature lesson with everyone sitting in a circle on the floor. With regards to introducing a technological device, Teacher Neri opted to use a CD player to listen to a song of a popular Italian songwriter. Then, she gave students the lyrics, and they had to do a grammar analysis of the text. They listened to the song several times and after correcting the text grammar analysis, they sang it together.

Teacher Viola in her Literature lesson arranged the chairs in a circle, then switched the lights off and asked the classroom to discuss and comment in the dark a novel they had previously read. The teacher set the rule that students had to introduce themselves by giving their names every time before speaking. When using a device, she asked students to work in groups and each group had to look up some information about an Italian novelist. She invited students to use their personal mobile phones and at the end of the lesson, she asked each group to share what they had found out.

Teacher Verdi's choice consisted of bringing as many plants as he could find around the school into the classroom before students arrived transforming it into a garden. He eliminated the rows of desks and moved the teacher's desk aside. Students came in in the morning and were surprised to see such a different classroom setting. Then he went on to give his Literature lesson. He used school laptops in the classroom to get students to search for images in groups, and then, asked them to explain their choices to the classroom.

Teacher Rossi, in her Philosophy lesson, decided to discuss Italy's current affairs sitting in a circle, debating on tolerance and intolerance. With regards to using a technological device, she divided students into groups and then asked them to use their mobile phones to look up information about how adolescents with same-sex parents faced social life.

2. Data analysis procedures

For all the steps of the procedure that required the transcription and analysis of audio-video material, I used Transana 2.42 software, specifically developed for the management, transcription and organization of large video collections. Its major benefit is the combination of both audio and video with transcripts, which are time-coded and synchronized. First, I transcribed the text and verbal exchanges in each video recording noting down anything that went on in the class I considered relevant. Then, I coded each transcription, according to the categories of analysis for Study 1 and Study 2.

Study 3 was based on chat analysis; I categorized each chat according to the indicators I had previously established. Data analysis procedure will be detailed in each single study.

The Inter-Rater agreement was the main procedure adopted in order to guarantee analyses reliability. For this step, I was supported by my supervisor and a graduate student attending Parma University. The Inter-Rater agreement was 85% in Study 1, 87% in Study 2 and 91% in Study 3. In my research, collaboration was essential and fundamental in all parts of the project, but particularly during data analysis.

3. Ethical issues

A collection of video-data on minors must rigidly observe and adhere to National and International Ethical Guidelines. The present study was carried out at all stages in complete respect of the ethical principles developed by the Italian Association of Psychologists. In particular, I informed the teachers and both parents of all participants about the objectives and procedure of the research, and that the data would be used for research and educational purposes. In addition to the consent form as above specified, I also made a written agreement with the students, in which they gave their availability to participate in this research project. On my side, I made the commitment to disseminate the findings of my research to teachers, students and parents by guaranteeing anonymity. When working with minors, protecting their identity and that of their families' is an ethical procedure that must be respected. I ensured participants I would take the utmost care to maintain confidentiality. The context of my research is not a big city, it is a relatively small area, people know each other, and social life is shared and participated, a further reason to respect privacy.

CHAPTER III

STUDY 1

The sound of classroom flow: seizing emotions in lesson mode interactions

“

1. Introduction

The actant is both the subject and the object
and neither the subject nor the object, but the network.
(Blewett & Hugo, 2016 p.66)

This study focused firstly on classroom emotions observed through the combination of control and proximity in interactions determining *lesson modes*, and then, on how lesson modes relate to *spells of flow*. In this discussion, *Control* was considered as the classroom management of power (Cornelius, & Herrenkohl, 2004), and *proximity* as the closeness, frequency of exchanges manifested in interaction (Pennings et al., 2014a): both regulate classroom dynamics and may foster emotions.

In the educational field, many scholars have investigated either positive or negative emotions, concerning achievement and classroom relationships. Classroom emotions are associated to specific issues such as engagement, attention, curiosity, satisfaction or boredom, anxiety and frustration, to mention a few (Pekrun, et al., 2007; Pekrun et al., 2011; Pekrun, 2016; Butz et al., 2015; Pekrun & Linnenbrink-Garcia, 2016; Glackin, 2017). According to this line of research, classroom emotions are connected to feelings of being involved or not, being part of a group, relating, learning and performing together. Joy for feeling confident while *performing* and the individual perception of managing to do “well” (or not) were both described by Csikszentmihalyi in his *flow* theory (1991) where flow was considered as an individual state of total absorption in the task at hand.

2. Teacher-student interactions in the classroom

“The reciprocity which lies at the heart of living systems
has not yet been incorporated into our methods of analysis”
(O’Brien, 2005, p. 888).

Interpersonal communication was first theorised by Leary’s model (1957), an interpersonal circle or interpersonal circumplex with a two-dimensional representation: a vertical axis of dominance, power, control; and a horizontal axis of proximity, friendliness, warmth, closeness.

Models based on this conceptualization can be easily applied to classroom interactions to observe classroom management (Rawlings Lester et al., 2017) and involve capturing students' attention, eliciting participation but also dealing with moments of boredom or disengagement. It is well known that disruptive behaviour may occur during a lesson: classroom emotions may vary very rapidly leading to moments in which high control is required alternated with moments of closeness and friendliness. Therefore, some lessons may turn out to be extremely interactive, whereas in other lessons, moments of high control might be required to cope with challenging chaotic moments (Glackin, 2017). Thus, in daily school routines, teachers' authoritative manifestations combine and blend with moments of relaxation and warmth (Mainhard et al., 2017).

In recent years, it has become conventional to identify the vertical and horizontal axes of Leary's model with the broad constructs of authority and communion (Horowitz & Stack, 2010). Different authors have named differently the two dimensions regulating personal interactions (Locke, 2014).

For example, Mortimer and colleagues (2006; 2010) have produced consistent research analysing science lessons and examining teacher-student interaction patterns based on *authoritative/dialogic* and *non-interactive/interactive* dimensions in a continuum.

Authoritative communication represents only one voice and one point of view without exploring different ideas. In contrast, in dialogic communication, attention is drawn to more than one point of view, to hear more than one voice, and there is exploration of multiple ideas (Bakhtin, 1981). The dialogic dimension opens up to different perspectives or, as the philosopher Buber would put it, there is an attitude of I-Thou instead of I-It (Wegerif, 2017) and communication focuses on the interpersonal relationship instead of on an object. In their discussion on communicative models, Mortimer and colleagues made an important distinction between dialogic and authoritative talk, independently of whether or not talk is uttered individually or between people. In dialogic talk, what makes the difference is that different ideas are represented, taken into account and acknowledged while talking, rather than whether produced by a group of people or by a single individual.

In the interactive/non-interactive dimension, the first involves more participants with many exchanges, whilst the non-interactive dimension means that only one person is involved, usually the teacher that plays the active part (Aguiar, Mortimer & Scott 2010). Thus, according to this model, the teacher could decide to conduct a recitative lesson where s/he explains and talks to a classroom of attentive students carrying more voices in her/his talk resulting in a dialogic and low interactive lesson at the same time.

In a similar vein to interpersonal theorists, another line of research (Pennings et al., 2014a) used the meta-concepts of control and communion (Gurtman, 2009; Horowitz & Strack, 2010) to describe both teacher and student interpersonal behaviour. A high position on the control dimension means

someone is dominant, has authority and power in interaction, makes choices and decisions; a high position on the communion dimension means that someone shows proximity, closeness and friendliness (Gurtman, 2009). According to these bi-dimensional models, the meaning of each interaction derives from a specific blend of control and proximity through which it is possible to observe classroom dynamics in real-time from a systemic perspective.

Investigating classroom dynamics further, Pennings and colleagues (2014b) described interactivity in terms of *attractors*, *variability* and *complementarity*, building on the Dynamic Systems Theory (Dishion et al., 2012; Granic et al., 2003; Hollenstein, 2011; Mainhard et al., 2014; De Jong et al., 2012). An *attractor* is a pole of interaction, a behavioural state preferred by a system when exchanges between some members are recurrent, repeated and reiterated. In addition, interactive patterns may also be influenced by *stability* or *variability* (Dishion, Nelson,Winter and Bullock, 2004; Hollenstein & Lewis, 2006). For example, Mainhard et al., (2014) found that students preferred stability in teacher-student relationships instead of variability, while variability proved to be functional in mother-child dyads in order to foster healthy developmental issues (Hollenstein, 2007). Finally, *complementarity* is another central aspect that helps define interaction patterns by describing the interplay between participants and those systemic movements in the interpersonal behaviours of both participants fitting together, mutually adjusting to each other, and how this dynamically changes during interactions (Sadler et al., 2009). When considering the interactive dimension in teacher-student dynamics, proximity may be observed in recurrence of attractors, variability (or not), and reciprocal adjustments.

The interactive dimension also allows to observe classroom movements in which spontaneous interactions may occur creating emergent and unexpected opportunities, influencing the group and provoking changes in the complexity of the collective dynamics (Molinari & Mameli, 2013; Mameli & Molinari, 2014). Emotional aspects may highlight and accompany these oscillations.

In line with these considerations, in my research, I drew on the previous conceptualisations, continuing to use this double lens to illuminate classroom dynamics. On the one hand, I considered those sociocultural aspects highlighted in Mortimer and colleagues' claims (2006; 2010) regarding co-constructed communicative exchanges between classroom participants. On the other, I also built on dynamic systems principles (Peenings et al., 2014a; Hollenstein, 2011; Molinari & Mameli, 2013) that allowed me to analyse classroom interactions from a systemic moment-to-moment perspective, with the aim of investigating further the inherent emotional aspects.

2.1 Lesson modes

Systems for me are always dynamic:
they exist, like living things, only when their processes are happening, are on-going.

(Lemke, 2015 p.27)

Using the above-mentioned interpersonal models, in my study I defined *lesson modes* as the recurrent pattern that originated from the various combinations of control and proximity in a continuum from high to low.

High/low Control

Control is a form of power (Ball, 2013) mastered and exerted in the classroom mostly by teachers (Glackin, 2017, Candela, 1998; 2005; Scott, Mortimer & Aguiar, 2006; Rajala, 2016). When in a *high control* mode, the teacher plays an active role by guiding interaction, making decisions and maintaining classroom power without giving it to students. In this way, s/he maintains discipline and plays a dominant role (Macleod et al. 2012), acting as a primary knower (Berry, 1981): s/he is officially the one who knows what to do, when, and why. High control is also useful when the teacher needs to contain students in those parts of the lessons in which discipline problems and disruptive emotions emerge (Meyer & Turner, 2007; Claessens et al., 2017). Alternatively, the teacher might opt to scaffold (Rojas-Drummond et al., 2013) and sustain the students in some parts of the lesson choosing different patterns (Molinari, Mameli & Gnisci, 2013; Molinari & Mameli, 2013). Research has demonstrated that dynamic forms of guidance and control are useful to "model" students reasoning skills (Ruthven & Hofmann, 2016) leading to more dialogical and dialectical ways, following an epistemic order (Hofmann & Mercer, 2016). In order for these interactive oscillatory movements to happen in the system, students have to agree, accept and collaborate (Hargreaves, Elhawary & Mahgoub, 2017), enabling the teacher to exert power. When forms of high control are explicit, students exert a receptive capability, *patiency* (Haynes, 2014) *radical passivity* described by some researchers as an acceptance to remain in a receptive state (Roth, 2010; Hilppö, 2016). When control is low, chaos might gradually take over.

High/ Low Proximity

Proximity represents the frequency of interactive communicative exchanges (Aguiar, Mortimer & Scott, 2010; Mercer, 2010; Mercer, 2007). Not only it has a quantitative aspect as an attractor (Hollenstein, 2011; Pennings et al., 2014a), but also a qualitative one in order to respect meaning in interactions. Therefore, high proximity manifests principally as closeness addressing and eliciting students' participation in talk, with the reiteration of meaningful, ordered and clear exchanges (Hollenstein, 2011; Pennings et al., 2014a); in this case, the teacher may guide the interaction driven by an authentic curiosity (Boyd & Markarian, 2011). Low proximity is non-interactive when it excludes the participation of other people maintaining distance, or interactions are disordered and

meaningless.

I operationalized classroom interactions mainly based on *control* and *proximity*, as they regulate the unfolding of classroom dynamics and determine *lesson modes*. Each classroom interaction can then be considered as emergent from a lesson mode.

3. Flow

"I remember one morning getting up at dawn.
There was such a sense of possibility.
You know, that feeling. And I... I remember thinking to myself:
so, this is the beginning of happiness, this is where it starts.
And of course, there will always be more...
It never occurred to me it wasn't the beginning.
It was happiness. It was the moment, right then."
The Hours, Michael Cunningham

According to Csikszentmihalyi's theory, "flow is an intrinsically rewarding, highly absorbing state in which people lose a sense of time and the awareness of self. Flow states are more likely when individuals freely choose activities, goals are clear, performance feedback is immediate and concrete, and challenges are high but the performer has the competencies to gracefully dispatch the challenges. When this balance between challenge and skill is not achieved, non-flow emotions such as anxiety, boredom, or apathy are experienced. While flow experiences are usually pleasant, positive emotions like joy may not be expressed or even felt during a flow experience. However, joy and elation are often expressed at the end of a flow experience or when a recent flow experience is recalled. Joy and elation are signature emotions of flow experience" (Walker, 2010 p. 2).

In current literature, flow has been described as a state of consciousness of a person when deeply involved in enjoyable and stimulating activities. Flow is the "optimal experience", the balance between one's own skills and the challenge of the task. When experiencing flow, individuals perceive themselves capable of doing what they are supposed to feeling a sense of gratification, accomplishment and satisfaction. "There's concentration, clear goals, feedback, there is the feeling that what you can do is more or less in balance with what needs to be done, that is, challenges and skills are pretty much in balance. This experience is so rewarding and that's the flow experience." (Csikszentmihalyi, 2014 p. 4)

Structurally, in flow, there are contemporarily two co-existing aspects: a performative dimension and a self-positive feeling perception, as shown in Figure 1.

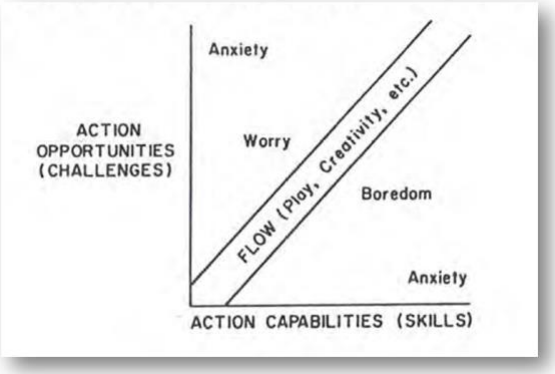


Figure 1. Flow diagram (Csikszentmihalyi,1975)

Flow is a multifactorial concept, which involves acting and emotions and has been studied through written self-reports or experiences in which people had to indicate the exact moment they were experiencing the state of flow (Csikszentmihalyi, 1975, 1997). It could be summarised as a complete absorption in what one does (Nakamura & Csikszentmihalyi, 2014; Csikszentmihalyi, 2014). This state of deep absorption in an activity is intrinsically interesting and enjoyable, for example, when athletes are focused on their play, dancers immersed in their performance, or scientists engrossed in solving a new problem (Csikszentmihalyi, 1990) and the experience is fulfilling and rewarding.

Optimal experiences are also considered to be the product of the quality of interaction between a person and the environment; thus, conceptualizing student engagement based on the flow theory is consistent with bio-ecological views. Bronfenbrenner and Ceci's (Bronfenbrenner & Ceci, 1994) bio-ecological model of development analyses the influences of an individual's background, personal attributes, peers, teachers, parents, school, community, and macro-level factors such as society and culture through proximal processes described as complex reciprocal interaction.

In the school context, research has shown that flow happens (Bempechat & Shernoff, 2012; Shernoff et al., 2014), but it would be unrealistic to conceptualize that adolescent-aged students are constantly and routinely in flow during school lessons. The National Research Council (2004) observed "We are not proposing that all high school students be in a constant state of flow, but we have seen youth deeply and enthusiastically engaged in schoolwork and we believe that this high standard should be our goal" (p. 32).

Flow theorists characterized it as an individual and not a group phenomenon, considering flow as an autotelic, self-referred experience, which is always associated to a performance. The majority of early researchers focused on individuals performing alone, however later studies also focused on group flow.

3.1 Group flow

Research has investigated flow also from a collective perspective (Sawyer, 2003; 2004; Armstrong, 2008; Walker, 2010). In further developing Csikszentmihalyi's concept of flow, Sawyer defined group flow as "a collective state that occurs when a group is performing at the peak of its abilities" (2003, p. 167). From an emotional point of view, group flow is a collective intensely absorbing state (Figure 2), also defined as the optimal performance of a group functioning together (Walker, 2010).

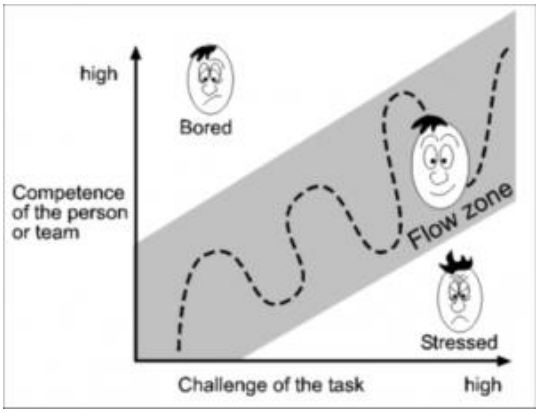


Figure 2. Group Flow

According to Walker, emotions are reported to be more positive when doing things together; in his study, he argued that some of the most positive flow experiences occurred during social interactions. According to his results, group flow is a social experience. Interviewed persons referred they had a better experience in performing together than alone. When asked to rate experiences where they had to collaborate in a group, they gave higher joy rates compared to the same performance done alone.

Other studies considered group flow as manifestations of co-constructed creativity analysing aspects other than individual ones (Sawyer, 2003; 2004; 2006). Contextualized in classroom interactions, optimal experience happens when the classroom is responding to a collective task (Armstrong, 2008), following a procedure or working and performing together to its maximum potential, for example achieving the best results prefigured and expected in problem solving activities, collaborating in searching for information, engaging in class discussion, or just listening attentively to a lesson.

In his studies, Sawyer built on Csikszentmihalyi's research and investigated group flow related to improvisation in teaching, in order to create teacher training and improvisational techniques. He suggested teachers should flexibly welcome unexpected students' answers acknowledging their contributions using "yes and" and revoicing techniques in order to encourage student creativity, as well as move from scaffolded and structured lessons to more improvisational forms in order to build new knowledge and offer different lessons.

Classroom emotions may appear in some spells of flow revealing a quality of absorption, intensity and presence in accomplishing a given assignment. Armstrong (2008) observed school context and studied small group work in maths lessons during problem solving activities and argued that it was not possible to orchestrate group flow as it occurred when during interactions, participants decentralised, coordinated, and communicated echoing, mirroring and completing each other's sentences, manifesting a sense of coordination, attunement and togetherness. The students seemed to function *as* one (Sawyer, 2003; Armstrong, 2008). Participation, involvement and a sense of *"we can handle this"* were there, and the group was experiencing, participating and sometimes performing to its maximum (Csikszentmihalyi, 1990; 2014). The author claimed that group flow is an emergent process and fragile collective state, created spontaneously but evanescent and difficult to seize. Armstrong affirmed that tracing collective emotions in interactions can be a demanding issue when not using self-report instruments. Flow instability makes it hard to seize, grasp and measure flow, even more so if we consider group flow.

4. Study aims and research questions

Based on the theoretical discussion presented so far, I aimed in this study to analyse how emotions unfold in teacher-student interactions.

Specifically, my research questions were:

1) Which lesson modes can be identified based on the combination of control and proximity in classroom interactions?

2) How do lesson modes vary when unusual elements are introduced in the lesson, with the objective of provoking unexpected interactions?

3) Which types of group flow, if any, can we observe in classroom dynamics?

4) How does flow intertwine with lesson modes? Are there lesson modes that incentivise flow?

5. Method

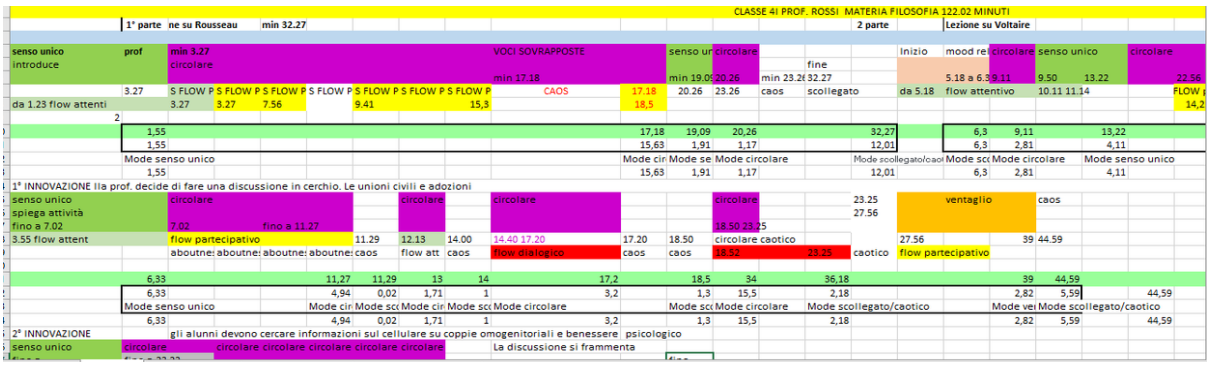
5.1 Materials

The material used in this study consisted of 16 video-recorded lessons of the 4 classes in which I collected the data. Of these 16 video recordings, 8 were standard lessons and 8 nonstandard lessons. The participants included the 4 teachers and 89 students (41 male and 48 female). The general data collection method is explained in detail in chapter 2. In this study, I considered the 8 standard and the 8 nonstandard lessons separately.

