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# The impact of technology as a communication tool within the class: the teachers' perceptions

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**Abstract**

*The introduction of ICTs in the school system has been a powerful catalyst for educational and pedagogical practices. But there is more than meets the eyes: in fact, an increasing influence of technologies in the school is evident especially if one considers the social-relational side. This is mostly due to the pervasiveness of mobile devices and the proliferation – in terms of time and space – of communication channels that mediate the exchanges between the school's actors – via email, through classroom information management systems, through chat or IM exchanges. By describing a research run in four secondary schools aimed to understand the ICTs' influences on classroom climate, the purpose of this paper is to shed light on how teachers perceive the new aspects of technologies and their use in their daily work, highlighting how these technologies influence the way in which they build relationships with students, parents and colleagues.*

***Keywords:*** *Teachers; ICTs; school; social climate; learning environments*

## 1. Introduction

The spread of digital technologies and digital media is nowadays a fact with which the school system must deal with on a daily basis. For more than thirty years, researches focused mainly on understanding how technologies can promote or hinder students' learning processes at all levels. Alongside a wide range of benefits, digital technologies also offer a very colourful palette of potential issues and risks. The impact of the introduction of technologies in school contexts is manifest in different dimensions of school life: from the influence on didactic innovation (Calvani & Rotta, 2013; Ferrari, 2017; Guerra, 2010; Pacetti, 2013b; Trinchero, 2018), to the dangers that digital media present as a source of endless distraction (Goleman, 2014), or as tools that can atrophy users' brains (Carr, 2010; Spitzer, 2013). From the opportunities that ICT offers to promote inclusion (Pacetti, 2013a) and learning opportunities for youngsters (Ferri, 2013, 2014; Prensky, 2012b, 2012a), to the risks that they carry linked to all the forms of online discrimination, hate speech and cyber bullying (Iaquinta & Salvo, 2017; Manca, 2016b). From the risks that the WWW brings to society and civic participation (Han, 2015; Turkle, 2012), to the forms of media literacy that enable users to use technologies critically, responsibly and with a civic purpose (Hobbs, 2016; Ito et al., 2010; Mihailidis, 2018).

One aspect that is still quite uncharted in the literature is the influence, and the possible repercussions, of digital technologies on socio-relational dynamics. Notwithstanding the fact that studies related to Computer Mediated Communication (CMC) have been trailblazers for an academic investigation about the communication dynamics mediated by digital tools, it should be noted that most of these studies are either exploratory (Ranieri, Manca, & Fini, 2012), or focused on the cognitive and performance influences (Bouhnik & Deshen, 2014; Cifuentes & Lents, 2011; Doering, Cynthia, George, & Nichols-Besel, 2008; Smit & Goede, 2012; Sweeny, 2010; Wurst, Smarkola, & Gaffney, 2008).

The manner in which mobile devices have permeated people's lives across generations has obviously, and profoundly, changed not only the ways in which these individuals inform themselves, study, learn, look for entertainment or express their own creativity, but also restructured the modalities, the time and the space in which the same subjects communicate, collaborate, enter in conflict and weave relationships (Caron & Caronia, 2007; Caronia, 2002; Thompson, 1995).

If this new scenario brought about by the onset of digital technologies is superimposed on the school context, what was already a deeply complex environment becomes even more so in terms of educational opportunities and challenges. This had a profound effect on the relationship dynamics between pupils, teachers and parents. These relationships have

been enriched by an additional layer of complexity due to the ever-increasing access to mobile devices and the possibility to communicate through new channels (messages, phone calls, emails, audio messages, images, videos and other ways made possible by today's social networks) in new and original ways.

This intense network of relationships mediated by digital contexts – in particular the dynamics between students/students and students/teachers – which so easily connects stakeholders in and out of the physical school context, and at all times, influences, in a rather decisive way, the social climate of the class environment (Hershkovitz, Abu Elhija, & Zedan, 2019; Rosenberg & Asterhan, 2018). How? By providing a series of additional communication channels and spaces that allow students to weave relationships in ways that were previously only possible at certain times and places: dynamics of trust and mutual help but also of conflict or disagreement that break the boundaries of the classroom and the school time frame and that have an influence on the classroom's social climate (Soriani, 2019).

