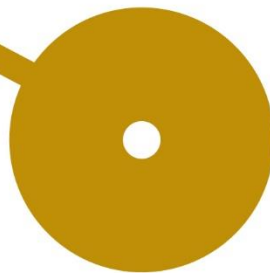


An investigation into skill acquisition in Cello performance and into the role of the teacher: A case-study of two cellists preparing for a performance in a Music College Setting

Klara Louise Rundel

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Resumo

O objetivo deste trabalho foi o de obter uma compreensão mais profunda das estratégias utilizadas pelos músicos a fim de desenvolver as suas competências e atingir níveis ótimos de desempenho, num contexto de uma escola superior de música. Além disso, o objetivo foi o de aprofundar a compreensão do papel do professor nesse processo, mais especificamente, compreender que metas de desempenho os professores traçam com seus alunos, que estratégias desenvolvem para as atingir e de que forma as comunicam aos seus alunos.

Foi realizado um estudo de caso numa escola superior de música Portuguesa. Participaram no estudo um professor de violoncelo Português e duas alunas da sua classe. A Participante 1 frequentava o último ano do curso de licenciatura e a Participante 2 frequentava o último ano do curso de mestrado. Foram gravadas em vídeo duas aulas de violoncelo, de 1h30m cada, as quais foram integralmente transcritas. Posteriormente, foi elaborado um sistema de codificação e identificadas as principais dimensões de análise.

Os resultados da análise indicaram que as alunas trabalharam através de um processo de modelação auditiva a fim de criar uma representação mental de como a música deveria soar (visualização do objetivo). Os resultados indicaram também que tanto as estudantes como o professor procuraram desenvolver estratégias específicas para estabelecer marcos referenciais na música (pistas de recuperação) que pudessem ser recordados automaticamente durante a performance. Em ambos os casos, o trabalho foi focado principalmente na interpretação, com diferenças nas suas subcategorias. Resultados posteriores sugerem que essas diferenças variam de acordo com os diferentes estágios de aprendizagem do repertório e com nível de expertise das duas alunas. Foi ainda visível que para atingir um determinado objetivo o professor usou, na maioria das vezes, mais do que um tipo de estratégia de comunicação e que adaptou as suas ações ao nível de desenvolvimento das alunas, bem como ao nível de domínio que detinham do repertório.

Por fim, os resultados sugerem a presença de um professor perito, atento às diferenças das alunas e que procura caminhos significativos para desenvolver o seu talento.

Palavras-chave: Aquisição de Competências; Violoncelo; Objectivos de Performance; Estratégias de Comunicação; Professor Perito

Abstract

The aim of this work was to gain a deeper understanding of what strategies musicians use to develop their skills and achieve optimal performance levels in a music college context. In addition, it deepened the understanding of the teacher's role in that process. More specifically, the aim was to understand the performance goals teachers devise with their students, the strategies they develop to put their goals into action and how they communicate them to their students.

A case study was conducted in a Portuguese music college. The participants were a Portuguese cello professor and two students. Student 1 was in her final year of her undergraduate degree and Student 2 in her final year of her master's degree. Two cello lessons of 1h30m each were video recorded and integrally transcribed. Afterwards, a system of coding was devised, and main dimensions of analysis identified.

Results of the analysis indicated that students worked through aural modelling to create a mental representation of how the music should sound like (goal imaging). Our results also suggested that both students and teacher were looking at specific strategies to establish mental landmarks in the music (retrieval cues) that could be recalled automatically during performance. In both cases the work was focused primarily on interpretation with differences in its subcategories. Further results indicated that these differences vary according to the different stages of mastering the repertoire as well as differences according to the level of expertise of the two students. To attain a determined goal, the teacher was using, most of the times, more than one communication strategy and he adapted his actions to the developmental stage of the students, as well as to the stage of domain of the repertoire.

Finally, our results suggest the presence of an expert teacher, one who is attentive to differences in students and promotes experiences to develop their talent.

Keywords: Skill acquisition; Cello; Performance Goals; Communication Strategies; Expert Teacher

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Introduction

When musicians enter their studies in higher education, they already invested several thousand hours of practicing. Indeed, a great number of professional musicians started learning their instrument even before attending primary school. The everyday life of artists striving to become professional musicians evolves mainly around practicing, accompanied by other educational engagements, especially lessons with their instrument teachers and others such as chamber music, orchestra, or theory classes. Even after you reach the point of becoming a musical professional, or even rank among the greatest soloists, instrumental teachers, orchestra-musicians, chambers musicians - continuous daily routine practice is necessary to maintain your skills and to develop these even further. Moreover, for music being such a competitive field, musicians are likely to compare themselves with fellows and role models. One of the most common strategies to develop as quickly as possible is to observe their role models and peers playing. However, this does not consequently answer the question of interest for this study: How did they got there?

