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## The Interplay Between Self-Regulated Professional Learning And Teachers' Work-Practice

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### Abstract

This paper explores the relationship between practice and learning in the workplace, by focusing on the case of teachers. It is widely acknowledged that (teacher's) professional learning is heavily informed by practice, and that an individual's capacity to self-regulate their learning can improve the quality of learning. However less is known about the precise interplay between practice and self-regulated-learning. This paper integrates existing literature in three areas: professional learning, self-regulated learning and teacher professional development, drawing on recent work describing learning behaviors in informal workplace settings and on Teacher Professional Development. The paper develops a hypothesis on how teachers' work practice stimulates their learning processes and, at the same time, is informed by their capacity to self-regulate their learning.

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### 1. Introduction

Teaching professional practice is changing under the pressure of the many challenges teachers face in their everyday work. These challenges include different objectives for education, such as empowering learners with the skills needed to learn and work autonomously and with others in a fast changing world, where knowledge is dynamic and technology pervasive. Learners are also changing. While they are familiar with technological tools and new media because they live in a technology rich environment, they often underestimate the power of technology, both in

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the positive and negative sense. Their learning needs are different from those of young people of previous generations, and may be highly differentiated within the same educational context (Delfino & Persico, 2009). Parents, educational institutions and the education system itself have raised expectations: teachers are expected to be able to orchestrate complex learning designs and create environments where constructivist learning takes place, where learners are challenged by authentic problem solving tasks, and scaffold learners to take charge of their learning and become responsible citizens of the digital society. In other words, the teachers' role is becoming more and more similar to that of researchers (Laurillard, 2008), whereby working and learning are two strictly intertwined activities driven by a common aim: enhancing the learning opportunities for students. Teachers today make use of technology with a twofold purpose: they use technology to develop their own practice, as most knowledge workers do, and they take advantage of its affordances to enhance their students learning environments and processes. Teachers' mode of working is heavily reflective, exploratory, experimental, and must be based on an understanding of the ways in which technology is changing how their students learn. In spite of the fact that research in Technology Enhanced Learning suggests that technologies have huge potential for learning, best practice in integration of technology in the classroom is not a widespread reality and teachers who can make systematic and pedagogically informed use of technology are still a pioneers, rather than the majority.. Some Technology Enhanced Learning (TEL) researchers (for example Mor & Craft, 2012) claim that there is a gap between the promise of TEL research and practice in educational institutions. They maintain that only the spreading of a participatory culture of learning design among teachers can support better and more widespread use of technology in education. The aim of this paper is to analyze the relationship between practice and their learning. While it is widely acknowledged that teacher professional learning is heavily informed by practice (Darling-Hammond, Chung Wei, Andree, Richardson, & Orphanos, 2009), and that increased self-regulated learning (SRL), or aspects of it, can improve the quality of learning (Boekaerts, Pintrich, & Zeidner, 2000), the question addressed here is what is the nature of the interplay between practice and learning? The paper draws on existing literature in the three areas of professional learning, SRL and teacher professional development (TPD). The aim is to better understand how teachers' work practice stimulates their learning processes and, at the same time, is informed by it.

### *1.1. Self-Regulated Learning*

Self-regulated learners have been defined as individuals who actively and consciously control their own learning from the cognitive, affective, motivational and behavioral points of view (Zeidner, Boekaerts, & Pintrich, 2000). This ability entails a set of interdisciplinary competences that have increasingly gained attention in the past couple of decades because they improve the learning process and are essential to cope with the challenges posed by our modern society, where knowledge is dynamic, distributed and complex. Such a society requires the individual to continue learning throughout one's own life, relying heavily on higher order thinking skills, problem solving in interdisciplinary fields, and the ability to communicate, negotiate and collaborate effectively with others, especially in knowledge intensive work practices. It is therefore no coincidence that SRL has been listed as one of the key competences for lifelong learning (European Council, 2006). A well-known, consolidated model describes SRL as a cyclic process consisting of (1) planning, (2) execution and monitoring, and (3) self-evaluation (Zimmerman, 2000). This model has been used, primarily, to investigate learning in academic contexts. However, people need to control their own learning after they leave formal education. Indeed, it has been argued that the ability to self-regulate one's learning is even more critical in the workplace (Enos, Kehrhahn, & Bell, 2003; Sitzmann & Ely, 2011) when individuals face new problems as part of their daily professional practice. In these cases, people usually resort to many strategies to find a solution but it is only when they consciously control the associated learning process that they can take full advantage of the problem solving experience to learn, allowing them to re-apply their newly acquired skills in similar situations. In other words, when they solve the problem, they learn how to solve that problem, but if they consciously regulate their learning, they are also learning to learn, and are subsequently able to tackle other problems more effectively.