Researches about classroom's social climate are many and rooted in the history of education studies. The first reflection around the topic dates back to the beginning of the 20th century with Perry (1908) and Dewey (1927), which consider the school as an environment in strong relationship with the spaces and the contexts that surround it; an environment with the power of shaping, promoting, hinder or even making difficult the activities within it. Few years later, Lewin, Lippitt and White (1939) where among the firsts to acknowledge the importance of the role of the teacher and his or her leadership style.

These insights opened a whole debate about how classroom climate can be defined, what factors influence it and how it affects the scholastic life of the actors involved. Moos (1979) introduced an idea of the class as an 'environmental system' organized in four dimensions: physical environment, organizational factors, characteristics of the classroom's actors and social climate. In this model, Moos recognized the importance of the latter as he considered it the main mediator of the others' three influences.

Many researchers have proposed various models and definitions (Ambrose, Bridges, DiPietro, Lovett, & Norman, 2010; Chiari, 1994; Kanizsa, 2007; Marzano, Marzano, & Pickering, 2003; Parker & Kaltsounis, 1986; Sink & Spencer, 2005), but for spacing reasons we would like to refer to Allodi's (2010) work who offers one of the most comprehensive definitions of the social climate of learning environments. The researcher describes it as the quality and quantity of relationships occurring within learning environments such as schools and classes. These psycho-social characteristics, according to the author, are shaped by the relationships between teachers and pupils, and between pupils and their peers.

In this sense, this climate is influenced by elements such as:

- interpersonal relationships between pupils;
- interpersonal relationships between teachers and pupils;
- expectations and behaviours of teachers and pupils;
- teachers' communication styles;
- class management strategies;
- group dynamics.

Teacher's mediation and their leadership style are the key elements, but equally important are the group dynamics intertwined by the school's actors (teachers/teachers, teacher/students, students/students). Dynamics that are not composed anymore simply by traditional in-class face-to-face exchanges: technology has profoundly changed these dynamics by offering multiple possibilities for extending them beyond the sense of place and time. Teachers need to consider these issues to better exercise their profession and to foster positive relationships in school in a more conscious and informed way.

This paper focuses on teachers' perceptions of communication exchanges mediated by digital contexts between teachers and students, teachers and parents, and between teachers and other teachers. These exchanges represent an important junction in the communication between the stakeholders identified but unfortunately often result in conflict dynamics that are mishandled or simply perceived as an additional burden and an added responsibility that teachers and parents must shoulder.

## 2. Relationship dynamics in digital contexts: a model

The spectrum of possible media in which daily school-related interactions occur is wide and diversified, ranging from digital tools that can be identified as 'official' – which have been specifically designed for academic purposes and have been authorized by the schools as proper tools for school related activities – to 'unofficial' – all those media and digital tools that are spontaneously used by school's stakeholders as *fora* in which their relationship dynamics take place (Soriani, 2019).

The use of the term 'context' is not causal: Information and Communication Technologies (ICT), in this sense, are not mere channels through which communication exchanges take place but actually shape communication modalities (Kress, 2015). Nor are they simple 'environments', understood as a set of conditions that act in a systemic way in promoting, preventing, stimulating or inhibiting the activities within them (Dewey, 1916), but real contextual situations that include times, spaces, purposes of use, devices and relationship dynamics where it is possible to activate learning experiences. The contexts of these relationship dynamics can be placed along a continuum with two 'opposing' polarities at the extremes. On the one hand are the 'formal' dynamics, whose main objective is everything related to the official aspect of

school life. On the other hand, 'informal' contexts are those which, without precluding school matters, encompass a host of other issues/matters.