This subject has been explored regarding eminent scientists, athletes, and artists, and there has been some consensus vis-à-vis the psychological characteristics (how they are) of these individuals, as well as the strategies (what they do) they use to push through their limits, develop skills and achieve optimal performance levels (Bloom, 1985; MacNamara, Button & Collins, 2010a; MacNamara, Button & Collins (2010b); Talbot-Honeck & Orlick, 1998).

Next to research, through media you have access to clips of master classes, such as soloists promoting on their webpages or social media accounts like Instagram, insights on their everyday life, on how they prepare for performance and what their practicing routine looks like. For example Pablo Ferrández doing a practicing tutorial: <https://www.youtube.com/watch?v=7IE5aCjw2I0>, or a challenge on Instagram called #100days of practice, <https://www.instagram.com/explore/tags/100daysofpractice/>, with 535.023 posts (last accessed 29/12/2020) where musicians and music students around the world share clips of their everyday practicing. The following link shows one of the clips of Hilary Hahn participating in #100days of practicing in the challenge already for her third time (*Vol.3*): <https://www.instagram.com/p/BzMlb1Vg0XX/> (57 699 visualisations, last accessed 29/12/2020).

The present study focusses on the research question, how musicians learn and acquire skills and how they develop and achieve expertise. In order to discuss this topic in detail, the study is divided into the following chapters.

In Chapter I, *How do Musicians acquire skills?*, the main findings of years of research on this topic are described. The most prominent studies of Anderson Ericsson, R. Chaffin and Andreas C. Lehmann, amongst others, form the research background of this work. As a consequence, the role of the teacher in acquiring those skills is depicted within the same chapter to sharpen the focus of this study. Chapter II describes the empirical work. Results will be described in Chapter III and discussed in Chapter IV, followed by the Conclusion of the work.

Chapter I

1. How do musicians acquire skills?

Anders Ericsson (1947 – 2020), a Swedish psychologist and Professor of Psychology at Florida State University, has dedicated his life to the research of learning processes by studying experts/high level performers such as athletes, classical musicians, or chess players. In one of his most recent works Ericsson and his co-author Robert Pool, who is a non-fiction writer specialized in science and technology, are depicting in the book *Peak: Secrets from the New Science of Expertise* how we can most effectively develop our abilities towards excellence through Ericsson's concept of Deliberate Practice (Ericsson & Pool, 2016).

When looking at the astonishing level of expertise in basically every field and every age group we often are under the impression that behind every extraordinary expert stands a special talent for the expertise itself. However, the authors state in their book that developing expertise is not about having a special given gift, but the gift is the ability to develop the gift (Ericsson & Pool, 2016). The basis of reaching expertise lies in dedicating training that drives change in our brains and in this way the amount of practice correlates with expertise.

Although the influence of factors such as genetic endowment, personality or intelligence may be relevant to gain skill, one may well ask what kind of practice is it that which enables people to reach abilities and push them consistently to levels which we did not expect to exist? According to Ericsson, Krampe and Tesch-Römer (1993; 1996) to reach world class level, musicians must put 10-20 years of training and about 10.000 hours of practice. Once at this point those developed skills must be maintained by regular hours of practice. The same applies to other highly competitive fields such as dance, individual and team sport or chess. However, the amount of practice alone is not enough, and the authors call for the importance of the quality of practice as well as the quality of feedback.

Indeed, Ericsson and Pool (2016) explain that it all started in the second half of the twentieth century when people devoted more and more time into training using the growing sophistication of training techniques, which resulted into steady improvement in abilities of performers. At that time cross-field research has started, leading to the observation that there is a set of principles that guide the most effective practicing in all fields working with the adaptability of the human body and brain. Because, the authors argue, the fundament of every method needs to take into consideration what works and

what does not work, driving the changes into body and brain, all effective practicing works essentially in the same way.

Ericsson (1996) defended deliberate practice (which is difficult, requires effort and not intrinsically motivating) as a necessary condition to achieve high levels of expertise, introducing the criterion of 10 years of systematic training as a determinant condition to achieve professional expertise. Later, Ericsson and Pool (2016) describe different types of practicing such as what Naive Practicing (where one would only repeat playing) and Purposeful Practice which works with having a specific well-defined goal building a frame for judgement. Some principles of Purposeful Practice match with the ones of Deliberate Practice. For instance, breaking down long term goals to puzzle parts, being completely focused on the goal, constantly getting out of the comfort zone, confronting yourself with what you cannot do or not trying harder to reach something, but differently.

Research in Psychology has shown that the knowledge of results is necessary for improving a skill. Knowledge of the current results of a performance (feedback) enables you to compare it with the desired goal. The ability to be aware of the discrepancy is the fundament to take further steps to diminish the discrepancy of current result and actual goal. While advanced musicians and students can provide their own feedback, starters and less advanced students rely on their teacher supplying it (Lehmann, Sloboda, & Woody, 2007).