5.2 Data analysis procedures

First, I read the transcripts of each lesson and watched the videos several times, in order to identify any regularities and recurrent patterns. Second, I defined a code system to identify how the interactions unfolded by observing the combination of control and proximity. Lesson mode became my unit of analysis and I divided the lessons in sequences of time, according to the recurrent modes as I found them, coding when each pattern began and ended, how long it lasted, and when another pattern took over. Each time there was a shift, I coded the time length of the patterns, calculating the time in minutes/seconds. Next, I chose a different colour for each pattern and used Excel sheets for each lesson, recording on a horizontal row the time a pattern started and ended, and a new pattern occurred. I finally ended up with sequences of diverse patterns in each lesson. Figure 3 is an example.

Figure 3. Example of modes and flow coding in Excel



I defined the indicators of code actions, body movements and non-verbal activities that characterised each recurrent mode describing students' and teachers' verbal and nonverbal behaviour/movements. Third, I compared the sequence of patterns in standard lessons with the sequences of patterns in nonstandard lessons.

Fourth, I identified those moments in which group flow manifested, in other words, when the group proved to be absorbed and functioning to the best of its possibilities. I observed when attention, enthusiasm, participation, interest and boredom manifested collectively. I defined the unit of analysis in *spells of flow* according to their duration, taking note of when they started and finished and coding each spell of flow with different colours. After that, I calculated the overall time of each mode considering all the lessons together: I considered this global time as a unit of 100%. When flow emerged, I quantified the duration of the spell. I had to consider time in seconds, since often, flow types overlapped between one mode and another. One spell of flow could emerge in one mode and then continue in another mode. I analysed whether flow had different characteristics and to which mode it was related, looking for recurrent features that would allow me to identify peculiarities. Finally, I investigated the intertwining of flow with lesson modes and when modes

facilitated this.

6. Findings

6.1 Different lesson modes

I identified four different lesson modes:

1) "*One way"* mode when the system functioned in high control and there was low proximity
2) "*Ping Pong"* mode when in control, proximity increased
3) "*Circular"* mode when control was reduced and there was high proximity
4) "*Out of tune"* mode when the system went out of control, the interactions became disorganized and chaotic movements were evident in the systems

Lesson modes are illustrated in Figure 4.

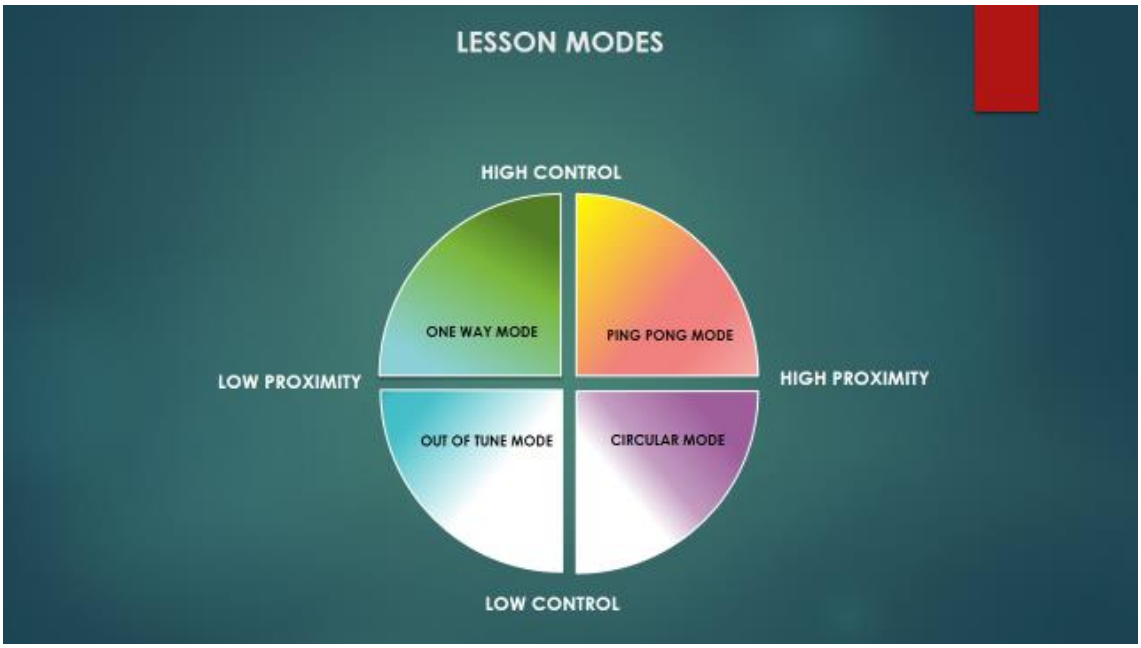


Figure 4. Lesson modes according to the combination of control and proximity

For each lesson mode, I individuated the way it started, the ongoing and the end as described in Table 1.

Table 1 – Description of lesson modes ongoing T= Teacher C= students, unspecific number

Starting			Ongoing
One way Mode	T	- The teacher calls for attention, assigns a task, (i.e. 'Go to page *xy* '), gives instructions about the next activity and then starts to explain the lesson.	- The teacher gives a recitative lesson; he plays a 'solo' sequence, explaining a topic.
	C	- The classroom faces the teacher, glances convey towards the teacher.	- Students take notes or listen, paying attention. - Nonverbal movements: look-listen-write.
Ping Pong Mode	T	- The teacher asks questions, initiates an oral test with one (or more than one) student.	- The teacher always re-takes the turn of talk and asks another question, assigning the next turn of talk
	C	- Students make some alert movements, they pay attention, tension due to the risk of being tested or assessed. - Once students have answered, teachers take over again controlling interactions.	- Students answer with 'ready-made' responses. Then wait to receive approval or wait for the next question. If tested, they wait for teacher feedback or assessment.
Circular Mode	T	- The teacher solicits participation in a debate inviting students to give opinions, or poses a question introduced by 'What do you think?'; 'In your opinion how do you see this…?', they proceed with explorative questions.	- Space given to free debate. When s/he interferes s/he resumes and/or re-launches, then again s/he decentralizes and allows the debate to unfold
	C	- Students interact spontaneously, engaging in discussion without waiting for the teacher to assign turns.	- Students autonomously self-regulate interventions and ask each other questions.
Out of tune Mode	T	- The teacher explains or continues his/her lesson but we can see s/he does not reach out to students.	- The students do something else.
	C	Students ignore the lesson, start to do something else and there is a state of chaos.	- Students keep not attuning to the request

A detailed description of lesson modes follows:

One way mode

This mode manifested when in the system teachers took high control, running most of the talk in the lesson, and playing the role of *primary knower* (Berry, 1981; Nassaji & Wells, 2000). In this mode, very low interaction occurred, there was only speaker, the teacher, who kept all the power and played the active part. One way appeared as the classic recitative lesson, based on transmission of knowledge; it implied silence in the rest of the system and the students positioned themselves in a receptive way to allow the teacher to explain the lesson.

The indicators of One way mode are detailed below in Table 2:

Table 2 Indicators of One way mode

ONE WAY		
	Action	Non-verbal indicators
Teacher	- no questions, s/he explains without interruptions. - when interrupted, no space is left to students. - when interrupted, asks students to postpone questions. - holds the floor during the entire explanation. - declares s/he wants to finish the planned explanation straight away. - gives instructions about routines/homework. - talks to the whole classroom not to specific students.	- facing students sitting at the teacher's desk or standing still. - no eye contact, but a general, widespread glance. - a recitative tone of voice.
Students	- silence - no interaction - scribbling - silent distraction – no lesson interruption - taking notes - rare "small" questions - hiding silent aside actions - write silently homework	- staring - either straight back or slouching - facing the teacher

Excerpt 1 is an example of One way mode. Teacher Neri is giving a History lesson; she starts to explain the topic straight away:

Excerpt #1Example of One way lesson mode

Discourse and interactions	*Nonverbal conduct*	*Comments to the episode*
(1) T: Octavian Augustus had no heirs, but had a third wife who had children*	Students are not listening as they are getting ready to take notes and searching book pages.	T starts the explanation straight away.
(2) T: His third wife's name was Livia. In particular, she had a son, who was very much loved, her son's name was Tiberius. Tiberius became the successor of Octavian Augustus, giving rise to the principle of heredity, alright?	Slowly the students start to tune in, movements become calmer and less restless, they begin to pay attention, and their glances convey towards the teacher.	The teacher uses her tone of voice to get their attention; she rises her pitch and modulates it as if she was telling a tale. She moves her hands. She spells out the word *he-re-di-ty*, and then asks for quick feedback to see if the students have understood. She then moves on with the explanation.
(3) T: Heredity means that he can then nominate his heir. Tiberius Personality… Tell me	A. raises his hand. T stops and waits.	T is absorbed in her explanation and A. raises his hand to ask a question
(4) A.: Here it says that Augustus…		T does not allow A to finish speaking.
(5) T: had no heir… Had no heir. He had a third wife, he had two previous wives, he had a third wife who was the last one. His wife, Octavian Augustus' wife, his third wife, was married to an exponent of the gens Claudia, in fact, Tiberius did not belong to the gens Giulia as Octavian Augustus but belonged to the gens Claudia. What did Octavian do? He adopted him, ok? He was the only possible heir, ok?	A. stops his question since the teacher completes it. The classroom continues to read and to listen.	T completes the sentence and gives the explanation straight away. She does not interact or stop, or leave space. The students never answer back when T asks 'ok?', 'alright?' T carries on with the explanation, at her speed and following her train of thought.

*In all excerpts, interactions were translated from Italian to English by myself.

In this example of One way mode, we can see the teacher had a goal, explaining this part of the History curricula; she clearly was following her scheduled lesson, going straight to the point. When A. interrupted her, she gave a quick answer in order to continue the lesson. The way she kept the control of the communication indicated she was executing an active part. There was very little movement characterizing interaction (low proximity); in order for the teacher to activate and follow this mode, an agreement of the whole system was necessary, students put themselves into a *patiency* (Haynes, 2014) receptive position (Roth, 2010; Hilppö, 2016). Thus, here the dimension of control is an implicit negotiation between participants (Rajala, 2016) and it allows to carry out planned activities. After explaining the lesson, the teacher then moved to another mode intensifying interactions and the class adapted to another way of functioning.

Ping Pong Mode

I chose the metaphor of the game of "Ping Pong" (table tennis) because this mode was characterised by "one to one" movements between two or more persons. In this mode, the teacher maintained high control at the same time allowing an increase in interactions. S/he guided and scaffolded the interventions, proximity followed an epistemic order (Ruthven & Hofmann, 2016), with the teacher taking an epistemic initiative, setting the agenda in classroom exchanges, taking

control once again after each student's turn and also evaluating what had been said (epistemic appraisal). S/he used authoritative strategies (Hofmann & Mercer, 2016), correcting and taking the initiative in each interaction, or posed *scaffolding* questions (Molinari, Mameli & Gnisci, 2013; Molinari & Mameli, 2013; Rojas-Drummond et al., 2013), a sustaining way of interacting, necessary and present in daily school practices (Renshaw, 2013).

In this mode, tested or questioned students let themselves be guided by teachers and tried to tune in the *high fidelity* (Rajala, 2016) answer, and waited to be acknowledged by the teacher. Other students listened silently, or they were disengaged, not the direct protagonists involved in the interaction. Normally, in this mode the teacher and two or three students were engaged in active exchanges, whilst the rest of the classroom remained in the background.

Table 3 shows the indicators of Ping Pong mode:

Table 3. Indicators of Ping Pong mode

PING PONG MODE		
	Action	Non-verbal indicators
Teacher	- interacts with the one-to-one mode, questioning and orally testing - questions one or two students at a time - listens to the answer, makes comments or adds information - speaks again after each turn of talk - gives instructions about routines/homework	- does not look at the rest of the classroom that remains in the background
Students	- answer specific questions in a recitative way, no personal elaboration or original contribution - when tested, attention to giving the correct answer the teacher wants to hear - ask the teacher questions about school routines i.e. timetable, dates	- when orally tested, the body is tense, facing the teacher - composure - staring at the teacher - if not tested, listen or get distracted

Here is an example of a Ping Pong interaction. Teacher Verdi decided to test students in Italian Literature; he invited two volunteers to come to the desk and started the oral test on the Sicilian Poetry School.

Excerpt #2 Example of Ping Pong lesson mode

Discourse and interactions	*Nonverbal conduct*	*Comments on the episode*
(1) T: So, come on. Um, a small question for Domenico, who were the municipal poets?	The two students at the desk are attentive, the rest of the class is totally out of tune, chatting.	The teacher initiates the interaction, posing a question.
(2) D: The municipal poets were poets that belonged to the Sicilian School, they were citizens, belonged to the Municipalities and were (D. gives a list of poets' names) Orbicciani, Bonagiunta, Guinizzelli.	After answering, D. stares at the teacher, waiting for feedback whilst his schoolmate who is being tested with him remains attentive. The rest of the classroom continues to chat making a lot of noise.	T starts the oral test by asking a knowledge-based question. D answers back, without adding any personal contribution.
(3) T: That's right. Do you remember? Were they before, after or during the Sicilian Poetry School?	D is very focused in answering T. His tested mates listen carefully and silently. The rest of the classroom carries on chatting whilst some students read a book.	In this interaction, T starts to scaffold D, who is insecure.
(3) D: Um… um…		D clearly does not know the answer.
(3) T: Partly during and partly…?	D's mate looks bored, and a bit distracted, waiting for his turn.	The teacher tries to facilitate D's answer.
(3) D: Partly after		
(3) T: Partly after. Then their idea does not belong to them, where do they take it from?	D stares at the teacher waiting for him to ask a question.	T rephrases what D says and poses a new question.
(3) D: From the Sicilian school		D gives the correct answer but then does not add anything else
(3) T: Exactly! Bravo! Listen… bravo! If I ask you the same question I asked your mates yesterday, why do they do it? Can you tell me?		T encourages D. His tone of voice is warm and supportive.
(3) D: …	D does not know the answer and remains in silence for a while	
(3) T: They did not belong to a court… They were independent… Ok, you can return to your seat.	D returns to his seat and the teacher writes down a mark without telling him,	T completes this sequence continuing to scaffold D and finishes the sentence giving the correct answers himself.

This excerpt shows how the teacher conducted the interaction based on Ping Pong mode. In this case, D. was quite insecure in answering; the teacher kept the interaction control, exerting a cognitive guide, using also an emotional scaffolding to contain and sustain the student (Mahn & John-Steiner, 2002; Mameli, 2013; Rojas-Drummond et al. 2013; Renshaw, 2013). This one-to-one interaction did not involve the other students, the teacher kept all the power to decide and act whilst the rest of the class was disconnected.

Circular Mode

When classroom control lowered and interactions intensified, a circular mode occurred in the system. The teacher decentralized him/herself and gave space to classroom discussion; students were invited to join in, not on the basis of already made knowledge, but considered and authorized as new meaning makers. In this mode, the teacher intervened very little and only to rephrase and relaunch what had been said, encouraging creativity and sustaining students to give personal contributions. His/her attitude was of authentic curiosity (Boyd & Markarian, 2011), fostering many interactive movements in the system and creating attractors (Hollenstein, 2011; Pennings et al., 2014a).

In this mode, the teacher partly *abdicated* in favour of students. The teacher positioned him/herself as a co-participant and let the students act as the primary agents of the discussion

(Kangas et al., 2014). By doing so, a new perspective was adopted, which involved considering students capable of adding knowledge and meanings to the discussion, giving them responsibility (Rojas-Drummond et al., 2013). It was a dialogical conduction where everyone was welcomed to join in, dialogue and exchanging contributions became important and answers gave rise to a new question (Bakhtin, 1986), not a finished and correct statement. On the contrary, the system entered into a *maybe space*, a collective co-constructed creative process, like a factory of ideas. I could observe that this mode encouraged practices able to expand knowledge (Rajala, 2016) and support dialogic education (Wegerif, 2007; 2013).

Circular mode is described in Table 4:

Table 4. Indicators of Circular mode

CIRCULAR MODE		
	Action	Non-verbal indicators
Teacher	- invites/encourages/supports students to give opinions, personal, creative contributions - uses utterances like: what do you think? /in your opinion? - relaunches opinions, creates a debate - shows authentic curiosity - recitative knowledge is not required - fosters interactions between students - ask for order and clarity in interventions - is not 'at the centre' of interaction/is not the only knower - leaves space to discussion, to the 'unknown' - allows spontaneity - gets closer using body language - can be playful and cheerful and jokes with the classroom as a whole	- looks around, inviting participation - not sitting at the desk, sitting aside - standing, walking around - in group work goes next to students, bends down to look at exercises - laughing
Students	- give personal opinions - use 'in my opinion'; 'I think that' - take responsibility to express themselves publicly - answer each other/ listen to each other - engage in group work interacting - respect clarity, order and build on each other utterance to create meaning - respect turns of talk	- face mates - sit in a comfortable way - chairs are moved to face and see mates - not necessarily facing teacher's desk

Circular mode, as we will see in the following excerpt, offered opportunities for dialogical exploration and creative patterns of interaction. In this example, classroom Rossi was having a philosophy lesson, she recalled the previous lesson in which she had explained Rousseau and his defence of ignorance. After a brief revision of the previous lesson, she invited the classroom to discuss whether ignorance protects humanity or knowledge destroys it.

Excerpt #3 Example of Circular lesson mode

Discourse and interactions	*Nonverbal conduct*	*Comments to the episode*
(1) We stepped out of ignorance, right? And sciences and arts were born, do you remember? From our vices that daily nourish them. I would like you to think about this and know your opinion about this. Was Rousseau right in your opinion? Was he right? Is he still right or was he wrong? In this phase, let's collect your opinions which of course, are personal. We discussed that step put from ignorance was a great deal and according to Rousseau, this was a symptom that we should overcome. You had already said something about this, on the basis of what you say, we will do some… some groups… so far, who agrees with Rousseau?	Students listen carefully	T introduces the discussion, premising that she is interested in personal opinions
(2) F: ignorance… I mean…	The classroom is not attentive and makes noises	As soon as T encourages discussion, F. starts talking but the classroom is not attentive
(3) T: Hey guys, let's listen to Franco, then… you are, maybe… are you in favour with what Rousseau said?		T asks for attention, giving importance to F's opinion acknowledging his point of view. She is interested and curious to listen to him and invites everybody to pay attention to what he has to say
(4) F: …yes because… because ignorance protected from conflicts, it allowed harmony. While passing from ignorance to knowledge creates competition, in my opinion.	This time the whole classroom listens to F	F takes position himself in favour of ignorance, supporting his point of view
(5) T: Does anybody agree with F?		
(6) Classroom: (in a chorus) yes, … yes… in this case yes		
(7) Do those who agree with F want to add anything? Do you want to counter him? Or add anything?	The classroom starts to assume a circular disposition, students start to turn their chairs around facing each other	Here T relaunches the invitation
(8) M: it depends, ignorance can help to avoid a danger, but in other cases … I do not think it can.	Students look at each other and do not face the teacher anymore	T now leaves the discussion to flow, she does not interfere for a long sequence
(9) G: Ignorance might expose you to danger	Now students have completed a kind of circle, still sitting in their places, they are all facing each other. The teacher remains seated. After Giacomo's intervention, there is a brief moment of silence. Then animated discussion starts once again	Now a sequence of chained interventions starts, sometimes voices overlap. The teacher remains seated at her desk, and sometimes coordinates discussion by asking to respect the turns of talk.

In this sequence of Circular mode, the teacher introduced the topic and then stepped aside, decentralizing herself. The discussion unfolded throughout the lesson and the teacher only talked to ask and understand better students' opinions, sometimes resuming students' contributions, or asking for order to maintain turns of talk. There were no right or wrong answers, the students were building the debate completing each other's sentences. There were some moments of silence in which students thought about what had been said. They chained each other, completing sentences, adding thoughts. In this mode, the teacher did not position herself as the expert, the only knower of the subject. Students interacted asking each other questions, the teacher became more and more peripheral, intervened when she wanted to know more about the student's thoughts and would say: "explain, explain", leaving space either to agreement or disagreement (Hofmann & Mercer, 2016).

She was however, always ready to retake control when discussion got too noisy. Sometimes the system went into chaos, when the interactions became too fast. Therefore, there was too much disorder and the class risked losing the meaning of the discussion. In that case, the teacher or other students intervened to ask for silence, and a couple of times the teacher shifted to Ping Pong mode assigning turns of talk to stop the system going Out of tune.

Out of tune mode

When there was low control and low proximity, in the system there were too many disordered interactions, disconnection from the ongoing activity and loss of meaning. In this way the system went on an Out of tune mode. Then, communication and interactions became confused, chaotic and meaning making was lost. Voices overlapped and disruption occurred. In other cases, the teacher might have tried to control too much, s/he pursued her/his schedule alone without engaging the students, provoking disconnection in the system, the students were distracted and boycotted the lesson, not listening, disturbing or participating in a disorganized way.