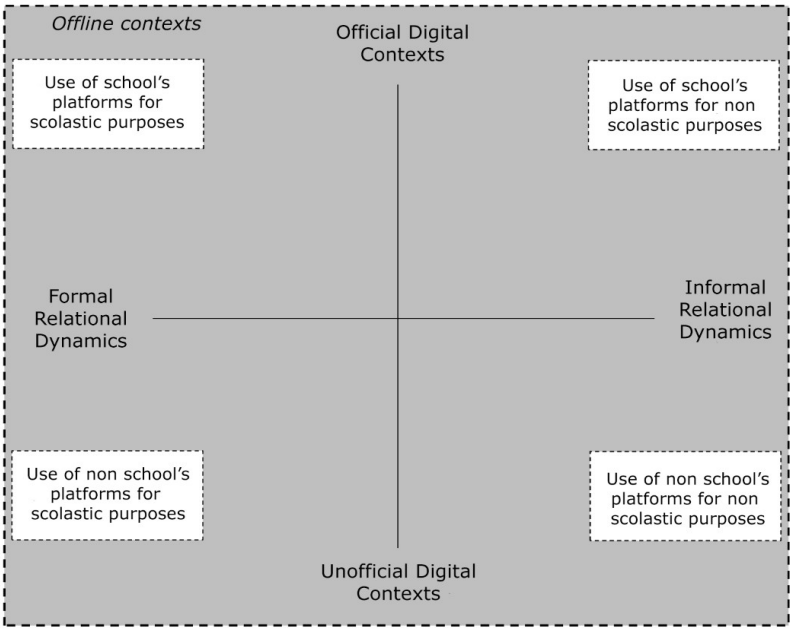


Fig. 1. Relationship dynamics and digital contexts model

It is important to underline that these relationships, be they formal or informal, are enacted in digital contexts with blurred boundaries and are strongly intertwined with the practices of the people who inhabit and become part of them. Moreover, their spatial and temporal continuity surround teachers, students and families across a variety of physical and digital contexts.

For instance, two students can start arguing on Moodle (an official digital context) or on an online game (an unofficial digital context), continue the conflict on the classroom's *WhatsApp* group, to then start a fight the day after in class, under the consternation of the teacher who might have completely missed all the previous dynamics.

## 3. The research

### *3.1. Context of the research*

This study is based on the empirical research carried out in two secondary schools in Bologna and in Paris in 2016. Conducting the research in these two countries was motivated by the similarities that, at the time, interested the two national school systems: both nations were dealing with a national reform of the school system (the *Reforme du college* and the *La Buona Scuola*), which also involved specific policies about technology in education *(Le Plan Numérique pour l'Education* in France and *Il Piano Nazionale Scuola Digitale* in Italy). The alignment of these situations provided quite a fertile ground for a research such as the one here described, a research aimed to investigate a constantly changing and growing phenomena that puts the school's actors always in front of new challenges and new opportunities.

The decision to carry out the research with secondary school's teachers was prompted by the fact that students in their age live a particularly delicate stage in their development (Manca, 2016a; Winnicott, 1961). The transition from pre-adolescence to adolescence is a remarkably challenging moment: from the more physiological aspects related to the changes that the bodies of boys and girls go through, to the search for autonomy from families; from the shaping of their identity as individuals, to the consolidation of friendships and the negotiation of their role within their peer groups (Palmonari, 1991). This transition period is also accompanied by an ever-increasing use of digital technologies (Mascheroni & Ólafsson, 2018; OFCOM, 2016), where they represent, for pre-adolescents, new modalities to shape their relationships with the groups of peers (Iaquinta & Salvo, 2017).

A questionnaire distributed to 365 students in 8 Italian and 8 French classes,[1] indicated that the number of pupils who do not possess a mobile device goes from 15.8% in the first year of studies in the respective school, to 0% in the fourth

[1] The entire research collected data from the students of the 16 classes involved as well: 16 focus groups with 10–12 participants on volunteering base, one for each class, and 365 surveys, one for each student. This paper focuses only on their teachers' point of view: to have a full insight about the complete research please consult the publication: Soriani, A. (2019). *Sottobanco. L'influenza delle tecnologie sul clima di classe.* Milano: FrancoAngeli.

year. Not surprisingly, the percentage of students who carry mobile devices to school rises from 57.9% in the first year to 86.4% in the fourth academic year.

Adolescents' use of digital technology is undoubtedly a phenomenon that is strongly present in schools today, resulting in a constant and uninterrupted network of communication between classmates. This constant and seamless network of communication mainly happens through unofficial digital contexts (online social networks, instant messaging systems), which are faster and offer more freedom as compared to the official school's channels, more controlled and monitored by teachers and parents.

Where do teachers stand in this scenario? Teachers' role is crucial and understanding how they perceive the problem, the way they choose to respond to issues arising from this unofficial communication, their practices and interventions, can be a useful exercise to further understand the influence of digital technologies on the socio-relational level in schools.

### *3.2. Sampling and research methods*

The research was conducted in four public secondary schools, two in Bologna, and two in Paris. The schools were chosen from institutes that already had previous experiences with ICTs (in terms of equipment and projects) and whose beneficiaries were families coming from a balanced mix of social-economic conditions.

Table 1 provides an overview of participants and data collection tools used in the research. Although the whole research interested also students, the current paper draws only on the teacher's surveys and interviews. At least one teacher from each of the 16 classes involved in this research was asked to fill in an anonymous questionnaire. Data was also collected through semi-structured interviews – 40 to 60 minutes long – with at least one teacher from each class and two school principals who volunteered to take part in the research.

