Implementing iSCORE in Piano Studio Teaching:

A Teacher's Perspective.

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ABSTRACT

Implementing iSCORE in Piano Studio Teaching:

A Teacher's Perspective

Ingrid M. Astudillo Mazuera

The process of implementation of the electronic portfolio iSCORE in a piano studio setting is documented using Zimmerman's (2000) model of self-regulated learning (SRL) as a basis for the understanding of emerging changes into the piano studio. Research questions explore the use of iSCORE by parents, students and teacher to foster SRL, and the observed changes and practices that arise during the period of implementation. One teacher-researcher and eight students participated in the study. Data were drawn from a teacher's journal containing weekly lessons' descriptive narrations, and from students' portfolio entries. Results show that students were generally resistant to explore the tool without teacher's assistance, especially during home practice. The showcasing works was more popular than the process aspect of the portfolio in users. Graphic data entry was preferred over text. Some positive changes in self-regulated behavior were observed in students, possibly more connected to a pedagogical emphasis on SRL than to actual portfolio work. Time expenditure and the lack of familiarity of students with the process embedded in iSCORE were some of the obstacles encountered through implementation. Implications for re-design, future research and better implementation are discussed.

Keywords: piano studio, self-regulation, electronic portfolio.

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Chapter 1 –Introduction

We all have different themes that mark our lives and those of our family members. Some families are bound to the sports world, others to politics or social issues; or to the arts, visual, literary or music. In their socialization processes, children's lives, their perceptions of the world and their place in it, are colored by these traditions. As a consequence, more often than not they are drawn to acquire the skills related to the family's values and relational styles. A myriad of influential factors play a role in this phenomenon; in many cases these traditions are shaped by participation in academic programs and more informal learning activities that produce different levels of skill as a result.

In the field of music, one of the most common instructional practices in western cultures is the private lesson, to which many children of middle -and upper- class families are exposed as an extra-curricular activity. This model of learning that involves one-to-one instruction can happen in either the student's or teacher's home, or in an institution like a conservatory or university setting (Davidson & Jordan, 2007). Independent lessons can have extremely different results as teachers' qualifications may vary and programs of study can be tailored to students' interests and goals. When institutionalized, private music teaching is regulated by overarching entities that pre-establish curricula and means of assessment (Davidson & Jordan, 2007).

Social constructivism has influenced current views of the psychology of learning, emphasizing the interactive nature of knowledge acquisition and the importance of environmental conditions in this process (Hallam, 1997). Contrary to the popular belief that achievement in music is the product of an innate talent or intelligence and that "gifted"

individuals will attain great levels of performance, some authors find that there are other factors that influence their outstanding accomplishments (O'Neill, 1997; Howe, Davidson & Sloboda, 1998), and that self-regulation is at the core of these results (Csikszentmihalyi, 1990). To explore this idea further, I have used Zimmerman's (2000) theoretical construct of the self-regulation cycle as a social-cognitive process as the basis for this project.

Researchers in the fields of education and psychology of music have, for some decades, worked towards a better understanding of the causes of the development of skilled musicians (Ericsson, 1996; McPherson, 2009) and what makes someone stick to music practice throughout a lifetime (Pitts, Davidson & McPherson, 2000; Zhukov, 2009; Faulkner & Davidson, 2010; McPherson, Davidson & Faulkner, 2012). These researchers seek to know what the mechanisms by which novice musicians become experts are, and how they acquire the skills related to musical performance.

The literature reveals that in general, expert performers start music instruction at an early age and gradually increase their practice time to attain an average of four hours a day during ten years before they become proficient in their instrument (Ericsson, 1996). They spend time purposefully practising to improve their playing, and they also participate in informal musical activities (Zhukov, 2009), which produce more cognitive engagement and intrinsic interest (McPherson & McCormick, 1999).

The relational styles adopted by parental figures in supporting learners, greatly influence the outcome of their experience (McPherson, 2009). Parents play an essential role in the musical development of their children as they act as environmental moderators through reminders and other kinds of supportive roles (Faulkner & Davidson, 2010); helping "to facilitate the self-

regulatory processes needed for children to eventually take charge of their own learning." (McPherson, 2009, p. 103).

This paper has been developed with the purpose of shedding light into the processes underlying musical development from a systemic view that involves personal and environmental elements in action. It gathers the experiences of a researcher-piano teacher and a group of eight students in a first attempt to implement the electronic portfolio iSCORE in a piano studio setting. iSCORE (Upitis et al., 2012) was designed to help music students develop into self-regulated learners, guiding them to perform the cyclical phases of Forethought, Performance and Self-reflection in each attempt to complete a musical work.

Chapter 2 – Literature Review

Self-Regulation in Academic Learning

The educational literature offers an ample scope of research based on self-regulated learning (SRL), a triadic cyclical process that enables the development of high levels of independence and agency in learners (Zimmerman, 2002). Zimmerman (2002) establishes that self-regulation is not a skill in itself, but "the self-directive process by which learners transform their mental abilities into academic skills" (p.65), and makes the distinction between the proactivity needed for self-regulation to occur and the covert reactive mechanisms that occur as a consequence of teaching. The self-regulatory cycle is bound towards the attainment of specific goals, and involves very complex learner-generated and learner-monitored overt and covert processes (Zimmerman, 2000; 2002).

The process of self-regulation has three cyclical phases called Forethought, Performance and Self-reflection. Each phase contains a series of sub processes that allow learners to move forward through to complete the cycle (Zimmerman, 2000, 2002), as illustrated in Table 1. This social cognitive process is made evident in academic learning when students are capable of monitoring and adjusting their thoughts, behaviors and environment to learn on their own; teaching moves out of the center of the process to allow for a learner-centered experience (Zimmerman, 1990, 2000, 2002).

Table 1.Phase Structure and Sub processes of Self-Regulation from Zimmerman (2000)

Forethought	Performance/volitional control	Self-reflection
Task analysis	*Self-control*	*Self-judgment*
Goal setting	Self-instruction	Self-evaluation
Strategic planning	Imagery	Causal attribution
	Attention focusing	
Self-motivation beliefs	Task strategies	*Self-reaction*
Self-efficacy		Self-satisfaction/affect
Outcome expectations	*Self-observation*	Adaptive-defensive
Intrinsic interest/value	Self-recording	
Goal orientation	Self-experimentation	

Self-regulated writers, as Zimmerman (1998) portrays them, will engage in Forethought by setting daily goals related to the number of words or pages that they want. Performance brings them to the place where they use visualization, verbalization of their ideas, and to specifically schedule writing sessions; in Self-reflection they seek feedback and advice from other writers among other actions. For a dance student, self-regulation in learning may be evidenced by behaviors such as taking initiative to get a convenient space in the row, taking the risk of asking questions, using kinesthetic patterning to learn a movement and self-evaluating and self-adjusting to get to desired outcomes during practice (Baum, Owen & Oreck., 1997).

Self-regulation is evidenced by students moving from socially bounded processes to more autonomous or self-directed learning (McPherson & Zimmerman, 2002). How does this process occur? Zimmerman (2000) argues that self-regulation develops through vicarious experiences and that a learner moves through scaffolding from social-regulation to self-regulation in four stages, namely: observation of a proficient model; emulation or imitative performance with social assistance; self-control where the learner displays the model's skills in structured conditions; and finally self-regulation, where the learner adapts to display the model's skills in changing conditions.

As a result of this process, individuals engage proactively in their own learning and take ownership of its results (Zimmerman, 2000). This developmental scheme can be useful when considering the possible steps to be taken when moving the approach to learning from a teacher-centered to a student-centered effort. After considering its value in explaining the path to student self-regulation, I found this developmental scheme suitable to be used as a theoretical ground for the analysis of the data obtained in this project. The reader will find references to it under Description of changes in students' behavior over time after introducing iSCORE on Chapter 5.

Academic self-regulation develops in six psychological dimensions pertaining to the six scientific questions of why, how, when, what, where and with whom; dimensions that have been conceptualized by Zimmerman (1998) as follows: Motive (related to goal setting and self-efficacy), Method (related to task strategies, imagery, and self-instruction), Time (related to time management), Behavior (related to self-monitoring, self-evaluation, and self-consequences), Physical environment (related to environmental structuring) and Social (related to selective help seeking). Metacognition, which is the awareness and control over one's cognitive processes, is self-regulated through the exercise of planning, monitoring and regulation or evaluation of

progress (Hallam, 1997). It is affected by environmental and intra-personal factors like time, effort and attention (Wade, Abrami & Scratler, 2005).

I have used the framework of the six psychological dimensions of academic self-regulation (Zimmerman, 1998) which have also been referred to in music education research (McPherson & Zimmerman, 2002). These dimensions help describe participants in this study in terms of observable signs of self-regulation both prior to and after the implementation of iSCORE (See chapter 4 and 5).

Self-regulatory processes in music learning contexts

The interest of researchers in the influence of self-regulation on music learning has produced a body of literature in support of the statement that the presence of self-regulatory skills is intrinsically related to efficient practice habits and a predictor of continuation of music making into adulthood (Fritz, 2011; Pitts et al., 2000). The literature offers evidence of a close relationship between the sub processes of self-regulation and the sets of beliefs that allow adaptive or defensive mechanisms to develop in the learner; it also demonstrates the importance of developing metacognitive skills that support effective learning (Brown, 2009; Faulkner & Davidson, 2010; Fritz & Peklaj, 2011; Nielsen, 2012).

Besides producing long-term involvement in music, for example, the set of beliefs and environmental conditions in which music practice is carried out in the early years is also a predictor of excellence (Faulkner, 2010). Zimmerman (2000) argues that self-efficacy beliefs are essential to the development of self-regulated learning and to efficient strategy use. Collectively,

the evidence helps make the case for the importance of focusing on the development of self-regulatory skills in beginning musicians.

In the field of instrument learning, where the quality of the time spent by students working without the supervision of teachers is a key factor in achievement, it becomes imperative to establish guidelines of work for students' home practice. As a consequence, much of the literature on music and SRL focuses on practice strategies and the development of metacognitive skills (Nielsen, 1999; Pitts et al., 2000; Leon-Guerrero, 2008; Zhukov, 2009), as they are key factors in the success of the music learning process.

Music education research on self-regulation has shown the importance of a strategic approach to learning as an element that will enable music learning and as a factor influencing the reflection phase (Nielsen, 2001; McPherson, 1999; Austin, 1992). This phase is crucial as it affords the learner the necessary information to enter the planning phase, which gives continuity to the self-regulating cycle. Following is a more in-depth account of examples found in the literature of research on self-regulation of music learning.

Forethought Phase

Task analysis

Goal setting is among the most important processes of self-regulatory development (Kim, 2008), and can be elicited by "open-ended tasks that promote thoughtful engagement" (Paris & Paris, 2001, p. 94). Brändström (1996) studied self-formulated goal setting and teacher participation in piano students' learning, and formulated a scheduling of lessons that was

determined by two factors: whether the student had really prepared for the lesson, and whether the student considered that there was a real need to see the teacher.

Participants in Brändström's (1996) study reported having a greater sense of ownership over the content of their course; they increased their level of responsibility by coming well prepared to every lesson, and the teacher's role was reportedly shifted towards a supporting one. "There is considerable evidence of increased academic success by learners who set specific proximal goals for themselves" (Zimmerman, 2002, p. 68).

In instrumental music education research, students' goal setting has often been associated with the selection of repertoire that a student is assigned to learn. Renwick and McPherson's (2000, 2002) study involved an adolescent clarinettist who was observed during practice sessions as she played both self-selected and teacher-selected repertoire. The researchers found evidence of greater time expenditure as well as an array of self-regulatory behaviors that resembled those of expert performers while the clarinettist was practising the self-selected work.

Efficient music practice also called "deliberate" practice (Ericsson, Krampe & Tesch-Romer, 1993) depends largely on the task analysis process of the learner. Zimmerman (2002) argues that while "the quantity of an individual's studying and practicing is a strong predictor of his or her level of expertise" (p.66), it is the quality of this practice that determines the level of skill; it makes the distinction between "expert" and "trained" individuals.

There are numerous references to strategies used by learners in the literature on self-regulation. Some of these strategies are used during task analysis, which in the SRL model is a sub-process occurring during the Forethought phase. Other strategies linked to the Performance and Self-reflection phases are used in sub-processes corresponding to those parts of the cycle. I

will focus on the strategies used by learners during individual music practice on the upcoming *Self-control* section of the *Performance Phase* chapter of this review.

Strategic planning in music learning has been associated with students' selection of material to be worked in preparation for practice sessions (McPherson & McCormick, 1999), and lessons, and surveying the music prior to attempting to practice it (Austin & Berg, 2006). Chung (2006) found that high levels of strategic planning were more common in high-achievers, who identified problematic areas on the score and made conscious decisions on how to invest their practice time.

Self-motivation beliefs

Faulkner, Davidson and McPherson (2010), who studied predictors of temporary and longstanding commitment to learning an instrument in beginners, found that self-efficacy beliefs were related to self-selected goals and motivation. These beliefs were better predictors than actual competence when it comes to continuing music involvement. They also found that the absence of extrinsic rewards and of externally imposed structures like a fixed time to practise, were predictors of continuation in music studies beyond the first year. Their findings suggest that students are able to take responsibility to manage personal and environmental factors in self-regulated ways, and to establish priorities when engaging in instrumental practice without the need of external motivators.

Music practice is at the core of all instrumental music learning. The efficiency of this self-directed activity is conditioned by motivational beliefs; which account for differences in practice behaviors related to effort control, self-monitoring and use of strategies (Renwick,

2008). Self-efficacy beliefs and beliefs about the simplicity of knowledge are also related to the use of meta-cognitive strategies that allow for the development of learning tasks (Fritz & Peklaj, 2011) and use of strategies (Miksza, 2011; Nielsen, 2012). These beliefs are found to be crucial to "sustain and make progress in practice" (Davidson & Jordan, 2007, p.741). McPherson and Zimmerman (2011) also express that volition and self-motivation processes explain "how a young child's initial enthusiasm for learning an instrument can, over time, become self-regulating" (p. 133).

Performance Phase

Self-control

Few would question that "the most important skill that can be taught by an instrumental music teacher is how to practise" (Zhukov, 2009, p. 5). For musicians, the ability to self-control and guide the practice of their instrument is a defining component of successful work and achievement. This section will focus on the vast literature on task strategies as they support all other sub-processes of the Performance phase and the whole self-regulation cycle.

Different terms are used to classify the various task strategies; some authors refer to strategies ranging from environmental control to cognitive and meta-cognitive ones (Leon-Guerrero, 2008; Miksza, 2011; Fritz, 2011). Others classify strategies based on the processes that they support during music practice: preparing for practice, monitoring progress and coping with distractions (McPherson, 1999).

Some qualitative studies on this subject have used videotaped practice sessions and triangulated key features with self-reflective reports and interviews (Nielsen, 2001; Leon-

Guerrero, 2008; Pitts et al., 2000; Hallam, 2001). Other studies talk about effective practising strategies that include chunking, modelling, mental rehearsal and hand rehearsal (Zhukov, 2009). Yet others refer to practise strategies yet as the ordering of the pieces that a student choses to practise (Faulkner, 2010).

Another approach establishes the dichotomy between low and high level practice strategies, their correspondence to the level of expertise of the learner (Dos Santos & Hentschke, 2011; Zhukov, 2009); relating the use of learning strategies to "sophisticated" epistemological beliefs (Nielsen 2012). Nielsen (2012) states that a learner who believes that knowledge is attainable through time and effort, for example, will be more likely to use these strategies. Dos Santos and Hentschke (2011) describe strategies as "deliberate choices regarding both actions and activities" (p. 288) with the goal of creating a targeted effect. They state that students purposefully used them to "survey and self-regulate the quality of [instrumental] practice" (p. 289).

Even though there is much evidence in the literature of the importance or self-regulatory skills in music practice to enable students to control contextual and inter/intra-personal conditions (Nielsen 2001), some researchers have observed that the most used learning strategy in practice sessions of novices remains mere repetition (Leon-Guerrero, 2008; McPherson & Renwick, 2001). Self-regulation and metacognition, which are scarce in novices' practice sessions (Pitts et al., 2000) are nonetheless defining factors influencing effective practice (McPherson, 1999). Previous musical knowledge also plays a role in the quality of this practice, conditioning the effective use of practice strategies (Hallam, 2001).

Self-observation

In the context of the self-regulation cycle, the sub-phases of self-observation, namely self-recording and self-experimentation, are associated with different behaviors that musicians display during practice. These can take the form of producing audio recordings of performances (Chung, 2006) and listening to them as part of music practice (Smith, 2002; Nielsen, 2001), or uploading them to an electronic portfolio (Upitis et al., 2010). The measurement of performance times (Dos Santos & Hentschke, 2011) and practice time is also referenced as self-recording (Smith, 2002); as well as students marking their score while practicing as a means to correct issues in their playing, as seen in Leon-Guerrero (2008).

Kim (2008) associated the exercise of writing daily self-reflections with self-monitoring activities occurring during the Performance phase, and found it had the potential of accelerating learning processes. She used journaling in the form of a practice dairy in a collective case study in order to find out how college music students develop into independent learners, and how this activity affects their self-regulated learning development. She found that "keeping a diary can be conceptualized as a form of self-monitoring; therefore, this potentially can become a catalyst for students to learn" (p. 10).

Using writing as a form of self-recording, some researchers have implemented the technique of reflective writing in music education settings as a tool for enhancing "critical, creative and self-regulated thinking" (Brown, 2009, p. 377). They advocate for the use of this technique as a means of acquiring lifelong learning skills, important to all performing artists; that allow them to exceed a limited "knowledge-based and practice-based curriculum" (p. 379).

Self-experimentation was observed by McPherson and Renwick (2001) in young student musicians in the form of informal practice. This is also found to be one of the activities that characterise expert performers (Zhukov, 2009); and students trying to learn a piece by experimenting with sounds repeatedly (Renwick & McPherson, 2002). This process is conditioned by the appropriateness of the received aural schemata, or the accuracy of perceived sound, that facilitates monitoring progress and the correction of mistakes (Hallam, 2001).

Self-reflection Phase

Self-judgment

A sub-process of self-judgment, self-evaluation is a crucial phase in the self-regulation cycle since it allows the learner to form an interpretation of the results of the learning effort. It facilitates the continuation of the cycle by providing key information to construct the upcoming Forethought phase. In music instruction, self-reflective processes are tightly linked to evidences of performance achievements (Chung, 2006), where learners "make constant self-evaluations of their progress to compare their performance with others or to react to the feedback they receive from a conductor or other musicians" (McPherson & Renwick, 2011, p. 242).

Upitis et al. (2010) found the use of an electronic portfolio to be supportive of self-evaluative purposes through the selection of material that the student displays on it. In another case study, Nielsen (2001) reports on advanced students' use of self-evaluation by comparing their practice sessions to mastery criteria corresponding to their learning stage.