The indicators of Out of tune mode are detailed in Table 5:

Table 5. Indicators of Out of tune mode

OUT OF TUNE		
	Action	Non-verbal indicators
Teacher	- proposes an activity - asks/shouts for silence/attention - repeatedly shouts or invites students to listen - says 'stop it!'/ 'shut up!'/ 'so what?' - poses questions but receives no answer - talks 'alone'	- stands - beats on teacher's desk - looks around to seek attention - facial expressions of discomfort/anger - speaks 'alone' and students are not answering
Students	- ignore/do not look at the teacher - talk out of turn, disorderly - introduce off topics - make noise/laugh/speak loudly/gaggle - stay silent but the eyes are 'lost' - distraction - do something else	- stand around - turn their back to the teacher - hang out in small groups - hang around - sitting slouched

The following excerpt illustrates an interaction that brought the system out of tune. Here students were discussing animatedly about knowledge. They started the discussion solicited by the teacher that had introduced Rousseau's concept that ignorance is positive, whilst science and art damaged humankind. Continuing the discussion, the students started to debate about technology, but then the discussion became so chaotic that the teacher, as well as some students called repeatedly for order since it was impossible to understand each other.

Excerpt #4 Example of Out of tune lesson mode

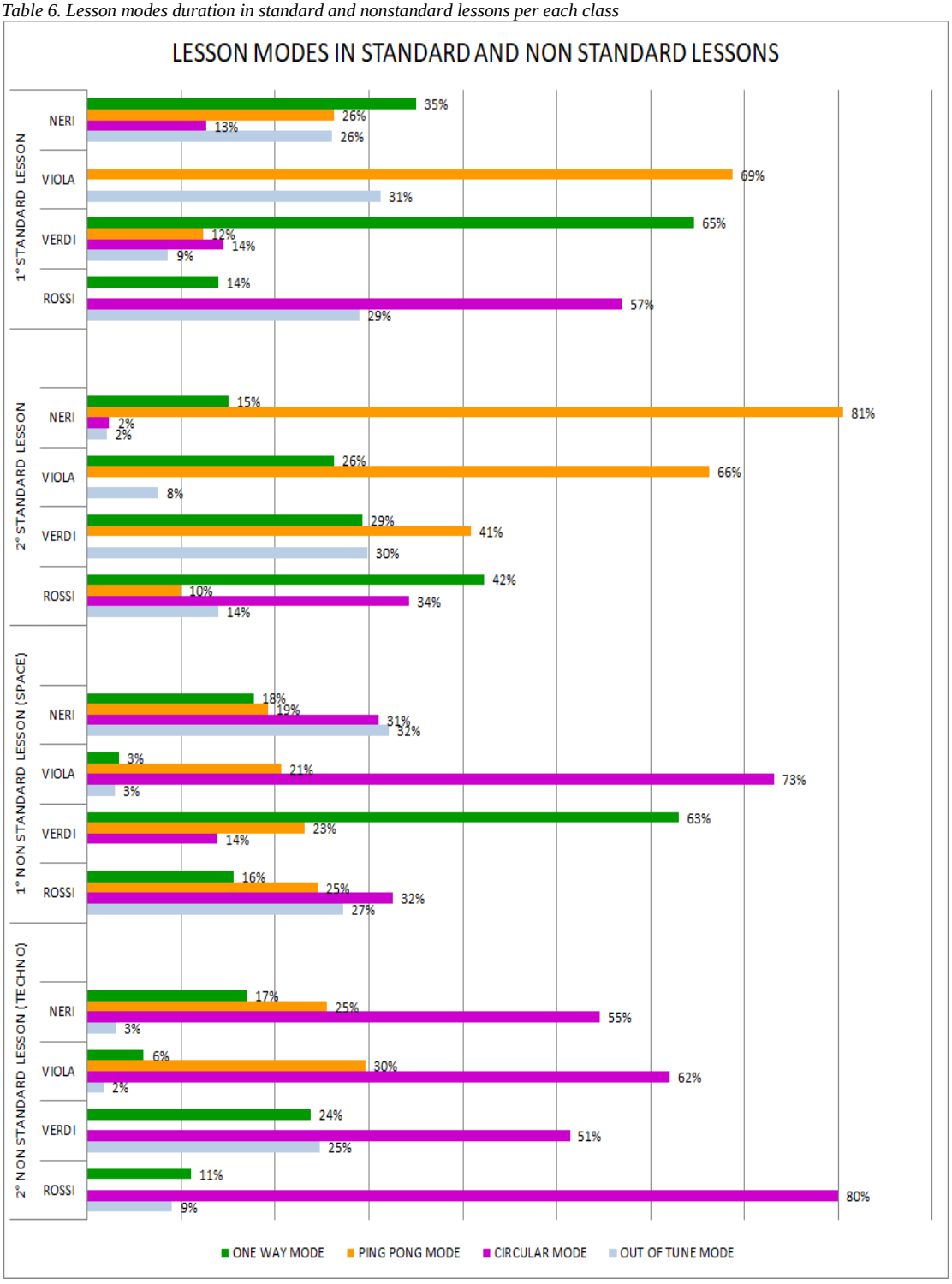
Discourse and interactions	*Nonverbal conduct*	*Comments to the episode*
(1) T: What are you saying? What are you talking about over there?	Students are discussing talking all together, there is a lot of noise and it is not possible to understand anything	Even if there is a lot of noise, the teacher does not interrupt abruptly the interactions. She still keeps interest in what students are telling
(2) T: Shhh, let's discipline the interventions! Otherwise, we can't hear you! Dino had raised his hand…	Students do not listen they are so occupied discussing that they do not hear the teacher	
(3) D: I mean… it is impossible to understand you! One at a time. You're all talking at the same time! If you talk among yourselves…	The class continues to talk all together	Here Dino tries to take control and speaks instead of the teacher. He is annoyed he can't follow the discussion
(4) G: What were you saying?	Still noise and voices overlap	Giacomo is also irritated and asks again trying to understand

Communication got difficult when the system ran out of tune. The students were really fascinated by the topic; they started to interact chaotically, not respecting turns of talk, so that control and meaning were lost. Then, interaction became meaningless and frustration arose in participants.

6.2 Lesson modes in standard and nonstandard lessons

As shown in Table 6, lesson modes were differently represented in standard and nonstandard lessons in each class.

Table 6. Lesson modes duration in standard and nonstandard lessons per each class



Observing Table 6, if we sum standard lesson percentages for each mode, in the 8 standard lessons, One way mode represented 28.5%, Ping Pong mode 38%, Circular mode 15% and Out of tune mode 18.5%. In the 8 nonstandard lessons: One way mode represented 19.5 %, Ping Pong

mode 18%, Circular mode 50%, and Out of tune mode 12.5%. Results showed that in the 8 standard lessons, the prevalent modes were One way and Ping pong modes, whereas in nonstandard lessons, modes distribution changed with an increase of Circular mode. In standard lessons teachers seemed to maintain higher levels of control, while in nonstandard lesson control decreased and proximity increased. In line with this, I can advance that introducing unusual elements in the lessons creates different interactive opportunities involving students in a more participative role. In nonstandard lessons, students and teachers responded positively to unusual suggestions, creating new forms of interactions and breaking usual patterns.

6.3 Types of flow

From the analysis of my material, I identified 4 types of flow as shown in Table 7:

Table 7. Types of group flow indicators

Types of group flow						
	Body movements	Turn of talks	Class configuration	Emotions	Group perception	Activity
Attentive Flow	Synchronicity Looking in the same direction If taking notes coordination while writing	One speaker	Focusing Convergence Concentration	Focused	Togetherness	Listening (rare questions)
Performative Flow	Doing (together) an exercise Interacting focus on writing	Work in silence Whispering Small group discussion	Focusing Convergence Concentration	Attention concentration Accuracy	Pair work Work in pairs Individual work (alone/together)	Writing Finding information Problem solving
Participative Flow	Looking at each other	Many disorganized interventions	Speaking randomly	Motivation	Togetherness	Talking
Co-constructive Flow	Looking at each other, same mimicry echoing, mirroring	Pausing Waiting for the oth to finish	Sentence completion And/yes sentences	Acknowledging the other and his perspective Creativity	*Withness*	Creating new meanings

In Table 7, we can see there are four types of flow according to the different indicators describing each flow. *Attentive flow* can be recognizable mostly by nonverbal indicators and related to the task of listening. *Performative flow* has executing characteristics and occurs when students are performing a task. *Participative flow* is related to the action of talking together, as is *Co-constructive flow*, in which in addition to participation, also new meanings are collectively created.

I will describe these types of flow in more detail.

Attentive flow

Attentive flow was a condition in which the classroom was synchronously paying attention, totally absorbed in listening or taking notes, students were silently looking in the same direction,

and there was coordination of nonverbal movements. When attentive flow manifested, students' movements were involved in a sequence of *watch-listen-write*. Glances converged to the speaker, normally the teacher. The system coordinated and carried out the task.

Here is a description of a spell of attentive flow in Rossi's classroom during a philosophy lesson.

The teacher was explaining a concept of Voltaire's philosophy, while students were listening. Their body positions showed that students' backs were straight and all students were looking towards the teacher listening to the lesson silently and attentively. There was a sense of attentive stillness.

Performative flow

Performative flow occurred when students operated together executing a given task. They shared and converged attention individually, in pairs or small groups. This gave a sense of unicity in problem-solving activities or exercising together. Doing was the main characteristic of this flow, definable as "group flowing in doing".

Participative flow

When involved in group discussions or exchanging opinions, participative flow emerged. It was recognizable when students interacted, asked and answered each other questions. Participative flow showed arousal, motivation and enthusiasm. However, interventions were disorganised and random. For example, in a class discussion, I observed how students were actively speaking and gesticulating, their hands were in the air and everyone was talking at the same time.

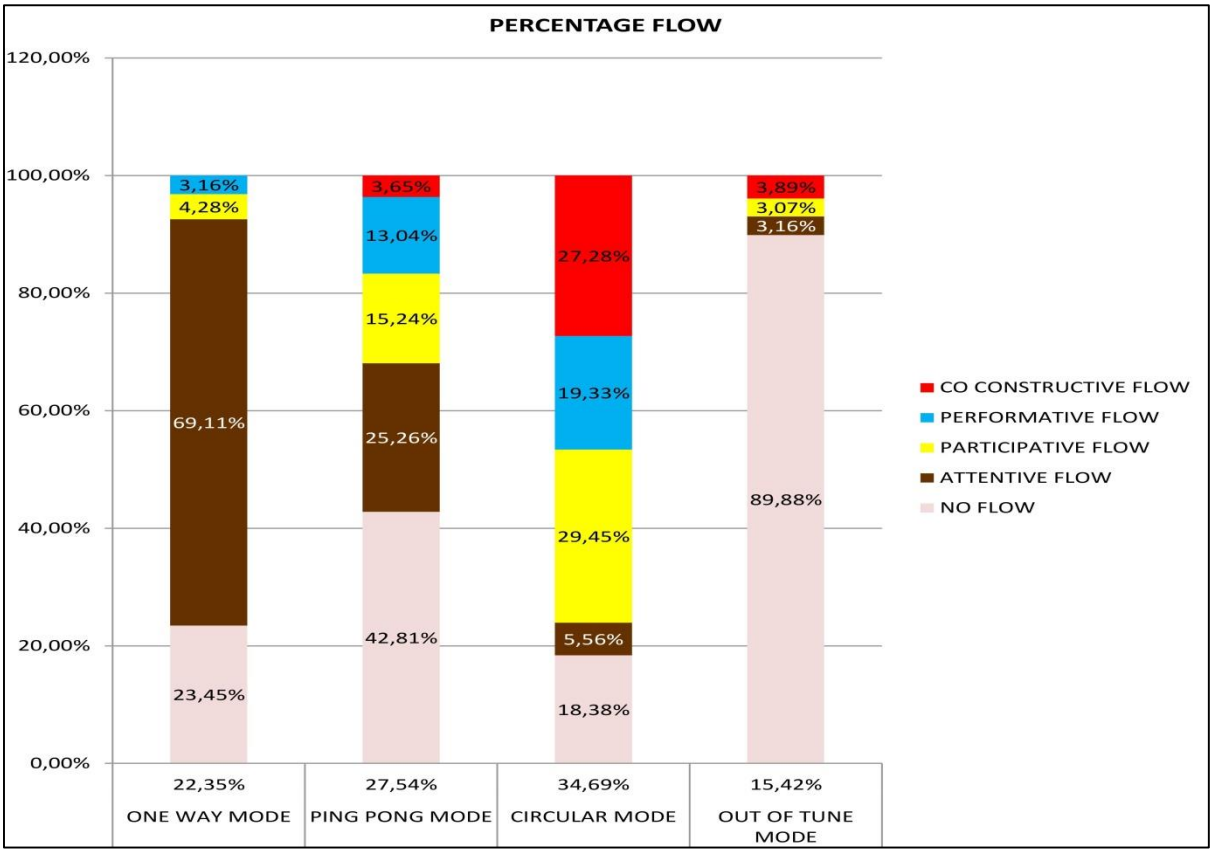
Co-constructive flow

Co-constructive flow was similar to the previous one but had a different quality: discussion and participation created new knowledge and for this reason, new perspectives and point of views were discussed together. Students were engaged in dialogic interactions (Grossen, 2010), completing each other's sentences, thinking collectively. There was an explorative attitude (Hofmann & Mercer, 2016) in the interactions and the sense of togetherness of previously described types of flow became *withness.* In addition, there was mutual respect and students listened to each other's points of view, collaborating in building a participated, commonly shared perspective. The classroom seemed to be guided by a common purpose; we could define this attitude of the system as a dialogical orientation. When transferring the responsibility of the activity (Mameli & Molinari, 2014) from the teacher to group discussion, this different type of flow manifested. Specifically, co-constructive flow had a collective thinking aspect and a creative aspect too. The group discussed, participated and shared ideas, opinions and exchanged points of view, and creative meaning arose.

6.4 Lesson modes and group flow intertwined

I analysed the intertwining between lesson modes and group flow and results are shown in Table 8. For each lesson mode, I calculated the total time spent in moments of flow for each of the four types of flow, and the time during which the classroom was not in flow.

Table 8. Intertwining of lesson modes and group flow



One way mode was characterised by the teacher's high control in the activity, therefore when the whole class was involved, attentive flow was triggered.

In Ping Pong mode, there was a distribution of all types of flow, with a prevalence of attentive flow. This mode activated participation and engagement in performing a task: since the teacher continued to exert a reasonable amount of control, students participated and performed, but were not solicited to provide original and personal contributions, and thus co-constructive flow was present in a small percentage. Circular mode had a reasonably balanced presence of types of flow, with a prevalence of participative and co-constructive flow. In Circular mode, a variety of types of flow occurred, and this mode proved to be the one that most triggered and incentivised flow, promoting collective meaning making (Matusov & Marjanovic-Shane, 2016), as we saw in excerpt 5. We could argue that when exploring together, talking and confronting (Wegerif, 2005; Vass et al., 2014) students experienced creative interthinking (Mercer, 2000; Vass et al., 2014). In line with

this, Circular mode demonstrated to foster co-constructive flow, in which new knowledge and new perspective were co-created. This mode resulted in stimulating the activity of thinking together that helped students to develop an intersubjective orientation (Rogoff, 1990) towards one another. Students were reciprocally collaborating, keeping in mind each other's point of view, going back to previous statements adding and completing them, enriching the interactions, supporting the creation of a dialogic space (Wegerif, 2007; Mercer et al., 2010) and new understandings (Teo, 2013). In Circular mode, there was a distributed amount of participative flow, performative flow and co-constructive flow. As we saw in mode analysis, Circular mode was characterised by the teacher encouraging students to actively participate in the lesson. The teacher's attitude (Boyd & Markarian, 2011) made a difference in triggering flow, in particular co-constructive flow that was characterised by new meanings. When this type of flow occurred, the debate was guided according to established ground rules (Hofmann & Mercer, 2016), and a rhythm in discussion occurred. Consideration and respect were requested for those in turn to speak. Circular mode seemed to prompt co-constructive flow when participants were focused on each other's utterances, and at the same time, created new points of view, building on previous contributions.

In light of these findings, we could say that flow is an indicator of what the lesson mode is triggering in that moment from an emotional perspective. On the contrary, the absence of flow can communicate that the system is not connected *together* in that part of the lesson, although some students may be and others may not.

Finally, we could observe that lesson modes constitute the structure of the lesson and flow turns out to be the emergent process, which in this case refers to the emotional aspects in the interaction shared by participants.

7. Discussion

At school, participants are not always aware of the mechanisms that rule and permeate classroom interactions. Therefore, this study attempted to give further insight into classroom dynamics and at the same time improve contributions in the literature.

These improvements were possible thanks to methodological choices that allowed a more accurate observation of classroom dynamics and at the same time a contribution to the literature. My first choice was to use an interpersonal model to detect how control and proximity combined: this led to the identification of four specific interactive patterns that unfolded differently in a lesson, and allowed to detect how participants moved from more controlled forms of interactions towards more manifested interactive ways. Consequently, I noticed that lesson modes influenced group emotions and it was possible to distinguish the variations that emerged in four different nuances of

group flow. The second methodological choice was to suggest teachers devise unusual nonstandard lessons, in order to observe possible variations in lesson modes and the evidence of group flow. In this way, not only could I provide a description of the relational patterns in both standard and nonstandard lessons, but I could also point out which modes could more easily trigger group emotions.

If we consider the advances given by the results of this study, classroom interactions patterns can now be understood within a more complex framework. As we know, the context of school relations is an asymmetrical relational context by definition. However, by closing-up on each interactive pattern, it was possible to identify how, either by controlling or by more interactive forms of communication, the classroom continuously and reciprocally influences, adapts or resists to what is happening, and these processes provoke different emotions.

Knowing how the communicative process functions and triggers (or not) group flow may help students and teachers recognise first when collective emotions emerge and, consequently, how to better capitalize classroom emotions. The risk of not being aware of emotional dynamics that may emerge could lead the classroom to lose opportunities. Group flow co-emerges in the course of the interactions and can be considered an important signalling system that warns when the classroom is tuned into the ongoing activity. This aspect is particularly relevant, as it can help teachers and students to be aware of subtle movements that might occur, and that normally are not so evident. Furthermore, through the display of interactional dynamics, the classroom may be conscious of which conditions are necessary to sustain them (Sedova, et al., 2014). Aiming for dialogic education either following structured lessons, or opening up to new opportunities is necessary to explore creativity.

In summary, what has this study added to the understanding of classroom interactive processes and classroom emotions?

First, results shed light on how the dimension of control and proximity combine, thus creating different lesson modes, and second, these findings improve information of how collective emotions may occur in group flow, intertwining with lesson modes. In One way mode, for instance, control was not distributed, rather it was typical of recitative lessons; however, it fostered attentive flow, a necessary condition for the system to go on with school practices. Ping Pong mode was functional to activate performative and participative flow, and allowed participants to gradually transit to more autonomous forms of expression and creative contributions. Circular mode seemed to be the most suitable mode for promoting classroom discussion and eliciting new meanings, thus activating co-constructive flow. Finally, Out of tune mode proved to be an important signal that the classroom was not flowing together and from this, participants may take this opportunity to transit to another mode.

These findings highlight the complexity of interactive school life and at the same time, they underline the importance of lesson diversification to break habits and elicit varied forms of emotional responses. The presence or absence of flow can be considered as a relevant code signalling that the system is emotionally involved, that participants can notice and sustain. As research has claimed (Armstrong, 2008), flow is unpredictable and cannot be forced or created on purpose, nor can it be foreseen: it can only be recognised by the system. In light of these results, lessons modes allow to combine the structural aspects of the lesson with more creative ones and for this reason, teachers may choose to adopt a repertoire of lesson modes for soliciting varied types of flow. Not only should teachers be aware of classroom dynamics, but considering the classroom as a system, also students should be involved in what goes on in a group. Tuning into the emergent emotional dynamics that might arise in the classroom implies sensitiveness, presence and awareness by all participants. When this happens, the imperceptible sound of classroom flow might be there.

CHAPTER IV

STUDY 2

The dynamics of class mood and student agency in classroom interactions

"Alice: How long is forever?
White Rabbit: Sometimes, just one second."
Lewis Carroll

1. Introduction

In this study, I focused on *class mood*, a collective, socially distributed emotional state, contagious and co-created from spontaneous interactions, and conceptualized, in a Vygotstkian perspective, as a "social emergent phenomenon that exists both beyond and between individuals'"(Stone & Thompson, 2014 p. 310), evidencing in momentary emotionally-rich interactive exchanges that permeate classroom life. Recalling the concept of Vygotskij's *perežívanie*, mood is a participative interactive process created moment-by-moment, the same experience of when I see a piece of art.

In this second study, my purpose was to observe classroom mood starting from Stone and Thompson's research (2014) and taking the observation of emergent emotions in classroom interactions a little bit further. The aim of this study was to concentrate specifically on spontaneous distributed emotions, arising from relational dynamics, and on how I can recognise agency in them. From this perspective, there are not many empirical studies on class mood and it deserves more attention from researchers.

2. Mood, emotions and interactions

Though often not traceable or evident, emotions are always present in classroom discourse and interactions. In sociocultural terms (Valsiner, 2001; Valsiner & Han, 2009), emotions arise in a material environment that is historically connoted and orients activity (Engeström, 2006), they are distributed, situated, and context-specific aspects of educational actions, and can be considered an inherent part of the social and interactional processes that unfold in classroom lessons (Kumpulainen & Mikkola, 2014; Lemke, 2015; Rajala & Sannino, 2015). In this Vygotskian perspective, emotions function in collective practices, emerge and are transformed in the social context where individuals negotiate and regulate reciprocal distance (Cole, 1996).