Table 1. Outline of schools and the different stakeholders involved in the research and data collection

| | Italy | France | Total |
|---|---|---|---|
| Schools | 2 | 2 | 4 |
| Classes involved | 8 | 8 | 16 |
| Surveys – Students | 178 | 187 | 365 |
| Focus groups – Students | 8 | 8 | 16 |
| Surveys – Teachers | 10 | 9 | 19 |
| Interviews – Teachers | 8 | 10 | 18 |
| Interviews – School's principals | 0 | 2 | 2 |

The group of teachers included 5 men and 14 women across different age group and years of service, represented in Table 2.

Table 2. Age and years of service of the teachers involved in the research

| Teachers' ages | Total | Teachers' years of service | Total |
|---|---|---|---|
| Less than 30 years | 1 | 1–5 | 2 |
| 30–39 years | 3 | 6–15 | 5 |
| 40–49 years | 8 | 16–25 | 7 |
| 50–59 years | 3 | 26–35 | 2 |
| More than 60 years | 4 | More than 36 | 3 |

To offer a picture as complete as possible, it is interesting to identify the different types of digital communication tools used by teachers. Smartphones (N = 19) and laptops (N = 17) seem to be the most preferred devices, followed by tablets (N = 15), and lastly, the traditional Personal Computer (N = 6). This picture presents an interesting trend: while students seem to prefer to connect to the Internet by using mobile devices – primarily smartphones, followed by tablets – adults prefer laptops (N = 13) to smartphones (N = 8) and personal computers (N = 5) to tablets (N = 4). This trend reflects a certain idea of the use of technologies more limited to the determined times and spaces than the idea that students have about them: from the chart below, it is in fact possible to observe that actions like checking the e-mail – whether for working or personal purposes – or social networks, are in most of the cases limited to not more than 10 times in a day.

Table 3. Teachers' daily use of email, IMs and social networks

| | 0 | 1–5 | 6–10 | 11–20 | More than 20 |
|---|---|---|---|---|---|
| School's email | 0 | 13 | 3 | 1 | 2 |
| Personal emails | 0 | 11 | 5 | 1 | 2 |
| IMs | 1 | 6 | 7 | 2 | 3 |
| Social networks | 6 | 7 | 4 | 1 | 1 |

Apart from e-mails and SMSes, some teachers reported a regular use of *Whatsapp* (N = 15) and *Facebook* (N = 11). Other social network services such as *Instragam* or *Snapchat*, generally associated with a younger audience, where not mentioned, indicating a lack of appreciation of these specific tools.

### *3.3. Research questions*

The research purpose was to explore the following questions: how ICTs influence the relationship dynamics that exist between teachers and pupils? What is the relationship between the communicational exchanges mediated by digital contexts and the social climate of the class?

This paper provides a detailed phenomenology of these questions, focusing on the teachers' point of view, while specifically trying to answer the following question: what are teachers' perceptions about the influence of digital contexts – official and unofficial – on the socio-relational level of interactions with their pupils, their parents and with their colleagues?

### *3.4. Research limits*

The research has several limitations that we want to underline here in order to provide the most complete picture. The researcher used both quantitative tools (the surveys), and qualitative (the interviews and the focus groups) and this affected the number of schools, only four institutes, that it was possible to involve in the research. The choice to limit the field to only two countries, four schools and just one year per each grade, was due to this limitation and allowed to obtain data that were useful only for an exploratory kind of research. Another limit must be searched in the selection of the sample: with such a limited sample, it was not possible to include in the research schools from other cities, or with different families' target, maybe coming from more disadvantaged areas, to remark differences and analogies.

## 4. Results

The following paragraphs summarise the main results of the teachers' survey. The teachers' points of view on the influence of official and unofficial digital contexts on their teaching methods and their relationship with pupils and colleagues will be presented.

### *4.1. Official Digital Contexts (ODC)*

89% of the interviewed teachers have declared a daily use of official digital contexts in their teaching. The 16 teachers that declared such use refer specifically to official platforms specifically conceived for the management of classes such as the electronic class-log, LCMSs or cloud working suites (*Google Drive* or *Microsoft 365*). Teachers expressed their appreciation regarding these tools for the following reasons:

- they facilitate administrative record keeping (students' attendances, grades, etc.);
- they offer new opportunities in terms of educational strategies;
- they facilitate inclusion of students with disabilities or with specific cognitive or relationship difficulties by supporting them to participate and be part of the lessons like the rest of their classmates;
- they help save time and money thanks to the possibility to share information and materials with the class and the colleagues more rapidly.