## 1.2. Teachers' Professional Learning

Generally, people at work learn by means of a problem-based approach, that is, the learning process is bootstrapped when they face a new problem. Traditionally, when the problem arises, people try to tackle it in some way: they resort to reliable sources of information, seek help from more experienced others, try to apply strategies that proved successful in similar cases by adapting them to the context at hand, or they may invent a novel (at least to them) solution, based on their previous experience. In most cases, they adopt a mix of the above. In the digital age, technology enhances most of these activities in many ways: by allowing for fast and multimedia communication between people, by augmenting extraordinarily the amount of easy-accessible sources of information and knowledge, by making possible the sharing and reuse of knowledge artifacts, including solutions to similar problems. All this is particularly true of knowledge intensive jobs. In the fields of education and research, for example, this participatory culture is regarded as a powerful way to increase knowledge and spread good practice for the good of society (Persico & Pozzi, 2013). Littlejohn, Milligan, and Margaryan (2011) provided a framework describing how this type of informal learning takes place. Knowledge workers are often unaware of the fact that they are learning while they work, because informal learning is deeply embedded in work practice. Consequently, self-regulation in these contexts is even more difficult to attain than in formal learning contexts, since awareness is a pre-condition for control. Studying the interplay between self-regulated learning and practice at work is thus essential to allow people to gain awareness of this process, learn how to control it and hopefully learn more effectively. Littlejohn et al (2011) explored the learning practices of knowledge workers and identified four key learning behaviors used to learn in informal networks (Milligan, Littlejohn, & Margaryan, 2014, (forthcoming)):

- Consuming knowledge created by others, by accessing sources of knowledge wherever they are;
- Creating new knowledge, by amending, extending and structuring existing knowledge. This is a continuous, often collaborative sense-making process that generates new collective knowledge;
- Connecting with people and resources within one's personal learning network, by sharing experience and ideas, providing support to others or collaborating with them. Connections can be local or global, two-ways or one-way, occasional or systematic;
- Contributing new knowledge, by offering the results of one's knowledge creation to the members of the network.

This framework, that the authors call the 4C's framework, represents the behaviors of people while they interact within their personal learning network, or community, at work. The way people plan, monitor and assess the learning outcomes of these behaviors is termed "charting" by the authors, and it is through this charting process that people self-regulate their learning. The above framework resonates well with the inner workings of Communities of practice (Lave & Wenger, 2001), deemed by many researchers as one of the most powerful concepts for individual professional development and organizational learning (Chalmers & Keown, 2006). A community of practice is based on the idea that learning is social and situated (i.e. largely derives from our daily life and work experience). According to Wenger (1998), a community of practice features the following "ingredients": a joint enterprise, shared and continually renegotiated by its members; mutual engagement, that is an explicit or implicit commitment of its members to the same enterprise; a shared repertoire of common physical, methodological or conceptual resources (tools, procedures, routines, documents, terminology, etc) developed by its members over time. In particular, in teachers' professional development, online communities of practice and online collaboration have been suggested as a powerful way to sustain teacher professional development because they overcome the typical isolation of teachers and constitute ideal contexts for collective reflection on practice (Knight, 2002; Vescio, Ross, & Adams, 2008; Delfino, Dettori, & Persico, 2010; Lock, 2006). Virtual communities of practice add to this that they enable an even wider range of perspectives of participants, extending the community beyond the physical boundaries of the school or the local community. However, participation in these communities only takes place if there a strong motivation, that is, if the joint enterprise is of core importance for the members of the community. For example, success stories are frequent for virtual communities engaging in the exchange of resources, initiatives and design ideas to improve students' learning, such as those that develop around databases of Open Educational Resources and/or intend to promote the dissemination of best practice in the learning design of Technology

Enhanced Learning (TEL) events (Koohang & Harman, 2007). In other words, these communities are more likely to succeed when they become a valid support for their members in solving problems frequently met in their daily work practice.