Lehmann et al. (2007) found that the most productive feedback however is the one describing the difference between the actual performance and the optimal performance. For example, a teacher could say that the student used too much bow for the sixteenth note to sound properly and that the student should use less bow and stroke between balance bow and the middle of the bow. This way you describe what makes the difference and thereby identify the problem which must be solved.

Moreover, feedback is crucial and can be provided either by oneself, if already a professional or advanced learner, or by someone external. A professional who is pointing out where you fail and why, who is giving you tools to overcome obstacles and giving insight on where you stand in the process of reaching the goal (monitoring your progress). Finally, and probably the most difficult, is to maintain motivation, as Hallam (2011) also stated. As already explained, learning something complex is about long-term goals and being patient. Seeing improvement takes weeks, months and even years. That is why it is

so important to break the goals into little sequential puzzle pieces because in this way it is easier to master one by one by being able to observe the improvement.

So, we might sum up the five principles of Deliberate practice Ericsson and Pool (2016) propose:

1. Full attention (Intense focus): giving full attention to every task in the process of learning. Do not wander with your thoughts. Being aware of the properties of concentration (e.g. it falls and rises constantly in just some hundred milliseconds). Being patient with those properties on one hand and disciplined on the other. Try to put everything else that may bother your thoughts away.

2. Leave the comfort zone (Push beyond one's comfort zone): According to the authors, if learners never push themselves beyond their comfort zone, they will never improve. Progress takes place when the work is done on aspects that were not mastered/learned yet. It is the moment where mistakes will happen, which is most crucial for learning.

3. Learning the basis (Attaining well-defined, specific goals): The student must break his goals down into little sequential pieces, which helps by keeping perspective and not getting lost on the long way of reaching a goal. Thus, it is important to master one piece at a time.

4. Immediate feedback (Receive and respond to high-quality feedback): The authors state that to progress, first it is important to find a good teacher because a good feedback is crucial. In the deliberate practice process, novices need a competent teacher who knows where to go and what is needed to get there, who teaches the student established learn methods. In other words, getting concrete feedback to one's actions and then adapting the actions based on it is critical for development.

5. Practice – Building Mental representations: The authors explain that the process of deliberate practice produces and relies on mental models and mental representations to guide decisions. They argue that if we are using mental representations daily what is it that sets expert performers apart from anyone else? It is the quality and quantity of their representations. Through years and years of practice experts build highly complex mental representations of the different

situations which they are likely to face in their field and train their memory specifically for that. Facts, images, rules, relationships are gathered in the long-term memory and can be used quickly to respond to certain contexts.

1.1. Practice: Building mental representations and the importance of Chunking

We all build mental representations and use them every day. It comes automatically over time, with added experience, and, of course, the development of the brain. Ericsson and Pool (2016) call upon the concept involved in the word dog: hypothetically living in a jungle with no dogs the word would have no meaning for us. Even if someone would tell us what dogs are about (furry, four-legged, trainable, meat-eaters or that they are called the best friend of humans) the word dog would still be just a label of disconnected knowledge. However, if we now would get to know a dog all this information would eventually come together to a holistic concept that is represented by the word dog. In future if we heard the word dog, we would not have to search in our long-term memory for details, they would be immediately accessible. The information provided by these details or small units of knowledge (chunks) regarding the concept dog help to process a large amount of information quickly. Through research in cognitive Psychology, we know that chunking enables us to transport more information from working memory into long-term-memory. As Gleitman, Gross and Reisberg (2011, p. 306) described, chunking is a process of reorganizing (or recoding) materials in working memory by combining a number of items into a single, larger unit.

According to Ericsson, Charness, Feltovich and Hoffman (2006) the most influential and pioneering work on expertise was conducted by Adrian de Groot (1965), who invited international chess masters and skilled club players to *think aloud* while they selected the best move for chess positions. His analyses of the protocols showed that the elite players were able to recognize and generate chess moves that were superior to skilled club players by relying on acquired patterns and planning. This work would have great impact on the seminal theory of expertise proposed by Herb Simon and Bill Chase.

Chase and Simon (1973) developed a technique for isolating and studying the perceptual structures that chess players perceive. They confronted three chess players of varying strength - from master to novice - with two tasks: (1) A perception task, where the player reproduces a chess position in plain view, and (2) a short-term recall task, where the player reproduces a chess position after viewing it for 5 sec (following de Groot's study in 1965). They departed from the following question: "What does an experienced chess player *see* when he looks at a chess position?" (p. 55). The results of the study have shown that the amount of information extracted from a briefly exposed position varies with

playing strength. The superior performance of stronger players derives from the ability of those players to encode the position into larger perceptual chunks, each consisting of a familiar sub-configuration of pieces. Moreover, they argued that pieces within a single chunk are bound by relations of mutual defence, proximity, attack over small distances, and common colour and type.