Based on data extracted from videotaped practice sessions, Leon-Guerrero (2008) found that self-evaluative comments appeared among the self-regulating strategies used by middle school instrumental musicians. Other authors also found that more advanced instrumental music students used self-evaluation as a means to monitor the quality of practice sessions (Dos Santos & Hentschke, 2011), reflect on strategy selection and identify problematic aspects of their performance (Dos Santos & Gerling, 2011).

Self-regulated learners consider the causes of their successes and failures not to be pre-determined by ability but a process-bound product (Zimmerman, 2000). Accordingly, Smith (2002) found that higher level instrumentalists tended to believe that musical ability is something that can be developed rather than an innate characteristic of some people. Nielsen (2012) explains the dichotomy between "sophisticated" and "naïve" epistemic beliefs, and points out that even students who hold sophisticated views about the nature of knowledge, show at the same time naïve views about the acquisition of knowledge; they often tend to think that ability is fixed and attribute achievement to talent.

Austin (1992) also studied the formulation of causal attribution in students as a factor that influences their response to experiences of failure in academic performance. This study revealed that the perceived causes of failure have a direct impact on motivational beliefs (Austin, 1992); these beliefs are known to predict short and long-term commitment to learning (Faulkner & Davidson, 2010). As it has been observed on many occasions, "when students attribute their success or failure to ability rather than effort, they are more likely to give up trying to improve." (Chung, 2006, p. 111).

Self-reaction

Concluding the self-regulation cycle, a learner's self-reaction will influence future learning efforts serving as a reference for future decision making (Dos Santos & Hentschke, 2011), and taking the form of adaptive or defensive inferences (Chung, 2006). Researchers have found classic avoidance (Pitts et al., 2000) and self-handicapping strategies (Fritz & Peklaj, 2011) used by learners, to relate to the self-reaction's sub-process of adaptive/defensive behaviors defined by Zimmerman (2000). These behaviors can be portrayed in actions as day-dreaming, frustration and response to distracting elements in the midst of instrumental practice (McPherson & Renwick, 2001).

De Bézenac and Swindells (2009) found that professionals and higher education classical music students were at a disadvantage compared to their jazz and popular music counterparts when it came to enjoying musical activities they engaged in. Renwick and McPherson (2002) also reported on the popularity of jazz music among classically trained students. They found that some students experienced higher levels of self-satisfaction in playing pieces that were already known to them rather than in learning new repertoire.

Other examples of affective responses to learning found in the literature refer to enjoying challenges or experiencing frustration during practice (Oare, 2007); feelings of satisfaction or dissatisfaction with assessments and rankings among participants in a competitive musical event (Chung, 2006); and issues related to performance anxiety and confidence. These elements are found to be significant predictors of amount of practice the learner invests (McPherson & McCormick, 1999). As self-satisfaction produces adaptive or defensive responses in the learner,

continuation into a second year of music training for younger students depends much on their finding it a pleasurable or fun activity (Faulkner et al., 2010).

Electronic portfolios (EPs) and SRL

EPs in academic settings

In educational contexts, EPs are used to support different pedagogical processes by means of visual and audio data storage and software design. They are useful not only for assessment purposes but also for scaffolding of learning, which accounts for their increasing popularity (Abrami & Barrett, 2005). Integration of multimedia materials allows for the possibility of using a large variety of tools to incorporate content (Wade et al., 2005) and are found to enhance technological, reflective and collaborative capabilities (Bartlett, 2006).

While showcase portfolios display the best works done by students, process or learning portfolios contain works at different developmental stages and can be used to track students' acquisition of knowledge or skills over time (Wade et al., 2005). According to Abrami and Barrett (2005), process portfolios are suitable tools for developing self-regulation in students as they presuppose a careful selection of material to be displayed and a reflection on the steps taken to get to those results. This activity fosters meta-cognitive processes related to self-efficacy beliefs and causal attribution. Blackburn and Hakel (2006) argue that EPs "should be designed in such a way that feedback given to students is independent of course performance evaluations [and that] students should be cued and encouraged to use the feedback to set developmental goals" (p. 86).

Student-centered approaches supported by EPs have the potential to better engage learners due to the multiple formats in which they can display content and through which they facilitate collaborative work (Abrami & Barrett, 2005). Portfolios can be used as a means of assessment for self-regulatory development in students as they provide a link between learning goals and the outcomes displayed in them (Wade et al., 2005). Electronic portfolios have been reported to support self-regulated learning in elementary classrooms (Meyer et al., 2011). However, the implementation of EPs in classroom settings is not without hurdle; students sometimes have been found to struggle with the responsibilities and activities demanded by the transitional experience of including portfolio work as part of the curriculum. This may be a sign of resistance to develop self-regulatory skills (Wade et al., 2005).

EPs in music learning

Digital technologies such as electronic-based systems have become more and more popular in the last decades. They have made their way into formal music educational settings (Savage, 2007) where they are found to increase motivation and creativity in music students (Ward, 2009). Portfolios have been used in music instrumental instruction to develop self-reflective skills and as a means of academic assessment (Dirth, 2000). They have been found to act as a facilitating element in the development of related skills in music studio settings (Upitis et al., 2011).

In some cases, EP's facilitate access to a growing number of digital products used by musicians to self-instruct in areas like composition, arranging and recording, which are part of the pedagogical practices of many music teachers. However references on their use in studio

settings are still limited. Lind's (2007) use of Eps in music teachers' education "resulted in students' making vital connections between academic content, teaching strategies, and state standards for music instruction" (http://0-www.editlib.org.mercury.concordia.ca/p/104258/).

Rowley and Dumbar-Hall (2012) expressed that "keeping students up to date on technology as it relates to teaching is expected in their training, and ePortfolios allow high levels of this," (p. 30); providing proof of acquisition of generic skills and music skills; which are facilitated by adaptive uses of the technology. These researchers implemented EPs as part of the curriculum of a music education university degree program, transforming regular assessment tasks into portfolio works.

Students in this study welcomed the process of adaptation to the technology as it was a tool that would allow them to display the multiple sets of skills demanded from music educators, through computer-generated music notation for composition, arranging, video and mp3 recording and editing, along with text-based assignments (Rowley & Dumbar-Hall, 2012). Also, EPs were considered by users as a valuable showcase platform to use in job searching and as being "cumulatively representative of student skill development" (p. 28), providing a better understanding of the sequential nature of learning processes.

As Abrami and Barrett (2005) explain, the intrinsic interest fostered by the use of process portfolios can lead to an increase of personal involvement and amount of time that students spend on the task of working towards a specific learning goal. This is relevant to music learning because the success of students' deliberate practice demands a combination of effort expenditure and amount of time on the task (McPherson & Zimmerman, 2011). This is not easily attained, hence an important asset of any tool designed to support music instrumental learning.

Previous research on iSCORE

The web-based electronic portfolio iSCORE was designed to foster the development of self-regulatory skills in music students. It has been developed by a joint team from Queen's University, the Royal Conservatory of Music of Toronto and the Centre for the Study of Learning and Performance at Concordia University. Previous studies in the use of iSCORE and other electronic portfolios to support music instrumental learning have found that such a tool can enhance motivation to practice, provide a platform of communication between parents, students and teachers and especially support the development of self-regulatory skills in students (Upitis et al., 2010, 2012).

The findings previously mentioned have been attained through the analysis of a collection of students, parents and teachers' reports and through the observation of the content of students' portfolios. Missing in the literature is an in-depth account of the impact of using such a tool in a studio setting in the teaching and learning process over a longer period of time from the teacher's perspective, who plays an influential role in the implementation of new practices through teaching activities and styles that shape students' views and responses.

One of these studies involving the previous prototype portfolio to iSCORE, called ePEARL. The student using it developed strong metacognitive skills associated to SRL when fully using the capabilities of the portfolio over a period of six months (Upitis et al., 2012). When tested among a bigger sample size within the same study, it was found that students logged on very often, mainly to record themselves but also to look at what other students had shared with them.

In this phase of the project, the recording feature was used by teachers as a strategic tool to foster attentive listening which is related to self-reflective processes of self-regulation. Students' progress was found to accelerate due to the increase of teacher feedback between lessons. An additional six week pilot testing in the same study revealed that iSCORE was well conceived for studio music teaching.

A seven-year research study has been designed in order to produce empirical data on the impact of the use of iSCORE in music studio teaching (Upitis et al., 2013) and has as a goal to "transform the studio music culture with the aid of an ostensibly powerful, highly interactive, web-based tool that engages students with music-making" (Upitis et al., 2013, p. 27). I participated in that project as a teacher with a group of students during the academic year 2013-14, and have written the reflections contained on my teacher journal within this timeframe. These reflections form the basis of my data collection for the present study.

Researchers have found that a tool like iSCORE would fit the cultural practices of the music studio and at the same time could help the learner develop self-regulatory mechanisms (Upitis et al., 2012), but researchers have yet to find an account of the paths by which these mechanisms develop over time through its use. This study will offer one teacher's perspective on how the use of iSCORE may enhance SRL development within music learning in its interaction with the cultural values and practices of the music studio community.

Chapter 3 – Research Questions and Methodology – case study

Research Questions (RQs):

1. How is iSCORE used by teacher, parents and students to foster self-regulation development in piano learning?
2. What are the changes observed over time after introducing iSCORE in a piano studio setting?
3. What are the practices that arise during the first months of implementation of iSCORE in a piano studio setting from the teacher's perspective and how do they fit into the culture of this educational system?

The methodology used for this project was the Case Study, suited for a culture-sharing group like a piano studio, for studying the common patterns that develop over time in a bounded system and the implementation of new programs or elements in educational systems (Creswell, 2008). This project was submitted for review to the University Human Research Ethics Committee (UHREC) of Concordia University, and found to conform to their required standards. Please see Appendix B for the Certification of Ethical Acceptability for Research Involving Human Subjects.

Data was drawn from my weekly self-reflections as a first time teacher user of iSCORE throughout the months January to early June of 2014. See Appendix A for a teacher journal sample. A second source of data came from the students' entries in the portfolio. Records of conversations with them also appeared in the teacher journal with participants' comments as well

as teacher's interpretation of those comments, also called emic and etic data respectively (Creswell, 2008). These different perspectives strengthen the validity of the data obtained.

The teacher journal contained narrative descriptions of the development of each lesson along with interactions, verbal reports about weekly practice habits and use of iSCORE. For the purposes of facilitating data analysis, a table with two fixed categories was created to help organize each journal entry by tracking important developmental steps in students, namely "iSCORE use" and "evidence of SRL development."

The first research question was addressed through the analysis of evidence of self-regulating processes found in the teacher journal and students' portfolios. These results are found in chapter 5 of the present report. In order to analyse these data, I used McPherson and Zimmerman's (2002) six dimensions of self-regulation pertaining to music, and Zimmerman's (2000) four level of self-regulation development, which seemed to fit really well with the descriptions of students' behaviors in the journal, allowing me to understand how self-regulation was becoming evident through my students' lessons. I also used Zimmerman's (2000) model of self-regulation.

The second and third questions were addressed through accounts of reactions of different members of the educational community involved in the piano studio and through the analysis of evidence appearing in the teacher journal that revealed how students, parents and teacher adapted to the tool. These data reflect cultural practices and values (e.g. parental involvement, students' attitudes towards daily practice, peer learning) that relate to the literature on music instrumental (or studio) teaching, and how the implementation of the electronic portfolio interacted with them; and can be found on chapter 5 of the present report.

There are very limited examples of previous research on the use of electronic portfolios in music instruction. Similarities in the methodology can be found in Lind's (2007) study, with the use of teachers' observations and portfolio content as data sources over an extended period of time along with students' interviews and assignments; which are more common means of assessment in classroom settings. Most studies on self-regulation and on electronic portfolios in music instruction use students' self-reports or third party observations as has been seen in the literature review; being able to account for students' reflections.

The methodology of this study is justified by the purpose of offering the perspective of the teacher's experience as a first time user of this electronic portfolio. The music studio where there is no affiliation to an educational institution, which is our case, differs from classroom contexts in the sense that it is far less structured and more flexible because it is an individualized teaching intervention where goals are negotiated between student and teacher; and where the distractions and enrichment brought up by interactions with peers do not have such a direct impact.

Observation protocols and context- advantages and limitations

The nature of the data in this research project is descriptive, subjective and constitutes the teacher's perspective on the process of implementation. It does not contain an external point of view since such a vision would come only from a third part observer. In order to produce the most accurate reports I wrote them within the same day of each lesson. Along with student's behaviors I reported on my reactions, feelings and perceptions, and on the comments those students and their parents made.

The main advantage of this methodology is that it provides first hand data on the pedagogical process as it occurs naturally, without the element of observers who are external to the piano lesson in its natural form (one-on-one) and could constitute a distraction to the student and the teacher and affect the dynamic of the lesson. Another advantage of the utilisation of the teacher journal as a data collection tool resides in the amount of data collected throughout time, which affords extensive examples of the cultural practices of this music studio as a specific educational micro-system.

On the other hand, the basic limitation of this data collection instrument lies on its subjectivity as it is only one person's interpretation of the pedagogical event, following its occurrence. The descriptions in the teacher journal were subjective given the fact that I was an active participant in the piano lesson on which I later reflected. Likewise, the teacher journal could not be said to contain students' nor parents' direct reflections on the events described which could help clarify certain behaviors and actions taken by them.

In terms of SRL development, some covert forms of self-regulation may not be recorded as they may have not become evident during lessons, even though they could be well installed in learners' practice habits. We have no access through this study to students' thoughts and self-monitoring behaviors while using iSCORE at home, so I can only comment on the works and reflections displayed on their portfolios and give my interpretation on signs of SRL development in those results, in relationship to what I observed during lessons.

The teacher journal-description of change of categories within the journal over time

The structure of this data collection instrument was designed to allow for recording observations and classifying specific types of information that could be relevant to my work as a teacher and to this research project. With this objective in mind, the teacher journal had an initial free writing section where the whole of the lesson was described; including thoughts not expressed verbally but that could help explain decisions made or my own reactions as a teacher during the lesson.

I described my thoughts and feelings with as much accuracy and honestly as I could to enforce the validity of the data given its subjective character. I wrote these reflections always in English to facilitate their inclusion in this report even though the lessons were given in French and Spanish. The length of these free writing segments varied around two hundred fifty and nine hundred words per lesson. I wrote on students' lessons only when they had one, with a few exceptions were I wanted to record other kinds of exchange about their music work and iSCORE work.

There was a table embedded in the teacher journal to record iSCORE work done during the week and evidences of SRL development by student. The last section of the teacher journal contained one question: What did I do to encourage them to self-regulate? After which, in some weeks, I wrote comments on parent-teacher communication and other areas of teaching not covered by lesson descriptions.

Chapter 4 – Context in which iSCORE is implemented

The physical and academic context of this study

Like many instrumental music teachers, I give piano lessons in more than one location. There is my piano studio, a room that I have arranged for this purpose in my place of residence. This accommodation is not foreign to the culture of the piano studio in Western Culture (Davidson & Jordan, 2007) where instrumental music lessons are given in teachers' and students' homes or at other locations like community centers or music schools.

I also teach at a private school in its music conservatory which is part of the students' services department. Here a group of music professionals offer instrumental music lessons and some theory courses after school hours. Even though it is a big school, there is a constant shortage of space due to the many extra-curricular activities offered in the place. The room where I give piano lessons is a regular classroom, in which the teacher has agreed to host the piano for part of the school year. These rooms are well lit, with good aeration and a semi-private corner for the piano with a couple of chairs for student and teacher.

Oftentimes there were visitors that come to chat with the teacher who stayed after school hours to do their own work, and sometimes my students were distracted by this coming and going of people and the noise that they produced. In spite of all possible distractions posed by this environment, parents and students value the convenience of having their lessons in the same school where they study: it allows for easier scheduling of lessons among the many extra-curricular activities they do during the week.

All of my students take piano lessons as a secondary activity to their school work, and none of them take academic credits for their music studies, which would imply a much more rigorous program and faster pace of progression. The students at the school participate in at least two concert series during the school year, on a voluntary basis, in the internal music competition organized by the conservatory. The competition offers an extra opportunity to showcase their performances and socialize with other student musicians and members of the school community. This can be considered as an informal method of assessment.

I give a written evaluation to the parents at the end of each school year, pointing out strengths and weaknesses, successes and failures and the material covered. The fact that they do not have a formal exam to pass produces a wide variety of performance outcomes among children who may have the same time learning the instrument. We find a whole range of levels of engagement, motivation, and self-regulated development.

Description of teaching practices before implementation of iSCORE.

A very personal examination of the concepts and implications of my own self-efficacy beliefs as a teacher and those of my students is the core motivation behind this project. The awareness that I have gained about the distinctions between what one is capable and what one thinks one is capable of doing (Faulkner & Davidson, 2010) have permeated my teaching from different perspectives. As my main goal is to be a proactive supporter of my students' musical development, I am careful to direct all criticism towards methods of practice so that improvements can be made in the musical production without ever questioning their ability to perform.

The implications of works like Austin's (1992) about causal attribution and its consequences have influenced my use of feedback. I try to foster self-regulatory skills that will help them face unwanted outcomes, which we all experience at one point or another. Prior to doing this work, and due to past educational experiences and other conditioning sets of beliefs, I had been strongly bound to think that the outcome of each lesson was a product of my own ability as a teacher, as if it were something unchangeable.

The result of this belief was a fluctuation in teacher's self-efficacy; discouragement takes over when students do not progress as I expect them to. A classical musical training has impacted greatly the way I structure my teaching, and the years of experience I have had as a piano teacher have also marked the way I conduct piano lessons. At all levels, I search for my students' understanding of the musical speech or, in other words, the sense of the music they are playing, as an outcome of a careful reading of the score; as well as their improving their technical abilities.

A typical lesson with any of my students will likely start with an exchange on their weekly practice. This includes the highlights and issues they encountered through practice time so as to promote their self-reflection on their own progress, and at the same time I get a sense of the amount of practice time behind their performance result and their motivational level. I usually ask them to start with a scale; I look for note and rhythmic accuracy as well as fingering and fluidity in their playing. I use imagery to help convey concepts to them, for example: lightness and the management of weight to produce different types of sound. After this initial warm up work, I may give them the choice of what piece to start with or choose one myself. Some students prepare only one piece at a time.

Following this technical revision we often go on to review the repertoire. When there's a recurrent problem spot I "frame" or mark it with a square on their music score, meaning they need to practice that spot separately to make it more manageable. I usually give them the choice of playing the entire piece or starting by a fragment needing revision, which requires some level of self-reflection.

I use the formal analysis of the pieces, often from the very first lessons. This prompts them to think in a more structured way about each piece when they practice. My students usually use the analysis of the form of a piece as a strategy for dividing their note-reading work into smaller chunks. This also helps them better their phrase shaping and interpretation in general. As I learned from my former teachers, I use the alphabet letters to name each section and my students got used to doing it themselves very quickly.