Another element that pushed teachers to embrace ODCs is related to the communicative possibilities that such tools offer. 16 teachers stated that they regularly use ODCs to communicate with the parents of their students, while 14 use the same tools to communicate directly with their students. Institutional platforms or official e-mail remain the preferred channels of communication with parents and students.

Table 4. Preferred tools used by teachers to communicate with their students' parents

| | Never | Few | Often | A lot |
|---|---|---|---|---|
| Face to face | 0 | 4 | 9 | 5 |
| Phone calls | 4 | 9 | 4 | 1 |
| Emails | 1 | 4 | 10 | 3 |
| Messages | 10 | 6 | 2 | 0 |
| Audio messages | 14 | 4 | 0 | 0 |
| Social networks | 15 | 2 | 0 | 0 |

ODCs are mainly considered as a necessary and useful resource to establish a communication with families, especially because they enable multiple ways to reach and interact with them. During the interviews, some of the teachers expressed

concern about some of the issues associated with getting in touch with the most problematic families and underlined how communication channels such as email or class registry messengers were ineffective in such cases. Moreover, participants expressed their concern about the effort needed to keep track of the countless channels of communication that are now used. It has become increasingly difficult not to confuse or forget to check for messages on the many tools in use simultaneously (institutional email, class e-log, messages on classroom work platforms, written communications on paper diary, phone calls, traditional letters).

Table 5. Preferred tools used by teachers to communicate with their students

| | Never | Few | Often | A lot |
|---|---|---|---|---|
| Face to face | 0 | 1 | 1 | 17 |
| Phone calls | 16 | 2 | 1 | 0 |
| Emails | 2 | 5 | 11 | 1 |
| Messages | 12 | 6 | 1 | 0 |
| Audio messages | 18 | 1 | 0 | 0 |
| Social networks | 17 | 0 | 2 | 0 |

Regarding the Formal Relationship Dynamics (FRD) that teachers build with their pupils, the participants consider the use of tools like institutional email, or other ODCs available to them, useful – from an educational point of view – mainly to exchange teaching material with the class, collect and provide feedback about tasks or activities, or to answer questions for clarification from the pupils.

Table 6. Teachers' perception of the influence of ODCs on the social-relational level

| Relationship between | Very negative | Negative | Neutral | Positive | Very positive |
|---|---|---|---|---|---|
| Student – Teacher | 0 | 0 | 0 | 11 | 8 |
| Teacher – Teacher | 0 | 0 | 2 | 5 | 12 |
| Teacher – Parents | 0 | 0 | 4 | 9 | 6 |

From a more social-relational perspective, the influence of ODCs is welcomed by teachers as they open some interesting possibilities allowing them to:

- maintain contact with the class even when they are on leave, such as maternity or injury;
- approach particularly problematic students and initiate educational interventions through a first digital contact;
- bridge the distance between teacher and student, by allowing students to work in an 'environment' that is more familiar to them in which they interact comfortably, and which can help foster their motivation to participate in class life.

The interviewees' responses regarding their preferred channels of communication with other colleagues are particularly interesting. Exchange of emails through the official designated platform remains the preferred method of communication with colleagues as it makes teachers feel safer both from an ethical point of view and in terms of protection of privacy. It should be underlined, however, that the use of IMs, audio messages and social networks is more frequent than the use of emails, enriching the informal relationship dynamics by exchanging last minute information and photo-video materials related to educational or formal activities.

Table 7. Preferred tools used by teachers to communicate with their colleagues

| | Never | Few | Often | A lot |
|---|---|---|---|---|
| Face to face | 0 | 1 | 5 | 13 |
| Phone calls | 3 | 12 | 3 | 1 |
| Emails | 0 | 1 | 7 | 11 |
| Messages | 2 | 9 | 8 | 0 |
| Audio messages | 10 | 9 | 0 | 0 |
| Social networks | 5 | 5 | 8 | 1 |

It is interesting to note that in France, teachers showed a lower level of interaction with other colleagues, a trend that is also reflected in the limited use of ODCs for exchange and coordination. The Italian scenario is rather different on: ODCs tend to be used more and are considered as a set of additional and useful tools, which can facilitate the relationship with colleagues, which support the coordination and exchange of information, while ensuring transparency and the possibility to track communication, something that would otherwise be impossible. The participants have, however, also highlighted some critical issues mainly related to possible misunderstandings that can naturally arise from a mediated communication of this kind. The cause of the divergences between the two countries can be identified in the differences

between the two school systems: in France, for instance, teachers are often in the condition to work in many schools for few hours; this puts them less in contact with their colleagues if compared to the Italian context.