There is something spontaneous and unplanned in emotions, sometimes powerful and volitional even arriving to question institutional rules (Engeström, 1996) that may evidence and express in

different experiences in daily classroom routines. This allows us to understand that the collective and individual aspects of emotions are co-constructed as part of social practices, in which the arbitration of boundaries, the creation of closeness or distance, and the transformation or the reaffirmation of the power relations take place (Encinas Sánchez, 2014). Research (Grossen et al. 2012; Mahn and John-Steiner 2002; Morcom 2014) has provided some interesting insights by applying a sociocultural approach to the interactive and collective dimensions of emotional dynamics. As Mahn and John-Steiner (2002), for example, demonstrated, in literacy, students' engagement may be sustained by emotional support due to the relationship between students, with their teacher and with the social environment. In relating, emotions are at work to regulate distance and closeness in interactions (Morcom, 2014; Jiang et al., 2016); in this way, participants immerged in classroom context reciprocally shape each other, helping, sustaining or opposing the ongoing activity (Rajala, 2016), either positively or negatively influencing classroom dynamics.

Interactions are also at the core of thinking together education, widely sustained in the literature as an important educational aim (Wegerif, Mercer & Dawes, 1999; Mercer, 2013; Wegerif et al., 2017). In this approach, creative learning happens interactively and this wide line of research has deeply discussed the importance of dialogue to stimulate an interthinking activity. As Mercer and colleagues pointed out, dialogic opportunities are created by working in groups and they lead to different and better results than just thinking individually (Mercer, 2016). Offering opportunities in the classroom to explore thinking together has demonstrated to be efficient to improve results (Wegerif et al., 2017) and foster creative meaning making (Vass et al., 2014). Although dialogical education promotes and recognises the importance of interactions in supporting creativity in learning, emotional aspects have not been discussed explicitly hitherto. For this purpose, investigating class mood can help to better sustain educational aims from an emotional perspective, in order to better understand social interactions and promote thinking together. In his line of research on collective creativity, Sawyer (2005) argued that to grasp emotions as situated social experiences, researchers need to go beyond what the author calls "methodological individualism" that considers emotions mainly as internal psychological states.

Wanting to go further in exploring social aspects of emotions, Stone and Thompson (2014) contributed to the discussion on how to study the collective dimension of emotions in classroom interactions by developing the construct of class mood. Within a sociocultural frame, the authors defined mood as a phenomenon that is emergent and socially distributed across time and space. In their view, mood is co-constructed in the coordination among people, and is also spatially located in interactional contexts. To capture mood, researchers must develop methods that go beyond descriptions of individuals' emotional states and are able to describe the collective emotional experience in terms of "a dialectical and mutually constitutive relation between individual and social

context" (Stone & Thompson, 2014 p.312).

Along the same line, the authors proposed to add the idea that "Along with being temporally emergent, "mood" is also spatially emergent and distributed across persons in a setting. Thus, attending to mood will also necessarily require an understanding of the emergent distribution of "mood" within that space. The emotional states of individual participants are important for understanding mood, but understanding mood will necessarily involve going beyond any one individual's emotional experience or even a simple addition of the emotional experiences of participants. Rather, understanding mood requires a rich understanding of what exists between and beyond participants" (Stone & Thompson, 2014 p. 312).

Nevertheless, mood cannot be easy to observe, and implies methodological challenge. Through a year-long video ethnography of literacy teaching in first grade, Stone and Thompson studied class mood episodes of help-seeking, help-giving and collaboration among students. In order to overcome the methodological challenges posed by the study of such a complex and somehow "untranscribable" social phenomenon, the authors suggested that class mood could be studied by focusing on the transitions that evidence the back-and-forth taking of stances by the participants in interaction (Du Bois & Kärkkäinen, 2012). According to Du Bois, "Stance is a public act by a social actor, achieved dialogically through overt communicative means, of simultaneously evaluating objects, positioning subjects (self and others), and aligning with other subjects, with respect to any salient dimension of the sociocultural field" (Du Bois 2007, p.163). More precisely, Stone and Thompson built on the distinction between two types of stances, namely epistemic and affective (Ochs, 1996): epistemic stance indicates participants' orientation to knowing (Goodwin, 1995) and their marking attitude to knowledge (Kärkkäinen, 2006). When considered in classroom talk, epistemic stance is knowledge based in relationship to some object inherent schooling, but it includes more generally also life. Affective stance indicates the emotional orientation in the interaction, and refers to those instances of talk in which the teacher or students indicate an emotion-based relationship to some object, topic, or thing in the world (Goodwin, 2007; Goodwin & Goodwin, 2000; Tainio & Laine, 2015).

In their discussion, Stone and Thompson (2014) argued that both epistemic and affective stances co-occur in the same utterance, consequently, only a consideration of the interactional production of stances in situated practices will reveal their meaning for the participants. Moreover, the relational pattern created within the communicative process in the ongoing of the lesson is a crucial aspect of classroom mood, therefore what could take us further in understanding classroom interactions is to analyse the emotional facets that may be implicit and conveyed in these dynamics. Interactions may elicit emotions that become contagious, thus contributing to create class mood episodes.

3. Class mood and agency

In the course of interaction and discursive exchanges, class mood and agency are dialectically in relation and mutually unroll. Consistently with a sociocultural approach to emotions in teaching learning processes, in this study, agency was specifically conceived as taking responsibility through interaction in the unfolding of class mood episodes.

According to Martin (2016), agency is observable when in a conversation, a person assumes a positioning, that is, s/he takes over a psychological location that reflects a sense of engagement in the ongoing action or activity and favours the creation of new social identities. Given the emotional properties of class mood episodes, in these kinds of interactions, students are agentic when they publicly reveal and take over responsibility for their own feelings and emotions, throughout the dynamic flux of the discursive exchanges. Clarke and colleagues (2016) drawing upon socio-cognitive and sociological theories presented a model of agency in their study in which the authors defined agency also in terms of self-regulatory capacities of individuals. Their study was designed with the purpose of understanding why students choose to contribute, or refrain from contributing, to dialogic science discussions in a US urban high school classroom, and the authors identified students' enactment of agency in terms of their participation in classroom discussions. By being engaged in collective and co-constructed episodes of class mood, students develop the capacity to assume authorship of their original and personal thinking that is intertwined with affect (Ratner, 2000).

Through these agentic actions, the whole classroom engages in the task of facing “differences” and searching for new findings that differentiate from what already is there (Hein, 2016). Moreover, in giving space to agency, class mood episodes are occasions for enforcing connections between the classroom and the other life contexts (Grossen, Zittoun & Ros, 2012; Muller Mirza et al., 2014), for sharing personal experiences and thus expand other’s and self-knowledge (Muller Mirza, 2016).

Sometimes student agency can evidence through active displays of opposition (Rajala, 2016) but also passive opposition can be a strong manifestation of agency as debated by Rainio and Hilppö (2017). Rajala (2016) aligns with an understanding of students’ resistance as an emergent property of classroom dynamics and considers it as an initial form of their agency. Recognized as agency, student resistance may turn into a resource, becoming a force that helps students to overcome passivity and disinterest (Rainio, 2008). As Roth et al. (2004) showed, agency can be shared and distributed between participants in interaction. In a conflictual situation, an urban youth street student was assigned a low grade, both teacher and student felt threatened in their identities and engaged in a renegotiating interaction. They engaged in an interaction where the teacher maintained his point but encouraged the student, until he got better results. The teacher earned the respect of

the classroom, and the student was able to renegotiate his identity becoming a successful pupil in the class context. In her research, Rainio (2008) suggested to use imagination and play to overcome student resistance in order to transform it into agency, capitalizing opposition for developing more meaningful instructional practices. However, while agency is always emotionally connoted, previous research has not explicitly addressed the relationship between agency and interactive dynamics of emotions.

Given these premises, the focus of this study was placed on the process description of the arising and unfolding of class mood episodes, with particular attention to students' achievement of agency in the course of classroom interaction.

4. Study aim and research questions

In this study, I further developed the conceptualisation of class mood in two ways. First, I aimed at identifying the arising and unfolding of class mood episodes. Second, I investigated the possible qualitative differences in these kinds of episodes. Third, I intended to gain understanding of the relation between class mood and student agency, as participation in class mood episodes offer students opportunities to achieve agency to shape the classroom interactional contexts.

The following research questions guided the empirical work of this study:

1. How do class mood episodes emerge and develop in classroom interactions?
2. Which qualitatively distinct forms of class mood can be identified, depending on the properties of the ongoing interactive process?
3. How – if at all – does student agency manifest itself in the various forms of class mood?

5. Method

5.1 Material

For this study, I used the video recordings of the 16 lessons as detailed in chapter 2. The participants of this study were the 89 students and their 4 humanities teachers. I analysed video transcriptions using Transana software.

5.2 Data analysis procedure

In a first stage, I, as the researcher, entered the classrooms, took field notes and recorded small flash videos of those students and teacher's interactions I considered meaningful for my purposes. Then I introduced two video cameras pointed towards the students sitting in rows, which allowed

the inclusion of all the students in the videos.

Data analysis was carried out on material comprising about 13 hours of video-recordings of normally scheduled humanities lessons. I also made use of the field notes and flash videos as a source of secondary data when relevant to interpret the video data. For all the steps of the procedure concerning the transcription and analysis of audio-video material, I relied on *Transana 2.42* software, specifically developed for the management, the transcription and the organization of large video collections. Its major benefit is the combination of both audio and video with transcripts, which are time-coded and synchronized.

The procedure for data management and analysis was the following. First, I transcribed the verbal exchanges while also adding notes that I considered relevant to describe what happened in the class meanwhile. Second, I read the transcripts and watched the videos several times, in order to identify regularities and patterns in the emergence of emotional interactive episodes that I could code as class mood. As mood is spatially and temporally located in the interactional context, this step of the procedure was based on interaction analysis of the participants' talk-in-interaction and significant nonverbal actions (Jordan & Henderson, 1995).

I am aware that studying class mood as an emergent phenomenon that is socially and temporally distributed poses several methodological challenges. First, it is a fact that emotions are ubiquitous, as they permeate classroom life, but they are hidden or covert most of the time. Secondly, it is quite difficult to sustain that a person or, in my case, a group is going through an emotionally connoted interaction. To overcome these difficulties, I used as a heuristic methodological principle to base the analysis on class mood episodes that are observable and transcribable with reference to the participants' epistemic and affective stance-taking process. For the purposes of my study, I focused in particular on how the combination of such stances unrolled in the course of the exchange. In this alchemy, I recognize that the epistemic and affective elements occurring in the same utterance contribute to create a mood, as the product of this specific stance-taking provides a way of characterizing some of the elements that make a mood emerge (Englebretson, 2007). This happens in the interaction, though, this creation of mood via stance is not a simple matter of adding up the stances to get the mood. Rather, it is much more like a chemical combination in which the properties of the resulting molecule are significantly different from the properties of the elements on their own. It is in this complex combinatory of stance that a mood emerges (Stone and Thompson, 2014).

To bring further contribution to understanding class mood, I started analysing the back and forth taking of stances and next searched for student agency. In my analysis, students' agency was indicated in their initiatives that were taken up and developed in the interaction to create new interactional contexts for the classroom activity. Once the procedure of data transcription, organization and analysis had been completed, I ended up with a corpus of data consisting of 48

interactive episodes of class mood, without the presumption that they represented all class mood events in the observed lessons.

6. Findings

To answer the first research question of this study, I identified specific *indicators* to outline the different interactional movements through which mood episodes evidenced. I was able to distinguish three qualitative distinct forms of class mood, which I described as *interpersonal regulation*, *material negotiation* and *resistance mood.*

Mood was normally initiated with a *thematic shift*; in the 48 episodes of class mood, participants moved on to another topic while they were engaged in an activity, for example lesson explanation or class work. Results evidenced that the episodes were initiated either by the teacher or by the students; 34 out of 48 episodes were started by the teacher.

In interpersonal regulation mood, the teacher produced the total number of shifts (28/0), in negotiation mood, students and teachers were equal (6/6), while students took initiative in every episode of resistance mood (6/0).

Keeping in mind the distinction made in the literature between epistemic and affective stance (Ochs, 1996; Goodwin, 2007), I could observe the intertwining of both aspects in the same utterance and as Stone and Thompson argued (2014), each stance had a prevalent aspect, more affect oriented or more knowledge-based. A *stance* was always used to initiate the shift (Chindamo et al., 2012), precisely: an affective stance for interpersonal regulation mood, a proposal on school material or activity for material negotiation mood, or a teacher's request for attention and participation for resistance mood. In all cases, mood unfolded in a back and forth movement between affective and epistemic stances. The mood episodes ended with another shift that brought the classroom back to the lesson task.

When mood emerged, it had a specific *focus* that involved relational aspects, converged on classroom materials or was inherent to challenging power. Different *emotions* seemed to characterise each form of mood: when participants were involved in regulating interpersonal distance, there were visible emotions that evidenced through warmth and humour, showing irritation, or using critique and reproach. In negotiations, emotions could be recognised in signs of excitement and tension, in resistance, disinterest led to chaos and hostility to oppositional silence. Each episode unfolded in an *interactive process*: in interpersonal regulation mood, the teacher led the interactions either searching for closeness, when making a joke or using humour, or marking distance when scolding and rebuking pupils for not having done well. In regulation distance mood, both "breakups" and trials to fix student-teacher relationship were present. When a negotiation

occurred, participants were searching for coordination, in resistance, students were provoking a stalemate in the unfolding activity or they impeded the activity to start.

Observing the interactive episodes when mood evidenced, I could notice that students sometimes took *agency*: in interpersonal regulation mood, students were agentic when tuning into the ongoing regulation process, actively participating in the interaction, sustaining "the mood" ; in material negotiation, students achieved agency when they succeeded in changing the procedure successfully, obtaining what they were negotiating for. Finally, in resistance mood, student agency was expressed by blocking or delaying the activity proposed by the teacher. In this way, observing how students made decisions and choices to participate in the ongoing dynamics, it was also possible to answer the third research question of this study.

The principal indicators of each form of mood are synthetized according to the number of episodes for each one (Table 1).

Table 1. Synthetic description of indicators for Interpersonal regulation, Material negotiation, and Resistance class mood episodes

	Interpersonal Regulation	*Material Negotiation*	*Resistance*
Total number of episodes	28	12	8
Number of episodes initiated by:	Teacher N = 28 Student N = 0	Teacher N = 6 Student N = 6	Teacher N = 0 Student N = 8
Thematic shift introduced by:	Affective stance (hummy /joke, sarcasm, empathy, scolding, blunder)	Request on school material or activities	Teacher's request for attention or participation
Focus	Interpersonal regulation	Materials and procedures	Power
Visible emotions mostly displayed	Cheerfulness Disappointment Tension Empathy	Anxiety Tension	Chaos Opposing silence Tension
Primary classroom interactive process	Searching for closeness or marking distances	Searching for coordination between teacher and students	Class stalemate
Agency hints	Tuning into the ongoing regulation process	Changing the procedure (succeeding from negotiation)	Blocking or delaying the ongoing activity

I will here present and reflect upon some episodes that I considered as representative exemplars of the three forms of class mood that I was able to identify. As I will specify in the following excerpts, mood elicited active participation and allowed students to take agency, declining differently in each form of mood.

6.1 Class mood episodes of interpersonal regulation

In Table 1, we can see that the majority of class mood episodes (28 out of 48) were centred on *interpersonal regulation processes*, initiated by the teacher, for the most part involving a humoristic or sarcastic affective stance. In class mood episodes focused on interpersonal regulation, participants communicated something about the way they were relating to each other (Sfard & Kieran, 2001). The mood starting signal corresponded to a stance taken by the teacher, which could either be verbal or nonverbal. Multiple emotional expressions – humoristic, sarcastic, positive, negative – pervaded these episodes.

In Excerpt 1, I present an episode[1] of interpersonal regulation class mood. It is taken from a literacy lesson on Manzoni's novel *I Promessi Sposi (The Betrothed)*, in which the teacher was testing a student about the episode of a young lady, Gertrude, who was forced to become a cloistered nun. At the beginning of the lesson, the teacher asked Matteo[2] to answer a question about Gertrude, the nun from Monza. The class mood episode started at turn 3 with the teacher correcting the student in a joking way. As Matteo's answer was not appropriate, the teacher corrected him with a surprised tone of voice, exaggerating her sense of wonder. This made the other students laugh.

Excerpt #1
The very hairy nun from Monza

Participants in the discourse: Teacher (T), Matteo (M), Pietro (P), Franco (F), Alfredo (A), Gabriele (G), Emilio (E)

Discourse and interaction	*Non-verbal conduct*	*Comment to the episode*
(1) T: Who was this lady?		T gives the turn to M.
(2) M: Eh… She was called Gertrude and she was… she was a nun who had been forced from the age of 14 years by the Prince to do this job for…		M responds by using the word 'job' which does not seem appropriate to T.
(3) T: job?[3]	The other students first observe and soon start to smile.	T reacts to M's answer with a stance of surprise, emphasised through the use of an emotional tone of voice. She is jokingly surprised and exaggerates hummy. With this reaction, T opens up to an episode of interpersonal regulation mood.
(4) M: to make this choice.		M replies.
(5) T: To make this choice, they forced her to this choice, therefore she was a nun...		T first repeats M's answer, thus signalling that she has heard and registered the utterance. By rewording M's answer, T confirms the answer is correct. T then prompts M to complete the sentence.
(6) M: or... or nun.	M gesticulates, then smiles, then gets serious, then starts giggling. It is a sequence of affective nonverbal affective stances.	M hesitates, he does not seem to know the answer.
(7) T: she was a nun…?	The other students observe and smile, looking at each other.	
(8) P: cloistered.		Another student answers by self-assignment, and by doing so, takes a risk in interrupting the oral testing of M.
(9) M: cloist… of...	The class is attentive and looks really amused.	M is not able to repeat the correct answer. And his test is not going well.
(10) T: cloistered! She was not a common nun, what's the difference, oh my God! between a common nun and a cloistered nun?	T's eyes look upwards (her mimicry indicates she is 'looking' at God).	T clarifies by repeating P's answer. While doing so, she also comments on her own question. In the phrase "Oh my God!", her tone of voice reveals she is joking. The public message she gives to the classroom relieves the tension created by the mistake.
(11) M: ehhhhhhh... I mean... uh uh uh.	Students look at each other silently and show signs of involvement.	M. stutters. This creates tension in the class and the attention is focused. Even if there is some growing concern about M's test, the class participates with aside comments.
(12) T: they're going to see these things in Finland[4]… I don't know...	All class participates in this interaction and starts chuckling.	This utterance works on different levels. T steps aside the epistemic frame by nourishing class mood with irony. With the stance "I do not know", T pretends to be worried and upset, even

[1] The excerpts used in this study were translated from Italian to English. Standard punctuation was used for readability.
[2] As for study 1, all through this study I made use of cover names for the students.
[3] In bold, the turn corresponding to the shift that provoked a class mood interaction.
[4] Teacher and students are aware that researchers will share the video-material with Finnish colleagues.

		though her tone of voice reveals she is joking. Concerns about M's many mistakes are smoothed over, and T transforms tension into collective participation in the interaction.
(13) F: at least they do not understand Italian.		F (by self-selection) picks up and gives a mocking consolation by pointing out that people in Finland will not understand Italian. The gag revives with the same irony.
(14) T: you'd better translate into Latin.		T continues with the joke by suggesting to the researcher an absurd and impossible strategy (to translate in Latin all the interaction), to make sure that people in Finland will not be able to understand.
(15) M: eh... I mean... that... perhaps the one who is cloistered lives… right inside the convention?		M takes back the turn and answers the pending question (turn 10). In doing so, he ends the side-sequence about the recording situation and brings the interaction back to the lesson topic. In his answer, he uses the wrong word 'convention'.
(16) T: in the convention?	All the pupils laugh. M laughs as well, and thus shows to have fun with the classroom.	Here again T reacts to the mistake by choosing again a humoristic tone of voice. She shows surprise for the blunder, since M confused 'convention' and 'convent'.
(17) T: the cloistered nun cannot get out! She remains inside the convent, ok? While secular nuns are those who have made a vow, though they live as those who run kindergartens, they are those who live among people, ok? Then they forced her to this choice, why?		With this turn, T takes the discourse back to the oral test. The classroom recomposes assuming a serious attitude.
(18) M: because she was not the first-born daughter.	All the class is very attentive to what is going on.	M provides the answer.
(19) T: and then what did you have to preserve?		T does not make a move of accepting. She directly asks a new question that contains a massive hint to the expected answer.
(20) M: huh... the family's wealth had to be maintained, because if... because if it was distributed among several children after...		M answers.
(21) T: it would have been decreased, while the name had to be accompanied by a lot of money and properties, ok? Okay, then explain, indeed A, explain what she's like, how she is presented...		T assigns the turn to a new speaker, now orally tested.
(22) A: Then, yes, right away, the nun is... appears to Lucia and... her mother, uh... immediately at first glance I see that the nun uh... it's not really a nun like all the others, in fact eh... it appears from the detail of the ca… of the... er of the curl that comes out of the dress and...		A answers by focusing on the nun's appearance and gives a reason why Gertrude did not look like a nun, but uses a wrong word (dress).
(23) T: dress?	The class laughs again.	T again makes a mistake-reaction based on joking and exaggerating the surprised tone of voice.
(24) G: the veil.		Another pupil (by self-selection) takes the turn and gives the right word.
(25) M: the hat (gesturing a nun veil).	All the class starts laughing again.	M (by self-selection) takes the turn even if the teacher is now testing A. He provides a wrong answer, featuring a form of a hat with his hands on his head and laughing at his own mimicry. The tension for his wrong answers has now turned into collective cheerfulness.
(26) T: hat?		T repeats the wrong word with rising intonation. She does not leave space to M for self-correction.
(27) T: the veil! Then! Go on!	The class laughs.	By exaggerating the tone of voice, T encourages the Student to continue.
(28) A: and by... precisely by the veil, and you see that...		A (under test) continues his answer (turn 22) that was interrupted by the correction of his wrong choice of 'dress' instead of 'veil'. But he cannot complete his statement as he is interrupted by laughing.
(30) E: wide or for a man?	The class also joins in smiling or laughing.	E (by self-selection) utters a funny question. Altogether, these humoristic exchanges contribute to the co-construction of the quite

		grotesque picture of the nun.
(31) T: it turns out that under the nun outfit there was a very hairy woman!		T joins in the general final laugh. She answers the question she had made in turn 21. She is joking, describing the nun as a 'hairy woman' with a lot of hair coming out from the nun's outfit.
(32) T: come on!		With this turn, the class mood episode comes to an end, and the lesson's structure is re-established.