When an issue arises that impedes their playing I usually ask them to stop and ask for their aural recognition of the problem. If they cannot do it themselves, I point it out through playing the mistake and/or modelling the desired outcome, and clarify, to the best of my ability, the nature of the problem. Sometimes a note accuracy problem may be caused by incorrect fingering, by tension, by misreading or something else. This issue recognition is at the core of my teaching practice. If I am not able to grasp the origin of an issue, I will not be of help to them. Sometimes it takes several trials until I can guide my student to a good solution of the issue; sometimes they find it themselves.

In most of the cases the students do not realize the reason they fail at a given passage of music until they stop and reflect on it. They need guidance in this self-reflection, and I know that a student is developing when they can self-reflect and find a strategy for success on their own. It

still takes perseverance for them to practice at home, but they have better chances of succeeding when they have a clear idea of what they need to do.

I write notes in their notation book and I also make marks on their music scores (sometimes they make their own marks) to call their attention to problem points during practice. When we frame a certain passage, it means they need to practice it in isolation, for example, before practicing the whole piece. When they miss a note every time they play it, I circle it so they know that special attention is needed there.

I strive for clarity in my instructions so that when they decide to follow them, they will be guided to practice effectively and focus on what needs to be solved. Unfortunately, many times they do not follow these instructions or even look at the notation book when they practice at home. In order to counter this lack of guidance during practice, I try to put a few, very clear marks on the score and then ask them constantly about their meaning during the lesson.

Younger students of around five years of age are usually working on note reading and technical skills for the first time, which imposes the possibility of cognitive overload. With these students I often use the strategy of color coding the notes to help them quickly recognize them. They learn to identify about five to ten notes on the music staff with specific colors. I place colored stickers on some piano keys and show them how these correspond, which serves as a base to study specific pieces by color-coding them. They color-code their own score.

I often use electronic devices in my lessons for different purposes. It is not uncommon that I refer my students to websites containing music theory information, YouTube videos of a piece that they are practicing or want to learn, as well to internet sites for finding scores of popular music or well-known classics; most of them are able to do these things on their own.

Sometimes this computer-based work is assigned as homework, but when we do it within the lesson it is always an element that awakens their interest and motivates them to learn their piece.

With adolescent students, who bring their smart phones or iPods to their lessons, I usually have them record themselves and listen to their playing as a way to help them self-reflect during the lesson and afterwards. These devices make it also possible to download metronomes for free, which are very useful to music practicing. So, I constantly use this technology in my teaching and show my students how they can incorporate it in their practice. Most of them do successfully and with pride.

The music studio group of students

The group of students participating in this project are all school-aged children ranging in age from six to sixteen, and they take piano lessons for leisure. Some of them participate in other extra-curricular activities and have very limited time for piano practice, which is very common in this setting (Davidson & Jordan, 2007). However, for some of them the piano is a major point of interest and they plan to develop themselves in music for the rest of their lives, even if not at a professional level. This variation in levels of involvement is related to different factors including family values and traditions, and other environmental influences like membership to social groups that value music involvement.

Most of these students speak two or three different languages at home, at school, and in other social environments where they find themselves, a frequent occurrence in a multicultural city like Montréal. It is rare that students at the private school have piano as their only extra-curricular activity. They have expressed an interest in music as well as other activities and have

been given the opportunity by their parents to explore them through lessons and workshops. Their parents are professional people who are economically well established, not rare in the contextual setting of studio music teaching (Davidson & Jordan, 2007).

The social expectation that surrounds them in this school environment is, in general, that their music learning will contribute to a well-rounded education. It will probably give them an experience of discipline as well as a leisure activity that they'll be able to share with family and friends throughout their life. Some of these families have a history of music involvement, which provides motivational support in their music learning.

The group of students that I see in my home studio come from a somewhat different social environment. They attend public schools and belong to middle and lower income earning families, with parents who are not professional workers. These students have a common language and share cultural experiences that identify them also with my experience as they come from Latin-American families who have immigrated to Canada in recent years. This condition puts them at risk of experiencing lower academic achievement (Witt, 2012).

Students from my home studio have been referred to me as a teacher through an informal network of people who share a common cultural and religious background. Besides bringing a great deal of familiarity to our communication, allowing for a closer teacher-parent interaction, this proximity gives them the opportunity for vicarious musical experiences. These students participate in weekly church services where I often play the piano, and sometimes share with them in music making of different kinds.

In order to describe my student participants in terms that are meaningful to the context of this work, I will use six dimensions proposed by McPherson and Zimmerman (2002) that pertain

to musical self-regulation. These dimensions are as follows: motive, time, method, behavior, physical, and social environment. Appendix C contains a table created to synthesize information contained in these students' descriptions. I'll be touching on these dimensions as they arethey are pertinent to my observations on each one of them. The students' names have been changed for reasons of confidentiality.

Jennifer

At sixteen years of age, Jennifer has returned to taking formal piano lessons after several years of informal music making in a church band environment. She started piano lessons around the age of nine and continued for about two years. She then stopped taking lessons but never really gave up making music. Her informal learning experience has given her a basic knowledge of harmony; she has also learned the basics of playing the electric base. She has taken voice lessons, participated in the church choir, and sang in the church band since childhood. Jennifer's parents give a great value to her involvement in music as a way to serve the community of faith and as a form of self-realisation, however they do not expect further accomplishments in her instrument, even if they appreciate her making progress in her piano learning.

Jennifer is in her last year of High School; she must choose where to direct her studies toward a career. She had considered the possibility of pursuing post-secondary music studies, but her inclination towards a career in science made her decide to keep the piano as a pastime and not to seek academic recognition for it. The pace demanded by music studies at that level exceeds what she is willing and able to do at the moment. With self-set goals, her involvement in

her piano learning is due to an intrinsic interest and although she's not planning to play music professionally, she is planning to do it for life.

As with other of my students, Jennifer does not own an acoustic piano but an electronic keyboard that their parents bought her when she first started lessons. At this stage in her piano learning, this instrument hinders her musical achievement. Its technological capabilities and environmental conditions (e.g. the tiny corner where it is placed in their living room, not leaving room for proper sitting) make it very hard to play a piece like Mozart's Turkish March, which she has been working on for some months at the start of this project.

Jennifer is intrinsically motivated and practices three to five times a week, though not in great detail, needing teacher assistance to guide her with practice strategies to focus. She manages her practice time on her own, deciding when and for how long to practice. When practicing, she follows a specific order of the material being covered, with technical exercises (e.g. scales and arpeggios) being played before more complex pieces in her repertoire. Her piano repertoire is negotiated and evaluated between the two of us.

Jennifer is also continuing her informal music learning through participating in the church band as bassist, singer and as a replacement pianist; proactively seeks help on chord progressions and rhythm patterns of accompaniment to use in this context. Jennifer is continually producing new compositions that she shares with me occasionally in the lesson time.

Odelia

Odelia is a very sweet seven year-old girl who chose to take piano lessons after a year of a group piano introductory course. She enjoys full parental support in her home practice, which gives a good base to her progress. Her mother is very involved in her learning. She sits with Odelia almost every day and reads with her the assignments and guidelines that I write on her notation book. She helps Odelia in practice time with tasks like setting the metronome and makes sure she's following through with my instructions.

As is customary of students of her age and level, Odelia practices for about fifteen minutes every time. Her mother is often present in the lessons, asks questions, and gives comments when needed, with the intention of helping clarify what needs to be done during practice, which I appreciate. Odelia is very shy in general, but she has expressed to her mother that she wants to become a piano teacher. Interpreting this as an intrinsic interest statement, I expect to see her involvement in music to be a lasting one.

Lara

Lara is a twelve year-old girl with a great talent and love for music. She had an excellent first year of piano lessons, but is yet to develop the attitude and discipline to maintain the level of achievement to realize her potential. Her parents are aware of this but consider the piano as a less important activity to school, so they do not push her to practice consistently or develop herself as a musician, even though they are happy to pay also for music theory lessons. An outstanding

student at school, she participates in state-level language competitions among other achievements. I focus on helping her develop structure within her learning level and encourage her to maintain regularity in practice.

Lara does not have a notation book. It has been impossible from the beginning to get her to maintain one as she never brings it to the lesson; she often forgets even her own music scores for the lesson. Her approach to practising lacks strategic thinking. I make efforts to condense instructions on her score to help her with practice, but I see that she just goes through the music from beginning to end when she's left alone to practice without teacher supervision.

As she has told me, when practising her piano she has a simple approach: if she likes what she hears, that may be it for the day; if she does not like it, she may try one of the strategies I have proposed to her. Really, she does not give her playing much thought. Despite all this, she has a great ear and is able to appreciate beautiful music making and phrasing details. In more objective terms she has the ability to listen and distinguish different types of articulation and dynamic effects. So, her strength being auditory skills, she is yet to develop self-reflection and self-instruction methods in her piano learning.

Chloe

Chloe has the fortune of coming from a family of amateur musicians. She is constantly being supported in her practice and motivation by the help of her uncle, aunt, mother and grand-mother, who have undergone piano lessons for many years, and who often sit with her and play the piano at home. At ten years of age, she is very shy, a relational characteristic that permeates

her piano playing, but she is also persistent in her piano learning and not given to discouragement.

Chloe progresses slowly but steadily, and she is one of the students who reportedly follows the instructions I write on her notation book; she practices regularly, more than any other student participating in this project. Her main strength is her perseverance and willingness to work. She reports greatly enjoying her piano learning and plans to play the instrument for life.

Oswald

The enthusiasm of this adolescent of fourteen years of age makes him a very pleasant student to work with. He has great interpersonal skills, but he often uses them to avoid responsibility for the lack of discipline in his piano practice by trivializing his performance issues; he has the habit of procrastinating. As his adolescence evolves, his musical tastes also become more defined and further from a classical repertoire; more recently he prefers to play music that is in vogue over a classical selection.

Oswald has formed a band with his school friends and they have established fixed schedule rehearsals every week. His lack of discipline catches up on with him, since by neglecting his personal practice; when these rehearsals occur he's not really ready to play. Oswald also participates on the basketball team of his school and in the Conservatory's Orchestra, which demands him to attend weekly practices and learn a supplementary amount of repertoire.

He usually spends his weekdays entirely at school; involved with homework and other extra-curricular activities, until evening hours. Because of his schedule, he has been granted access to practice piano in the Conservatory practice rooms, which is where he does most of his

practice. His parents are supportive of his piano learning and ready to put pressure on him when there's a teacher's note reporting Oswald's failed involvement, but they are often so occupied with work they do not check on his practice on a regular basis. Probably, they assume he's old enough to carry this responsibility on his own.

Amy

Amy is a six year-old girl who has chosen to take piano lessons; she participates with enthusiasm. Her parents value and support the idea of music learning as being an important element of a balanced education. This is her first year of private, one-on-one lessons after having taken a year of an introductory group piano course. She's strongly prone to distraction and can be drawn away from playing at any moment in the lesson. Even though she's happy to come to the lesson, she complains when I ask her to play a piece more than once, or to make corrections to her posture.

Amy practices piano at home with her mother, but not regularly, which makes it more difficult for her to master her pieces and go on to learn new ones. The aspect of her musical training that was most developed prior to the start of the project is note and rhythmic reading, but technical aspects of her playing have been hindered by her lack of practice to date.

Rebecca

Rebecca is fifteen years old and a very talented pianist. She started taking piano lessons at age five but stopped them three years later, then started back at eleven years of age only to

stop again. Finally, she has returned to piano lessons this academic year. Throughout this time she has participated in music bands from her church, where she has had extensive informal learning of music. This experience has provided great background knowledge on harmony, phrasing, ear training (playing by ear), and an extensive repertoire in popular style music.

Enrolled in a high school with a music concentration program, Rebecca has also taken clarinet lessons as part of her program and played in the corresponding school band for four years. This formal music training has allowed her to keep up with theoretical content that helps her in piano learning. These conditions allow Rebecca to learn quickly and have a strong sense of the musical speech, she has developed skills that allow her to be able to quickly understand musical problems and apply solutions.

Rebecca practices by herself at home with few parental reminders and somewhat regularly. She plans to make music all her life although not at a professional level. Her parents are supportive of her piano development as they value her involvement in music church activities and want her to develop her skills even further.

Ernest

Ernest is an eleven year-old boy from a family where he is the oldest of three children. He participates in several extra-curricular activities and enjoys full parental support for his participation in sports teams, theater plays, church youth activities, and piano lessons. Even though the will to push him to develop his potential to the maximum is in embedded their value system, his parents do not have a structure that supports the building of discipline for piano practice at home.

So, even though Ernest's family values his learning piano, he does not get to practice most of the week. He usually comes to lessons unprepared; he works with diligently at improving his playing while he is with me, makes amazing progress during the lesson, realizes his need for practicing, but does not follow up with practice at home. This is a cycle that I see repeating itself constantly.

One of Ernest's difficulties in practicing is the lack of a permanent place for his electronic keyboard. It sits on top of a desk shared with his younger sister, where they both do homework and place their kinds and belongings. Often when he wants to play, he reports, his younger brother, who is one year-old, comes to his room and requires his attention. So, this child struggles to do his school work and most of the time does not get to his piano during the day. He likes to play and says that he finds this learning process very rewarding, I have observed that he is intrinsically motivated to excel at anything he participates in, which he succeeds to attain in most other activities.

Chapter 5 – Results and analysis

The following section summarizes the information obtained through the analysis of the data collected in this study. In order to perform the analysis of students' use of iSCORE I created a table with information on students' use of their portfolios, containing the amount of works created and developed by each participant who used it, evidence of self-reflection, and whether those works were developed by the student alone or during the lesson with the teacher's help. This table is included as Appendix D.

The use of iSCORE in Self-Regulation development by teacher, parents and students (RQ1)

Teacher's use of iSCORE and Self-Regulation development

In the context of studio music teaching it is expected that students will reproduce during daily practice what they have learned or tried in the lesson. My initial idea was that students would use iSCORE to work from home and not during lessons. The tasks that I assigned them to do during the week were aligned to this purpose, as well as the guidance I gave them during the first weeks. There were at least two reasons for this choice: to avoid extra time expenditure during the lesson and to allow students to freely develop the aspect of their portfolios that they felt more inclined to do, with the expectation that this would help them take ownership over their work.

At the beginning of the project I sent several e-mails with reminders to the parents as a way to solicit their support in getting students to work on their portfolios, and left notes on students' notation books about what they were expected to do on iSCORE. These proved not to

be effective in accelerating the rate at which students were developing their works. As the ideal of student-centered permeated my decisions on the use of iSCORE, I decided not to impose but rather negotiate with students the content and deadlines of their portfolio work.

I basically invited them to use it, showed them the Works I had developed myself, presenting it as an interesting tool that would allow them to improve the way in which they learned music, and to share their work with others. I asked them almost at every lesson whether they had done any iSCORE activity, and opened their portfolios during the lesson at least on half of the occasions. Simple instructions were given to them –verbally and through e-mail and internal iSCORE messages- as to where to start with their portfolios: developing a welcome message and creating a Work for each of the pieces they were learning or intended to learn during remaining of the school year.

I had great expectations on my students' taking ownership over their own learning processes by clarifying their personal goals in music and realizing what strategies they were using already, and how to integrate new ones. I had also anticipated that they would develop reflective skills that would enable them to self-evaluate and recognize the cause of the results obtained with each work, and that they would be motivated by the making of video and audio recordings allowed this technology. The students' portfolios offer prove that these processes took place, yet not always in the expected order which would follow the self-regulatory process: Forethought, Performance, and Self-reflection; and especially at a slower pace than I had in mind.

In practice, iSCORE was used in my teaching especially as a showcase tool and notation book throughout implementation, as seen in Figure 1. On one occasion I uploaded a music score

to one of my students' Notes and Posts section. My home studio offered better facilities to videotape students' performances so I did this with a couple of them to immediately upload to iSCORE and watch their performance. This was done as a demonstration of what they could do at home, but even though they reported feeling comfortable with the technological skills needed to repeat it on their own; they did mostly text-based work from home such as task description and self-reflections.

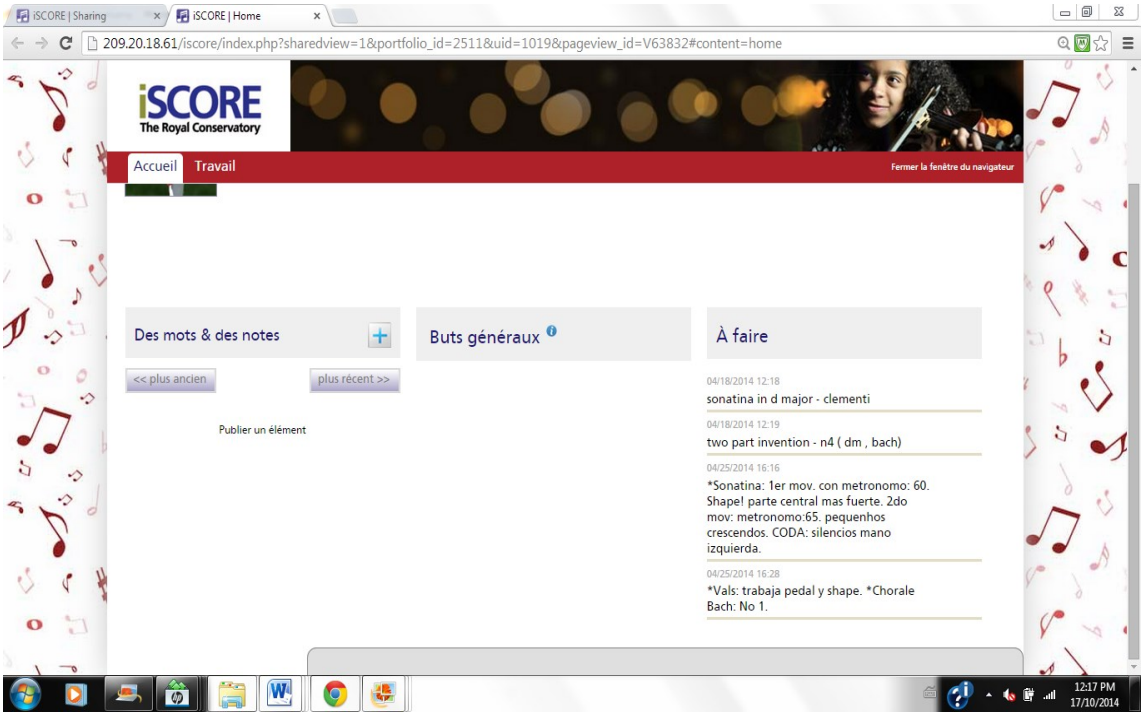

Figure 1. Utilisation of iSCORE as notation book.

I did not have the same recording equipment available at the private school, but I had a computer there from which I often logged on to iSCORE during lessons. In this location, I used mostly the To Do List of my students' portfolio page as a notation book and showed them the possibility of linking Works to YouTube videos through iSCORE.

Because of the immediacy of note taking, sometimes while writing instructions for practice on a student's To Do List, I found myself adding content pertaining to criteria of a specific Work, which should have been entered in the Planning section. I often wrote instructions containing task strategies to use during practice sessions and criteria to be met during weekly practice on the same sentence, and sometimes as isolated points under the piece's title; as shown in Figure 2.