Teachers also commented about the ODCs and the relationships between parents. They denounced the fact that ODCs do not provide a space where parents can interact with each other. Moreover, they reported that communication exchanges between parents, mostly take place through unofficial channels such as mailing lists organised by class representatives (a phenomenon that is much more prevalent in France) or group-chats on instant messaging services like *Whatsapp* (a trend mainly present in the Italian context). While the value of these unofficial channels is recognised as they encourage parents to participate more actively and to become more involved in their children's schooling, they also raise many concerns. These Unofficial Digital Contexts (UDCs) are strongly perceived by teachers with mistrust and the reason is motivated by several factors, including the lack of knowledge of what is actually being said and discussed through these channels as well as issues that arise through the misuse of these channels and which have repercussions in real life contexts. These problematic episodes are mostly caused by the almost excessive immediacy of exchanges offered by tools like *Whatsapp* and other social networks.

### *4.2. Unofficial Digital Contexts (UDC)*

The use of students' personal devices in the classroom, in line with the Bring Your Own Devices (BYOD) paradigm, was a major cause for concern among participants, mostly caused by the lack of control that teachers have on this phenomenon. Conflicts and difficult situations were identified as the major cause of concern. A group of interviewees claimed that they regularly allow students to use school's tablets or even student's smartphones during the lessons for educational purposes (to audio record explanations or to film parts of the lessons to be used as study or reflection material later or, for example, to take pictures of the whiteboard in case of necessity) conscious of the fact that such devices are forbidden by school regulations.

Table 8. Practices connected to the use of BYOD (Bring Your Own Device)

| Practices connected to the use of BYOD devices | Number of teachers |
|---|---|
| Student's personal devices used to take photos or record videos | 12 out of 19 |
| Carry out some online research during the lessons | 6 out of 19 |
| Create connection hotspots to access to the Internet, due to the lack of connectivity in certain schools | 4 out of 19 |

Teachers' opinions about the influence of Unofficial Digital Contexts (UDCs) on aspects related to the didactic-cognitive dynamics of the class, are more nuanced than those related to Official Digital Contexts.

Those teachers who perceive the influence to be neutral (N = 6), believe that these digital contexts have a predominantly social-relational impact, and that the teaching and cognitive development of pupils should occur through face-to-face interactions within the school walls or through official digital channels.

Teachers who believe that the influence of UDCs is negative (N = 2) or very negative (N = 1) defend their stance by pointing out the impossibility of even partial control over the content and exchanges taking place therein. They denounce the use of such digital contexts mainly devoted to leisure and which often become a source of distraction. They also stress the naivety with which pupils use UDCs, arguing that pupils are too often unaware of the risks associated with the use digital media and do not care about their online safety in general.

The graph below provides a more detailed picture of possible unpleasant situations that are conveyed by digital contexts as perceived by teachers.

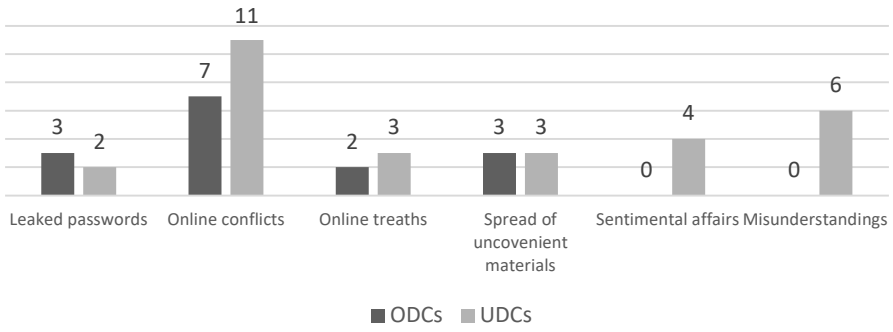


Fig. 2. Teachers' answers to the survey's question 'Which kind of unpleasant situations occur on ODCs and on UDCs?'