## 2. How work-practice relates to self-regulated professional learning

This paper proposes a vision on how teachers learn through practice, when they do so, and to what extent charting behaviors in informal networks support learning and are related to teachers' SRL. We propose to represent the relationship between practice, charting and SRL through the three layer pyramid in fig.1. The hypothesis underlying this representation is that, while work practice constitutes the bottom layer, that is the authentic context where the learning process is naturally embedded, and to which it is anchored, charting is a higher level activity carried out by proficient adult learners, and is especially effective if the teacher can take advantage of social network technologies that enable efficient communication within and beyond their networks. On top of this, Zimmerman's model of SRL (Zimmerman, 2000) is a further "layer" of metacognitive control allowing self-regulated teachers to direct the whole learning and working process towards their desired objectives. While the bottom layer of this pyramid is always there, that is, it is frequent, realistic situation, the 4Cs behaviors are probably employed by different teachers in different measures (and some of these behaviors might be used more than others by each individual teacher), SRL doesn't always take place: it only does in ideal situations. To clarify the picture, let us consider the way teachers work, and learn while they work, even if sometimes they are unaware of the extent to which they continually progress in their professional development. In their work, teachers face problems that motivate them to learn something that will hopefully allow them to solve the problem. This solution typically results in some kind of change in the way they teach or, more generally, work. The problem that triggers the whole process is identified by the teacher and typically has to do with some kind of ineffectiveness of the learning process: superficial learning, low motivation of the students, complexity of one of the topics, scarce efficacy of the teaching strategy. Faced with this problem, the teacher will likely move up one layer in the levels of fig.1 (the transition is represented by the arrow numbered 1) to use one or more of the 4Cs learning behaviors: he might search for existing solutions to the problem (consume), share his problem with colleagues (connect), undertake some reflective analysis of the problem by making some notes (create), and try to develop or adapt new solutions for his context (create/contribute). The teacher may design an educational activity, or a whole course, aiming to improve or solve the learning problem (create). Ideally, the design could be shared with colleagues to obtain feedback before trying it out with his/her students (contribute/connect). She will then carry out the activity, evaluating its effectiveness in solving the problem. At this point, the teacher might refine the design of their activity based on any weaknesses identified by the evaluation (create), and then share the outcomes of their efforts to their personal network, or openly through a blog-post or more formal publication (contribute). This may be done more or less explicitly, according to their confidence in the positive results obtained. Similarly, the degree of success obtained, balanced with the effort needed to carry out the activity, will feed into the future practice of the teacher: as new practices adopted in a more stable way, or as a decision not to adopt the innovation over the longer term, due to a poor cost-benefit balance (arrow number 4). As for the relationship with SRL (represented by the arrows number 2 and 3), when the object of learning is learning design, as in our example, while the above behaviors take place, the teacher consciously or unconsciously plans her learning, since she makes decisions about what she is going to learn. If they design an activity that makes use of a new teaching strategy or a new technological tool, she is "planning" to learn about the use of that strategy or that tool. When she runs that activity, she will "execute and monitor" her learning about them. When she evaluates the success of that activity, she will also evaluate her own learning. There may not necessarily be a one to one correspondence between the design-implementation-evaluation phases of learning design and the planning-execution and monitoring-evaluation of SRL, but we suggest that planning-monitoring and evaluation of the teacher learning does take place while she follows the lifecycle of learning design and, if she is not aware of this, a way to support her learning is to help her become aware of the learning process that arises from her work practice. Awareness of these mechanisms also leads teachers to use an evidence-based inquiry approach, that is, become researchers in their own field. The above considerations concern the way individual teachers control their own learning when the learning process is embedded in work practice, with the assumption that the teacher works alone. What happens, though, when a group of teachers work together to collaboratively design activities to be carried out