Reminders that were given during the week were recorded into the Notes and Posts box or on To Do lists, since I could not write on the planning sections of students from my teacher's account. These criteria and strategies never made it to the right portfolio sections, which would've strengthened the student's self-regulation work, should the students have taken the responsibility of transferring the information. Since this was not specified as an assignment, they probably did not think about the possibility of using my notes to complete their planning sections.

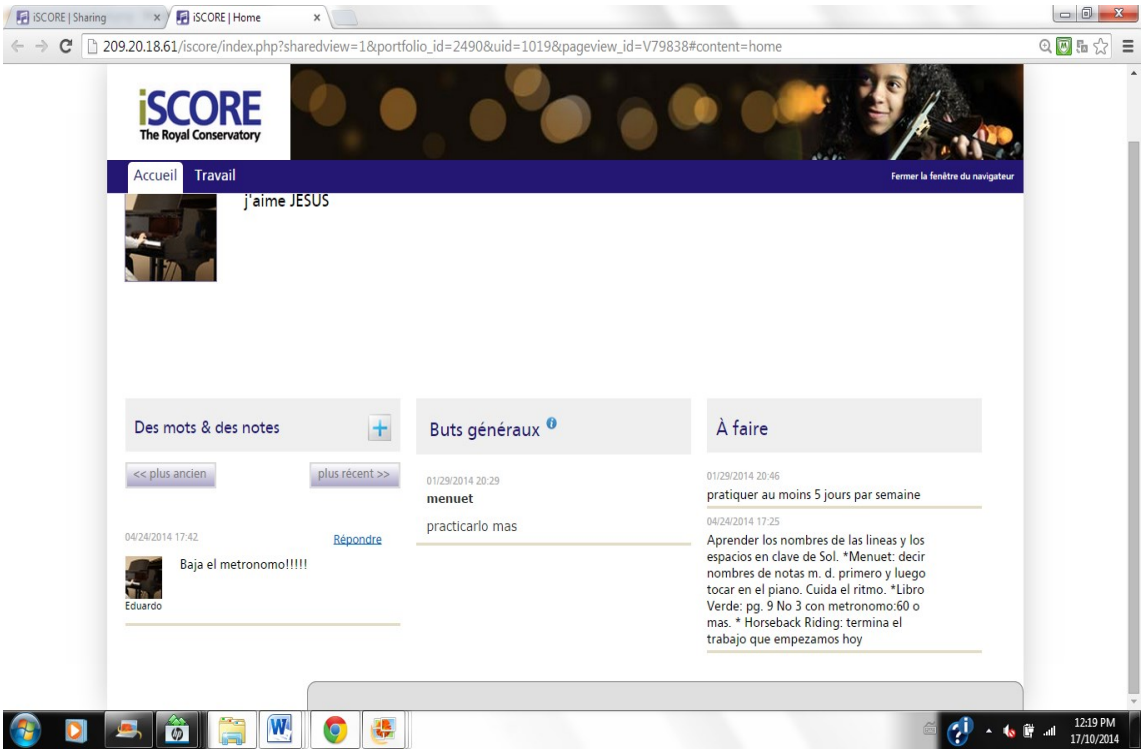

Figure 2. Utilisation of To Do list for note taking containing strategies and criteria.

Although as a teacher I was inviting my students to participate in this project exploring a new tool, I had reservations doing iSCORE work during the lesson. I felt uncomfortable with the time expenditure imposed by the need to teach my students how to use the tool, and pressured myself to not invest more lesson time on the computer than working at the piano. As a consequence of this mind frame, I did not take the extra time that was probably necessary to guide my students in the process of decoding their portfolios' sections for better use.

Going through opening my students' accounts and taking the time of reflecting to see what was a goal and what was a strategy and typing this information, for example, seemed to me to jeopardize the flow of the lesson and its speed, with possible negative consequences on

student's concentration and engagement in the actual playing. This was a type of work that I thought would be better done individually in the quietness of a home practice session and I proposed this task to them; but most of my students did not follow up with the reflective work needed at home to fulfill the process aspect of the portfolio.

Even though I had these initial reservations about managing the time spent in portfolio use, I consistently made efforts to incorporate iSCORE into my teaching during lessons. I often opened students' portfolios and review them with my students when they reported to have done some work during the week, or gave them suggestions as to what to develop as we looked at their iSCORE Works. In conversations with students, in other occasions, I would ask them to take the time at home to incorporate into their portfolio strategies that we would identify during the lesson.

In several occasions I used iSCORE as a communication tool to facilitate the progress of my students' work during off times as spring break, missed lessons, etc. Messages did come from parents at occasions to inquire about guidelines for students' practice and in some occasions students replied to my comments, but I found out that students who are not present for their lesson for any reason slowed down in their practice and any other related work. The initial enthusiasm with which iSCORE was received did not translate into a change in the habit of not doing piano related work during off times.

Towards the end of the project and the school year, I told students who were active users of iSCORE to prepare one Work to be shared with the other participants. Half of the class shared their works with the rest but none of them commented others' shared material, even though I asked them to do it. This not commenting of others' work could be explained by the

individualized instructional environment of the piano studio, where students share their work on concerts without formally offering feedback to one another. Within this cultural setting, students could lack interest or confidence in giving feedback to their peers. Another reason could also be that students expected me to guide them on this process or further insist through reminders for them to engage in giving feedback.

Parents' use of iSCORE

As was expected due to the age of some students, parents were mostly involved in the iSCORE set up process. This first step was initiated by an invitation that they received through e-mail from the iSCORE administrators, asking them to open an account for their children. Even though they had been advised of this procedure in advance, it took several weeks for most of them to actually open it, which was a longer time that I expected.

Passwords of the students' iSCORE portfolios were not quickly available to use during lessons in many cases. Sometimes students would have their password but did not know the corresponding parental e-mail address needed to login (e.g. Odelia's Week 6 lesson), since at their young age they did not have an e-mail address of their own. Older students who received their invitations through their personal e-mail accounts like Oswald and Rebecca did not experience this delay in accessing their portfolio.

From the eight participants in this study, the youngest one (six years old) never opened an account. Several e-mails went back and forth with her mother through the first two months of the project with detailed instructions about how to proceed. The parent reported having difficulty to

access the main page of the portal even after having apparently created an account with a password, which never appeared on my list of registered students.

A second invitation to this parent was sent on the eighth week into the project in order to allow her to restart the process, but there was not follow up, very likely due to personal reasons (mother was in the last months of pregnancy of her third child) that impeded more time expenditure on her part. However, the flow of communication with this parent generated by this issue allowed for a closer follow up of the student's progress.

Another parent offered remarkable support to her child during this project, and got involved in all the steps of work creations. Her child, Odelia, seven years old, did not possess the technological skills needed to work on iSCORE on her own. As can perhaps be seen from the description which follows, the parental style of this mother allowed her to scaffold the learning process of her child and gave her the opportunity to create a positive experience of this project.

Odelia was the second student to open an account on the first week of the project. Her mother followed through with the instructions on account opening at home even though she decided to wait for the next lesson –where she was present- to be guided through the portfolio by me, and was always very open to the ideas I proposed when working with it. As can be observed in this extract from the teacher journal (Week 10), the technology supported by iSCORE was welcomed by this parent as an asset to Odelia's musical development:

> "…she told me she…was very interested in looking to see what can be done with this tool. She even told me that sometimes she'd go online to find answers to music questions in order to help Odelia with her practice, and I suggested that she'd put a link on Odelia's

iSCORE so we could share this information with other students, which she found to be an interesting idea."

Odelia's mother acted as a typing assistant to her daughter in entering text on iSCORE, as a coach through negotiating the content of portfolio entries with her, as a sound technician in helping Odelia through recording her playing; and used iSCORE to ask me questions on theory related matters arising during home piano practice and to post the link to websites that contained relevant information on music theory.

She would not always use the affordances in the right way but was always pro-active in using iSCORE to support the learning process of her daughter. For example, she posted an audio recording in the Planning section the first time, reporting in a later conversation (Week 12) that she had not seen the Doing section. She also sent messages through her Notes and Posts instead of the internal messaging system (which became common practice for all participants) and entered the link on websites containing theory information under General Goals. She also reported on Odelia's progress and difficulties by posting self-evaluations under Task Description of the portfolio's Planning page, as can be seen in Figure 3.

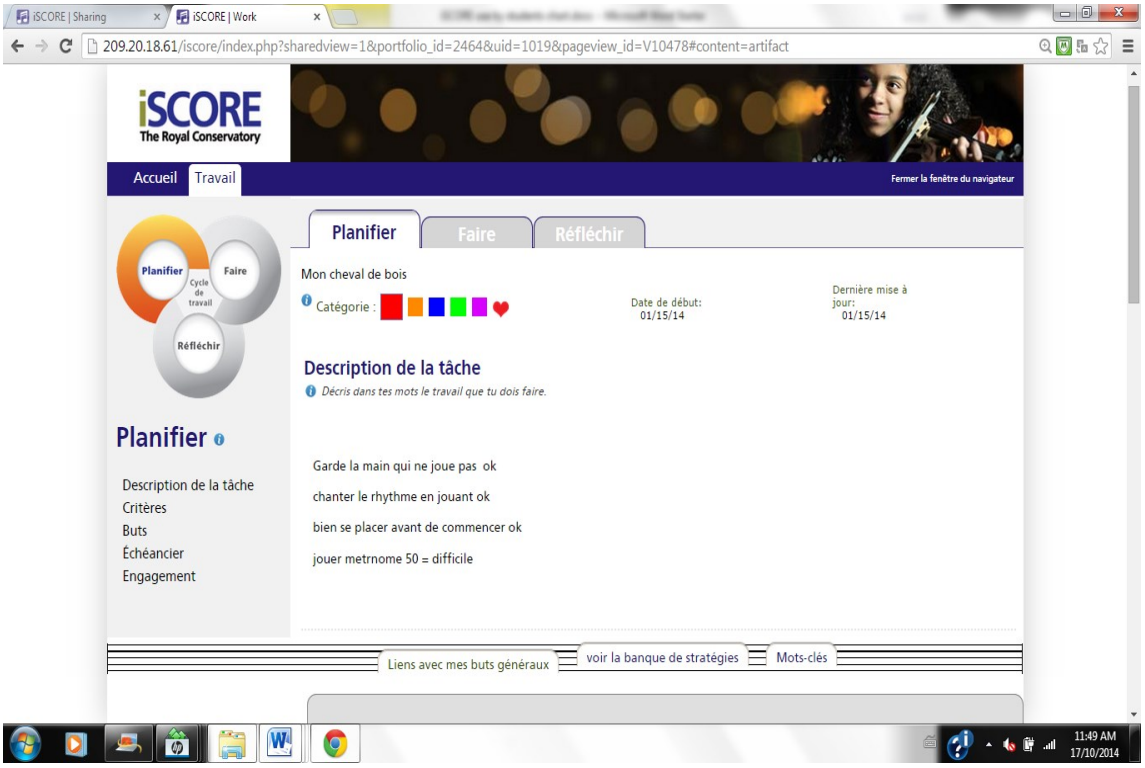

Figure 3. Reports on students' progress posted under task description.

All parents were made aware of and invited to watch the tutorial videos on the RCM website on iSCORE use. I did not get feedback on whether they did it or not. The issues encountered in this mother's experience reveal a need for better preparation of parents and students to get advantage of the affordances of the portfolio. There are no reports of other parental involvement during this project beyond the opening their children's accounts and making sure they had their passwords and correct e-mail addresses.

Students' use of iSCORE

From the eight students participating in the project, one of them did not ever use iSCORE, and another one did not create an account. The remaining six students used it in a variety of ways and for different purposes, to display their playing and to analyze their learning process. Works created varied from one to five per student, and they contained more or less in-depth reflections and plans (see Appendix D).

Students rarely used the welcome page to present themselves to others. Even though the first activity proposed to them was to personalize their home page, only two students actually did it, posting self-affirmative messages: "never give up, you can do it" and "I love Jesus". I interpret this latter message as the student presenting himself in a phrase that reveals a sense of belonging, since being a Christian is a part of his identity that he is proud of. This type of message is relevant because it presupposes the student's taking ownership of his space in this electronic environment, an attitude that seems favorable to further use and valorisation of the tool.

In general, students elaborated the Planning section of their work more than other segments. From the five questions or headings contained in it, none of them ever entered data for "Schedule". This may be due to the absence of due dates to submit iSCORE Works and the fact that concert dates were not yet known at the time when they filled up their Planning. Evidence offered by the higher amount of data on the Planning and Doing segments over the Reflecting one in the compound of the portfolios could be explained the assiduity with which these sections were referred to during lessons. The mechanisms by which students decided upon which aspects

to develop on their portfolios are unknown, but this fact could point towards a resistance to develop self-regulation in the group as a whole, as found in Wade et al. (2005).

Another salient fact is that, from the fifteen Works created by my students during the course of this project, there were three that contained nothing inside. Two others had only content that was created during the lesson in the form of video recordings and never further developed even though it was agreed with students that they would do so. It would be inaccurate to state that there was not a degree of planning or reflection in the course of the learning of these pieces. Rather, we could say that either iSCORE was not crucial in the performing of the self-regulation cycle, or it probably triggered and supported it but somehow was inefficient in acting as a recorder of this process. There's not enough evidence to support one or the other claim.

As they were first time users and most of the text entered was done from home, we can find certain confusion in the answers to headings or questions under the Planning section, like self-assessments of performance during piano practice under Task Description (e.g. play with metronome at 50: difficult) or a recording that should've appeared on the Doing section uploaded under Goals. In other cases the use of Goals and Strategies was very appropriate (e.g. Goal: play without mistakes, Strategies: work hands separately and play with metronome), as can be seen in Figure 4. This difference in use could be explained by the fact that the users who misplaced information were trying iSCORE in the first weeks of implementation when little time had been spent in the lesson to go through the portfolio and exchange on where certain information should be placed.

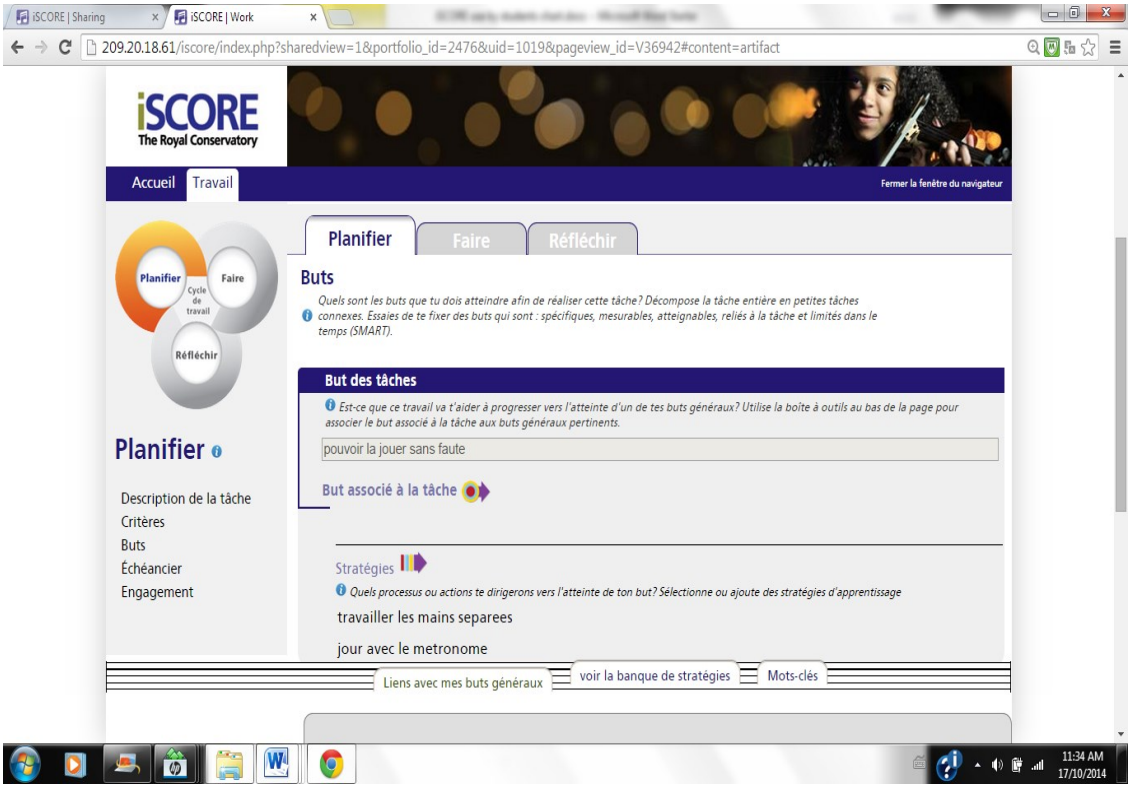

Figure 4. Appropriate use of the strategies box.

The category of Criteria was not always easy to grasp by students, as illustrated in Oswald's answer: "I will evaluate myself and ask the people around me for their opinion". It is possible that such an answer would've been triggered by the question under Criteria (How will you be evaluated?) which prompted repeated requests for explanations from students. Part of the confusion that students had filling up the text boxes under certain headings in the portfolio might have been aggravated by the fact that they received only a general initial training on the use of the tool and they did not have access to fully developed Work examples in their language of instruction which is French.

Motivation was the category that no one failed to report on, even for Planning sections that did not contain any other piece of information; likely due to the graphic form of data entry

which made for an immediate response after little reflection time. This heading was the most efficient in clearly depicting a component of self-regulation in students.

From the twelve Works that were actually developed, only eight contained data in the Doing sections. Three of those contained audio recordings uploaded from home, another three contained video recordings made during the lesson and another one had a more elaborate home-made video recording of the students' playing. The remaining Work was the only one to contain text data in the Doing section, pertaining to the lyrics of a song that a student had composed.

The other four initial iSCORE Works had only been developed in the Planning sections by the end of this project. The three cases in which video recordings were done during the lesson were not followed up by students, who failed to develop either the Planning or the Reflecting sections. In all cases, material still pending to be worked on the portfolios was verbally agreed by students to be developed at a later time, which obviously exceeded the time allowed for this project, making it impossible to be covered by this report.

Some of the answers recorded under Self-Evaluation listed strategies that had been used by the student successfully but had not been recorded as such (e.g. practice a lot, sing the names of notes, and take care of dynamics); which reveals the close relationship between adaptive mechanisms and causal attribution happening in the Self-reflection phase and the use of strategies during practice. This could indicate that these students will be ready to use those strategies in a more overt manner when the self-regulatory cycle is performed again. Figure 5 portrays an assertive use of the Lessons Learned text box found under the self-reflecting tab.