From the interviews emerged that many of the unpleasant situations cropping up in ODCs are mostly related to school issues: lost passwords, accidental sharing of private materials or small disagreements. The issues arising from use of UDCs, on the other hand, are much more colourful: sentimental issues, harassment of weaker and marginalized pupils,

dissemination of inappropriate materials (mostly photographs or videos taken in the school bathrooms or changing rooms).

Participants who advocate the positive influence of UDCs, while admitting that pupils may still not be fully able to properly manage their digital lives, and therefore need to be closely monitored, argue that UDC, when used with due care, can:

- be an important stimulus to motivate pupils;
- be the engine for media and digital literacy through a channel that children identify as 'theirs';
- create opportunities for dialogue between teachers and students in order to facilitate the resolution of controversial situations or other minor issues related to work in classrooms;
- create new contextual situations of socialization and collaboration for students.

As can be seen in the graph below, the teachers' perceptions of the influence of UDCs on the socio-relational level are more varied.

Table 9. Teachers' perception of the influence of ODCs on the social-relational level

| Relationship between | Very negative | Negative | Neutral | Positive | Very positive | Both positive and negative |
|---|---|---|---|---|---|---|
| Student – Student | 6 | 3 | 0 | 2 | 6 | 2 |
| Student – Teacher | 0 | 0 | 9 | 7 | 1 | 1 |
| Teacher – Teacher | 0 | 0 | 2 | 9 | 7 | 0 |
| Teacher – Parents | 0 | 1 | 9 | 7 | 0 | 0 |

The influence of UDCs on the students' relationship dynamics are considered almost as an unknown territory, which causes a high level of diffidence and mistrust among the interviewees.

According to the teachers, mistrust is caused by the circumstances in which they become aware of relational exchanges (formal or not) taking place in digital contexts not controlled by the school, for example, *WhatsApp*'s group chats or *Instagram* conversations. Most of the time, teachers only become aware of the existence of this universe only when conflicts, quarrels or harmful relationship dynamics involving their students become manifest in classroom and at a point in time which is too late to avoid such unpleasantries to occur. At best, teachers take restraint actions to tackle these issues but only after they become aware of them, which is usually too late.

Another main cause of mistrust is the fact that there is still a strong ambiguity and vagueness regarding the supervisory/control/monitoring role of the school in these situations.

While some participants claimed that it should not be the school's responsibility to manage these delicate and sometimes unclear dynamics – unless, of course, the school or the teachers themselves are directly involved – others, in contrast, believe that it is important for schools to address this phenomenon. Paying attention to these relationship dynamics in all their complexity could contribute to nurture dialogue with pupils, engaging them in a process of reflection on their use of technology. These teachers consider their role as going beyond mere teaching (didactic-cognitive sphere) to include an education that addresses relationships and emotions (socio-relational sphere). This also means carefully monitoring contexts, such as the UDCs, which are difficult to control and impossible to ban from school. During the interview, one of the French school principals reinforced this attitude by arguing that, as well as being impossible, it would also be wrong to try to forbid what is not possible to forbid.

Looking at the relationship dynamics mediated by UDCs between teachers and parents, the majority of participants (9 teachers) answered 'neutral'. They motivated their point by stating that they prefer to contact the parents through official channels provided by their institutions. Those who answered negatively have, instead, highlighted the risks that may be associated with the use of unofficial tools to communicate with families, first among which is the concern for privacy. The risk of compromising the tranquillity and the privacy of their personal lives brings these teachers to avoid relationship exchanges via non-institutional channels. Positive responses are mainly motivated by the fact that some teachers consider such tools (especially the personal email) as useful channels to engage in a first contact with families, which prove to be more difficult to reach.

The influence of unofficial contexts on the relationship dynamics between colleagues was for the most part considered to be positive. This trend was observed in a preponderant way among the Italian teachers, who reported more frequent and closer interactions with colleagues when compared to their French counterparts. Even if subjects believe that official tools are the most appropriate for school related communication, not insignificant number of teachers reported that they regularly engage in formal and informal relational exchanges using UDCs, SMS or *WhatsApp*'s group chats being the most common. These teachers consider the UDCs as a channel that greatly facilitates communication between colleagues (especially in cases of urgency) and the strengthening of friendships with their peers.

Looking at the answers of the participants regarding the influence of UDCs on the relational level with their students, a wider variety of contrasting positions set against two polarities can be observed. While some teachers believe that

unofficial contexts should in no way be the scene of formal or informal relationship dynamics, others are open to relationship exchanges across less official grounds.