So, the Chunking Theory of Chase and Simon (1973) proposes that expertise in a domain is acquired by learning a large database of chunks, that, as Gobet (1998) explains, are indexed by a discrimination net. This discrimination net allows a rapid categorization of domain-specific patterns and accounts for the speed with which experts *see* the key elements in a problem situation (p.6). This theory and its subsequent refinement has had a significant impact on expertise research in general and that on games in particular, like the studies of Charness (1998), Gobet, or de Voogt and Retschitzki (2004) to mention but a few.

The concept of chunking is also found in Ericsson's aforementioned concept of deliberate practice (Ericsson et al., 1993;1996) where the authors consider that the development of efficient mental representations are the main purpose of deliberate practice. Later, Ericsson and Pool (2016) would argue that mental representations help us to deal with information (by means of analysing, understanding, interpreting, organizing, and memorizing it) and to make accurate decisions as well as responding rapidly in given situations. In short: Seeing the forest when everyone else with fewer mental representations is seeing only trees (Ericsson & Pool, 2016, p.48).

The fundament to do so are mental representations, which in turn must be built by teachers. Students need them *internalizing the teacher in themselves* meaning being able to self-regulate their development of skills in practice and performance (Lehmann et al., 2007).

Lehmann et al. (2007) proposed three representational functions of mental representations address the teacher's role in developing them:

The function of Goal imaging is to be able to imagine your goals. You need to know how a piece of music should sound like. It is developed through the teachers aural modelling or technical media.

Motor production are mental representations that allow students to execute movements and physical responses needed to play the instrument and the knowledge of how those movements feel. Teachers teach them through instructions regarding technique and bodily aspects of performance.

The third function self-monitoring applies to the ability to monitor yourself. To do so you need to know how you sound. You need to be able to listen to yourself to be able to compare your current result with the goal you were imagining. Once these skills are developed and partly automatized, musicians can compare the sound image (of their own performance) with the goal image, identify discrepancies therein and then correct them by adapting the representations for motor production.

Mental representations, thereby, are a tool to plan. In this way, before expert musicians start a new piece, they are able, based on what they see, to hear the music, guiding their practice and their performance, using it as a feedback to check how close their practicing is matching with their idea. Additionally, the mental representations of how the music should sound like are not the only one that experts have. They also have sophisticated representations about pitch, intonation, tone length, rhythm, tempo, dynamics, vibrato, harmony, variety of sound quality, bowing and many more. Not only have they an idea about how those components of music should sound like but also how to produce them on their instrument. The ability, however, comes with experience (Ericsson & Pool, 2016).

Results from a study led by Australian psychologists Gary McPherson and James Renwick (2001) have also highlighted the importance of quality of practice in developing music skills. They found that although most learners who took part in their cohort possessed the will to learn their instrument, they did not necessarily possess the level of skill required to ensure efficient and effective practice. They also found that young learners were typically excited about learning their instrument and that although their instrumental teachers were making them aware of what to practice many had very little idea of how to practise. The authors argued that every time a young musician self-initiates practice, consciously plans what to practise, chooses to correct their performance, structures their learning environment, or actively seeks information from knowledgeable others, they come one step closer to refining the self-regulatory processes that will eventually become automatized. Finally, results indicated that these differences in the

quality of practice emerged from the very first practice session and that they account for a large part of a student's subsequent progress.

Ericsson and Pool (2016) indicated that more advanced students are more likely to recognize mistakes, and to identify difficult places, which implies a higher mental representation of what they were playing and of their own performance. That means they hear the big and fine differences of their playing to their mental representation of what they want the music to sound like. Furthermore, they also indicated that the more advanced students were, the better their practice techniques. They depict the relationship of skill and mental representation as a virtuous circle: the more skilled the better the mental representation. The better the mental representation, the more effectively one can practice perfecting their own skills.

If we need mental representations to learn but they are also resulting of learning, as Ericsson and Pool (2016) say, how do we get there? Or differently put: how do you build mental representation? As the authors identified in their Book chapter's title: "First, find a good teacher" (p. 91).

2. The role of the teacher

As we have seen before, Ericsson et al. (1993) have proposed that the fundamental prerequisite of expertise is the accumulation of effortful practice over many years and the possibility of maximizing the time spent on deliberate practice. However, performers need to consider three constraints for their development: resource, effort, and motivational constraints. The resource constraint regards the available time and energy for deliberate practice, as well as access to teachers, training material and training facilities. The effort constraint regards the ability to highlight gains from long-term practice by avoiding exhaustion. Finally, the motivational constraint regards the ability to view deliberate practice as instrumental in achieving further improvements in performance, as Hallam (2011) also suggested. Therefore, the resource constraint would account for contextual factors of development, whereas the effort and motivational constraints would account for individual factors of development.