By tuning in and participating in the interaction, the class co-created an episode of class mood that revealed a regulation process aimed at searching for closeness while reducing distances. In the whole exchange, the class revealed solidarity and complicity by laughing together and enjoying the interaction. In the episode, the students could display and achieve agency by contributing to the way class mood unfolded, therefore emotions were distributed between participants in interaction, in a contagious dynamic that involved also the rest of the class.

For example, in turn 12, the teacher encouraged the pupils and at the same time, she jokingly expressed worries, too. By doing so, she was able to create a collective involvement that is typical of class mood episodes. Shortly afterwards, another mood wave arose, when a student mistook "convention" for "convent". Again, the teacher used a surprised, humoristic tone of voice to prompt mistake-correction, and the class tuned in.

The teacher's communicative style was determinant in the episode, and so was the students' chain of surprising mistakes and performances that gave life to an emotional collective play. Throughout the episode, the teacher's use of humour and jokes turned out to be a way of reducing interpersonal distances and eventually transformed a structured individual oral test into an emotional collective state. After each mistake, the teacher repeated it with a surprised tone of voice that provoked hilarity in the classroom. No blaming or judging took place, instead the teacher played with what came out spontaneously. Matteo and others tuned in by using sense of humour that demonstrates their agency, thus playing the same game and creating a rhythmic exchange. Even if most of them remained in the background, all students participated in the interaction and joined the emotional tuning.

All through the exchange process, the teacher used several affective stances of humour. She often exaggerated in order to create a reaction or self-correction, and in doing so, she led the entire classroom to have fun, pay attention and participate. Alternatively, the teacher could have reacted to Matteo's and Alfredo's mistakes by just remarking the wrong answers and concluding the oral test with a low mark. By the use of stances showing surprise, she instead involved several students in a mockery interaction and fostered class participation and the display of collective emotions. In this way, the teacher created a rhythmic pattern that, allowing students to tune in and co-construct class mood, eventually sustained and fostered students' agency. The episode came to an end when

the teacher went back to a more structured epistemic pattern.

The following excerpt reports an interpersonal regulation class mood episode that developed through a different interactive dynamic, characterised by the sharp marking of distances between the teacher and the students. It is an abstract from a Latin lesson, which started when the teacher asked Simone to read the translation of a text from Latin to Italian that he was supposed to do as homework.

Excerpt #2
You poor little thing!

Participants in the discourse: Teacher (T), Simone (S), Barbara (B)

Discourse and interaction	*Non-verbal conduct*	*Comment to the episode*
(1) T: S would you like to volunteer? Have you done it?		T invites S to read the translation of a Latin version.
(2) S: yes, yes…		S starts reading his translation. First he reads some sentences in Latin, then in Italian.
(3) T: Well… look! Right from the start (incipit) Right from the start eh… I understood the origin of the translation (long pause. Did you download the text?	All students stare at the teacher silently. There's tension and silence	T stops S after the first words. There is irritation in her voice, and a kind of tension becomes clear in the classroom. She communicates that she suspects S has downloaded the translation.
(4) S: eh? no… no...	S looks down showing embarrassment.	
(5) T: Look! Listen to me my dear boy, you must know that you are dealing with a 60-year old fox… Do you get what I mean? So do not treat me like this! You offend me! How did you think I wouldn't realise with the choice of such vocabulary in the incipit…	The class looks restless, with students smiling, giggling and whispering to each other.	The way T says 'Look!' secures attention from S and the class. T shows anger and rebukes the student by forbidding to go on acting toward her in the way he has done. She also blames S for his opinion about her, that is not in tune with her self-image of being an experienced teacher that cannot be cheated. Rapidly, T's irritation arises. She also uses sarcasm in defining herself an old fox.
(6) S: A bit… I was not able….		S stutters, he weakly tries to find an excuse, even though his embarrassment for being 'caught' is evident.
(7) T: Oh yes! You poor little thing...		T is sarcastic. 'Oh yes!' is an ironic acceptance of an incomplete excuse. 'Poor little thing' is an ironic consolation.
(8) T: B go ahead.		T gives the turn to B.
(9) B: This sentence...		T does not give B the time to go on, as she is still on S.
(10) T: when you hear such a precise strike… so... come on…	The class is very attentive.	T motivates her point, specifying that S obviously must have copied. In her voice, there is still irritation. Then she gives the turn to B again, and the class mood episode ends.

In this interactive exchange, the teacher regulates interpersonal activity by marking her distance from students. The episode started with the teacher's emotional utterance showing irritation, with the affective stance *"Look!"* that she uttered using an annoyed tone of voice and it developed through a prolonging tension between the witty teacher and the tricky student who had been unmasked. The teacher was explicitly annoyed when she realized that Simone had downloaded the translation of the Latin version. Here, the teacher reconsidered her authority, through regulating the

distance between her and Simone. The classroom silently participated in the mood episode, as the video showed that all students stared alternatively at the teacher and at Simone. The student was "alone" to face the teacher's irritation and looked really embarrassed and hardly talked. Simone's reply was weak when he tried to make up an excuse (turn 6). In coming to school with the Latin exercise downloaded from the web, Simone challenged the rules (Engeström, 1996), but the teacher immediately flushed him out. Agency in this episode can be traced in two different moments. Simone came to school with a ready-made solution, so that the teacher could not reprimand him for not having done his homework. In doing this, there is a contradiction between what he did: he made a choice to cheat but at the same time, he respected the homework assignment, thus following the rules confirmed by the teacher. Once the teacher found out the trick, the student was agentic in revealing publicly his embarrassment thus assuming responsibilities for an action that is contrary to the moral order established in the classroom. Simone's face expression showed signs of regret in front of the teacher's attack. As for the teacher, she clearly made use of her power in order to re-establish distance and authority.

Class mood is here signalled by the fact that the episode captured the classroom's attention and emotional engagement. At the beginning of the episode, students participated in the created tension, then they looked also amused by the fact Simone had been caught out. A few minutes later, I observed another interaction between the teacher and Simone, which is informative in terms of agency.

Excerpt #3

Shut up you, lazybones!

Participants in the discourse: Teacher (T), Simone (S)

Discourse and interaction	*Non-verbal conduct*	*Comment to the episode*
(1) S: **Teacher… Is it correct to translate "Great benefactor of the state?"**		After being rebuked by T, S does not renounce to participate in the lesson and, by self-selection, he makes a suggestion for the translation.
(2) T: great benefactor ahaha.	Students nervously look at each other.	T laughs at him.
(3) S: No but no, this I did this one by myself.		S sustains he translated the sentence by himself.
(4) T: Well I would say this is the best choice for sure, you made a very good choice Hahaha.		T reacts with sarcasm.
(5) S: No… teacher truly no…		S stands up for himself. He is determined to show his effort to T.
(6) T: Shut up you, lazybones shush, shut up, quiet! (looking to the class) Come on let's carry on	The class participates with non-verbal movements. S smiles. (S smiles and looks at his mates).	T uses a warm tone of voice. In doing so, she recovers the relation with S that had become really tense minutes before.

In this short exchange, Simone was agentic in establishing an interaction with the teacher even though he was aware that she might still be angry with him and react badly. With his initiative, Simone took the risk of being rejected and scolded by saying that this time he had done it by himself (turn 3), but he succeeded as he made the teacher smile (turn 6) and the class aligned with him. In this way Simone applied a strategy to repair the previous conflictual interaction, in turn, the teacher changed her attitude and started joking again, once more regulating the distance, this time using warmth and closeness. In excerpt 2, Simone could cope with the teacher's reproach, in excerpt 3, he demonstrated he could take responsibility in the interactions. Despite having been scolded, he renegotiated his relation with the teacher, asking new questions, participating actively in the Latin exercise. In this way, the teacher reconsidered the distance, and used humour to regulate it creating a new opportunity for proximity and closeness thanks to playful talk (Wegerif, 2005).

Both examples revealed how the teacher initiated the interpersonal regulation mood, provoking the thematic shift that started the episode. The focus of the interaction was on the relational aspects and as we can see, the teacher got really annoyed when she had the suspicion that Simone was tricking her. Then after a while, both Simone and the teacher renegotiated the power relationship that sometimes might divide and isolate teachers and students. In both cases, agency evidenced through mood, and emotions allowed agency to manifest.

Making a general consideration, the fact that interpersonal regulation mood episodes were 28 out of 48 (58%) is a significant datum: closeness and distance are relevant aspects in classroom life, and this form of mood can be a relational cue for students and teachers since it allows to define interactions moment by moment. Moreover, the thematic shift initiating this mood was provoked by the teacher in all episodes. These data show the importance of the teacher's attitude in classroom

management, either in searching for closeness or in marking distances to reconsider his/her authority and discipline. Interpersonal regulation mood allowed teacher and students to continuously readjust and redefine themselves reciprocally in the interactions, enabling students to take agency in sustaining the interactive dynamic (Clarke et al., 2016).

6.2 Class mood episodes of material negotiation

In daily school routines, there are always moments dedicated to negotiating classroom practices through interactive processes (Rogoff, 1990). Part of the lesson is in fact taken up with activities of planning, discussing and making arrangements that sometimes provoke contrasts. In my video-material, I observed that class mood episodes of negotiation emerged when teacher-student confrontations about school tasks or activities arose, with either the teacher or a student making a request concerning school practices, procedures or tasks.

These episodes were characterised by a contractual interactive process, which was visible in the tension between what was planned by the teacher and the students' requests or needs. The class mood process developed through the haggling daily schedule, deadlines, or dealing with an emergent necessity, concerning material or objects usage, and the interactive dynamic revealed the effort to coordinate actions between the teacher and the most active participants, while the rest of the class paid attention.

The episodes might start with a question, a proposal, a command, or a statement regarding the practical school routines or assignments that provoked a contrast between two positions (Siry et al., 2016), the one of the teacher who wanted to impose his or her own planning and that of the class who complained, protested, discussed, and made requests. In these dynamics, emotions showed up through words, as well as non-verbal language. The emotions most frequently observed in these episodes were mainly dissatisfaction, signs of worry, anxiety and tension. However, when negotiation eventually succeeded, emotions of relief were evident in the course of these mood episodes, which generally ended with an agreement, a settlement.

The process of negotiation mood episodes unfolded in ways similar to those previously described. However, unlike the interpersonal regulation mood, in this form of mood, the interaction was focused on material, procedures or practical issues. In other words, negotiation happened in a context in which objects, not people, provoked emotions that nevertheless were a doorway to the assumption of agency.

In the first episode of material negotiation that I describe, the teacher was giving instructions for the study of History before passing to Grammar. Roberto tried to advance a suggestion, but the teacher did not listen to him and went on with her plans. A couple of turns after, the teacher accepted

another suggestion from the same student, and opened to a negotiation.

Excerpt #4

Shall I invent?

Participants in the discourse: Teacher (T), Roberto (R), Federica (F)

Discourse and interaction	*Non-verbal conduct*	*Comments to the episode*
(1) T: Well...		T is about to start a new activity.
(2) R: If I analyse the History textbook, won't it be quicker?		R goes back to History. He is challenging T who has just assigned a search for information on the web for homework. R suggests looking for the information in the History textbook.
(3) T: So… Analyse these sentences.	The classroom is preparing to write.	T ignores R's suggestion and starts to assign a Grammar exercise. She is ready to read and dictate the sentences.
(4) R: **But can't you invent them yourself, teacher?**		R again interrupts T asking the teacher to invent the sentences herself instead of reading them from the book. With this utterance, R makes an explicit request to modify the ongoing activity.
(5) T: Ah, shall I invent them myself?	Some students are attentive, others are not paying attention.	T shows surprise ('ah'). She prompts him, thus opening to the exploration of alternatives.
(6) R: Yes! It is much more beautiful!		R sustains the interaction by expressing his appreciation and liking. There is tension between what was planned and what is requested.
(7) T: about yourselves?	Students observe and nod.	T now asks R to specify what kind of sentences he wants her to invent.
(8) R and F: Yes!		Another pupil, F, joins R's request and reinforces it.
(9) T: ok... So, "Federica was away from school for at least a week because she was sick".		T accepts the request. She starts dictating the sentences inventing them. After this negotiation, T goes back to the previous frame and restarts dictating.

In this sequence, I first noticed that Roberto tried to give his opinion at the end of the History lesson, but the teacher did not listen to him and went on with what she had pre-planned, starting the Grammar lesson. She was going to dictate some ready-made sentences taken from a book, which she asked students to analyse. However, Roberto did not give up his intent to make suggestions on class activities, and this time he formulated his comment with a very assertive tone of voice. This influenced the episode's process, as the teacher listened to him, stopped for a few seconds and then asked for clarification. In turn 6, Roberto answered with an affective stance: "It is much more beautiful" and with his tone of voice showed volition. Here a contrast is observable between the teacher, who wanted the students to do what she had planned, and Roberto and Federica, who asked the teacher to act differently. At this point in the exchange (turn 7), the teacher did not only accept the suggestion, but she also asked students for more details.

From the whole interaction, I could deduce that inventing sentences for grammar analysis is not a new practice in the classroom. However, this time, the request came from the students; and when the teacher asked if the characters of the sentences had to be the students themselves, they all nodded. Thanks to these aspects, the exchange revealed a negotiation in which the teacher's volition gave way to the students' voices, which were explicitly expressed by Roberto and Federica while

the other pupils silently aligned with them. In this episode of negotiation mood, Roberto achieved agency, as his expressions of volition and his emotional engagement were eventually able to transform the interactional context. These results confirm what Kumpulainen and colleagues stated: agency is constructed in social practices, and it is negotiated, and renegotiated in interaction (Kumpulainen et al., 2014).

The following excerpt is another example of material negotiation mood taken from a lesson during which students were asked to search for information on their personal devices. Students worked in groups on different topics. At the end, they would be asked to publicly present what they had found. This activity had never been done before, and the class showed excitement for the novelty of nonstandard lesson.

Excerpt #5

This task is difficult

Participants in the discourse: Teacher (T), Carlo (C)

Discourse and interaction	*Non-verbal conduct*	*Comments to the episode*
(1) T: So, two more minutes and that's it. At 12, I mean at 11...		T informs that time is running.
(2) C: At 12 o'clock, come on teacher!		There is a shift, arising from C's request to have more time for the task, not only for himself but for the class. A negotiation starts.
(3) T: at 12? no...10 minutes more?	Others students who were working in groups raise their heads and nod.	T negatively replies. Her tone of voice shows surprise for C's request.
(4) C: Eh teacher… this task is difficult eh!	C's mates are carefully observing this interaction in the background.	C tries to convince T by calling for the task's difficulty. He is enforcing his position with the utterance 'eh'.
(5) T: they are difficult but I'm interested in the fact that you have started it, so the best I can do is give you until 11.55, not more! We'll stop at 11.55!		T accepts the objection and adds her motivation. She allows 5 more minutes.

In this episode, Carlo started a negotiation in order to have more time for the exercise. At the beginning, the teacher did not agree with the request, but Carlo kept on and added motives for the request. By silently sustaining him, the other students contributed to the creation of a class mood episode that supported Carlo's achievement of agency. In the end, he succeeded in gaining five minutes more to work on group task. This exchange created in the classroom a negotiation mood to which all students participated in the background, and they were all eventually affected by the final decision. In the short sequence, Carlo achieved agency by managing to influence the course of the activity, he transformed the situation with a concrete result, obtaining something not only for himself but also for the whole class that had supported him.

In the next example, Alice engages in a negotiation about Literature homework and involves mates Luca and Alina in asking the teacher to change homework, while the teacher is asking the classroom to finish a novel they had begun previously and bring a written comment of the novel.

Excerpt #6

This book is very ugly

Participants in the discourse: Teacher (T), Alina (A), Matilda (M) and Livio (L)

Discourse and interaction	*Non-verbal conduct*	*Comments to the episode*
(1) T: So, for Easter* I will assign you a task. Please, finish the book and	Many students are not paying attention	It is the end of the lesson and T is giving homework for the Easter holidays
(2) M: Ehm… Teacher!	M raises her voice, calling the teacher in high tone	The classroom starts paying attention and tunes into the interactions
(3) T: Is that clear? And then… I want you to make a review of the book…	M has her hand up	T does not hear M and carries on talking
(4) M: Teacher!	Class watches T	M calls T again
(5) T: Ah? What?		This time T stops talking and pays attention
(6) M: **The book is very ugly!**	High tone of voice	M takes an affective stance and expresses herself about the book publicly declaring the book is not appealing
(7) L: Yes! And it is not clear at all, it is unintelligible!	Now all students are focused on the interactions, glances are towards to the participants	L sustains M point of view, and adds another negative comment about the book. There are some whispers and aside comments
(8) T: Really? Oh…It is a very exciting story… well I thought it was. Well you finish it the same ok? No point! Ok?	Tension rises	T listens to what M and L are saying, and she hesitates. Noise at the back, comments
(9) M: But… No, it is boring! And I have many more exercises to do! It's only one week… come on teacher…	Now L and M are staring at the teacher, sustaining the interaction	Someone in the back of the classroom says 'it's true', some students nod
(10) A: Can I have another title? Teacher…?	Now students are silent, waiting	A joins actively the interaction and makes a concrete proposal, she suggests the teacher give them another book
(10) T: Well… well… maybe… I could give you another book to read then, another novel. Let me see… And… I mean, to start reading it, it is not to finish…ok?	L leans forward, ready to speak again	T is still hesitating, then she decides to change the book, she suggests to start reading it
(11) M: That's ok, teacher but a good one eh!	L and M shake hands	Students at the back rejoice noisily someone says 'good job!'

* In Italy, students stop school for one week for the Easter holidays

In this episode, Matilda first tried to attract the teacher's attention, initiating the interaction by calling her twice. Once she got the teacher's attention, she took an affective stance and produced a thematic shift. The teacher was assigning homework, Matilda started to criticise the book and expressed a negative opinion, Livio sustained her, saying the book was unintelligible. A co-participated negotiation mood started, involving the entire classroom. At the beginning, the teacher argued she thought it was exciting, she was not going to change her idea. Tension arose, but Matilda did not give up, on the contrary, she insisted on reinforcing her position, taking the responsibility to affirm that the book was also boring (turn 9). In doing so, Matilda took agency since she was responsible for showing her feelings, contrasting the ongoing classroom activity. Livio and Alina did the same (turns 7 and 10) by joining the discussion and making a proposal, negotiating with the teacher that, this time, did not refuse to consider it. In this joint interaction, each active student demonstrated agency, sustaining each other. The class remained in the background and participated too, some students were nodding, thus the negotiation affected also the other mates. By joint attention and nodding, mates were supporting Alina's request, expressing consent silently, contributing to co-construct the ongoing of the negotiation mood episode (Boiger & Mesquita,

2012), enacting and favouring distributed agency (Hilppö, 2016): all the classroom benefited from the teacher's solution to change the book. Agency was achieved by succeeding to make the teacher change her plans. Consequently, in this episode both students and teacher had to negotiate their position (Kumpulainen, Lipponen, Hilppö & Mikkola, 2014) and agency derived from this co-constructed interaction.

These results seem to be in line with Siry and colleagues (2016). In their study, the authors analysed children's interactions in Science lessons and they investigated the contradiction between lesson structure and student agency, evidencing how through the agency-structure relationship, classroom structures were transformed, and students and teacher– researchers were positioned in new ways. In the case of the above episode, through negotiation mood, students were able to change the homework they did not like. In their request, they were able to sustain their point with volition and the teacher changed her plans.

6.3 Class mood episodes of resistance

I called Resistance mood the third type of class mood I observed, and it was mostly triggered by a stance that revealed the class' opposition to the teacher's plans or questions (Rajala, 2016). In the identified episodes, I noticed that this form of class mood was signalled in two ways. Firstly, when the entire classroom was compact in remaining silent in front of a teacher's request. Here, I recognised a mood process created by a non-verbal affective stance, i.e. class compact silence in response to an epistemic invitation acted by the teacher. And secondly, when the students pervasively continued to be talky and noisy in front of the teacher who repeatedly tried to catch their attention and asked for attention. In both cases, the students communicated a clear message of 'no' to what the teacher was saying or asking, and thus challenged the teacher's authority in that moment without offering opening to any form of alternative exploration (as was observed in the material negotiation class mood episodes). A condition for resistance to turn into a class mood was in the collective expression of the oppositional message.

The following excerpt is taken from the beginning of a school day. The teacher entered the classroom and started the lesson by asking pupils which subject they wanted to do first, since they had two hours in a row.

Excerpt #7

Italian or History?