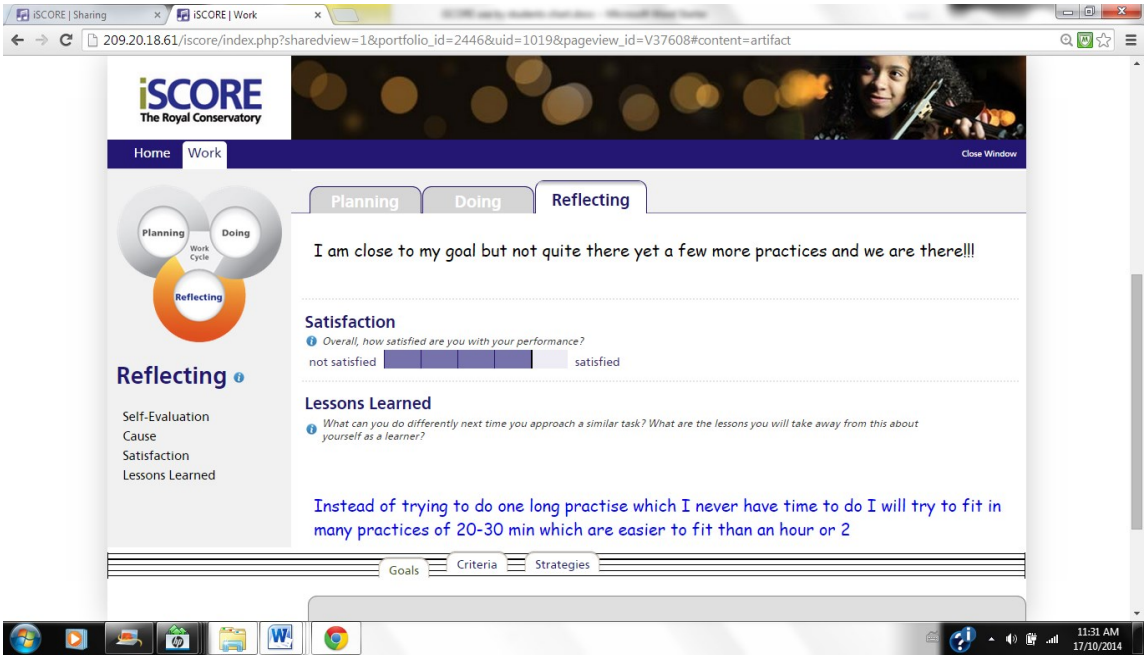

Figure 5. Assertive use of Lessons Learned.

Description of changes in teaching practice over time after introducing iSCORE (RQ2)

Implementing iSCORE in the piano studio setting made implicit the process that it was built to support. The first aspect of my teaching work that was touched by this project was a conscientious choice to work in student self-regulation development. For this reason, and by means of writing the journal after each lesson as an exercise of self-reflection, I gained more objectivity in judging the needs of my students: I could relate my observations to the self-regulation processes that were taking place and those that needed attentive care.

I found iSCORE to be "…a platform that allows me to construct a teaching style that's SRL oriented." (Week 10). Working with iSCORE gave me access to insightful information on my students that sometimes was not recorded in their portfolios, but was obtained through

conversations triggered by its use. This information was valuable for understanding their motivational processes. As an example, Chloe's verbal reflection about general goals in music allowed me to learn that she wants to become a great pianist. As can be seen in the following excerpt from Week 16, this kind of information was useful in re-directing my comments to help her reshape her criteria of success:

> "Reviewing the work of Chloe, for example, on iSCORE, I can see that she focuses on mistakes, as a recurring goal for her is to play without mistakes. One of my goals forming as I read this is, to have her switch focuses towards realizing her potential and thinking about the music instead of being without fault."

A conversation with her around these matters on Week 17 allowed me to learn that she did not consider her repertoire to be challenging enough (even though it is so for her level of expertise) because all her pieces were of one or two pages, when in her view "worthy" repertoire was constituted by longer pieces of eight pages or so. This insight into her value system could explain a lack of enthusiasm sometimes during work; it also allows me to aim for a future repertoire selection that is more attuned to her motivational needs.

One of the recurring comments on the teacher journal and an overall point of growth throughout the project has been the increasing focusing of the lessons on more specific subject areas than I had experienced before in my teaching. There was a clear shift from doing a lesson based on what students were bringing from their weekly home practice in the form of repertoire, to a lesson where the goal was the development of specific skills needed to accomplish the learning of that repertoire.

Even though there could seem to be a contradiction between this teacher-driven approach and the concept of student-centered learning, the teaching role could not be well performed if there's no clear directives to either follow or challenge. I experienced great self-efficacy in feeling able to "get to the point" during a lesson, and students profited from clearer instructions on the work they needed to do, since one of the outcomes of this shift was that we used the lesson to work on more manageable chunks of material, as expressed in this fragment from the journal on Week 15:

> "I used to spend a lot of time hearing my students go through long chunks of music and feeling frustrated by their lack of achievement. Now I feel that I know what my role is, and I'm feeling empowered to give them back their responsibility. I'm finding that, almost in every case, I finish the work that is there to do before the lesson's time is up. That allows for more theory work, some improvisation or other stuff…wow!"

Another change observed in the journal concerns teacher-parent communications. The use of iSCORE demanded a special kind of parental support at least in the first stages of the project like setting up an account and learning how to navigate the website and get to their home pages, which was not easy for all participants. This need for assistance prompted conversations with some parents that worked in favor of a perceived better understanding and valorisation of each other's roles in the students' learning, as shown in this text extracted from Week 10:

> "I've been more in communication with the parents of my students, and feel more open to them. I usually would feel they arethey are [just] very busy people… but I'm finding that they arethey are more permeable than I thought…Maybe they feel… that I'm really interested in the musical development of my students and that's why they see a value in this iSCORE new thing."

As it is not very common that EP's are used in music studio teaching, my use of iSCORE with students was an isolated case among the rest of the community of music teachers that work in the same Conservatory as I do. Sharing ideas about the use of iSCORE with one of my colleagues in one occasion brought to light the contradictions between the educational technology culture and the studio teaching one. In an informal conversation about this project, my colleague was quick to announce her disapproval arguing that the use of iSCORE would take up too much time from her lessons, meaning there was no perceived value in this activity.

That point of view is very common among music instrumental teachers, who usually think in terms of performance within music lessons, where they expect to get results through more conventional means like modelling and verbal instructions. It also brings up the dichotomy between the need to balance efficacy and the effectiveness. While teachers may want to search for methods that produce quicker performance results, a tool like iSCORE may require a longer time of adjustment in order to produce a sustained change in self-regulated behavior. We need to produce arguments for a better understanding of the possibilities offered by its implementation in music studio teaching to facilitate its embrace by the music education community.

Description of observed changes in students' behavior over time after introducing iSCORE (RQ2)

Data analysed in this section was mainly drawn from the descriptions of students' behaviors recorded in the teacher journal. Two samples of this journal have been included at the end of this report and form Appendix E. I have used Zimmerman's (2000) four stages of self-regulation development mentioned in the literature review as the theoretical background for this analysis

because it helped me comment on skill acquisition. I also used the six dimensions of musical self-regulation previously mentioned in the initial students' descriptions (McPherson & Zimmerman, 2002). Appendix F contains a table summarizing information on these dimensions by student. References to students' iSCORE work were drawn directly from their portfolios.

Jennifer

One of the first students to sign up for iSCORE, Jennifer opened her account on Week 2, but did not develop any work until much later, on Week 17. By Week 8, after missing several lessons, she reported having worked on her compositions but not on her repertoire, which shows a lack of intrinsic interest on learning new pieces, a condition aggravated by the lack of regularity in our lessons due to constant last-minute cancellations.

The fact that she'd been only working on less challenging or already known music is not an uncommon practice among learners. Although she has self-set goals in music, these goals are not completely aligned with her piano curriculum. In this case she had been using her informal compositional work as a defensive mechanism to avoid facing the hurdle of music reading and technical development demanded by the new repertoire, which forced her to face the cognitive challenges of complex reading and analysing of technical problems.

Jennifer had only nearly half of the scheduled lessons during the data collection period. The content of the lessons was basically tackling technical difficulties and helping Jennifer to realize the aspects that needed work for her to guide herself during practise, going from observational to emulative stages of skill development. It became evident through lessons that she needed a great deal of teacher supervision to advance. This lack of self-regulatory

development produced the general result observed in Week 8: "she was, as always, very present in the lesson, very willing to work, but unprepared."

Jennifer's concentration was drawn towards her upcoming college experience, as she was finishing high-school and became very busy with related activities; the reason of several missed lessons. As with other students, my general goal with her was to facilitate the skill development needed to perform the repertoire negotiated between the two of us. As task-related goals, the focus of my teaching was a work on note reading, technique (e.g. relaxation of the thumb, weight transfer), attentive listening and other related skills of piano playing. However she worked mostly on composing songs and learning pop music styles; that is where she showed more signs of self-regulatory behavior.

Jennifer's development of skills related to learning the repertoire we were working went from observational to emulative, and sometimes to self-controlled, as can be seen in the following example from Week 9:

> "She sat on it [the inflatable exercise ball] to do the [technical] exercises and found it interesting, she liked it and was able to transfer the weight and get the "feeling" of playing with weight instead of from the fingers. She was also capable [for the first time] of aurally recognizing good weight transfer from unsuccessful."

Scales, which was one of the technical elements worked on more extensively, was the repertoire-related subject in which she showed more signs of self-regulatory development: self-reflective work, self-experimentation, and the use of varied task strategies. Most of the lessons

were teacher-driven with me deciding on the content and the order of the pieces to be played, providing task analysis and strategies.

However, signs of a more student-centered lesson type appeared on Week 14, when she took ownership by choosing a new piece to start the lesson that she'd prepared because she already wanted to learn it; seeking help from me as opposed to being offered help, and creating strategies of her own for self-instruction and attention focusing. For example, she asked me to show her how to play the main pattern of this piece; she tried it several times and also took the initiative to record it as shown in the next excerpt from the teacher journal:

> "…when I showed her the right hand part of this accompaniment, she immediately jumped to her phone and asked me to let her videotape it. So she did two or three short clips of my demonstration and was very excited before the task of learning to play this".

It can be understood that in Jennifer's self-regulation development, piano lessons served as a motivating factor to facilitate her compositional and popular music learning work. Even though she missed so many lessons through the project and offered a great deal of resistance in the form of avoidance strategies in the repertoire that we had selected, there was evidence of an increase in self-directed work in her piano learning.

Examples of this self-directed work are found in her seeking for help, creating task, attention focusing and self-instruction strategies, verbally expressing intrinsic motivation to learn. The discussion on her last lesson reflected this change:

> "Our conversation…was centered on how to take profit of our lesson time based on the conjugation between her areas of interest and my expertise. She expressed to me that even though she's starting College-level infirmary studies very soon, she wants to continue learning music with the expectation of getting a degree in music later on in her life… She has a clear goal! And that goal is excellent because it's a medium term one, which keeps her focused and is achievable in a reasonable amount of time"

Odelia

Thanks to a sound parental support for this seven year old girl, iSCORE was introduced early in the project, on Week 2, after mother and child opened an account. This introduction took place during the lesson and was more of a demonstration and brief explanation of the SRL model and how the portfolio could be used.

Odelia strengthened her already good self-reflecting habits at an emulative to self-controlled level, which allowed her to correct mistakes in her playing during the lesson when asked to revise a passage, without little or no teacher's intervention. She gradually integrated the learning strategies that I gave her; she was increasingly proficient in using them on her own, giving her successful experiences that helped her maintain motivation to learn.

Odelia's lessons were mostly teacher-driven; with some exceptions of student-driven moments when she proposed the next piece to be played during the lesson. She was one of the students that used iSCORE more often and for a wider variety of purposes: As a communication tool, as a process portfolio through planning and reflecting, as a showcase tool through uploading her audio recording, and also as a collaborative learning tool through posting a link on Odelia's

homepage with useful information for other students to see. Nevertheless, she followed through the entire SRL cycle on iSCORE for only one work.

Signs of Odelia's self-regulative development were observed from Week 12's lesson on. Her mother reported having started to let her daughter practice almost by herself. Her supportive role shifted from reading my instructions from the notation book and enforcing them while Odelia practiced, towards her just listening beside her during practice, available to help if the child asked for it. In that same lesson, parent and teacher agreed in the observation that Odelia was more alert and active than usual, she would respond to instruction in a more spontaneous way, imitating the gestures I would show her without waiting to be asked to do it and choosing which piece to play next.

Other signs of SRL development in Odelia were seen in Week 14 with her spontaneous inclusion of creative activities different from the usual repertoire and technique work:

> "[Odelia] started the lesson by improvising, and ended by improvising. She would just get playing with both hands and letting out beautiful melodies. I complimented her and asked her to continue. At some point, she'd say: it's over, and stop playing. I see a beautiful discourse springing from her musical mind."

It is important to mention that these improvisations contain evidence of self-regulated skill level in most of the technical aspects of piano playing that we usually work during Odelia's lessons. This evidence was seen in her hand posture, wrist movements and her control over the dynamics; which were elements that we had worked on several pieces of her repertoire. In this sense, they arethey are not only a creative activity alongside the piano curriculum, which would be considered self-controlled skill development. These improvisations offered evidence of the

application of such skills in new musical "environments," considering that a piece of music is an environment where the pianist performs their skills, whether it is a permanent one (repertoire) or an ephemeral one (improvisation).

Supporting this SRL development and its relationship to musical development, is the fact that during that same lesson, Odelia's performance was observed as being superior that her average, and she had taken the initiative to do extra work at home, as we see in the following excerpt:

> "…she was excelling at what I'd asked her to do: rhythm, notes, and dynamics…I revised with her the theory assignment and found that she'd done even more that I'd asked her. She reported that her mother had gone online to gather information on a concept that we had not touched upon yet, which allowed her to complete the assignment. I even tested this new conceptual learning (intervals), asking her to apply it on the piano in several examples and she did it successfully without hesitation."

Odelia's self-regulation progress continued in the following weeks. Self-reflection was evident in her ability to correct her own mistakes without my intervention during the lesson. She could also aurally recognize errors in a new piece and advance in her theory work with little or no help. There were two more works started on iSCORE but none of them fully developed through the end of the data collection period.

Lara

Lara is one of the students who opened an iSCORE account but never used it. The data collection period started with the fact of her forgetting her scores at home, an occurrence that I have seen many times during her lessons; which she did not see as a problem. That fact allowed for the occasion to have a full lesson introduction to iSCORE in Week 1, where, using my teacher's account, we developed together the planning section for the piece that she was going to learn, in full.

She expressed enthusiasm for the work done on iSCORE during that lesson and she agreed to re-do the work on her own account, but somehow this enthusiasm did not successfully change her practice habits to prompt her to continue using this tool, despite the many reminders she received throughout the data collection period. Nevertheless, this introduction to iSCORE allowed for the experience of a more self-reflective approach to learning, as can be seen on this excerpt from Week 1:

> "I remember her being blocked at one point by the challenge of goal setting. The best thing I did for her was to tell her to take time to reflect before writing something. This really changed everything. She started to allow herself time to come up with her own answers, and none of them were dismissed by me as inappropriate. She wrote what she considered to be good strategies and she knew that she could put in more in the future if she wanted."

The goal of my work with Lara during this period was to help her develop skills that would allow her to be more efficient while practicing alone, which would demand a development in her self-control and self-experimentation processes. Asking her questions about the causes of non-desirable performance outcomes was one of the strategies most used by me in this endeavour, as a way to awaken awareness of her own performance needs. She showed early signs of self-directed work during lessons: "…she marked the score to remind herself of this detail… At some point she got out and wrote some of my indications on her school agenda, which is her method for keeping notes" (Week 4).

Lara's self-regulation strengthened during the course of the project and was evident in processes of strategy selection, intrinsic motivation, self-reflection, time expenditure and physical environment, as shown in her verbal reports collected on Week 11:

> "On the way to the piano room…she told me that she'd written the 1, 2, 3 on the whole of section C of her piece, AND she'd noticed that she'd been shortening one of the measures by playing 5 sixteenth-notes instead of 6… she told me that the day before, right after our lesson, she'd worked on solving the problems that we had encountered, and that this morning she'd woken up early to work on her piano. She said that she preferred to work early in the morning because she felt fresh and alert to study."

This pro-active approach to learning had a direct impact on her performance: "From the very first try, she played impeccably. All the issues had been resolved." In the following weeks, more evidence of self-directed work was seen in her autonomous learning of self-selected music pieces and strategic search of resources such as music scores on internet in order to attain better results. Lara's self-regulation development allowed her to increase in motivation and see

progress in performance skills during this process, despite having very limited time to practice at home and limited parental support for following up on iSCORE work.

Chloe

Chloe's learning goals (pieces) had been negotiated with me since the first week of data collection. Although supported by her family and motivated to learn piano to some extent; initially she would not show evidence of self-observation or seeking help; she'd rather wait for me to offer help in the form of comments and task strategies. This behavior slightly shifted towards a more open and pro-active approach to learning over the course of the project, where she showed signs of development of self-regulation.

Chloe got an introduction to iSCORE as part of the piano lesson on Week 2, when she opened her first Work and started to develop the planning section; and the portfolio work came up in different occasions as we talked about setting goals and criteria, taking time to reflect on her motivation and strategy use. Our work was centered on music reading and technical skills such as arm weight and finger independency, and she went from observational to emulative skill levels. She would observe my modelling of certain gestures and postures and attempt to imitate them. Strategies were mostly teacher-given with constant reminders to use them during practice, like the use of the metronome and the theory book to find reference points on the score.

Chloe's maturity was increasingly evident in the fact that she became more open and able to discuss about the issues faced in her playing. She was regularly practicing and clearly the student opened more Works on iSCORE than any other participant. However, the teacher-centered scheme prevailed in her approach to working with her portfolio, as can be noticed on this excerpt from Week 6:

> "I asked her if she'd been to iSCORE during the week, to which she replied "no, there's nothing to do there" as in "you've not assigned anything for me to do there", which I gathered by [further] inquiring about her expression…I have the feeling that I will have to convince her of the importance of using iSCORE before she gets the hang of it. I have not done it, trying to avoid being intrusive."

Chloe was actively using iSCORE from the moment I started to assign it as homework with the rest of the instructions on her notation book, but it was never a self-initiated activity. However, this portfolio work permeated our conversations during the lessons in a variety of ways, namely allowing her to develop task analysis and self-judgment, among other abilities. Some of these reflections made it to the actual portfolio and others did not, but they affected her learning process helping Chloe develop her own metacognition.

Oswald

An enthusiastic participant at the beginning of the project, Oswald self-initiated contact with me through a text message on Christmas day (prior to Week 1) saying that he was on my iSCORE class. A need to work on self-control skills related to time management was evident since the first weeks of data collection. He had self-set goals (pieces) and some of them were not very challenging, he had a number of task strategies integrated to his practice habits, intrinsic interest to learn the material, self-set deadlines; but would consistently fail to dedicate time to weekly practice.

The content of each lesson was negotiated between teacher and student, and task strategies were mainly proposed by me and emulated by Oswald. In Week 3 there were self-

reports of time-management skills development in his piano practice. His work on reading, technical, and interpretative skills went from emulative to self-controlled levels. He was able to incorporate isolated gestures into the playing of his repertoire.