with their students? Basically, the lowest level of the pyramid remains the same, that is, working practice will generate authentic learning problems that the teachers will tackle together in the hope of finding an effective solution. Some changes are likely to take place at the level of the 4Cs behavior: consuming, creating, connecting and contributing would occur at two levels: within the collaborative group, and, at a larger scale within the global community of practice. However, the main changes would probably take place at the level of self-regulation of learning. In fact, the literature about SRL in collaborative contexts tells us that the self-regulation of the individual must come to terms with that of the team (Dettori, Giannetti, & Persico, 2005; Järvelä & Järvenoja, 2011). Defining the objectives, planning and controlling time, even self-evaluation needs to take into consideration and be negotiated with other members of the group. Nevertheless, both in individual and in team work, the four arrows in fig.1 indicate that the process starts with problems faced during work practice, then it moves up one level to the 4Cs behaviours (arrow 1). These can be controlled by different SRL phases (arrow 2), which in turn determine behaviours (arrow 3) and finally influence practice (arrow 4). This process is cyclic, but it only takes place to the extent to which the teachers adopt the 4C behaviors and regulate them to control their own learning. While regulation of learning during practice does not always occur (Van Eekelen, Boshuizen & Vermunt, 2005), teachers' professional development could leverage these behaviors and should strive to promote both the 4C behaviors and teachers SRL.

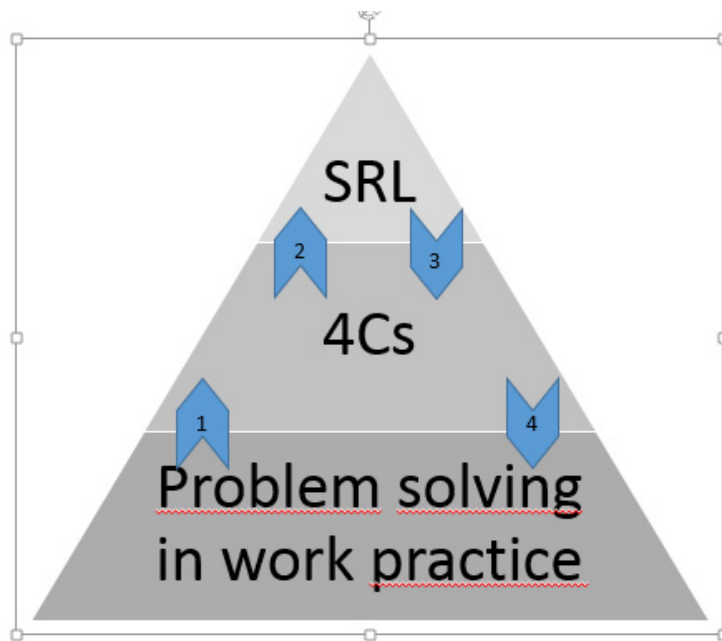


Fig. 1 The three layers representing the relationship between practice, charting behaviors and SRL.

### 3. Conclusions

This paper brings together literature on professional learning, self-regulated learning and teachers professional development in communities of practice to provide a vision of how, in an ideal situation, practice provides the stimulus for reflection and the motivation for learning, the 4Cs behaviors are the strategies for participation into communities of practice and the individual governs the whole process through the SRL phases. As a result, learning takes place and subsequently leads to new practice. In this view, awareness of these mechanisms is highly desirable because, not only would it improve SRL, but it would transform the pioneer teachers into fully fledged researchers able to increase not only their own knowledge, but also the knowledge of the community of practice they belong to. Further research is needed to support this vision with data concerning the extent to which charting takes place among teachers and SRL skills actually make the whole process more effective. The nature of charting during

individual and collaborative learning could also be explored. A similar approach could be used to investigate SRL in professional learning in other knowledge intensive jobs, such as, for example, research.

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