Participants in the discourse: Teacher (T), the class

Discourse and interaction	*Non-verbal conduct*	*Comments to the episode*
(1) T: What shall I do first?		T wants the students to choose which subject to do first.
(2) **(4.0)***	Students do not respond to teacher's invitation.	The mood is created from this 'contradiction': to the teacher's request, the students reply with a compact silence that lasts in a time-space.
(3) T: Eh? Shall I do Italian or History?	Students stare at the teacher silently or continue to look their books.	T asks again, prompting students. The students are oppositional in their no-reply attitude.
(4) (3.0)	Students stare at the teacher in silence.	The class behaviour is unanimous in compactness.
(5) T: What do you want to do?		T does not give up. He keeps insisting in eliciting the answer from the pupils, this time he tries with a direct question. But his endeavour fails again.
(6) (1.5)	Students stare at the teacher silently.	
(7) T: Italian or History? What shall I do? Let's do Italian then.		T makes a last attempt, and again suggests the alternative. Since no answer comes from the students, he decides himself.

*Time in seconds

Student agency was signalled in the dispute that challenged the teacher's authority. Students did not respond to repeated invitations made by the teacher. In the episode, the massive students' non-response isolated the teacher, who was momentary powerless in dealing with the interaction. As Rajala and colleagues demonstrated (2016), students may use opposition as a form of agency to generate or transform the context possibilities. In their study, the authors focused on active display of opposition, while Rainio and Hilppö (2017) analysed passive opposition. In this resistance mood episode, students' opposition resulted in delaying the starting of the lesson, and they were using silence as an oppositional agentic expression. Students' silence created a sort of distance and the teacher was talking 'alone'. This form of mood can signal the system is not available to join the proposed activity, instead, it is acting a passive opposition.

According to these findings, it was possible to trace agency also in episodes of resistance mood when chaos evidenced in the classroom. I do not refer here to the messy situations that are typical of school routines, normally developing when activities are changing, or while having a pause. I coded interactional episodes as resistance mood when the class chaos was compactly expressing an explicit opposition to a teacher's request. As observed before with the class showing up a compact silence, in this case, the persistent chaos was signalling a resistance to what the teacher was doing, be it an activity, a proposal or a request. On these occasions, the teacher used to repeatedly ask for attention, or for silence, but the class, altogether, went on undaunted in chaos. Throughout the interaction, the students' strong sense of "I do not want this" revealed their agentic positioning, which was co-constructed and used as a means to communicate collectively a feeling of not being at ease, rejection, or simply boredom (Rajala et al., 2016).

In the next example, the teacher interrupts a given task: students are working in groups and are getting too noisy, they keep on discussing but are off topic. The teacher realises this, and out of too much noise tries to attract students' attention asking them if they have finished their group work.

Excerpt #8

Could I have an answer?

Participants in the discourse: Teacher (T), the class

Discourse and interaction	*Non-verbal conduct*	*Comments to the episode*
(1) T: Hey guys, what are you up to?	Mixed gestures and noises	T hears too much noise in group work and asks what students are doing
(2) **(3.0)***	Students do not respond to teacher's invitation.	In this case, the mood is created from this opposition: to the teacher's request, the students do not reply, ignoring him
(3) T: Eh? Could I have an answer?	Students have their backs to the teacher and gesticulate among themselves	T asks, prompting students. He stands behind them, half smiling, asking to receive an answer. The students remain in their no-reply attitude, making noise and chaos
(4) (5.0)	Students giggle	The class is involved in something else and do not listen to the teacher
(5) T: Hey, big boys, is everything ok?	Students whisper	T this time tries with a group of boys that are working together. But his endeavour fails again. Although ignored, he seems more surprised than angry. Students do not answer, they just turn the volume of their voices down
(6) (1.5)	Students this time shut up	Finally T succeeds in getting attention
(7) T: Finished? Let's listen to my reports then!		After a long trial, T manages to get back the class's attention and the lesson re-starts

*Time in seconds

In this example, the teacher was trying to tune in with students, calling for attention while students were engaged in a group activity. They were at the end of the lesson, and they seemed to have finished their exercise. Thus, they were chatting together, joking and goofing off. When the teacher called them, they did not respond, continuing to joke and talk. The teacher tried several times, and only at the end got students' attention.

In this resistance mood, students were collectively ignoring the teacher, and they gradually expressed their volitional power resisting through delaying the activity with chaos, thus opposing to what the teacher was proposing, challenging the authority in this case, ignoring it, and maintaining chaos. In a way, they not only took a risk, not listening to the teacher, but they also took responsibility in opposing the teacher's request (Martin, 2016). In this form, agency involved actions that broke away from a given frame, the lesson. According to a line of research, this form of agency implies taking the initiative to transform given social practices (Virkkunen, 2006; Engeström, 2006).

So far, research on agency in educational contexts has not focused on agency expressed through silence or chaos, but other studies have investigated agency as a form of opposition expressed in verbally contrasting the ongoing activity (Rajala, 2016; Annan, 2016; Rainio, 2008). In a similar vein, Rajala, Kumpulainen, Rainio, Hilppö and Lipponen (2016) considered students' opposition and resistance as a form of agency when it had transformative power. Their study focused on oppositional interactions during a primary school science project that was inspired by dialogic

teaching (Alexander, 2006), and their video data were analysed inductively using interaction analysis. In line with Rajala and colleagues (2016), student opposition can be considered as an educational challenge with an important transformative potential that teachers should be able to grasp. The developing of resistance mood episodes can thus be interpreted as emergent episodes emotionally connoted that create opportunities to display agency and empower students in collective public situations.

7. Discussion

...intelligence is the ability to hold two opposed ideas in the mind
at the same time, and still retain the ability to function.
One should, for example, be able to see that things are hopeless
and yet be determined to make them otherwise
The crack up F. Scott Fitzgerald

The results of this study allowed to illuminate the process through which class mood evidenced in interactions and at the same time, to identify three qualitatively different forms of class mood named *interpersonal regulation*, *material negotiation* and *resistance*, respectively. This distinction informed us about the interactive dynamics through which students and teachers engaged.

In the identified forms of mood, agency was achieved in various ways. In interpersonal regulation mood, agency was observed when students were able to tune in with the emotional interaction, in ways that allowed tension relief. In material negotiation mood, it was achieved through interactions that succeeded in changing a pre-planned activity or influencing the ongoing task. Finally, in resistance mood, students were agentic in taking the power to block or drift the ongoing interaction. One important point in studying mood is that it enables to reconsider negative emotions since they have often been considered disruptive in classroom routines, or an issue to prevent and control, since they might be an impediment to schooling (Glackin, 2017). Particularly, resistance mood could offer opportunities to fulfil educational aims, using it as a dialogic opportunity to explore student agency and learn how to stay in that *negative capability* defined by the English poet Keats as the ability to stay in the "uncertainty, mysteries and doubts", giving it space and time. Managing the contradictory oscillations in ceding power to students, or not, may become an educational aim, to open to dialogic interactions, for example asking students what their silence or their chaos stand for when it evidences, instead of repressing and reprimanding.

Given the emotional properties of class mood episodes, students were agentic when they publicly revealed and assumed responsibility for their own feelings and emotions, throughout the dynamic flux of the exchange.

According to the results of this study, mood represents an opportunity to seize emergent

classroom moments in which students and teachers might explore something unexpected (Beghetto, 2013). Seizing these "micromoments" in classroom life may become a challenge for teachers to step out from curricula and follow improvisations (Sawyer, 2005), consequently confirming what Sawyer stated about effective teachers as those who tap into a variety of repertoires and are always ready to combine structure and improvisation.

I am aware that in this study the description of class mood is only partial, as there might be other interactive processes provoking different forms of mood. Nevertheless, these findings illuminate interactions in which students are constructing, maintaining and contesting school routines, and at the same time, they shed light on how agency can evidence in co-participatory dynamics (Martin, 2016).

Bringing classroom emotions under the microscope provides foreground elements for further considerations. Since class mood allows agency to manifest in interaction, it may become a precious instrument when it shows up in the classroom, if students and teachers know about the way it unfolds. Observing how emotions evidenced in mood, I could see that positive emotions emerged collectively in co-participating in jokes and humour, or in facing reproaching and sustaining it.

On the contrary, from these study findings, it evidenced that in negotiation, tension permitted to find new solutions, bringing new positive feelings. When exerting opposition, students demonstrated to have power. In the light of these considerations, opposition seems to be a powerful instrument that students have in order to communicate collectively, a strong signal that students used in the dialectic of the interaction: through tension, resistance and passive opposition (Rainio and Hilppo, 2017), students were able to take agentic positions and from that transform classroom activity (Rajala et al., 2016).

In this way, class mood might become an important process that gives information about who is handling the power in moment-to-moment interaction and at the same time, it offers an opportunity for involved participants to regulate, negotiate or resist.

This entails reconsidering also power management: thanks to class mood, teachers might evaluate if, when and how to listen to this "codified" message and decide whether to acknowledge it or not.

Knowing how mood unfolds may help students and teachers to coordinate and use mood as an opportunity to create and exercise a dialogic space. In agreement with Scott, Mortimer, and Aguiar (2006), rather than authoritative and dialogic approaches being polarised and separate, dealing with classroom dynamics may require a progressive shifting between keeping all the control in the classroom to gradually ceding the power to students when necessary.

By getting in tune with class mood, teachers and students may become more aware of how emotions can be handled, and learn a dialogic attitude to regulate distance or negotiate the

reciprocity and the power challenging classroom interactions. Once the classroom is given the chance to explore emotions through class mood, then also dialogue could eventually take over.

CHAPTER V

STUDY 3

What's up on *WhatsApp*?
Student agency and emotions in chat interactions

"Experience changes not only the way we intellectually know the world,
but also the way we affectively and perceptually relate to it"
(Roth & Jornet, 2014).
"Writing is easier than talking…
You do not see someone's face when you write. You just send and wait for answers"
Daniela F.
"It was a different lesson, in which we were able to study more in depth the themes of the previous lesson.
And we were more 'at the core' of the lesson"
Luca F.
"The lesson was interesting and constructive, definitely beautiful. Confrontation is always welcome.
Yes, with this spatial arrangement, we felt better,
we could look into each other's eyes"
Jaco V.

1. Introduction

In this study, students were involved in a chat debate about lessons and school practices. They were asked to express and discuss together their feelings and thoughts in 16 *WhatsApp* chats, starting from two guiding questions: "*What do you think about this morning's lesson?" "How did you feel about this lesson?"*. The main purpose of this study was then to listen to what the students had to say (Wegerif et al., 2010): in this case, I was interested in investigating the emotions that emerge in a chat (Feidakis et al., 2012) where students were asked to talk about school. Particularly, I investigated the themes they were interested in, with particular focus on how agency could be traced in a chat, recreating an online classroom context (Edwards et al., 2009). The idea came from the fact that nowadays, classrooms are culturally rich contexts, real modern melting pots where ideas potentially refract like in a kaleidoscope. Moreover, this new trend in every day communication is amplified by using social media more and more (Akkerman & Bakker, 2011); they constitute affordances and make a fundamental impact on our societies as a way of crossing boundaries (Kumpulainen & Mikkola, 2014). This hybridization of settings, school, home/out of school, leads us to consider the concept of context in a wider sense in which self-disclosure might happen diversely.

This study is in line with a research field that considers students co-protagonists of schooling, in order to sustain young individuals' voices to express agency (Rajala, 2016; Kullenberg & Pramling, 2017).

2. *WhatsApp*

2.1 A group chat as a communicative tool

WhatsApp is a very popular social networking app commonly used by adolescents for online everyday interaction, mostly used in leisure time. As some scholars sustain (Bere, 2013; Church & de Oliveira, 2013), in such contexts, students build and co-build their narrations also expressing self-awareness of feelings (Toshalis, & Nakkula, 2012) and self-representation (Ong, Ang & Ho, 2011). Research has demonstrated that online communication can foster cooperation, (Bansal & Dhananjay Joshi, 2014; Chipunza, 2013), facilitate peer exchange, strengthen the feeling of being part of a group, and it is also fun (Bere, 2013). Other authors (De Fiori et al., 2010; Hewson, 2013) suggested that group discussion on a forum promotes collective thinking and personal thought elaboration (Ng'ambi, 2011).

In particular, the *WhatsApp* app is so far, the most used and popular for its features and services, functioning as an online platform (Church & de Oliveira, 2013; Bouhnik & Deshen, 2014). Nowadays, teachers and students increasingly use it as a didactic tool in *M-learning*, learning with an instant messaging application via mobile phones (Ngaleka & Uys, 2011). Bouhnik & Deshen (2014) claimed that investigating the potential of this means to collect conversations might enlarge the focus of research in this direction since *WhatsApp* seems to be a good tool to solicit students' chat debate (Man, 2014).

A chat conversation has some characteristic features, the turns of talk follow in a chronological sequence, they can be very short or expressed in emoticons. Each participant decides what and when to post, some participants might decide only to read, some are very interactive; some students may feel more courageous and find it is easier to take part in a chat since it is different from a real context. Interactions follow threads of topics that may overlap. As Zemel et al. (2009) suggest, "Since chat postings are individually authored, individual postings may seem to be a 'natural' choice that is compatible with the participants' perspective. However, the arbitrariness of this choice becomes clear when one considers the interactional work that each posting accomplishes in chat. The quasi-synchronous nature of the environment and the fact that participants need to type contributions encourages them to interact with each other in particularly distinct ways multiple, short texts in order to make their contributions appear at relevant points in the posting stream. As a result, it is often the case that only a combination of postings constitutes a coherent turn or activity for the participants. Thus, it would be incorrect to consider a single posting as the unit of analysis" (pp. 405-406).

Thanks to these features, online debate is a social fertile context, even if virtual and informal,

where non-verbal features are used alternatively (Gajadhar & Green, 2003), but the same functional to collective meaning making processes and a potential dialogic space (Wegerif, 2013). In fact, Wegerif sustains the benefits of using online interaction in learning, since it reconsiders concepts of time and space and at the same time, it may give the possibility to expand and unbound from a monologic approach to a dialogic one (Mercer et al., 2010), if supported by educational aims (Wegerif, 2013).

Unfortunately, classroom time-space organization and, in general, curricula provide little space for regular activities in which students can be the protagonists of a discussion, exchange opinions and listen to each other, because the interactions are above all framed by school subjects (Ma & Gao, 2010). Mostly, pupils listen to teacher's talk (Cazden, 2001) or are strictly tested on subjects, only very rarely do they have opportunities to interact informally and spontaneously. Often there is no time to explore with authentic curiosity students' already existing knowledge (Boyd & Markarian, 2011), or aside of related topics such as real-life experiences (Kumpulainen & Rajala, 2016) inviting them to contribute and be co-authors in learning. In the end, teachers might end up not knowing students' thoughts, life experiences and emotions.

2.2 *WhatsApp* and classroom boundaries

The Internet has changed classroom boundaries. From a spatial bounded configuration of the classroom (Nespor, 2002), nowadays, thanks to the Internet, students have the possibility to stay online with classroom group chats also after school, class "walls" have been reframed and connections expanded (Erstad, 2014). Time and space have been reconsidered and with *Facebook* or *WhatsApp*, students can share leisure talk, school information about homework or gather ideas (Lemos & da Cunha Júnior, 2017); learning contexts have now acquired permeating boundaries (Kumpulainen & Mikkola, 2014) and the possibility to learn is available online and offline (Nunes, 2006). Thus, Erstad (2014) has redefined students as "learners in motion" capable of crossing the boundaries of multiple settings; Leander, Phillips and Taylor (2010) described "new mobilities" as the educational changes in learning contexts, questioning the classroom as a fixed container and highlighting the transformation of educational settings.

3. Student agency in a chat

Agency occurs because of a relationship with the others, in a specific context; since in this study the context is different, we can presume that agency evidences differently in a chat where participants acknowledge each other (Kumpulainen & Rajala, 2017). In this part, I conceptualized

student agency as their capacity to take responsibility (Rajala, Martin, & Kumpulainen, 2016) in a public debate and express their emotions online. Specifically, here agency is considered as the capacity to influence and transform the chat trend, creating a shift in the discussion, breaking the "pattern" (Sannino, 2015) and offering new points of views.

As happens in relational face-to-face contexts, in the same way, students may achieve agency also in a debate (Lipponen & Kumpulainen, 2011). In this virtual framework, agency is viewed as a dialogic tendency in students' meaning making where exposing oneself with strength and volition gives birth to new perspectives, collectively recognized. Although agency has mainly to do with action and choices, some research has also identified school activities in which students are involved busily in creating curricula, considering them as educationalists' partners (Goulart & Roth, 2010; Toshalis & Nakkula, 2012). These programs position students as agents of change instead of wanting to change students through schooling. As such, activities concerning students' voice imply the antithesis of educational experiences defined as depersonalizing, standard, and homogenizing, since it considers not only students' actions, but also their thoughts and feelings (Annan, 2016).

Asking for students' opinions about schooling, as I did on *WhatsApp*, led students to be considered also as potential consultants. Listening to young voices in informal chat, as I propose in this study, is an opportunity for adults to gauge adolescents' perspectives (Toshalis & Nakkula, 2012) and at the same time sustain critical thinking (McPeck, 2016).

4. Study aims and research questions

I chose a chat format such as *WhatsApp*, for three reasons. Firstly, because it was useful in investigating interactions in a different perspective; second, it was an alternative informal context for sharing ideas and listening to what students had to say about lessons. Finally, *WhatsApp* created a hybrid space (Kumpulainen & Mikkola, 2014) which was like a bridge between school and private lives. In the chat, the whole classroom had the possibility to participate together at the same time, although outside school conserving its organic ensemble.

The general aims of this study were first, to analyse students' perception of school activities by observing how they publicly unveiled their emotions in an online debate when talking about lessons. Second, to investigate which themes emerged and were relevant to them when they were emotionally involved in the discussion; third, to recognize agency from the chat interactions and finally, to observe which school picture came out from the chats.

In particular, the research questions were the following:

1) How did students describe their everyday lessons in terms of affect and emotional involvement?

2) Which themes did students discuss in chats? Were the themes influenced by the emotional involvement?

3) How did students' agentic contributions evidence in the chats?

4) Which portrait of schooling did students provide indirectly, through their discussions?

5. Method

I was aware that detecting emotions and student agency on *WhatsApp* would be a challenging task. As discussed above, chats have a specific template, utterances are not long, there is a rhythm and turns follow one after another in a very quick way forming thematic threads of conversations that often intertwine. In this, recurrent themes may emerge and coexist: in order to proceed with chat analysis, I got inspiration from existing methods in the literature to identify expressions of feelings (Pang & Lee, 2008; Liu, 2010; Liu & Zang, 2012; Hutto & Gilbert, 2014) and track some recurrent patterns in the chats (Strijbos & Stahl, 2007; Braun & Clarke, 2006). Sentiment lexicon analysis can help investigate emotions, in this case, expressed in chats. It studies natural language and considers people's opinions, sentiments, evaluations, attitudes, and emotions in texts. These kinds of analyses identify positive and negative orientations (Villavicencio & Bernardo, 2013a; 2013b), evaluating also the strength and intensity of expression. Moreover, lack of nonverbal cues can cause trouble in computer-mediated communication (Derks et al., 2007) and the use of emoticons can help to disambiguate and give force to some affective expressions, or can transform a neutral utterance into an affective one.

5.1 Materials

I collected 16 *WhatsApp* chats of 89 students of the four classes that were the participants of the previous studies described in chapter 2. I asked students to take part in a classroom debate after the lessons I had video recorded for studies 1 and 2. Students had to participate in the chat only after morning lessons, when they were at home. They were given ground rules to follow during the conversations (Wegerif & Mercer, 1997): the chat would stay open for one hour. The time to connect to *WhatsApp* was negotiated each and every time together with participants in order to find a suitable time for everyone. Students were asked not to use the chat for leisure time or other purposes. If they were busy, they could join before the end, however, between discussions students were not allowed to use the chat until the following discussion. I was the moderator and participated in all chats full time, guiding discussion and inviting students to stay focused when they happened to go off topic. Gossiping and offensive jargon were not allowed. The two questions guiding classroom chats were

both oriented to solicit students' emotions and thinking related to the morning lesson and were: "*What do you think about this morning's lesson?" "How did you feel about this lesson?"*

5.2 Data analysis procedures

To organize my material, I transferred all the chats to Excel worksheets. I arranged all the chats by organizing data according to the date, the time, participant nicknames and turns of talk in a sequence. Figure 1 is an example. Then I started to code utterances. Students' names have not been reported in the examples to respect privacy.

N CHAT WA	N CHAT WA	N CHAT WA	N CHAT WA
30/01/2016	18:01	XYZ	Per me la lezione è stata interessante, perché Cmq a me filosofia piace perciò è interessante Conoscere le varie mentalità??
30/01/2016	18:01	XYZ	Per capirci meglio Lun l'altro
30/01/2016	18:03	XYZ	A me ha fatto riflettere il fatto che lui dice che è molto improbabile che un uomo da solo decida di punto in bianco di uscire da un certo stato, in quel caso dallo stato di minorità, perché l'uomo in generale è portato a seguire la massa, e questo succede anche oggi!
30/01/2016	18:04	XYZ	Siete d'accordo con Lisa?
30/01/2016	18:05	XYZ	In Linea di massima si, perché le persone non vogliono sentirsi escluse perciò cercano di rimanere in gruppo. Adeguandosi
30/01/2016	18:05	XYZ	Si io sono molto d'accordo

Figure 1. Example of a WhatsApp message thread on an Excel sheet

Once all the chats had been transferred to Excel, I started to code them quantifying the duration in minutes, the number of participants, the amount of moderator's and students' utterances. Table 1 summarises the chat database.