One factor worth mentioning in the resource's constraint is the paramount importance of time to practice. Indeed, Oare (2011) claims that although being able to practice involves

character qualities such as dedication, commitment, and perseverance, which are non-musical traits but essential elements of successful people, time is essential to improvement. However, the time invested needs structure, effective strategies for improvement, and assessment that informs students and here emerges the main role of the teacher: helping students to produce self-directed musical practice.

According to Oare (2011) this involves setting clear, timely goals, planning, and creating effective strategies, help students to self-monitor and adjust as well as to know where to seek advice, and to structure an optimal learning environment. Of course, this implies that students display consistent effort and persistence, but those characteristics also derive from the role of the teacher in helping students to achieve higher goals. Indeed, Oare also argues that teachers who provide students with such practice tools continue to see improvement and create a higher percentage of students who experience lifelong love of music and are intrinsically motivated.

So, the key to expertise lies in setting up conditions under which individuals can develop skills through practice. It is the teacher who must set up those conditions. The teacher is the one who is helping the student to build mental representations and to develop them continuously and should have training techniques that make it possible for the level in the field to increase steadily.

For orientation in the search of a good teacher, Ericsson & Pool (2016) identify some qualities a teacher should bring along:

1. A teacher should be accomplished in the field.
2. A teacher should have experience in teaching in that field.
3. A teacher should help students develop their own mental representations so that they can monitor and correct their own performance.

To develop their own mental representations of music, Ericsson and Pool (2016) claim that performers need to break the process of learning an instrument down into a series of sequential goals, focusing on each at a time. To build detailed and sophisticated representations they need to break the specific action/task down. A teacher should be able to break it down for them, having the long-term target in mind, teaching every step in it, not overwhelm them by having to take too many steps at once. The student should be able

to orientate himself on reaching little goals, to be encouraged to go on. Moreover, a teacher should monitor the trials, give feedback to it and help to modify the representation if needed.

According to Reid (2001) music students learn music through a hierarchy where the levels are successive, and the teacher is guiding the student through them. He proposed five levels of learning: focus on physical skills/technical aspects of performance, focus on musical elements (dynamics, phrasing, articulation), focus on Meaning (finding meaning within the music), focus on Conveying meaning to audience and focus on Express Meaning (self-expression).

In their book Ericsson and Pool are referring several times to the work of Roger Chaffin, Professor of Psychology at the University of Connecticut in the USA. Chaffin carries out intensive research on the cognitive processes involved in musical performance. In the paper *Practicing perfection: How soloists prepare for performance* (originally presented as a keynote lecture during the 18th edition of the ANPPOM annual congress in Salvador (Bahia-Brazil)- September 2008) Roger Chaffin and co-author and cellist Tania Lisboa discuss the results of studying how soloists in the Western classical tradition memorize their musical performance by analysing how the musician's practice for their performance (Chaffin & Lisboa, 2008). They distinguished between two kinds of memorizing aspects. Associative chaining, where each passage of the piece provokes the memory of what comes next in the chain. In learning, this kind of memory comes rather easily and spontaneously but lacks in reliability for two reasons. It is not independent from the changes of external and internal conditions which musicians go through from practicing to performing. Secondly musicians can only reach a link of the chain by going to the first link.

The second kind of memorization is what Chaffin calls content addressable because it works through addressing the content of each link. It takes extended practice but is also more reliable. With it musicians can enter the piece at any place. Chaffin is bringing the example of the song *Happy Birthday* where the words *Happy Birthday* act as a retrieval cue for the tune. To access the last line of the song *Happy Birthday* most of the people use associative chaining to bring back their memory, starting from the beginning of the song. If you train yourself by telling yourself *Last Line of Happy Birthday* and now mentally rehearsing that line you will make it content addressable. Thinking *Last Line of*

Happy Birthday acts as a retrieval cue for the content itself. The key to this method is not setting up the suiting retrieval cue but the practice you put into making it rapidly and reliably. Once developed it allows the musician to recover from memory slips while performing by being able to go to the next retrieval cue when memory slips. The difficulty is to not choke, a term used in athletics, when the thoughts about what you are doing disrupts the action of highly practiced motor skills. To overcome this state, more extended practicing is needed.