That same week he also reported unsuccessfully trying to log on to his iSCORE portfolio, an issue apparently related to website navigation encountered by several participants during this project. We never used iSCORE during the lesson until the eighteenth week, as still on Week 11 he was not sure what his password was; which made it impossible to log on to his portfolio page.

By Week 6, Oswald was showing signs of self-regulative development in the areas previously identified as dysfunctional: "He had practiced and was well prepared for his lesson. He was using the strategy of analysing the structure of his orchestra piece to facilitate his note reading." Oswald self-initiated a Work on iSCORE on his orchestra repertoire later on, which I had not proposed. Even though he did follow up on learning the orchestra repertoire, the corresponding iSCORE Work was never developed, but he did fully complete the self-regulation cycle on iSCORE for the only piano and voice piece he was preparing, between the eleventh and the eighteenth week.

More student-driven lessons were reported as a consequence of Oswald's social environment. On Week 14, for example, Oswald's partner in a voice-piano duet, who is also a piano student of another teacher, participated in one of his lessons where they would perform their music for me. As Oswald started the lesson by playing only the piano part:

> "…she would just jump in at any point and give him tips on how to practice while we were working …peer learning! I wanted to encourage it even though I felt out of

> place…so I asked her to be my assistant when Oswald was practicing and make sure he followed these instructions. They both laughed, we all did. I think he got the point."

Oswald was able to end the school year with a good level of intrinsic motivation, an accomplished performance of the only piece that he worked on (an exception to the common practice of two or more pieces) which was described by an audience member during the final concert as a "moment of grace"; greater metacognitive skills as evidenced in self-reflective statements recorded on iSCORE, and an enhanced capability to manage his social environment in order to attain musical goals. As was recorded on Week 19:

> "The fact that he's actually learning on his own is a great sign of SRL development, and the fact that he takes the time to communicate with me outside of the lesson time to tell me, is a sign of engagement and motivation."

Amy

Amy was the youngest participant in this project, so it was clear from the beginning that her usage of iSCORE would demand a great deal of parental support. I got messages from her mother as early as Week 2 reporting technical problems to access the portfolio page, even though she had reportedly created an account early on. This kind of difficulty was expressed by several participants. These technical issues were never surpassed, even though we spent time and effort in trying to resolve them. As a consequence, Amy never did use iSCORE.

Amy's main difficulty with self-regulation was clearly the phase of self-control during practice, with time management skills being underdeveloped and her needing the presence of a

parent to help her practice. Parental support for her practice was fluctuating during the data collection period, with the consequence that she was often badly prepared for her lessons; so I constantly emphasized the idea that she was capable of practicing by herself even if nobody was available to help. I also sent reminders to parents asking for their support.

Three major points needing self-regulation development were found in Amy's lessons: Motivational processes, attention focusing and defensive mechanisms as a form of self-reaction. I observed that she had a lack of motivation to work during the lesson and was showing resistance to review and correct mistakes, as shown on this phrase from the fourth week on the journal: "Every time that I would ask her to repeat something [on the piano] she would complain about it, but do it anyway".

Defensive mechanisms are found in journal entries from the beginning of data collection with a recurring question about the end of the lesson. On Week 10, when Amy asked again "is the lesson going to be very long?" I decided to switch from my usual reassuring answer to the more confrontational "no, it will not". Her attention focusing in this lesson was stronger than in former ones, even faced to distracting elements in the classroom. Some weeks later it was recorded on the journal that she'd stopped to ask for the end of the lesson.

Amy's self-regulation was supported by a change in the mode of attribution of stickers, which created clearer outcome expectations for her. She had been accustomed to receive a sticker after each lesson. On Week 14, I introduced the concept of earning the sticker for having practiced five times during the week, with or without parental support; and for doing a certain number of repeats of a passage without error during the lesson. I knew that the sticker itself as extrinsic reward would not produce intrinsic motivation but I expected it would help increase the

amount of practice time and the focus on progress during the lesson as a goal, prompting her to self-regulate to attain it:

> "At the end of the lesson she asked me, as usual, for a sticker; and I told her that she would not have one this week, reminding her that she'd need to practice for next lesson if she wanted to get one next time…She was upset at me, but I know this was the right thing to do" (Week 14).

Lessons with Amy were teacher-driven, with much care put on the time spent on every lesson's activity to be suitable for the development of self-control skills related to attention focusing. She developed task strategies related to music reading rapidly and piano technique a little slower up to a self-controlled level, which allowed her to master her repertoire. On Week 17, Amy reported practicing by herself without parental presence, which signals an increase in motivational beliefs. I also noticed that she was more focused through the lesson. Her behavior was more adaptive than defensive as she was not asking for the end of the lesson. She also "followed through all my demands for repetitions, and dynamic and fingering work"; an evidence of self-reactive mechanisms that are more favorable to learning.

Rebecca

Rebecca could be said to be one of the better self-regulated students since the beginning of the project. Reports from Week 1 show that she had followed through with her engagement to learn new material during the Christmas holidays, which is very uncommon of most students. She was also able to self-reflect and verbally express what had worked and not worked about that learning experience. That same week I gave her an introduction to iSCORE using my teacher

account, since she had not opened her own; but for some technical reason we could not open the Work tab, so it was verbally agreed that she'd do it from home and continue exploring it.

Work during lessons was goal-oriented from the beginning of the data collection period. Rebecca had the necessary reading and technical skills to master her repertoire, as was recorded on Week 1:

> "…we started working on the difficult parts of the piece before playing the whole, modeling for her a practice strategy. After each try, I would ask her for her appraisal of her performance (self-reflection). Based on that, she would play again with a specific goal in mind and repeat the cycle until the result was satisfactory"

Strong metacognitive skills allowed her to regulate her effort and self-satisfaction, giving creative answers to interpretative challenges as was recorded on Week 6:

> "She spoke to me about the freedom in the phrasing when she played the music that she composed herself; and told me she knew she needed to get the same sensation of "ownership" of the music when she played this piece."

Rebecca's use of iSCORE started not by her opening a Work, but by her exploring a music writing tool embedded on the portfolio named Noteflight, which got her attention from day one. She saw it as a useful instrument to her compositional work, which is one of her main music interests. It was only on Week 15 that we did a video recording of her playing during the lesson, which I immediately uploaded to her iSCORE.

This was a motivational moment for her: "She was really proud, so happy of having done it!", and gave way to using iSCORE for other purposes, as writing names of new pieces on the

portfolio's TO DO list. Motivation to use iSCORE for her learning did not fade away after this experience: "We agreed that she'd send me a video of another new piece that she also wanted to learn, and to my surprise, she'd sent it a couple of hours later."

The fifteenth week was also an occasion in which the lesson was remarkably student-centered. Rebecca came to the lesson with two very specific questions on one of her pieces; seeking help as opposed to being offered help, so I followed her lead to work on the areas she requested, modelling and prompting her to self-reflect as she was playing, which she did successfully. Subsequent lessons reports from the journal showed a self-regulated use of task strategies as spontaneous note writing on the scores to self-instruct during practice.

Further on, near the end of the data collection process, which was the end of the school year also, Rebecca did several video recordings of a piece during one lesson, looking for a perfect performance to upload to her portfolio. This selective process allowed us to reflect together on the realities of live performances, where there's the possibility of making errors; and of the importance of having coping strategies to face these moments. This reflection was perceived as an important one to share with other students:

> "We even commented on the usefulness of uploading the three videos and ask my other students which one of the three they preferred and why; and then seeing what each person values most (note accuracy, pedalling, phrase shaping). She saw the usefulness of this possibility and decided to upload two of the three to her iSCORE, even though not sharing them yet." (Week 17)

Ernest

Ernest's main challenge in self-regulatory skill which challenged his piano learning was related to time management. He would generally show great capacity to work during the lesson, with strong self-control and self-observation skills which allowed him to make great progress in one hour; but fail to follow-up with home weekly practice, using defensive mechanisms as a form of self-reaction, such as excuses, when prompted to self-reflect on this fact. In consequence, his great capabilities were very little fulfilled.

By the end of Week 2 his iSCORE account was opened with parental support. As it happened with several other students, the first attempt to log on to iSCORE during the lesson failed for lack of a correct password, which retarded its incorporation to the lesson work. When the correct password was received, I gave him an introduction to iSCORE showing him the main features such as home page, Work page, etc. which allowed us to reflect on task description and goals and, as it happened with several other participants, he quickly entered his level of motivation for the Works that were created on site based on the pieces he was playing.

Ernest was very proficient in incorporating information without delay, and would go successfully from observational to emulative skill levels when being taught a new concept. He could perform at self-controlled level any of the teacher-given task strategies, as illustrated in this excerpt from Week 3:

> "At some point he told me: oh, yes! I know what to do: if things are not going well, I'll try to play them slower. I told him this was an excellent idea. At the end of the lesson I asked him to tell me three things he'd retained from the lesson, and he gave me three good elements."

Ernest displayed on Week 7 greater self-reflection skills and adaptive behavior in his performance of pieces. He even showed a self-regulated use of task strategies that had been modelled by me in previous lessons: "…he made his own marks on the score for different difficult points." With parental support, Ernest was able to upload a video recording of his own performance from home on Week 8, with a fully developed planning section also; to which I replied immediately using the annotation feature of the portfolio.

His carefully crafted video was received with enthusiasm by other members of our studio as well, to whom I showed it with Ernest's permission. This was a motivating experience for him. In a later occasion, the iSCORE TO DO list was used as a notation book, but there's no record of him using the information posted there; since Ernest had a more conventional paper notation book that he brought to the lesson every week.

Ernest experienced an increased level of skill development during the data collection period, meaning that he learned the material that was negotiated between us, with more or less proficiency. However, the main issue needing self-regulatory development which was the establishment of a weekly routine of piano practice was not successfully overcome. The use of iSCORE proved to be a source of motivation for him to master his piece and share his work with others, but there was no evidence of motivating him to practice beyond the actual performance recorded at home. It is possible that the effects of this experience take a longer time to become observable.

Changes in the piano studio as a system over time after the introduction of iSCORE (RQ3)

It is undeniable that working with iSCORE has prompted many more conversations with students and colleagues about the use of digital technologies in music learning than I used to have prior to its implementation, and has expanded my own understanding of it and provoked a certain level of interest in my students and their parents. As was recorded in the teacher journal, participation in this project by one of my students spurred the interest of a fellow pianist who wished to join my studio greatly motivated by our iSCORE use, which in her view held interesting possibilities for her musical development.

One peculiar change recorded in the journal concerns time management skill development for the ensemble of the studio. It was observed that, in contrast to previous years where students "were struggling to learn the notes even two weeks before the concert" (Week 16), which is an undesirable outcome; for this concert season they had accomplished all the reading and technical work of their repertoire over a month in advance of the concert date.

Self-handicapping strategies (Fritz & Peklaj, 2011) common in this system`s culture, were present. It often happens that students verbally agree to learn a certain excerpt and don`t follow through during the week. In the same way, students often promised to develop aspects of their portfolio works that they never did or did very late, like Oswald, who created his only Work towards the end of the project. Even though I used the portfolio as a notation book during the lesson, or as a video recording repository, to show students what they could do with it at home, but there's no evidence that they actually went back to those postings and used them to advance their work.

Chapter 6 – Conclusions

This research project has examined the experiences gathered through five months of iSCORE implementation on a piano studio with eight student participants and one teacher. Descriptions of individual lessons gathered on a teacher journal were used as the basis for this analysis, as well as portfolio entries that students did through the data collection period. Students' covert self-regulatory processes such as those related to motivational beliefs and self-judgment, among others, are not reflected in this report as they could not be observed during lessons.

Self-regulation processes in which learners engage during music practice are not accounted for in this study, where observations were made on behaviors made evident during lessons and portfolio entries by students. However, the processes that students initiate during practice sessions are modelled and shaped through lessons, as some aspects of the strategic planning of practices is negotiated between teacher and student in each of these encounters. This is how the data gathered through lessons narrations touches indirectly on self-regulation during practice and performance outcomes.

Another limitation of this research is that there's no evidence that the observed changes of this educational micro-system are due to the use of iSCORE. This is rather a rendition and attempted analysis of observations from within the music studio community as I implemented iSCORE within the given time frame. Its value lays in the informative character of descriptions

of students' parents' and teacher's adaptations of the tool to the music studio pedagogical practices.

Implementing iSCORE aroused the interest of student participants to use an electronic tool as part of their music learning, to showcase some of their works for self-discovery and reflection. In some cases using iSCORE brought fourth important conversations with students about their musical goals, as found in previous studies (Upitis et al., 2012). Parental support was an important factor in students' iSCORE use for younger students, as could be expected due to the technological demands for setting up and managing accounts. Older students showed more development of self-reflecting through iSCORE than younger ones. Most students had difficulty interpreting the heading Criteria under the Planning section of the portfolio, which prompted recurring requests for further explanations.

In terms of self-regulated learning, most students showed clear signs of some of these processes taking place throughout the project. Some of this evidence was observed throughout the lessons and other was recorded on their portfolios as they entered key information under the Planning, Doing and Reflecting tabs of iSCORE. Constant reminders were needed in order for students to move forward in their portfolio work. This could be interpreted as evidence of the need to strengthen self-regulation in participants and the need to find strategies to attain a more successful implementation process.

These findings reveal that on one hand there was an improvement of pedagogical practices (e.g. time management within the lesson, accuracy of instructions and greater efficacy in preparing the final concert), and on the other hand there was a real constraint with the time needed to use the portfolio at home and during lessons. These two elements were also pointed

out in Dirth's (2000) study of the implementation of portfolio evaluation in music instrumental tuition.

One of the main difficulties in getting students to work in their portfolios in this implementation context came from it being an optional activity, and portfolio work was not introduced as implying any form of assessment. As signaled by Abrami et al. (2011), students are faced with having to balance their own learning interests with the demands of required assignments; they tend to prioritize activities perceived as facilitating success. As a consequence, it is very likely that students, feeling overloaded with piano learning on top of the academic demands from their school programs, will tend to strategically choose to concentrate in succeeding at a lesser amount of work. In these cases, portfolio work will fall undoubtedly behind piano work for some students.

Hallam (1997) proposes a model of practice and points towards important aspects of music instrumental learning, some of which were found in the present study, that are not directly addressed by SRL theory. Issues ranging from the diversity of learning and teaching styles to the effects of the academic environment in which instruction is carried out are among these aspects. The interactions between environmental factors and the learning process are explained in the triadic forms of self-regulation model (person, behavior, and environment) and the 6 dimensions found in Zimmerman (2000), but these are not integrated into the cyclical SRL model itself which covers only the processes taking place in the learner.

Rethinking the teaching of self-regulation to music students in a way that could also lead to a suitable re-design of iSCORE should be informed by research. In their systematic review of self-regulation research, Varela, Abrami and Upitis (2014) identify several aspects of self-

regulation that are of crucial interest in music learning: the knowledge and appropriate use of practice strategies, the development of time-management skills, the fostering of informal and creative music experiences and of self-selected repertoire.

Musicians need to feel motivated by and capable of performing the repertoire they are playing, and have a clear idea of the demands of this repertoire in relationship to their level of expertise. Their matching of strategy use to the nature of the music problem should become the basis for self-reflection, because it implies a conscious connection between the student's choice of task strategies and the perceived results. An electronic portfolio is an ideal platform to establish these links and make them understandable to the user because of its interactive multi-media nature.

In summary, SRL theory emphasizes the development of autonomy in the learner. This must be a goal for any music teacher. Using Zimmerman's (2000) model as a departure point, as well as research findings that emphasize some self-regulatory processes over others in relationship to music learning (Varela et al., 2014), the following categories seem to be of preeminent importance:

Forethought	Performance	Self-reflection
Goal Setting / intrinsic interest Balance between self-selected repertoire and technical work that is attuned with the level of expertise of the student. *Self-efficacy / Outcome*	*Task Strategies for music problems of diverse nature* Classifying types of problems (technical, interpretative, performance related; or attention focusing and time management; etc) and	*Causal attributions* Linked to sound matching between the nature of musical problem and the task strategies chosen.

expectations Shaped through peer-learning, master-classes, public performances and sharing of works on EP's.	matching them to appropriate strategies. *Imagery/ Self-monitoring* Establishing relationships with other art forms, listening to one's audio recordings, comparing to other musicians' versions. *Self-experimentation* Improvisation, compositional work, informal practice, learning through tutorials.	*Self-satisfaction/ Adaptive behavior* Persistence in practising.

Chapter 7 – Possible avenues for future research

Implications for iSCORE re-design and support

As Upitis et al. (2012) have pointed out in previous research, there's a need for a feature of date stamping and notification to the teacher about new additions to students' portfolios. Such a feature would encourage a better use of the time spent on iSCORE because it would allow the teacher to know immediately when information has been added to the students' portfolios, and to directly go to the section that has been updated. The following excerpt from Week 11 illustrates this need for date stamping as a support to the pedagogical process:

> "I'd like to be able to see is when [Odelia's] mother uploaded this video. In general, I think this is important information, as sometimes there's several versions of a piece to upload and it'd be good to know how much time it took to go from an initial state to a later one."

The literature offers vast evidence of the fact that more advanced and successful performers invest considerable amounts of time on their instrument (Zhukov, 2009). In the teacher journal we can find that amount of practice time is the subject of weekly verification with my students. The literature offers examples of the importance given to the amount of time spent in instrumental practice (Brändström, 1996; Renwick & McPherson, 2000, 2002) and monitoring it as a means of self-assessment (Smith, 2002). Considering this, a weekly practice time check box would be an important feature to include in future developments of iSCORE.

Keeping with Blackburn and Hakel's (2006) idea about facilitating teacher's feedback on electronic portfolios, "the space for setting goals should be electronically linked to spaces for instructors and advisors to provide students with feedback about their progress towards these

goals" (p. 84); there could be a direct link on the goal section to teacher's or/and student's comments on their progression towards those goals.

As Abrami and Barrett (2005) point out, Electronic Portfolios demand a considerable amount of implementation time before specific results can be distinguished. A conversation with one of my colleagues on Week 15 reflects what in my view represents the common attitude of resistance of this culture-sharing group on the use of a tool like iSCORE: "…she was very skeptical and pointed out immediately that the use of iSCORE in class or in the lesson would take up much time." This is one of the greatest challenges to a successful implementation of iSCORE in studio teaching.

The problem of time expenditure was faced in this project as well. On Chloe's lesson on Week 2, when she received her introduction to iSCORE, I did the typing as she dictated to me the answers to the questions on the planning page. This simple fact could be counterproductive in engaging students in taking ownership over their portfolios. On the other hand, sitting in front of the computer to type answers to questions on the portfolio seems also counterproductive, as it is a slow process and demands that the student moves away from their instrument to do this work.