Table 1. Chat summary

N. PROG. CHAT	CHAT MINUTES	STUDENTS PARTICIPATING IN CHAT	TOTAL UTTERANCES	PERCENTAGE OF MODERATOR'S INTERVENTIONS	STUDENTS' UTTERANCES
1	**59**	**17**	**92**	**17%**	**76**
2	**61**	**20**	**359**	**9%**	**327**
3	**70**	**18**	**309**	**21%**	**244**
4	**34**	**21**	**145**	**14%**	**124**
5	**75**	**13**	**225**	**13%**	**195**
6	**63**	**20**	**175**	**18%**	**144**
7	**69**	**14**	**100**	**27%**	**73**
8	**77**	**16**	**143**	**30%**	**99**
9	**66**	**21**	**306**	**14%**	**263**
10	**62**	**18**	**133**	**23%**	**102**
11	**65**	**17**	**315**	**18%**	**257**
12	**58**	**17**	**129**	**26%**	**95**
13	**77**	**16**	**174**	**22%**	**135**
14	**47**	**13**	**65**	**24%**	**48**
15	**60**	**14**	**383**	**7%**	**357**
16	**38**	**14**	**104**	**32%**	**70**

For data analysis, I proceeded in 4 steps. First, I collected and counted the emotional lexicon students used to express their opinion on each lesson; to trace when emotions evidenced in the chat, I defined an *emotional turn* that could contain the following structural aspects:

a) Sentiment lexicon (adjectives, expressions conveying emotions; a concept indicating an emotional state).

b) Emoticons/Smileys.

c) Affective stance: a noun, an adjective referring to an affective/emotional state.

Then, I noted that an emotional turn implied:

1) Emotional self-disclosure; students were revealing something about themselves.

2) Risk-taking (courage to self-disclose); sometimes this meant sustaining a completely different point of view from the chat trend.

The second step was to identify threads of discussion in each chat; a thread is a thematic sequence and I coded when it initiated and ended. Since *WhatsApp* allows multiple users that all interact at the same time, various threads of discussion on diverse themes might occur simultaneously and overlap. Thus, I had to spot and follow thematic threads to keep trace of discussion, and I had to unwind the threads, which often intertwined. I analysed each thematic thread leaving aside topic turns and extra communication, when it had nothing to do with the theme. Once I had identified the thematic threads, I analysed whether the topics activated high or low emotional intensity.

The third step was to trace student agency, which I coded when agentic contributions evidenced. For example, when participants were able to sustain their point of view motivating it with strength, influencing and changing the chat trend according to the following indicators:

1. Exposing oneself/self-disclosing publicly in the chat with clear ideas, courage and strength
2. Risk-taking (of what one is saying)
3. Taking responsibility of one's argumentation
4. Expressing volition and power
5. Manifesting original/ critical thinking, influencing the chat trend and producing a shift in the chat
6. Acknowledgements by other chat participants were expressed or supported.

Finally, I reconstructed a "final picture" about schooling that emerged from students' interactions, going back to what students expressed about schooling in their chat, resuming what students had said.

6. Findings

6.1 Emotional lexicon

I could observe that students used recurrent adjectives and concepts to define their lessons. They expressed emotions and strength in their conversations to sustain their point of view, also using relative emoticons. Sentiment lexicon was embedded in turns of talk. Here are some examples of utterances commenting the lessons:

Excerpt #1 Examples are taken from diverse chats

*05/02/2016 19:33 Corazón ❤ La lezione era tranquilla e monotona**	The lesson was quiet and boring.
05/02/2016 19:33 Lety:) Una Lezione come sempre	A usual lesson
26/01/2016 6:04 Lalla: Mi sentivo abbastanza agitato perché avevo timore che mi chiamasse per correggere la versione, visto che io vado molto in panico e mi sale l'ansia😂.	I felt quite anxious because I was afraid the teacher would call me to correct the version, because I usually go into panic and I get really anxious
09/02/2016 20:03 Ketchup ❤ Non avevamo mai fatto una lezione così è stato bello e più rilassante del solito	We'd never had such a lesson, so it was nice and more relaxing than usual
09/02/2016 20:04 Debo ❤✨La lezione è stata molto diversa dal solito Quindi è stata coinvolgente Sì stava scomodi ma piuttosto che fare sempre la stessa lezione andava bene anche cosi	The lesson was very different from the usual one, so it was involving, it was uncomfortable but rather than doing the same lesson, it was fine like that
12/02/2016 20:04 Giulio: A me piace sempre ascoltare le opinioni degli altri quindi le lezioni di questo tipo le trovo sempre interessanti. E poi questa volta l'abbiamo fatta al buio ed è una novità che mi è piaciuta molto :)	I always like to listen to other people's points of view, so I find this type of lesson more interesting. And this time we did it in the dark and this was a novelty I really liked :)
24/02/2016, 18:05 Lucia: Meglio così la disposizione perché possiamo confrontarci faccia a faccia	I preferred this spatial arrangement because we could look at each other in the face
24/02/2016, 18:05 Ramy: Guardarsi in faccia è più bello ☺	To look at each other in the face is much nicer.
24/02/2016, 18:07 Polly: Si però forse abbiamo interagito di più anche perché il tema era molto attuale. Poi la disposizione ha aiutato sicuramente	Maybe we interacted more because the theme was more current. Then the spatial arrangement helped us for sure

*The chat excerpts are reported also in Italian to respect the authenticity of the format

Analysing the chat verbatim, results highlighted two tendencies: students showed a neutral/low level of emotional intensity, or high emotional intensity (either negative or positive).

Table 2. Level of emotional intensity

Neutral expressions	lexicon indicating comfort zone feelings
Low emotional intensity	lexicon indicating boredom or heaviness
High negative emotional intensity	lexicon indicating anxiety or fear
High positive emotional intensity	lexicon indicating positive emotions (enthusiasm, appreciation)

A list of adjectives/nouns divided in the 4 groups are shown in Table 3:

Table 3. Detail of emotional lexicon

Neutral expressions COMFORT ZONE	**Low emotional intensity HEAVINESS/ BOREDOM**	**High negative emotional intensity ANXIETY/ WORRY/ODDITY**	**High positive emotional intensity AFFECTIVE/GOOD TIME/PROACTIVE/CHALLENGING**
As Usual **At Easy** **Less Pressure** **Comfortable** **Current** **Cute** **Light** **Nice** **Normal** **Quiet** **Relaxing** **Simple** **Typical** **Well**	**Boring** **Distracting** **Useless**	**Embarrassing** **Heavy** **Sad** **Strange** **Uncomfortable** **Unintelligible/Confusing**	**Alternative/New/Particular** **Autonomy** **Beautiful** **Cheerful/Happiness/Pleasant** **Curiosity/Diverse/Stimulating** **Empathy** **Excellent/Well done** **Exciting/Joy/Funny/Cheerful/Good** **Free** **Helped** **Important** **Impressed/Touched** **Interactive/Constructive** **Interesting/Appreciated Theme** **Involving** **Productive/Useful** **Protagonist/At the core of the lesson** **Relieved** **Shared/Collaborative** **Surprised/Wonder**

Specifically, neutral expressions described a comfort zone lesson, defined "as usual"~~,~~ in which nothing new seemed to happen, it denoted a known space and a common routine. With low emotional intensity lexicon students described a boring lesson in which they declared to be

distracted or annoyed, and they did not see the utility of the subject (*History is useless*) or they criticized the way it was taught. When using negative high emotional intensity lexicon, students reported feelings of anxiety and fear of grades, tests, and teacher evaluation. Positive high intensity lexicon was used when there were affective/good time and proactive/challenging feelings, referred to motivating and stimulating lessons. In particular, students used different expressions when they were impressed and touched (affective lexicon), or when cognitively stimulated (proactive).

The following excerpt is an example of low intensity lexicon used to comment a lesson:

Excerpt #2 chat n° 9

03/02/2016, 16:58 - Mod: Ciao ragazzi! buon pomeriggio e benvenuti. Stamattina come è andata la lezione con la prof Taranto? Tante cose! Spiegazioni, interrogazioni e esercizi. Cosa ne pensate? Come vi siete sentiti?	Hi everybody, good afternoon, and welcome! This morning what was the lesson like with teacher V.? Many things! Explanations, interrogations and exercises. What do you think? How did you feel?
03/02/2016, 17:01 - Vero ❤😕: Solita lezione…	The same old lesson…
03/02/2016, 17:02 - Ketchup ❤: È stata come sempre	It was as usual
03/02/2016, 17:09 - Franco: É stata la tipica lezione di sempre	It was the same lesson as always
03/02/2016, 17:14 - Luigi: Normale	Normal
03/02/2016, 17:14 - Ilenia: Normale	Normal
03/02/2016, 17:16 - Mod: Ma voi in queste lezioni così classiche come state?	But how do you feel in these classical lessons?
03/02/2016, 17:17 - Manu ❤: Bene	Good
03/02/2016, 17:17 - Flo: Bene	Good
03/02/2016, 17:17 - Corazón ❤: Bene	Good
03/02/2016, 17:17 - Franco: Bene	Good

Students used the adjective “usual” in commenting this lesson and the other students agreed. To the moderator’s direct question “how do you feel in these classical lessons?”, they declared chorally to feel good, as if they were referring to a sort of common code.

High negative intensity emotional lexicon was used when they felt anxious, nervous, scared of an incoming test, or when they thought the lesson was odd or unintelligible. On the contrary, they used high positive intensity emotional lexicon to describe a lesson in which they felt involved.

Excerpt #3 chat n° 7

12/02/2016, 20:02 - Cri: A me è piaciuta molto la lezione di oggi perché è stato bello ascoltare le opinioni e le interpretazioni degli altri	I really liked the lesson today because it was beautiful to listen to the opinions and interpretations of others
12/02/2016, 20:02 - Miry: Buonasera, allora secondo me è stata una lezione molto bella, coinvolgente ma soprattutto diversa dal solito per via del buio.	Good evening, well in my opinion the lesson was very beautiful, involving but above all different from our usual lessons since it was dark
12/02/2016, 20:03 - Giarai: Bene, è stata una grande idea fare la lezione al buio, si riusciva ad ascoltare meglio☺	Good, it was a great idea to do the lesson in the dark, we could listen to each other better
12/02/2016, 20:04 - Giliola: A me piace sempre ascoltare le opinioni degli altri quindi le lezioni di questo tipo le trovo sempre interessanti. E poi questa volta l'abbiamo fatta al buio ed è una novità che mi è piaciuta molto :)	I always like to listen to other people's opinions, so I always find this kind of lesson interesting. And then this time we did it in the dark which was a novelty I liked very much :)

High positive emotional intensity lexicon was used to comment this unusual lesson. Miry said "Very beautiful, involving but above all different". Students expressed enthusiasm and appreciated the possibility to share opinions, to listen to each other, discussing and exchanging ideas. They spontaneously declared a wish for a dialogic space (Mercer et al., 2010; Wegerif, 2013): "I really liked the lesson today because it was beautiful to listen to the opinions and interpretations of others". Moreover, when using high positive intensity emotional expressions, students seemed to appreciate the opportunities to be proponent, protagonist and "at the core of the lesson", as autonomous agents of learning processes (Ma & Gao, 2010). According to what they expressed in the chats with adjectives and affective expressions, students described a repertoire of lessons. They were very sharp and had clear ideas, describing the lessons in which they felt they were protagonists with the possibility of collaborating and participating in the creation of new meanings as challenging. They appreciated unusual elements where they could experience a sense of wonder, surprise and curiosity and referred amusing feelings where fun and joy were the prevailing related emotions. As a matter of facts, they were able to distinguish peculiarities, appreciating or criticising them and they seemed to be at ease with this variety: in their opinion, usual lessons were valuable since they seemed to accompany routines and pre-established practices; however, novelties were also welcomed as they brought new forms of interactions.

6.2 Themes

When discussing lessons, some themes emerged mainly referred to schooling and students themselves. About schooling students:

a) described school practices, i.e. tests, subjects, teachers (evaluating their strictness and their ability to involve students);

b) criticized or appreciated some school routines; they complained about low marks, they criticised subjects they considered useless; at the same time they valued the importance of meeting together to learn and discuss;

c) suggested to link school subjects to real life experiences, "jumping" from personal topics to

generalisation, or vice versa, thus spontaneously actuating processes of secondarisation of emotions (Muller Mirza et al., 2014) and indirectly expressing what they really would be interested in learning at school (Majlesi & Broth, 2012);

d) when talking expressly about themselves, introduced personal issues, talking about their personality traits (i.e. "This morning in the lesson I didn't speak. I am shy and have got a low voice, everybody was shouting, so I only listened, maybe someone said what I think"). They revealed fears or worries, talking about family life, strictness of parents about school, thus self-disclosing publicly.

Next, an example of both criticizing and appreciating school and at the same time Ely spontaneously made a secondarisation of her emotions.

Excerpt #4 chat n° 3

09/02/2016, 20:56 - Ely: Io penso che è a scuola invece che magari si scoprono le emozioni più vere che poi ritrovi nella vita reale la scuola ti insegna a vivere al di fuori di essa	I think that it is at school that you can discover the most real emotions that you can find in real life, school teaches you to live outside
09/02/2016, 20:56 - Dony ❤✨: Se magari fosse così Ely	Oh, I wish that were true Ely
09/02/2016, 20:58 - Ely: Secondo me no invece anche quando studiamo le poesie a volte sorgono delle frasi veramente profonde che dal mio punto di vista sono utili anche al di fuori della scuola e mi fanno riflettere	I don't think so. Even when we study poems sometimes some very deep sentences arise and in my opinion they are useful also outside of school and they make me meditate

Ely recognized the formative role of school and the tools given by education, both in and out of school life, claiming that school is a place where to learn how to live outside. Dony sustained the opposite.

After commenting the lessons, students often continued to discuss school practices.

Excerpt #5 chat n° 8

13/03/16, 17:33:28: Gina G.: A me é piaciuta perché era qualcosa di diverso da solito e comunque con questo metodo mi é sembrato di assimilare le cose in modo migliore. E mi sono anche divertita perché come abbiamo già detto avendo poco tempo abbiamo collaborato tutti nel gruppo.	I liked (the lesson) because it was something different from usual and anyway with this method I think I learnt more and in a better way. I also had a good time since, as we said, we had little time and so everybody collaborated in the group
Students go on discussing the lesson using high intensity lexicon	
13/03/16, 18:05:55: Marta: Io sono interessata quando si discute insieme riguardo un argomento	I am interested when we discuss a topic together
13/03/16, 18:06:12: Timoteo: Quando facciamo delle cose diverse dall'ascoltare un prof che parla... basta poco, anche una discussione	When we do something different from listening to a teacher that talks… it doesn't take much, even just a debate
13/03/16, 18:07:55: Gilda Cam: Durante le discussioni come quando ci troviamo al Portico al sabato sera	(I like) when we can discuss at school, the same way we do maybe when we meet at "The portico" on Saturdays evenings
13/03/16, 18:08:02: Dario: Quando si fa un lavoro in cui tutti devono esprimersi o esporre qualcosa	When you do something where everybody must express or say something
13/03/16, 18:08:19: Gina G.i: Io sono d'accordo con Timmy	I agree with Timmy
13/03/16, 18:09:15: Gaia Ui: Anche io la penso come la Mary e la Giada	I agree with Marta and Gilda
13/03/16, 18:09:55: Cristiano: Durante discussioni che riguardano ad esempio argomenti di attualità. Come la prevenzione dell'AIDS. Abbiamo un po' paura di ste cose	During discussions about current themes like AIDS prevention. We are a bit scared of these things.
13/03/16, 18:09:58: Mario: Io sono d'accordo con Timmy	I agree with Timmy
13/03/16, 18:10:25: Dario: Tipo con il prof di religione. Quando solitamente ci consegna dei quotidiani e possiamo vedere cose che ci servono nella vita, come ad esempio come sta la gente in guerra. A me la guerra fa paura….	Like with the Religion teacher. When he brings us newspapers and we can see things that are really useful in life, like for example how people are in war. War scares me…

In this case, they also expressed the need to deal with current themes, and finally they revealed something about themselves, self-disclosing emotions ("…AIDS, we are a bit scared of these things…; War scares me…"), and they appreciated the possibility of discussing between themselves.

When using negative emotional high intensity, students tended to talk about their fear of failing and performance anxiety, they complained about grades and teachers, and spoke honestly about themselves, unveiling personality traits and revealing self-awareness. They sometimes also disclosed painful details of family life as can be seen in the next example:

Excerpt #6 chat n° 5

26/01/2016, 6:19 PM - Timmy: Sbagliare è un fatto che mi crea molta ansia... se io penso di aver sbagliato non riesco più a proseguire nel compito e il pensiero mi ricade continuamente sulla parte dove mi sembra di aver fatto l'errore... è come un'ombra che mi perseguita	To make mistakes is something that makes me feel really anxious… if I think I've made a mistake, I can't go on doing the test, I keep thinking about the part where I think I made a mistake… It is like a shadow following me.
26/01/2016, 6:19 PM - Pietro: anch'io… detto con molta sincerità ho paura dei brutti voti poiché io ho una madre molto severa (più di molte madri dei miei compagni di classe a quanto sento) e ogni volta che prendo un brutto voto mia madre mi punisce togliendomi la maggior parte delle volte lo sport... Io cerco di impegnarmi ma nonostante tutto mi agito... Ecco perché il latino mi pace come materia ma la odio assolutamente! 😥😥	Me too… To tell you the truth, I am scared of bad marks since I have a very strict mother (much more than many of my mates' mothers as far as I know) and each time I get a bad mark, my mother punishes me most of the times not allowing me to do sport…. I try to do my best but despite everything, I get anxious… This is why I like Latin as a subject but still I definitely hate it 😥😥

Timmy unveiled his anxiety about making mistakes and Pietro too revealed something very intimate about himself by talking about his life outside school and his difficulties: his mother is very strict and punishes him when he gets bad marks. As we can see, threads are intertwined and in a same turn a student may comment the lesson, introduce or join a theme, talk about him/herself revealing his/her emotions.

In table 4, threads of discussion show how they emerged when using low and high emotional intensity lexicon.

Table 4. Thematic threads and intensity of emotional lexicon

Lexicon intensity		Low/ Neutral intensity	High intensity
Threads evidence		27	27
Schooling		16	9
	Practices	7	1
	Appreciation	2	4
	Criticism	5	0
	Secondarisation	3	7
Self		10	15
	Self-anxiety	5	1
	Self-disclosure	5	14

From table 4 the intensity of emotional lexicon seemed to influence the discussed themes. In fact, analysing threads of discussion, when using high intensity emotional lexicon students talked mainly about themselves, they revealed personal details and made self-disclosure; when using low intensity emotional expressions they mainly discussed about schooling, they were critical about school practices and talked less about themselves.

6.3 Student agency in the chats

Sometimes students influenced the chat trend, making a shift in the ongoing discussion. In these cases, students achieved agency by taking responsibility of exposing themselves clearly in the discussion and they were recognised by mates (Reeve & Tseng, 2011; Rajala, 2016). As stated above, agency in the chats implied breaking the pattern (Sannino, 2015) as in this example:

Excerpt #7 chat n° 12

26/01/2016, 6:20 PM - Mia: Io sono d'accordo con quello che ha detto la Gina… vale anche per me... molti errori si fanno per l'agitazione e non perché non si sanno le cose e magari si rischia di far capire che non si sanno le cose sbagliando	I agree with Gina… It is the same for me, many mistakes are made out of anxiety and not because you do not know the things. And you might risk appearing as if you don't know things by making mistakes
26/01/2016, 6:21 PM - Gina: Davanti ai compagni non è un gran problema sbagliare perché poi ci aiutiamo a vicenda	In front of mates it is not a problem to make mistakes because we help each other
26/01/2016, 6:21 PM - Lucio: Si dice per imparare, ma dopo in realtà sbagli ancora. Il latino non è come nella vita😔	One says you can learn… but then you make mistakes again. Latin is not as it is in real life ☹
26/01/2016, 6:21 PM – Gaia: Per me anche questa agitazione che abbiamo è un modo per crescere e avere la capacità dopo di superarne altre.	In my opinion this agitation we have is a way to grow and have the capacity after (school) to overcome other fears
26/01/2016, 6:26 PM - Teo: Molte volte in latino ho troppa paura di sbagliare ed è proprio questo che mi manda in palla... vorrei stare calmo ma non riesco a pensare ad altro che al voto	Many times, in Latin, I worry too much about making mistakes and this confuses me… I would like to be calm but I cannot think of anything but marks
26/01/2016, 6:26 PM - Gabry: Tutto quello che stiamo passando adesso ci prepara per superare le difficoltà dopo	All we are experiencing now prepares us to overcome difficulties we might have afterwards
26/01/2016, 6:27 PM - Alberto: Secondo me i voti sono relativi perché magari anche se prendi un brutto voto la volta dopo sei più stimolato a fare meglio, i brutti voti secondo me non sono sempre cose negative, da questi si impara a rialzarsi	In my opinion marks are relative since you may get a bad mark but then you are more stimulated to do better, bad marks in my opinion are not always negative as you can learn how to get up again
26/01/2016, 6:37 PM - +39 328 378 3280: Qualcuno diceva che se non ci fossero i voti	Someone said that if marks didn't exist…
26/01/2016, 6:38 PM - Teo: Probabilmente nessuno si impegnerebbe più	Maybe nobody would bother anymore…
26/01/2016, 6:38 PM - Alberto: Esatto	Exactly
26/01/2016, 6:38 PM - Teo: Alla fine servono anche quelli	In the end, they are necessary too

In this thread chunk, students were discussing fear of grades and Teo was really upset. Gaia's turn of talk proved to be a turning point: she declared she was in favour of grades since she thinks they will be useful in the future to overcome real-life difficulties. In doing so, she crossed boundaries and bridged school and life; at the same time, mates recognised her statements. In expressing her opinion, she took responsibility to stand up for her point of view, which was very different from all the other students that had spent the entire thread complaining about how bad it is to be frightened of grades. Teo did not change his mind immediately, he answered back sustaining he gets really upset because of his fear of grades. Alberto shifted, supporting Gaia, and said grades are useful since you can stumble and fall, but then you get up again, then Teo started to have second thoughts. Finally, he admitted that without marks, nobody would study and he recognized grades are useful. In her succeeding to change the chat trend, Gaia was agentic, she became an influencer in the conversation. Moreover, this thread chunk turned out to be a potential creative dialogical space where students built together meanings, collectively.