The concert pianist Gabriela Imreh whom Chaffin followed in his study described integrating the two types of memory in her learning of J.S. Bach's Italian Concerto (Presto):

My fingers were playing the notes just fine. The practice I needed was in my head. I had to learn to keep track of where I was. It was a matter of learning exactly what I needed to be thinking of as I played, and at exactly what point so that as I approached a switching point, I would automatically think about where I was, and which way the switch would go. (Chaffin et al., 2002, p. 224)

Keeping track of where she was by thinking of retrieval cues that provides content addressable access to her memory for the piece, the authors call performance cues. They describe them as follows:

Performance cues are mental landmarks that an experienced musician attends to during performance, thoroughly rehearsed during practice so that they come to mind automatically and effortlessly as the piece unfolds, eliciting the highly practiced movements of fingers, hands, and arms. Performance cues become an integral part of the performance and provide a means of consciously monitoring and controlling the rapid, automatic actions of the hands. (Chaffin et al., 2002, p. 118)

According to the different parameters of making and learning music they divided performance cues into four main categories which are adequate for the studies conducted:

1. Structural cues: critical places in the formal structure of the music (section boundaries, switches)

2. Expressive cues: represent musical feelings which are to be convey to the audience (for example: surprise or excitement)
3. Interpretative cues: places where the focus lies in an aspect of interpretation.
4. Basic cues: are critical technical details a musician must think for the performance to go as planned

Later, Chaffin and Lisboa (2008) carried out a study to track the development of the performance cues adopting the model of longitudinal studies. Thereby, they combined two perspectives: The one of the musician and the one of the psychologist. Through this method the musician records his practicing from the very first reading of the piece until the moment of performance and verbalizes his thoughts while practicing, the psychologist observes the musicians practicing and compares the reports of the musician to the behavioural data of the recordings. In the paper Chaffin describes the most extensive of the studies in which the cellist Tânia Lisboa learned the Prelude form J.S. Bach's Suit No. 6 for solo cello and gave ten public performances over a period of more than three years. In her practicing Lisboa recognized five stages of learning which almost agreed with Wicinski (1950, cited in Miklaszewski, 1989) stages of learning, both presented in Table 1 below:

Table 1. Comparison between Chaffin & Lisboa and Wicinski's stages of learning

Chaffin & Lisboa (2008)	Wicinski (1950, cited in Miklaszewski, 1989)
Explore	Initial ideas
Smooth out	Work on technical difficulties
Listen	Trial rehearsals
Re-work technique	Work on technical difficulties
Prepare performance	Trial rehearsals

Although in cognitive psychology, retrieval cues as the ones described by Chaffin and Lisboa (2008) are considered stimuli that assist information recovery in long-term

memory, in educational contexts the discussion on the use of these specific cues as a tool in instrumental teaching literature has been scarce.

Therefore, Foletto, Carvalho and Coimbra (2013) conducted a study with the aim to both verify and identify the use of retrieval cues by the teacher in one-to-one violin lessons. A set of retrieval cues was identified using qualitative analysis. In addition to this, the results if a quantitative approach indicated that most of the retrieval cues were used during verbal communication; specifically, when the teachers focused on aspects related to technical and/or motor skills. The results of this study highlight the importance and the need to organize a way to explore the use of retrieval cues as a teaching tool. The authors claimed that in one-to-one violin lessons, retrieval cues can be identified as summarized information and these retrieval cues have the function to alleviate the information overload and therefore optimize the memorization of information.

These results were in line with those of Mac Pherson and Renwick (2001) who argued in their study that teachers should spend time during their lessons demonstrating and modelling specific strategies that their students can try when practising, such as how to correct or prevent certain types of performance errors. Indeed, in string lessons Colpritt (2000) has identified that 41% of lesson time was dedicated to student performance, 45% to teacher talking and 20% to teacher modelling, suggesting that, after student playing, teacher talk and modelling are the largest part of instrumental lessons.

In contrast to work and play, music practice requires the generation of specific goals for improvement and the monitoring of various aspects of performance, and, as Ericsson & Lehmann (1999, p. 695) stated, “involves trying to exceed one’s previous limits, which requires full concentration and effort. Consequently, it is only possible to engage in these activities for a limited amount of time until rest and recuperation are needed.”

Also, during the lesson itself a balanced flow of the information and of the students’ attention are very important. For instance, Goolsby (1996) described that expert teachers divide more class time among all pieces to be rehearsed and address specific properties of music in their feedback. Byo (1990) pointed out that expert teachers can deliver strategies by means of using efficient voice tones and facial expressions, to which Fredrickson (1992) added the importance of eye contact.

Finally, Sloboda (1986) stressed the considerable qualitative changes which occur in learning when teachers adapt their teaching to students' individual characteristics and

needs. Later, Lehmann et al. (2007) would emphasize the importance of the type of the relationship a teacher establishes with the students for the learning process, arguing that a relationship marked by mutual respect and exchange of ideas may better aid students in realizing the highest levels of music preparation and performance. They distinguished two broad relationship-models, the Master-apprentice model (in which the teacher demonstrates the craft or asks the student to imitate) and the Mentor-friend model (with the teacher being responsive to the individual needs of the student and marked by a greater exchange between teacher and student). The authors claimed, however, that the relationships between teachers and students lie somewhere in between these two models.

Research has shown that the relationship of time spent practicing to the signs of improvement may be more affected by the methodologies used during that time than previously assumed, Townsend (2012) proposed another possibility to help students develop an understanding of the relationship between exercises, new and old, and the music that they are preparing. “To incorporate a mnemonic device based on the acrostic PRACTICE: Preparing Relevant Activities Causes Technical Improvement, and, Correct Execution “ (p.397). He conducted a limited case study with cello students unknown to him prior to the study and observed the result of this approach in their practice.