Addressing this issue in future developments and re-design of iSCORE could take the form of simplifying the entering of data into the portfolio if it were possible to make it more "lesson friendly". Embedding in iSCORE tools designed to support the activities commonly done during the lesson and during instrumental practice that mimic and enhance the ones already used (e.g. metronome, notation book, daily practice self-evaluations, etc.) could also encourage its use by teachers and students and its perceived value.

It is imperative to have better technological support access for users who, for example, cannot find their way to their homepages inside the RCM webpage, which was an issue encountered by several participants. It would be beneficial for these users to be directed to a supporting person other than the teacher when faced with these problems. The need to make iSCORE able to support iPad files is also very important, as would be the possibility to work on iSCORE from mobile devices which students often carry around and bring to the lesson.

The use of an electronic portfolio is an activity that demands taking a step aside from actual playing to reflect on the learning process. It requires a will from the learner to engage in deep thought processes that involve cognitive skills related to verbalization and syntactic development. Confronting such demands can be discouraging to users who are not proficient enough in these skills to easily formulate answers to the questions proposed in the portfolio. This makes the current version of iSCORE more suitable for students who have developed the cognitive skills related to the construction of more or less complex sentences. It would be necessary to take into consideration the possibility of adapting this tool to a development of self-regulation that is not so dependent on these other skills that are related to sentence construction.

As was referred to earlier in this report, when talking about students' reporting on motivation, the graphic type of data entry was immediately filled out by students. This fact puts in evidence the efficacy of graphic forms of communication. In future re-designs, I would present a first layer of complexity of the self-regulation cycle in graphic form, which would also make the portfolio much more user-friendly for younger students. After entering this graphic information, I would then make the questions appear, that support the more reflective work of planning, doing and reflecting. In this way, users could adapt their portfolios to their cognitive levels and still go through the whole process with every Work.

The observed preference of students for data entry mechanisms that do not depend on text may be further explored through research as a possible feature to re-design. Goal setting and strategic planning should continue to be addressed in future developments of the portfolio, but could be further simplified. A goal most likely is a piece to be played; hence strategic planning can become a pre-selected list of issues to be addressed through corresponding pre-selected task strategies.

The use of these strategies could be demonstrated through video tutorials. Teachers and students could upload their own demonstrations also. Levels of motivation could be entered through choosing from different phrases that reflect the student's motives to learn and could prompt, in one click, immediate feedback to the student helping re-shape self-efficacy. In addition, they could also be linked to subject-related short video clips with stories of real-life musicians that could help motivate students to strive for success.

Lastly, it seems logical that embedding gaming technology into iSCORE could provoke great enthusiasm among young students, who are in general avid users of digital tools for purposes that are considered as highly rewarding. Perhaps iSCORE can be presented as a game in itself, with self-regulation points to be earned for every work completed and shared. Any development in this sense will demand a thorough revision of the research on this topic, and a complex study of its many possible applications.

Implications for research

One of the main limitations of the methodological approach used in this project concerns the triangulation of data, which was drawn from the teacher journal and portfolio entries only. It is recommendable that in a future research projects data is gathered directly from students and parents on signs of self-regulating processes throughout the project as well. In a qualitative study like the present one, this could take the form of semi-structured surveys or student journals.

Videotaping and comparing students' practice sessions with teacher's reports on lessons and students' portfolio entries have advantages and challenges. Chaffin and Imreh (2001) found that videotaped practices offered more complete data than self-reports on practice goals. The use of videotaping presupposes the need to choose reliable tools for data analysis. In also imposes a reconsideration of the quantity of data analysed and number of participants in the study.

My own reflections on the teacher journal were bound by my ability to perceive certain behaviors they may have left other behaviors unaccounted for. My observations were mainly on students' verbal reports and expressions during the lesson, their performance, their reactions to my comments, etc. I did not report on students' covert use of, for example, self-instruction or task strategies that could've occurred during lessons but I did not perceive. To counter this limitation in future research projects, a list of observable self-regulating behaviors that students display in lessons and while practicing alone should be drawn from the literature and incorporated into the teacher journal. Teachers then could check on every item that presents itself during every lesson reported.

Different self-regulation measurement instruments found in the literature could be studied for inclusion in future research to gather data on covert self-regulatory processes that could

further help to explain students' actions in different contexts. For example, Maclellan's (2006) measurement tool, designed for higher education students, could be adapted to music instrumental learning. It would help in understanding how the process of implementation described in this report affects students' goal setting, strategy use and monitoring activities.

Other instruments more specifically conceived for measuring self-regulation in music learning could be used. One of them is Renwick's (2008) questionnaire. It focuses on dimensions of self-regulated behavior and intrinsic motivation in music instrumental practice. Miksza's (2011) questionnaire, designed to measure SRL in music students of beginning and intermediate levels, focuses on the six dimensions proposed by Zimmerman and McPherson (2002). It can be used to identify students in need of help with practice-related skills, which could be addressed through portfolio work. The inclusion of such instruments would demand a revision of the methodology to include quantitative data, pointing towards a mixed methodology that would strengthen the validity of results.

As suggested by Varela et al., (2014), a larger sample size in future studies could allow gathering additional data on learners' ages and musical genre. It would also facilitate a better understanding of the relationships between users' interactions with technology for other purposes and their use of electronic portfolios for music learning. These data could be drawn during more extended periods of time, where changes in self-regulatory behavior could be more precisely linked to portfolio use and music learning.

Implications for better implementation of iSCORE in music studio teaching

Certain issues about the use of an electronic portfolio would need to be addressed in future implementation efforts, for example the amount of time needed to develop a good use of it which has been identified by Dirth (2000) as "the single greatest barrier to instituting portfolios" (p. 2). In a culture that strives to invest consistently lesser amounts of time to obtain any kind of gain; that overvalues quick success and overnight heroes; the task of accomplishing systematic home instrumental practice is already a challenge. Most people tend to hold naïve beliefs about the acquisition of musical ability as something fixed rather than acquired through time and effort (Nielsen, 2012), a viewpoint that conflicts with the need to value effort and time as a means to achievement (Abrami et al., 2011).

In addition, there is the need to invest extra time to develop portfolio works that are meaningful and really reflect and foster the development of lifelong learning skills. As found in previous research (Chong, 2006), the fact that students are extremely familiar with the use of ICT does not guarantee that they'll be motivated to perform computer-based tasks that are assigned by the teacher; which imposes a constraint that needs to be addressed in future implementations on the managing of intrinsic vs. extrinsic motivators.

It becomes a priority then, to champion the cause of the benefits of it use among all the members of the educational system, as well as to incorporate its use as a core aspect of the practice and lesson experiences, so it is not perceived as an added task that takes up unnecessary extra time. If we expect students to adhere to the use of a tool like this one, future implementations would need to be perceived by students as assignments and not an optional activity. Students need to believe that they arethey are capable of attaining their learning goals,

must want to take responsibility for their learning efforts and believe that this tool will be of help in their success, which is a challenge for the implementation of any knowledge tool (Abrami et al., 2011).

As observed in Chong's (2006) study, a blogging feature could help students develop confidence and knowledge in a constructivist manner through sharing not only their works but their questions and strategies on a weekly basis. It would allow for a greater sense of community to the otherwise isolated participants in the music studio, who in this case encounter each other only at recitals twice per year. Even though this is a design recommendation, such an implementation would take scheduling from the teacher's part, and clear directives on what and when students are expected to post online.

As suggested by Abrami et al. (2011) in their work on knowledge tools, future implementation efforts would need to establish accountability measures to help students take advantage of the space of time between lessons, as well as specific deadlines for submitting and sharing works, commenting on others' works or developing punctual aspects of them. As on Dirth's (2000) implementation experience, where portfolio work was found to positively impact music learning, I would use iSCORE as a self and peer-assessment tool, and negotiate a set of parameters of evaluation with each student since the beginning of the school year.

Following Abrami et al.'s (2013) recommendations about incorporating the tool as a core element of the lesson, iSCORE could be used as a self-regulating notation book through entering information directly on the planning and reflecting tabs. This would help clarify, within the lesson, students' goals, strategies, motivation levels and deadlines. Weekly self-reflections could be also typed within lessons that could be added week after week.

Between lessons, iSCORE could be used as a practice log to aid in what Pitt et al. (2000) identify as lack of purpose oriented practice habits during initial stages of learning an instrument. In this sense, teachers of novice musicians could propose a self-monitoring activity to their students in the form of audio recordings on their portfolio of their first ten minutes of practice for a week, knowing that some of them will not necessarily exceed this time; and use this data to provide efficient feedback to foster the development of SRL in instrumental practice.

Congruous with the literature on self-regulation in music instruction where goal setting takes the form of repertoire selection (Renwick & McPherson, 2000, 2002), in this project I used the approach of making the pieces of my students into Works because it seemed to me more tangible to talk about pieces than it would've been to talk about technique or interpretative skills or theory. However, the latter could also be valid Works and probably well suited to more advanced students that could desire to focus on building skills rather than accomplishing the performance of specific pieces.

All these possibilities face one common challenge and this is the issue of the time required to incorporate the dynamics imposed by a real integration of the electronic tool into the lesson and not just their addition to a list of proposed activities (Abrami, 2013). With limited time to work on the multifaceted issues of music performance and get to some kind of result or plan of action for the following week, the lesson is mostly based on demonstration and trial of playing skills. The reflective work of the portfolio is in some way foreign to this dynamic, even if it has the possibility of enhancing it.

The computer as an external object to the music instrument demands that the exchange on actual performance is left behind to give place to sitting in front of the screen to enter

information, which is not normally part of a music lesson. However, this difficulty can be attenuated by setting up a series of initial activities within lessons where students can be guided through creating complete Works that are not extremely complex.

It is also necessary to gain full support and better understanding from parents prior to implementation and this must go beyond a simple consent to use the tool. Parents could be invited, in a first stage of the process, to develop a Work with their child that is not music related but on a simple subject matter of common interest, as a means of getting acquainted with the self-regulation cycle and the use of the portfolio. Surely this idea will find some resistance, but for those who take the time, the experience could facilitate a higher level of user engagement.

As an afterthought, it is interesting that several student participants have expressed interest in continuing using iSCORE in their lessons some months after the end of the project. As my own learning progresses, my teaching work continues to gradually focus on the development of attitudes and behaviors that help my students become better self-regulators. As part of this work, I plan to design time-bound, short assignments on iSCORE to strengthen peer-learning through sharing of works and knowledge, and self-reflection in their music learning.

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Appendix A –Data collection instrument

Teacher Journal

Each week: Free writing section covering self-reflections on what has happened and how the use of iSCORE has impacted my teaching during the week. Also unexpected outcomes, expectations met and not met; attitudes, feelings, thoughts, plans, etc. by date. Then a section by student commenting on iSCORE use and evidence of SRL development.

Date:

	iSCORE use	Evidence of SRL development (goal setting, strategy use, self-reflection, self-directed work)/ other comments.
Student 1		
Student 2		
Student 3		
Student 4		
Student 5		

Questions:

1. What did I do to encourage them to self-regulate?
2. Comments on teaching practices and parent-teacher interactions

Appendix B – Ethics Approval Certificate

CERTIFICATION OF ETHICAL ACCEPTABILITY FOR RESEARCH INVOLVING HUMAN SUBJECTS

Name of Applicant: Ms. Ingrid Astudillo

Department: Faculty of Arts and Science \

Education Agency: N/A

Title of Project: Implementing iSCORE in Piano Studio

Teaching Certification Number: 30002476

Valid From: December 17, 2013 to: December 16, 2014

The members of the University Human Research Ethics Committee have examined the application for a grant to support the above-named project, and consider the experimental procedures, as outlined by the applicant, to be acceptable on ethical grounds for research involving human subjects.

Dr. James Pfaus, Chair, University Human Research Ethics Committee

APPENDIX C- Six dimensions table of my students before iSCORE implementation

	Motive	Method	Time	Behavior	Physical environment	Social environment
Jennifer	Intrinsically motivated She has self-set goals	Practices systematically, in the sense of going through a series of technical exercises before tackling repertoire, decides which part of the repertoire she's going to focus on each time. Task strategies are guided by teacher	Does not practice regularly unless there's a lesson coming in three next days. Her school work takes priority and she has many more responsibilities. She manages her practice time on her own, deciding when and for how long to practice	Likes to play music that she knows but resists learning new music Her performance of piano repertoire is negotiated and evaluated between teacher and student	Her piano is in the family room, not always a quiet place to practice. She does not count on a good practicing environment	Family and church friends appreciate her music playing Help is provided by teacher
Odelia	Extrinsic motivation in the form of maternal presence in order to practice, even though she enjoys playing piano and wants to be a piano teacher	She follows through all the instructions written on her notation book	She practices about 20min almost every day of the week	She plays the piano as doing her homework, will not go beyond what I propose	At home, in her electric keyboard in a semi-private space I assume	She practices with the help of her mother
Lara	Intrinsic motivation to play the piano, but not to practice	Little self-reflection in weekly practice. She does a run through of the music she's playing and hopes to	Practices once or twice a week on weekends only, as agreed with parents; so she can concentrate on school work.	Often forgets music scores to lessons and does not keep a notation book. It's	Has a very small keyboard connected to a computer where she practices Unsatisfying physical	Family encouragement but no pressure to accomplish goals in piano.

		survive. When faced with difficulties, tries some strategies to overcome them.		like it was someone else's duty.	conditions.	
Chloe	Intrinsic and extrinsic motivation. She likes learning piano and is a way of participation in family tradition.	Follows instructions consistently during practice. Uses teacher-given strategies.	Practices every day for about a half hour.	Very shy in her playing and personal exchanges, and waits for teacher to lead the lesson.	Has an acoustic piano at home where she can practice without distractions.	Several family members support her in her weekly practice.
Oswald	Intrinsically motivated to play but not to practice daily	Uses strategies he's learned with me (writing on score, color-coding)	Procrastinates to learn new music (lit. rev. ref. to learning new music) practices irregularly, sometimes long hours and sometimes none at all.	Very enthusiastic to work in the lesson and to integrate my teaching. Likes to be guided, to show off when he's learned something new. Really good attitude in class.	Practices at home, his piano in the living room, mostly quiet. He did get a special permit to practice at school on his own initiative.	Created a band with friends to play music that they all like. He's more consistent with those practices than with his own practice time. He participates in the schools' orchestra. Needs parental reminders to practice regularly.
Amy	Extrinsic motivation needed for her to sit and play the piano, even though she's happy to come to the lesson.	She follows the instructions on her notation book and goes through it when practicing, not insisting too much on perfecting	When her mother takes the initiative, she sits on the piano to practice about 15 minutes at a time, which is not uncommon for a child of her age.	Invests little energy to learn music, has little patience when it comes the time to repeat passages or work more	Practices at home.	Practices only when her mother sits with her to do it. She's very happy to come to the lesson, derived from affinity with me on an emotional

		details.		intensely.		level.
Rebecca	Intrinisically motivated, sees playing the piano as something valuable for her.	She has well developed attentive listening skills. She focuses on musical results when she practices. In the lesson, as they all do, she gives me the lead and wants to follow the order that I impose.	Practices regularly, almost every day	Advances well with repertoire, practices only what I ask her to play, but composes on her own and plays at church every week.	Has an adequate place to practice	Makes music at church, practices alone with parental reminders
Ernest	Intrinsically motivated to play the piano	He aims to perfection in everything. Follows strictly my instructions in class and tries to go beyond his own limits	Very little time for practice	Does not practice regularly. In the lesson, he works hard to accomplish, not intermediate goals, but the final performance result	Crowded bedroom full of distractions	Alone against distracting siblings, needs parental reminders to sit and practice.

Appendix D – iSCORE use by students chart

	Work 1	Work2	Work3	Work 4	Work 5
Oswald	Planning 4/5 Doing 1/1 *audio* Reflecting 4/4 *with great metacognition*	Created but never developed			
Chloe	Planning 4/5 Doing 1/1 *audio* Reflecting 0/4	Opened but never developed	Planning 3/5 Doing 0 Reflecting 0	Opened but never developed	Planning 2/5 Doing 0 Reflecting 0
Rebecca	Planning ¼ Doing 1/1 *videotaped in the lesson* Reflecting 0	Planning 0 Doing 1/1 *videotaped in the lesson* Reflecting 0			
Jennifer	Planning 1/5 Doing 1/1 *text* Reflecting 0				
Ernest	Planning 4/5 *including strategies* Doing 1/1 *video* Reflecting 3/4	Planning 0 Doing 1/1 *videotaped in the lesson* Reflecting 0			
Odelia	Planning 4/5 Doing 1/1 *audio*	Planning 2/5 Doing 0 Reflecting 0	Planning 2/5 Doing 0 Reflecting 0		

	Reflecting 2/4				

Appendix E –Two Teacher Journal Samples

Date: Week of Jan 6th, 2014.

The week went off quickly and I waited until the end of it to write. This could make that I'll write more of an interpretation than a description on what happened, but I'll try to be descriptive. It's been more than two weeks that I sent the invitations to students to open iSCORE accounts and only three out of eight have done so. **Oswald** surprised me on Christmas day with a text message saying that he was on my iSCORE class! He always surpasses me with his enthusiasm. However, he practices not much more that other students, there's something that SRL can do there for him. Can I help him establish goals that are HIS?...The other student that opened an account was **Odelia**, her mother is always involved in her piano learning, sometimes present in class, when not she's asking how things are going. After I sent a recall to parents to open accounts, the mother of **Lara** opened one and emailed me to announce it. She's trying to be a little involved but not too much, my impression.

	iSCORE use	Evidence of SRL development (goal setting, strategy use, self-reflection, self-directed work)/ other comments.
Jeniffer	We talked about it out of class and I suggested that it could be	No class this week

	something useful.	
Odelia	I told her to look for a (goal-setting suggesting) message I had left on her page	She had followed through with the work we had planned before the holidays. Her new piece was learned –the notes, that is- the rhythm was not very clear. She stopped at every bar line. We worked on that. I induced her to recognize what needed to be fixed and she did. She was able to self-reflect on each try and arrive at a better playing.
Lara	She did not bring her music scores, so we went to a computer room and I showed her iSCORE. We worked on my page because she did not have her password, and I guided her to develop the piece she's working on "fur Elise" as a Work. We did task analysis, goal setting, and explored what could be done in the other sections (doing, reflecting). She was delighted and this	The fact of not bringing her music scores to class shows that she's lacking in SRL development. She does not realize that this plays against her goal of learning her piece. She sees it as having little importance. This is, however, a student who is very motivated to learn this piece and very talented, but she does this often and does not take responsibility for her forgetting.

	allowed us to do relevant work during the lesson.	
Chloe	I mentioned to her in class that she needed to open an iSCORE account	We did some goal setting by talking about the music she wanted to play for this period of the year with the end concert in mind.
Oswald	Opened the account but has not developed anything in yet.	No lesson this week
Amy	Has not opened an account	
Rebecca	She has not opened an account, so I showed her my iSCORE portal page, but the "work" tab did not open. We agreed that she would open a "work" using iSCORE and linking a youtube video that we I found for her on salsa playing.	She had followed through with practicing her piece during the holidays, and had made progress. She had self-reflected and was able to tell me what was working and not working with the piece.
Ernest	Has not opened an account	Coming back after months of not having lessons, he was quick to go into action (playing) without taking much time for planning or reflection. After some work, he started to take some time to "listen" to the result of his playing and "look" at

		the gestures that produced it. This allowed him to apply changes to it.