Another student, Bizzo demonstrated agency in this thread chunk and the topic was, again, marks:

Excerpt #8 chat n° 6

30/01/2016, 18:19 - Giliola: Per me è stata una lazione tranquilla e divertente... sono rimasta male per il voto ma me l'aspettavo	I think it was a peaceful lesson and funny… I was upset because of my mark. I did not expect it
30/01/2016, 18:19 - +39 328 378 3280: Mi spiace Giliola...	Sorry Giliola…
30/01/2016, 18:22 - Bizzo: In classe io non mostro mai le mie emozioni e qualunque cosa succedendo io ho sempre il sorriso sulle labbra perché se mi devo mettere a piangere per un voto la mia vita in futuro sarà pessima.....bisogna essere tristi per cose più importanti sicuramente non per un voto	In the classroom, I never show my emotions and whatever happens, I always have a smile because if I have to cry for getting a bad mark, my life in the future is going to be awful… one has to be sad for more important things, not for getting a mark
30/01/2016, 18:23 - Giliola: Si lo penso anche io, rimango male in un primo momento e penso sia normale, ma c'è sicuramente di peggio che un brutto voto	I agree, I feel sorry at first and I think it is normal, but of course there are worse things than getting a bad mark
30/01/2016, 18:24 - Gina: Anche io delle volte sono triste per un voto ma magari lo sono in quel momento della consegna poi non ci do tanto peso	I am sometimes sad too when I get a bad mark but only at first, at the hand out, then I am pretty cool
30/01/2016, 18:25 - Pietro: Io condivido il pensiero di Bizzo...	I agree with Bizzo
***	***
30/01/2016, 18:32 - Timoteo: Io tendo di più a mostrare quando sono felice per qualcosa rispetto a quando sono triste... Per quanto mi riguarda io sono sempre molto teso prima delle verifiche... ansia da prestazione😅	I tend to show when I am happy for something rather than when I am sad. I get really worked up before a test. Performance anxiety ☺
***	***
30/01/2016, 18:42 - Gina: Poi secondo me è anche un po' una 'mancanza di rispetto'... ci sono persone che magari sono tristi, se così si può dire, per aver preso un 7, quando ci sono persone a cui farebbe più che piacere prendere un voto simile	I also think that it is not respectful. Some people get sad, let's say, for a 7, when some would be really happy to get such a mark
30/01/2016, 18:43 - Gloria: Si anche per me, diciamo che subito magari mi dispiace un po' se mi va male una verifica e tendo a mostrarlo, ma subito dopo mi rendo conto che non ha per niente senso demoralizzarsi o essere super felici per un semplice voto...esatto, come dice la Giada, nei confronti di altri è anche mancanza di rispetto	Yes, I agree, let's say that at first, I get upset if I fail a test and I show it, but soon after I realize that to get upset or to be extremely happy just for a mark is nonsense … just like Gina says, it also might be disrespectful for someone else
30/01/2016, 18:44 - Bizzo: Per te male cosa vuol dire un brutto voto… nove?? Cioè se una che ha la media del 10 in tutte le materie dice che se prende 8 è scontenta del suo voto io mi sento presso per il sedere	What do you mean bad mark… to get e a 9? I mean, if a girl has 10 in each subject and gets an 8 and complains about it I feel I'm being played for a fool

In this thread, students were discussing about being evaluated. Bizzo intervened and made a shift in the chat revealing that for him there are more important things in life than marks. From his turn of talk on, the chat trend shifted from anxiety and fear to positions in which they were more reasonable. In his shift, Bizzo was agentic agency, he influenced the discussion and took responsibility for his opinion that was different from that of the collective trend. Although the as the debate developed, some turns came back to complaining about grades, the chat unfolded in a new tendency, recognizing that marks are not so important. After 23 minutes, Bizzo achieved agency once again, when replying to Gloria. She sustained that she sometimes gets upset with her grades. Bizzo's answer implies she is a very good student and there might have been times in which she complained because the marks she got were not high enough. In outlining that, Bizzo took responsibility to publicly tell her what he really thought and at the same time, he exposed his difficulties, implicitly, since it seemed he did not find it easy to get high marks. He declared that he felt teased by Gloria's statement.

6.4 A school picture

To answer the fourth research question, I connected the dots looking backwards, recomposing the puzzle spread in the chats, gathering all the snapshots taken of school students discussing.

Tracing a line in what they said, first, it was possible to see how students, while chatting, crossed boundaries from personal talk to schooling, and from schooling to real life. In going back and forth, they demonstrated collective creativity, and building on each other's feedback, they opened to a dialogical space, in this case created by *WhatsApp* (Wegerif, 2017). Second, students described a school that is still mainly based on marks and evaluations and this creates anxiety and fears. They made implicit suggestions about what they would like to learn, asking indirectly educators to bring real life to school, and to study subjects that could be useful in real life. They also showed to appreciate when school becomes a dialogic space to share ideas spontaneously allowing students to intertwine academic discourse with personal talk. In this interlacement, students demonstrated to be skilled in boundary crossing (Kumpulainen & Mikkola, 2014) talking about school *and* themselves. Moreover, their self-disclosure was embedded in school subject, which they proved to master, also outside school far from tests and evaluations.

In the chat movements, a picture of classroom habits came out intertwined with real life, and self-disclosure. There were comments about how school is and ideas of how it should be. In this way, students indirectly made a portrait of school reality. They appreciated group work and collaboration, assuming an active role in school evaluation, they made their voice heard (Toshalis, & Nakkula, 2012).

7. Discussion

In this study, an online space on *WhatsApp* was created to give students the opportunity to spontaneously discuss school in an alternative setting, different from the classroom context. *WhatsApp* turned out to have potential for dialogic confrontation and meaning making, therefore the capacity to create new meanings collectively. Used as an interactional tool, it proved to be an opportunity for students to interact differently, to have an alternative chance to confront and give voice to themselves. In some cases, students declared that it was easier to chat in *WhatsApp* rather than intervene in the classroom debate.

As known, in a chat, we have a specific configuration in which interactions spread in a horizontal way; each one has the same opportunity to express his voice contemporary, although the chat form organizes turns of talk in a sequence. For this reason, in a chat, communicative exchanges have peculiar features; overlapping voices happen differently from the classroom where communication unfolds mostly in a vertical fashion. Teachers conduct the lesson and students pay attention or are asked to intervene in an orderly way. In chatting, chronology of the turns of talk remains available and clearly readable, and has the same opportunity to be taken into account, while in the classroom overlapping noises and voices might blur the interactions. Thus, thanks to this

methodological choice, it was possible to analyse students' interactions in order to listen to their feelings and thoughts. This turned out to be a useful option, since each student had the same authority to intervene; moreover, the chat also proved the fundamental role of collective interactions in meaning making.

In this way, this study illuminates students' relationship with classroom routines, and they firstly demonstrated to be able to distinguish between a repertoire of lessons, indicating also the value of each of them. Second, they pointed out the themes they felt to be relevant when discussing school and indirectly indicated potential issues they would like to go through. As the most relevant one, they implicitly expressed the need to bring real life to school and vice versa; in addition, they wished school topics could be useful in real life. Finally, interactions in chatting allowed students to give a picture of school as they see it.

By chatting together, students created a thinking together space in a dialogical way (Wegerif, 2013; Rector-Aranda & Raider-Roth, 2015) and the result was a choir with a multitude of points of views, in which a gallery of school snapshots emerged with potential suggestions that might be useful for educationalists to make a reflection. Students pictured school as essentially evaluating and this seems to cause many emotions and be a source of stress, but at the same time, they were able to recognise the utility of these emotions as a formative process. Moreover, from their comments, students demonstrated to take agency in a public space as the chat, responsibly expressing themselves and influencing the chat trend.

Giving students the opportunity to have a voice about school (Annan, 2016; Rajala, 2016; Kullenberg & Pramling, 2017) first can allow educationalists to better respond to students' needs, second it is a way of enhancing and sustaining student agency. Considering them as capable of giving their contribution to school curriculum, implies an optic of co-construction of knowledge but also of a dialogic approach to reality.

This study sheds light not only on the importance of creating a suitable space to collect students' voices, but also on the capacity of students to be agentic in taking responsibility to motivate ideas and give suggestions. As an outcome, a group chat became a hybrid space where many discourses coexisted and boundaries were crossed; in sustaining this hybridization, students demonstrated to take responsibility in showing emotions and opinions.

CHAPTER VI

Final points

Dialogue is always an invitation

Exploring the literature on classroom emergent emotions, interactions and student agency, the principal aim of this research was to contribute to a debate on quality education. In this chapter, I will try to synthesize the main elements of this dissertation, discussing its strengths and weaknesses and finally, reasoning about practical educational issues.

The *first study* underlined the importance of observing classroom interactions by considering them from both sociocultural and systemic perspectives. The methodological choices permitted to see how interactions combined according to control and proximity, giving way to lesson modes. In these patterns, *group flow* evidenced collectively as an absorption state signalling that the system was attuned together in classroom cognitive tasks. Thanks to this study, it was possible to recognize flow evidencing in different types, and to individuate that teachers' explorative attitude of authentic curiosity (Boyd & Markarian, 2011) invites students to participate, fostering a co-constructive flow. Acknowledging the peculiarity of flow may add a quality element in dialogical education and shed light on collective emotional processes intertwined in learning/teaching practices.

The *second study* focused on relational aspects in *class mood*, aiming at a better capitalization of emotions as an ally in educational processes, since they manifested to sustain interactions and support student agency. Class mood emerged because of collective interactions, as an emotional distributed state; it can assume different nuances. Students showed to be agentic when engaging in a regulation distance process with the teachers, while negotiating school practices and during oppositional collective behaviours (Rajala et al., 2016). In the analysed episodes of this study, it was possible to observe how interactional exchanges can contribute to the quality of the relationship between students and teachers. In particular, class mood revealed to be another possible instrument for the classroom to modulate emotions and power management.

The *third study* was an attempt to give the floor to students, observing how student interactions unfolded in *WhatsApp* chats and listening to their voices, "unwalling" the classroom walls (Deed & Lesko, 2015). Through this methodological choice, I interacted directly in the on line with the students, participating actively to the discussion about school as a moderator. This was involving and interesting, besides the originality of using *WhatsApp* as a tool. This debate turned out to be a creative opportunity in which students were protagonists and they were able evaluators of school practices such as lesson repertoires, appreciating the variety of them and welcoming possibilities to discuss collectively, looking at each other and listening to mates' contributions. Students also

showed to change themes of discussions according to their emotional involvement that influenced the ongoing chat; commenting the lessons they had valued with high emotional intensity, they spoke about themselves whilst when less emotionally involved, they discussed routines and practices. They indirectly asked school to bridge life, actualizing teachings, indirectly calling for what Muller Mirza and Grossen defined as emotional secondarisation (2014); at the same time, in the chats students demonstrated the ability to cross boundaries between contexts talking about school and personal life (Kumpulainen & Mikkola, 2014). Finally, an important element of this study lies in the school co-constructed picture emerging from chatting, offering significant and relevant avenues for educationalists to be explored.

This work cannot be defined complete, but it may give suggestions on how to continue classroom interaction exploration, highlighting emotional aspects.

1. Strengths and weaknesses of this research

The points of strengths of this research lie on the choices made. First, the choice to study emotions from a collective perspective to contribute to the literature, since they have been underestimated hitherto. Moreover, these studies suggest that dialogical education should consider group emotions in their co-constructed aspects, including them in Thinking Together programs (Dawes, Mercer & Wegerif, 2000). Second, the theoretical double lenses used to approach data was an attempt to study the complexity of classroom interactions in a "round" way, considering both the co-constructive interactive processes and the reciprocal adjustments and influences implied in a systemic analysis. Observing the classroom with both videos and chats, offered a double vision of emotions in interactions. On the one hand, video recordings gave the opportunity to study the classroom under the microscope, seizing also non-verbal aspects that are so important to identify collective emotions, and on the other hand, it allowed to grasp those waves propagating in contagious emotions. This required devising methods that allowed the observation of the emotional collective emergency, and co-constructed manifestation, and this was particularly challenging. It mainly implied to "give a form to emotions" not just to list and describe them, as they evidenced, but above all to catch their systemic co-construction. At the beginning, it was really demanding to deal with collective emotions, one moment they were evident, the following one they were gone. The more my research questions improved, the more it became easier to explore classroom emotional reality, I felt involved and intellectually fascinated.

The choice of using *WhastsApp* as a container for dialoguing created an online choir where students were the protagonists of a polyphonic co-construction process (Bakhtin, 1986). The chat gave students the opportunity to build on each other's exchanges, and to form a spontaneous

dialogical debate composing a gallery of school snapshots. As Vygotskij would put it, points of view became social without ceasing to be personal. In the chats, students not only took school pictures of the present, but they also sketched how they would like school to be: a place to bring also emotions and life experiences (Muller Mirza et al., 2014) as they said "at school we do not speak about life, unfortunately".

The fourth choice that gives force to this dissertation was that of studying student agency related to emotions. Pointing the focus on emotional aspects of agency can indicate a path to follow in lessons to sustain students. In the three studies of this work, power has been analysed from different angles, inviting to rethink about management of classroom control. If teachers are aware of how students show agency through emotions, they might be able to choose *whether* to sustain it or not in interactions, deciding to cede or gradually redistribute power. In my discussion, I sustain that emotions carry creative unexplored possibilities if we train the classroom to observe it and interpret it as a signal. Seen in this way, also disruptive behaviour might hold important messages for teachers and the classroom, and may eventually foster creativity (Beghetto, 2013).

Furthermore, I think this research has benefited from the fact that before becoming a researcher I spent thirty years being a teacher. Thanks to my long experience, it was easy for me to get contacts with schools and teachers, and I felt totally at ease in the classroom, spontaneous and familiar, I knew the codes, and the context. However, this was also a double-edged sword: I was so used to the school environment, and it was such a habit for me that it took me many hours of field notes to start changing the glasses of the teacher and begin "to see". For this reason, this point is also a limit.

Moreover, as a teacher, it was also easy for me to go back to school to talk about results and discuss with teachers, as we share the same code and are aware of the current difficulties in the classroom. On the flip side, the "results" come from a "same job" person and this might also be a limit, as findings might not be welcomed because of this potential *bias*. Fortunately, this has not happened so far. During meetings with teachers and students, I declared my intentions to investigate classroom emotions, since I believe they are so important in interactions, and yet are still the "Cinderella" of our curricula. I also revealed that this research is a "beginning", a dialogic invitation to talk about classroom emotions and to consider them differently, without any ambition to make the discovery of the century.

Another limitation concerns data: although the collection is rich and reflects school complexity, it refers to a limited number of lessons, for this reason generalization is not possible. Even if results are food for thought, I am aware that much more investigation is needed.

As for the teachers that participated in my research, I made short video interviews once data collection had been completed, during which teachers revealed to be satisfied to have participated in this project. One of them affirmed: "I think this experience was such an opportunity! I would like

to continue, it helped me to reconsider classroom "walls", opening the doors to external eyes. I think we were spontaneous, we offered our daily truth, nothing else". In this way, seeing the other teachers from a different perspective was fruitful and useful to my research and my profession, and from this confrontation, new understandings emerged also for the teachers. In one of these meetings, a participant teacher felt embarrassed in watching herself in the video: despite her young age, she exclaimed "I am so old fashioned in my lessons… it's only me speaking all the time!" In a nutshell, teachers were open to listen and work together to better focus on classroom emotions.

Students were also interested in watching themselves in the videos, and asked many questions. One of them impressed me by sustaining: "I do not agree totally with these results because they do not show completely our responsibility. We are much more responsible for our bad behavior, and in the video this doesn't appear." His intervention was a good example of agency and this student pointed out another limitation of this research: it only partially describes emotions in the classroom.

In addition, the context in qualitative research based on participating observations risks being influenced, although I took all the necessary precautions. Choosing to observe emotions in interaction involved selecting material, excluding many other aspects that amply pervade classroom routines. Moreover, emotions are difficult to tell and many variables can interfere, so I am aware I chose a delicate topic for my research. Actually, I believe that teachers already apply what is *needed* in their lessons, moment-by-moment, but at the same time, more awareness can be brought to how emotions function and influence classroom interactions, in order to employ to the best what goes on in everyday school practices (Goldberg & Schwarz, 2016).

The results of this work do not allow to draw conclusions on the impact of recognizing lesson modes, group flow and class mood in terms of pupils' learning. However, I would like to confirm that the imprint of this research lies within a precise picture of the psychology of education, which shares a vision of learning as a social and interactive process. For this reason, I sustain that this work has provided an original and innovative contribution to the state of the art. In the light of all these considerations, I believe that the same weaknesses of this research become also strengths, because they are at the same time stimuli and inspiration to overcome difficulties and move on.

2. Practical educational issues

The question for the educationalist is then: how to consider emotions in order to harness them aiming for quality education? The findings of this research confirm that students' emotions should not be left in the backyard or remain overlooked in everyday school life, as they continuously intertwine with the cognitive work of classroom life and its learning opportunities. School managers and teachers should think and re-think about how to produce school curricula that consider emotions

and their central role in learning and development (Hohti, 2016). However, understandings are not enough, promoting new ideas and organize teacher trainings are also necessary. To start with, supporting classroom creativity may sustain teachers in dealing with classroom emotions; several authors emphasize that teaching cheer all the activities that enable thinking "out of the box" (Eadie & Lymbery, 2007; Kirkendall & Kirshen, 2015) and help to find creative playfulness (Wegerif, 2005; Catala et al., 2014). Teachers can cultivate classroom awareness and exploit micromoments creative potential (Molinari & Canovi, 2016) to promote original learning opportunities. Since I think that there can be no responsible choice without emotions, detecting emergent and spontaneous forms of agency in students can help teachers to support them to develop independent and creative thinking.

This research raises important points of consideration not only at an academic level, but also for school stakeholders that have the power to make decisions about the educational world. Teachers' awareness of teaching and learning principles and practices is certainly a valuable tool to improve the quality of their daily work in the classroom. From this perspective, this work offers teachers at least three elements to reflect on.

To conclude, I think it is important that teachers and education policy take into account classroom emotions as precious mutual enrichment opportunities. Preparing able and responsible citizens implies schooling practices that provide for chances to train students to autonomous choices, creative actions (Rigolizzo & Amabile, 2015) and freedom of expression, in which emotional aspects are intrinsic. In school, opening to new experiences and promoting creativity give rise to motivation and facilitate interactions. For this process to occur, teachers should give space to novelties, trust moment-by-moment lesson unfolding, encourage spontaneity and original thinking in a safe, inclusive and nurturing school environment (Yi, Plucker, & Guo, 2015). Knowing more about classroom interactions "hidden secrets" allows to expand opportunities for students' emotional competence, responsibility and agency to develop. These skills can also prepare students to participate in social life, once outside school. , Thus, thinking and engaging together in classroom activities are a means to share social reality: experiencing group dynamics, students learn to face the "outside".

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Never ending learnings

As I said at the beginning of this dissertation, this doctoral project has been a challenge. Actually, it was not easy at all. Everything was new, despite talking about something very familiar: school, teachers and students. Moreover, during this research I often had a sense of not knowing what I thought I knew so well. This created many emotions: doubts, fears but also a stimulating sense of wanting to go further in my understandings.

My tutor once asked me, "What do you see now thanks to your data analysis, that you did not see before?". That question puzzled me, and it guided me to look deeper. First, how can we tell an emotion is there? This is quite a big deal. Second, I know that school can be a very boring, sleepy place but at the same time, there is such potential to really enjoy, do, discover, learn, and share things together. Third, being happy at school has to do, in my opinion, with quality. How can we manage to bring quality to school?

When I started to teach, I was very young, about 19 years old, and I never stopped for more than 30 years. Some colleagues of mine used to teach so easily, I looked at them as inspiring, fascinating models. Students seemed to appreciate those teachers, authoritative and at the same time appealing. Others struggled and looked exhausted after the bell rang. What was the secret for the first ones? What did not work for the second ones? I started questioning myself: what kind of teacher was I? Above all, were my students "happy" during my lessons? What happened when they were? What did not happen when they were not? Was I happy in my classroom? What happened when I was or I was not? How could school be a fantastic experience, juicy and challenging? What are the ingredients to make a "good" lesson in order to sustain quality at school? Following these thoughts, and wishes, maybe dreams, I approached the incredible adventure that my PhD experience turned out to be, going back to the role of student once more.

Did I find any answers to my questions? This dissertation was an attempt to do so. I believe that the classroom not only is an interthinking space, but also an inter-feeling place, although we do not talk about this aspect often, since feelings are subjective, difficult to spot, describe and tell. Now I can only say I know a bit more about the secret language of emotions in our classrooms.

Noi siamo socialmente costruiti, ci incontriamo
ai confini per negoziare nuovi significati,
e così evolviamo gli uni con gli altri,
insieme responsabili di nuovi universi di senso.
Perciò la chiusura, la paura e la diffidenza verso l'altro
non ci permetteranno mai di evolvere ed essere veramente noi stessi.
Dedico questa tesi a tutti coloro che nel mio cammino
ho incontrato davvero.
Ameya

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