He recorded three sessions with the students. For the first session each student was videotaped in a 30-minute practice session with only the subject in the room. They were given no instructions other than to go through their usual practice routine. One week later the author talked with the students about the mnemonic and they were instructed to apply the strategies discussed in another videotaped 30-minute practice session observed by the author. Following this observed session, the author made further suggestions to each student on how to self-analyse and thereby identify additional strategies for use in practice. One week later the students provided a diary of their own practice sessions outlining what they had planned to do, the strategies used, and a self-assessment of the result for each session.

Townsend (2012) described that one challenge for most students – especially the more inexperienced – is to identify the exact cause of a certain difficulty, especially a technical difficulty. A very important factor in making his mnemonic system work, Townsend claimed, is teaching students to self-regulate problems, for only when the student can pinpoint directly where a problem or mistake occurred could they take the next step of

figuring out why the mistake occurred. “After identifying the problem, students can use their exercise database” (p.405). “The role of the teacher would be to consider these exercises as tools to the development of technique and to ensure that the students understand what each exercise is designed to accomplish and how to employ that tool as a relevant activity in future situations” (p.406). The students reported that they felt that having the freedom to search for their own solution to addressing a particular technical challenge made practicing more enjoyable.

This conclusion, he argued, is supportive of that of Sloboda, Davidson, Howe and Moore (1996) who suggest that the highest achievers are those who spent the most time under the supervision of their teacher. Therefore, as this is rarely, if at all, possible for most teachers and students, Townsend calls for the usefulness of applying the PRACTICE mnemonic and developing a system whereby students can self-diagnose and correct problems, develop their skills, and advance their creative learning.

In sum, the main role of the teacher is to help students to produce self-directed musical practice, to self-monitor and adjust as well as to know where to seek advice, thus structuring an optimal learning environment. A teacher should help students develop their own mental representations to monitor and correct their own performance and to help students optimize the memorization of information using retrieval cues. To do the above, teachers should also spend time during their lessons demonstrating and modelling specific strategies to correct or prevent certain types of performance errors by encouraging students to reflect on the adequacy of their own practice habits, and especially on how they might invent better ways to practice more efficiently.

Chapter II

2. Methodology

2.1. Aim and research questions

The first step was to establish a firm research focus on which the study is based. From the literature review on skill acquisition and the role of the teacher in instrumental lessons arose the following questions, which formed the initial point for our methodological framework:

- I. What is the goal addressed by the teacher?
- II. How does the teacher approach the goal?
- III. How does the teacher impart the information?

The aim of this work is to gain a deeper understanding of what strategies musicians use to develop their skills and achieve optimal performance levels in a music college context. An additional goal is to understand the role of the teacher in that process. More specifically, the intention is to understand the performance goals teachers devise with their students, the strategies they develop to put their goals into action and how they communicate them to their students.

2.2. Participants

The participants of the study were a Cello teacher from a music College in Portugal and two students.

The Cello teacher, Filipe Quaresma, is an adjunct lecturer from the music college and a very experienced performer, He reconciles an intense solo and chamber music career with the activity of cello teacher. Filipe Quaresma has played in the main Portuguese and European venues, such as Casa da Música, Gulbenkian Foundation, Centro Cultural de Belém as well as Philharmonie de Paris, Berliner Philharmoniker, Royal Albert Hall, Wigmore Hall, Concertgebouw, Tonhalle Zürich, Wiener Konzerthaus, Philharmonie Luxembourg or Palau de la Música of Barcelona. As a performer he received several prizes and scholarships of international prestige: Valter Boccacini Prize from Scuola di Musica di Fiesole, Young Musicians Prize – Radio Difusão Portuguesa (RDP) Antena 2, Calouste Gulbenkian Foundation Scholarship, Norah Mary Turner Trust Award, Sir Arthur Bliss Prize, Foundation Award, S & M Eyres Scholarship and Guilhermina Suggia

Scholarship. In 2010 he was awarded the prestigious title ARAM (Associate Royal Academy of Music).

Student 1 is 20 years old. She is in the third year of the Music undergraduate degree course (final year). Since the beginning of her undergraduate degree course she is studying with the teacher. Student 2 is 23 years old. She is in the second year of the Master degree course (final year). With the teacher she has been studying since the start of her master degree course. To the point of the study both students are both in the end of a cycle. In their respective degree courses the two students were placed at the upper level of assessment grades.

A professional accompanist, provided by the school, was also present in the lesson of student 2.