The subjects belonging to the first group justify their position by stating that contact in unofficial spaces would expose their privacy to a violation. Such a violation of privacy could cause unpleasant episodes such as students making phone pranks in the middle of the night or other similar situations. Others strongly advocate a neat distinction between their private and professional lives, as this separation could also be sought by students themselves.

Teachers belonging to the second group, those who accept the contact with their students even through UCDs, stated that using these channels can facilitate dialogue and connection with the pupils. Some participants have created second social profiles, with the aim of getting in digital contact with their classes, using *WhatsApp* or *Facebook* group chats to coordinate works or specific educational experiences with their students.

These more optimistic positions are not, however, immune from a more in-depth and critical reflection. Those who claimed to use unofficial channels in their teaching and in their relationship practices with students, have also emphasized the need, if not the urgency, to carefully monitor the relationship dynamics in these spaces in order to prevent unpleasant or risky situations, which are more likely to occur in this unofficial contexts. Moreover, this category of teachers stressed the importance of building trustful relationships with their students: a key condition for creating a positive and serene social climate within the class, an inclusive climate, able to make everyone feel comfortable and safe.

## 5. Conclusions

Technology does not affect only the teaching-and-learning cognitive dynamics but also has an influence over the classroom's relationships and the social climate.

The purpose of this contribution was to present the result of a research aimed to build a phenomenology of the teachers' perceptions about the influence of digital contexts – official and unofficial – on the socio-relational level of interactions with their pupils, their parents and with their colleagues, or in other words, on how technology affects the social-relational sphere of the school life. Despite different positions, described in detail in the 'results' section of these pages; most of the teachers who were part of the research acknowledged the relevance of this issue as a key element to monitor and to care about in their professional practices.

Teachers see technology, especially the ODCs, as a necessary tool for their teaching and for the formal exchanges with colleagues, families and students but they also retain a few concerns. Concerns related to the use of personal mobile devices and the fact that teachers perceive their students as still too young to manage their devices with enough maturity: one of the most openly voiced fear is the misuse of smartphones to record audio or video material or to take inappropriate photographs during class time undermining the privacy of other pupils and teachers.

UDCs raise, among teachers, concerns about the possible misuses that their students can keep – in terms of potential source of distraction and of danger for their privacy – but they are also aware that relationships mediated by technology can't be stopped, neither controlled, and they recognize it as an uncharted ground full of pedagogical opportunities. Technology can represent an important stimulus for fostering student's motivation, can create opportunities for dialogue between teachers and students in order to tackle controversial issues or conflict situations, and even can create new situations of socialization and collaboration for students.

It has become more and more difficult to trace a line between what is online and what is not, between what is perceived as 'real' and 'virtual': this ineffability is rooted in the way technology penetrates students' (but also, adults') lives; according to Floridi (2017), there's no point in talking about being online or offline because technologies are now 'onlife', present basically in every single aspect of the day of the students and, of course, of the teachers themselves.

Another important reflection to point out involves the fact that not all students may possess or have access to a mobile device, be it for economic conditions, parenting styles or other reasons. This phenomenon can ignite a form of digital divide, which, unless addressed accordingly, could trigger exclusion dynamics both in the relationship between students and their peers, and with the teachers.

In order to address such a complex and delicate topic – the one about how teachers can deal effectively and consciously with the relationships mediated by digital contexts and their influence on classroom climate – the participants of the research described in these pages agreed in stressing the importance of three main strategies.

The first one, it is promoting teachers' professional development initiatives to help them promote an awareness regarding the issues of Digital Citizenship and Digital and Media Literacy in their classrooms.

The second one involves the need for carrying on a negotiation with the families and the students about school regulations concerning school policies about ICTs. It is also fundamental to clearly express and share the motivating factors that lead to the policies governing the use of personal devices and digital contexts, whether official or unofficial.

The third one foresees promoting a more open dialogue with families, by sharing and proposing them training activities and opportunities for debate.

We'd like to add one last strategy that interests mainly the academic world: the importance of keep researching this field. Possible future researches could focus on investigate the relationship dynamics mediated by digital contexts in different target schools such as primary or high school. A scientific gaze over the ways the actors of the school (students, teachers, but also parents) communicate might help to better understand this complex, hidden and relentless stream of

relationship exchanges that inevitably have an influence on the quality and the conditions of the relationship inside the schools and the classrooms.

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