Questions:

1. What did I do to encourage them to self-regulate?

With **Lara**, I remember her being blocked at one point by the challenge of goal setting. The best thing I did for her was to tell her to take time to reflect before writing something. This really changed everything. She started to allow herself time to come up with her own answers, and none of them were dismissed by me as inappropriate. She wrote what she considered to be good strategies and she knew that she could put in more in the future if she wanted.

With **Chloe,** I asked her what piece she would like to play (and she had an answer for me) which gave her the power of goal-setting in a student-centered way. I also mentioned that we had a time limit to learn the notes for the pieces she was going to play and defined the repertoire in full for this time period.

With **Rebecca**, we started working on the difficult parts of the piece before playing the whole, modeling for her a practice strategy. After each try, I would ask her for her appraisal of her performance (self-reflection). Based on that, she would play again with a specific goal in mind and repeat the cycle until the result was satisfactory.

With **Ernest,** I modeled for him self-reflection through asking him to reflect on not only note accuracy after playing, but also articulation and rhythm.

2. Teacher self-regulation

Planning. I want to open a page on iSCORE for each of my students and analyse there what I need to do in order to help them self-regulate. I'll also open a page for those students who're not participating in the iSCORE project. I would like to develop more into preparing material for the lessons. Like this week, I had found the perfect YouTube video for Rebecca and it was a success to show it to her, she immediately got hooked and wanted to play what was being taught to her. I e-mailed it to her to work on during the week.

Date: Week of March 10th.

Jennifer's lesson this week was the last to be videotaped. I've not seen any of the recordings; I'm just wishing to be done with it. She had not practised for the last four days but we did anyway accomplish some work during the lesson. We followed the usual routine of scales first, then Bach's invention and then the Turkish March. But I've been thinking that my approach to conducting the lesson is not very original, and not goal oriented, even though the work I do in every piece IS goal oriented. Well, we went right on to the scales and for a change I decided to stick to D major, an easy one that's not C major. So, I looked for the metronome and as always she wanted to hear the eight-notes but I gave her only the quarter-notes and asked her to hear the others internally. She did a first try, after which I told her to work hands separately because she was having fingering problems. I asked her after each try what had been the problem. The first time she just pointed at her left hand, after the second try she said it was the fingering, and at the third try I had to remind her the rule of 3rd finger passes first and then 4th. After a couple of

repeats of the explanation she got it and started to do correct fingerings. And then I started focusing on keeping the speed (related to fingers that were staying too long on the keys), evenness of sound and wrist motion. She worked the right and left hands comparing the motion in both. It was very conscientious work, and she could notice when she was playing correctly, lightly and letting go of the keys soon enough to not drag down the whole tempo. This was half of the lesson already. I also worked with her on the scales on triplets, which is a challenge for her. We found a slower tempo on the metronome and I asked her to practice that way the hands separately. She tried, as they always do, to play it immediately after hands together; but I kindly repeated my recommendation of doing it hands separately. She agreed. I asked her to play the invention with right hand and she told me upfront that there were a couple of spots she had trouble with. So I asked her to start by one of them, which turned out to be a reading problem (she did not know the notes), but there was no major technical issue there. I lead her to analyze harmonically one of the passages hoping that it will help her associate the notes of the chords represented, but she had some trouble still. We went on and I found the real difficulty which was a passage that we had already spotted. Her thumb was too tense and I tried to help her giving her ideas of how to practise, and letting her know as soon as I saw the thumb tense, so she could recognise. She's getting a lot better at recognizing her own tension and I'm proud of this, but I'm searching as I teach this piece to her, what could be the best way for her to get to play it free of tension. I feel a bit ignorant, and at the same time I know it is she who has to find it, in these moments I do not know if I'm well prepared to teach this piece; but at the end I think I can do it and I'm a good support to her even if I do not have all the answers. She played also the left hand even for only 2 bars and I reinforced what I had already taught her about using the wrist for the eight-note passages. It took her some tries but she got it, and said it was the first time she was

able to do it that way. It sounded good and it looked good. Last three minutes or so of the lesson I asked her to play a bit of the Turkish March and we saw the tense thumb again. I've been trying to tell her to use her wrist a lot even in small movements, but she referred to the Glen Gould video which I told her to see and follow, because I like it a lot, and she says that his technique is different for that passage; because he does not use but the fingers apparently. When she tried to imitate him I liked what I saw, even if it was not the same technique. I have to look into this video again and see what we or she can incorporate in her version of this piece.

This week **Lara** is not having a lesson because of school activities. I spoke to her mom who reported that she's been practicing regularly, and asked her to have Lara record her piece on iSCORE. She agreed to tell her. I explained her that it was a good way to receive feedback from me even if she was not having a lesson, and that the iSCORE work would help Lara stay on focus on the aspects to be worked out in her piece. We'll see.

Odelia's lesson. She did not have her scores and told me her mom was on her way to bring them, so I thought that was a good moment to open the iSCORE account and see what she'd been doing (opening it takes, in my understanding, a long time). I was wondering what to do in the portfolio, sure that my intuition would guide me once again, and at the same time telling myself that this could not work this way, that I should've had a plan of what to do today in iSCORE with Odelia. As I was looking for the passwords the mother arrived, so I immediately rushed to focus on the repertoire. I asked her about practicing during the spring break and she looked at her mother, who reported that they've been practicing every day a little bit. I was pleased, and I asked Odelia why she looked for mom to say that, to which the mother replied that Odelia was not sure that the minutes they'd done were considered enough. So, I asked Odelia what she had practiced the most and she told me the name of the piece and started playing it. Strangely, she

started playing the right hand part with the left hand…not being able to go on, she started over three times without noticing anything, until she started with the right hand. Then I mentioned it, and she was surprised, and her mom commented that there was another piece that started with left hand and that was surely the origin of her confusion. I told her it was a good thing to be able to play one hand's part with the other, hoping one day we get to that kind of exercise. I put the metronome and saw that she was able to play at the speed and raised the speed from 60 to 80. Then one of the difficulties became clearer, and I had her repeat it as I modelled for her how to keep the fingers very close to the keys in order to play all the notes on time. Since she was getting it and the mom was there, I indicated on the notation book that they could start practicing at 75 and slowly get to 80 during the week. Immediately after that point was made, I went on to ask her to play the next piece, in which I lead her to correct a rhythmic problem that was recurrent. Once again solved (for the moment, at least) I asked her to look at the dynamic markings, which we had never worked on, and she was able to recall the meanings of "p" and "pp" which were written. She played with dynamics successfully. Then she asked me if we were going to play the C major scale, to which I replied "yes, go ahead!" (I was following her natural rhythm –she'd had enough) She played it and had trouble in the descent part with her right hand fingering. I asked her to play hands separately, to name the notes as she played, and to play the scale in staccato. Finally I wrote on her notation book, as I explained to her mom, that she'd practice hands together but staccato to help with her problem at a slow motion. When I wrote "slowly", I asked her what would be the use of this indication (I'm proud of this), to which she replied she did not know. So, I asked her if she thought that playing very fast would be easier or harder….shyly she replied "harder", and then I explained to her that playing slowly would allow her to have more time to reflect on her fingerings, and would make it easier to achieve the

desired results. Then I do not know how she went to the last piece and started playing it. The note reading was good, and there was only one measure where the rhythm was not good. So we worked on it and I marked the score with an X4 to mean that she'd practice it four times before playing the piece. I made sure to explain them all of this. I even (I'm proud) got to work with her on the dynamics of this piece also, which she was able to respond to. The last ten minutes of the lesson, we went to the table to work on the theory part of her book. I made sure that she understood the basis of what she needed to do, explained the basic principles and we finished the lesson. I told her mom that it would be good to develop a bit of her work on iSCORE, and she told me she had not had time during the holidays but was very interested in looking to see what can be done with this tool. She even told me that sometimes she'd go online to find answers to music questions in order to help Odelia with her practice, and I suggested that she'd put a link on Odelia's iSCORE so we could share this information with other students, which she found to be an interesting idea. They left and the mom thanked me many times for my service to her daughter. It's good to be appreciated.

Chloe's lesson started 15 minutes late. She reported having practiced during the holidays. I asked her if she was ready to play in the Conservatory's music festival because the deadline for application was in two days, and she said that she was not. It was a de-dramatized conversation; she took it well and decided owning her decision. I told her that we would prepare a good end-of-the year concert and she agreed. Before she started playing I asked her if she had done any work on iSCORE (I'd seen it yesterday and there was nothing new on it) and she said that she'd done a bit last night. She told me that she did not understand the meaning of "criteria" that I'd asked her to develop on the first "etude". Then I asked her to define what would it look like to succeed at playing the piece, and she came up with "to play it entirely without mistakes", and I

told her to write that on iSCORE, that was a perfectly valid criteria. She played the first "etude" that I'd asked her to play with metronome at 120 (it is really good that she keeps a neat notation book) taking care of left hand's fingerings. She set up her iPad metronome, and played. When she finished I asked her to recall her criteria for that piece, and to tell me on a scale from 1 to 10 how well she'd done. She said 9, and I agreed and complimented her on her playing, instructing her also to write that on "reflecting". I asked her why she thought she'd had that result and I immediately referred to something she'd said rapidly right after playing it "she'd practiced enough to be able to play it well and overcome her left hand fingering problems". I was so proud to have iSCORE come to life in the lesson, even if we were not online actually filling it out. I told her to go and write all that, record her piece by tomorrow night (I had to put some pressuring deadline); and I had to draw a sketch of the planning, doing and reflecting tabs to make it clearer to her. I did not have the time to open the computer and look for the site, enter passwords, etc. She played the E major scale and I instructed her to play on fourth-notes and eight-notes and showed her how to do it with the metronome. Apparently she had not understood my former notes. Then she played the Sonatine, in which she was having tension problems and rhythm inaccuracies. I called upon her emotional memory, and asked her to play expressing the anger that the music demanded, which worked for her. But there was a passage that remained clumsy, so I stopped her many times telling her "no", and giving her a new strategy each time (keep fingers close to the keyboard, run towards a specific note, lower the speed, etc). I told her that only repeating the passage would not do it, if she was not playing it well, and that she needed to have a clear idea of the music in her head. She started overcoming the tension and listening more attentively to her playing. We did not have much time for all this work. I asked her to record it

on iSCORE so I could give her feedback and not wait another whole week (she's missed some lessons) for help from me. She said she'd try. I believe it.

Amy's lesson started with a phrase from her that's very common. Well, almost at the start of the lesson (after I'd asked her about the holidays and she'd sat on the piano to start playing) she asked me: is the lesson going to be very long? I immediately said "no, it will not" and tried to ignore this comment. It's puzzling for me and I do not know what to do with it, really. Does she like it or not to do piano lessons? As soon as I saw my note on her notation book about the need to download a metronome, I asked her if her mom had succeeded at doing it, and she eagerly told me yes, and started telling me how when it went too fast she would lose sight of the little ball on the screen. I got my metronome and she showed me the effect. We left it aside and she started playing a fingering exercise I'd written for her on her notation book: first RH then LH and then hands together, every step twice. It was at this point that she asked me if the lesson was going to be very long. Then she played Vieil Oncle Jean with rhythmic errors because her hand was not close to the keys. So, I worked this out with her and finally set the metronome at 80 and came down to 60 where she was more or less comfortable (zone of proximal development) and asked her to only sing the notes of RH while I played the LH. She did it successfully and next step she sang RH and played LH and it was good, so next she played both hands. She still had some trouble but I wrote and told her to practice it with the metronome. Following this we started looking at a new score and she was able to color-code all of the notes with little help, although it took her some time. But she was comfortable doing it. Then she played the entire RH part and I assigned the LH also for home practice. One thing I've noticed in this lesson is that she was less distracted; even the teacher of the classroom was there and very close to us, and my student did not get distracted by this, like she'd normally do.

Oswald arrived very enthusiastic to the lesson, as always; and as always he reported to have been practicing a little bit. He never says “oh, I did not do anything” or “ I’m ready to play this piece in front of anyone” but arrives in a playful way to slowly work in the lesson. I had already opened the computer on the RCM website to login to his iSCORE but after a few tries he told me that he was not sure he remembered the password. He tried to reset it, but the system did not even recognize his e-mail address….!....who knows….he said he’d try to login at home and recover his access, I told him to e-mail or text me if he needed me to resend the invitation. He opened an account but has not used it at all so far. So, I went on my iSCORE portal to show him the interface and the planning, doing and reflecting tabs; and asked him to record his Skyfall piece and fill out as much as he could on these tabs, as a first work on iSCORE. Fifteen minutes had passed from the beginning of the lesson; luckily we had some extra time. I asked him about the state of his orchestra repertoire and he evaluated it at 75% learned, so he started playing one of the pieces where there were rhythmic and fingering problems. We worked them out, marked the score on pertinent places and he was playing it much better after ½ hour. So, we reviewed another score and there was a little phrasing detail but the rest was very good. I congratulated him for it, it was probably the hardest of all pieces. I was feeling lacking in vocabulary to express the character of the piece and of a specific phrasing, but I went for what I could say and his musical result was excellent. Then he played a last piece that he called “the remaining 25%”. It was the easiest of all, and after he played the LH with many problems due to a lack of practice, I told him that he did not need me for this work, it was too easy but he needed to do it himself, in an attempt to set clear boundaries that would help him take ownership over his responsibility. I challenged him to learn it in one day (orchestra rehearsal is tomorrow) and he took the challenge.

Last I asked him to play Skyfall but he was not even capable of playing two bars of it. I told him to go and practice it by himself, to recover it and then record them over the weekend on iSCORE, and then I'd give him my comments. He said he'd do it, and even proposed to do a "work" for his orchestra repertoire later on. After that I reviewed some of his theory work and pointed out a couple of mistakes needing correction, and assigned him another theory page to do during the week.

Previous to **Ernest** lesson I'm trying again to re-upload the video that he'd uploaded, so I can annotate it and comment on it…it's apparently working, but it's been 8 minutes and it's not fully uploaded yet. Second try….26 minutes and it's not done yet, for a less than 2 minutes piece.

	iSCORE use	Evidence of SRL development (goal setting, strategy use, self-reflection, self-directed work)/ other comments.
Jeniffer		Spontaneously incorporates learning strategies.
Odelia	Mom said she'd log in this week and look at it with her.	
Lara	Mom said she'd have her upload her playing	
Chloe	Did work on a new piece and asked about the meaning of "criteria"	She was able to give her own criteria and to self-evaluate and do causal attribution assertively.
Oswald	Proposed to do	He took the challenge to learn his 25% piece in one day

	more that I asked him on iSCORE	and have it ready for his orchestra rehearsal the next day
Amy		Better attention focusing, self-controlled use of strategy.
Rebecca		
Ernest	Difficulty to upload recording to annotate and use in class.	

Questions:

1. What did I do to encourage them to self-regulate?

   For **Jennifer**, I notice I'm asking more upfront questions like: what's your goal with this? And I'm noticing that she uses several strategies automatically as she works on a passage in class (slowing down, hands separately, studying one hand's movement to imitate it with the other, imitating someone else's playing). I see that in **Chloe**'s lesson I was assertively guiding her towards self-regulatory work in the questions I was asking to her. We did a perfect self-regulation cycle in a few minutes, thanks to the reference to iSCORE. With **Oswald** I showed him the whole SL process on iSCORE and assigned him to complete one work by the weekend.

2. My teaching –parent communication.

I've been more in communication with the parents of my students, and feel more open to them. I usually would feel they are very busy people that do not care too much for my work with their kids, but I'm finding that they are more permeable than I thought. iSCORE is giving me a subject other than their kid's lack of practice to talk about and suggest things. Maybe they feel

(or I feel) that I'm really interested in the musical development of my students and that's why they see a value in this iSCORE new thing. I think that it's my perception, but it's opening a way of valorisation and communication with them for me. More to come later. Somehow I'm (am I?) getting out of my comfort-uncomfortable zone and reaching out, seems like I'm finding in iSCORE a platform that allows me to construct a teaching style that's SRL oriented.

APPENDIX F - Six dimensions table of my students after iSCORE implementation

	Motive	Method	Time	Behavior	Physical environment	Social environment
Jennifer	Intrinsic motivation to play pop styles and compose songs using the piano, but not for classical repertoire	Created task strategies to use during self-instruction	Invested increasing amount of time in practising, even though it was not regular	Resistance to learn new repertoire but pro-active in composing and seeking help for pop music	Same conditions	Music making in the church band is her main activity, informal learning.
Odelia	Gradually increasing intrinsic motivation as she experiences successes in the lesson	She got to self-correct during the lessons; started improvising spontaneously and acquiring a much steadier rhythm.	Continued practicing regularly	More pro-active in the lessons, asking questions, improvising, self-correcting	Same conditions	Mother is slowly letting go of her supportive role by just sitting by her during practice, without giving instructions.
Lara	Intrinsic motivation increase	More pro-active in using the time of practice to get results	Started to practice in early mornings to take advantage of	Taking ownership over her learning, evidence of	Same conditions	Family support with no pressure for her to achieve

			alert state of mind	self-directed work in creating strategies, using self-instruction		musical goals
Chloe	Intrinsic motivation encouraged by family members	Follows instructions but waits for teacher to give guidelines	Consistently practicing every day throughout the project	Started to verbalize her opinions on her playing and the repertoire	Same conditions	Family support in the form of company and help during practice
Oswald	Increase in intrinsic motivation	Spontaneously created an iSCORE work for his orchestra pieces, used strategies provided by teacher	Procrastination in general and a slight increase in practice time thanks to the possibility of practicing at school	Defensive mechanisms in the form of resistance to learn new repertoire	Started practicing at school to take advantage of free time during weekdays	Persevered in learning a piece to play with a singer friend
Amy	Extrinsic motivation to work in the lesson.	Attention focusing increased, strategies were teacher given	Lack of time invested in practicing.	Defensive mechanisms: asking about the end of the lesson, complaining about repetitions; started to give way to more adaptive ones	Same conditions	Started to practice sometimes without parental assistance
Rebecca	Intrinsic motivation	Self-regulated use of strategies for practicing	Continued to practice regularly	Self-directed work, adaptive behavior in following through with assigned work	Same conditions	Continued to play in church band and practice repertoire by herself
Ernest	Intrinsic motivation very low to	Very quick to incorporate strategies	Did not practice almost at all	Good performance defensive	Same conditions	Teacher's input through the

	practice, extrinsic motivation to succeed during the lesson probably supported by teacher's praising for progress made	given by teacher but did not follow up with home practice		mechanisms for not practicing. Really pro-active during lessons and efficient in getting results quickly		lesson was the means to make progress since he would basically not practice by himself