2.3. Ethical Considerations

Ethical considerations were very important throughout the present work. Porto Polytechnic Code of Practice, in its Preamble (2013), states that the development of the institution activities' is based on the ethical principles of equity, non-discrimination and justice, as well as on the respect for the dignity of the Human person. It is also based on the personal and professional responsibility. These indications were always observed. The case study carried out involved one teacher and two students as participants and three main areas in which ethical issues could arise were informed consent, confidentiality, and anonymity. Before the researcher started to observe the lessons, it was made clear to each participant (teacher and his students) that they would be recorded, how the data would be subsequently used, and that anonymity would be always preserved. Participants were further informed that they were free to withdraw from the study at any time, even after the recorded sessions, and without having to give a reason for withdrawing.

2.4. Stimuli Material

The stimuli material was the compositional works students had to work in the lesson.

Student 1 is working on Robert Schumann's *Adagio & Allegro, Op.70* in A-flat major written 1849 originally for pianoforte and horn. When published, the piece was also titled *ad libitum* for cello or violin. The *Adagio* was originally called *Romance* and shows significant similarities to the *Adagio* from Schumann's second symphony. Contrasting in its character stands the *Allegro*. The composer typical emotional upturn in triplets is intermittent by dreamy episodes, reminiscing the *Adagio* (Kammermusikführer der Villa Musica, Dr. Karl Böhmer). Student 1 and teacher worked on the cello voice alone, without pianist.

Student 2 is working on *Sonata in A-major for violin and piano* by César Franck (1886). In summer 1886 César Franck composed the *Sonata in A-major for violin and piano*. All four movements, *Allegretto moderato*, *Allegro*, *Recitativo-Fantasia*, *Moderato* and *Allegretto poco mosso*, circulate around the motive of the falling third, with which the sonata begins. The *Allegro moderato* is affected by its floating tone and seems to be a prelude to the passionate motions of the second movement. Starting the third movement with a *Recitativo* in dreamy contemplation the composer leads into bright, singing, and flowing *Fantasia* of soft but profound expression. Finally, the fourth movement blazes in A-major, moderate in passion but full of lively movement and in reminiscence of the second movement, *Allegro*. The sonata was dedicated Eugène Ysaïe, who premiered the piece in 1886 in Brussels and became the most popular sonata of the Fin de siècle. Plenty of cellist felt the need to arrange this masterpiece as well for their instrument and so it became a common piece in cello literature (Kammermusikführer der Villa Musica, Dr. Karl Böhmer).

2.5. Study Design and Procedure

A case study design of inquiry has been chosen. According to Crowe et al. (2011) it is from great use to gain an in-depth insight of an issue, event or phenomenon in its real-life context. It usually involves a detailed observation and description of the setting or individuals, in which the researcher creates an in-depth analysis of a program, event, activity of one or more individuals over a defined period. As stated by Yin (2009) it is suitable in obtaining information on more explanatory *how*, *what* and *why* questions, such as *what* are the goals teacher and student are working on?

The procedure used was devised with the full participation of the Cello Teacher. This was to ensure that the protocol complied with that of the College and that interference with the natural setting was kept to the minimum possible. First, informed consent was granted from the teacher and the students.

Then, the lessons were video recorded (two lessons of 1h30m each), transcribed *verbatim*, and then translated into English. This aspect implied that the lessons were visualized integrally and section by section several times. Other sources of data collection such as extensive files of field notes and observations were also included to ensure greater validity.

After visualisation and transcription, the texts were coded and analysed. The presentation of the results was supported by quotes from the developed code and respected the sequence of the events in the lesson.

2.6. Establishing categories of analysis

As it was explained, the first step was watching the video recordings several times and doing the *verbatim* transcriptions. At this initial point, a system of coding was devised, with the main dimensions (categories) of analysis identified. This allowed us to gain some objectivity in the analysis and to provide a more standardised description of the data, and of the analysis.

The initial point for our methodical framework were the following three questions of interest:

1. What is the goal?
2. How does the teacher approach the goal?
3. How does the teacher impart the information?

For question 1. What is the goal? three categories of analysis were defined: I. Compositional structure; II. Interpretative forms of realization and III. Technical means. For question 2. How does the teacher approach the goal? we defined the same three categories: I. Compositional structure; II. Interpretative forms of realization and III. Technical means. For question 3. How does the teacher impart the information? we started

by distinguishing between I. verbal and II. non-verbal communication strategies, to which we added III. Being insistent and IV. Summing up.

Further categorization emerged from the data. The resultant framework of analysis and the dimensions is described below.

2.6.1. Categories of goals

I. Compositional structure:

- a. formal structure
 - sections and subsections
 - transitions
- b. harmonic structure & melodic structure (includes playing wrong/ right notes)
- c. rhythmic structure
 - meter
 - tempo
 - rhythm
 - tempo modifications
 - timing (alone and together)
 - timing entrances
- d. score (editions)

II. Interpretative forms of realization:

- a. character; character of sound
- b. articulation
- c. dynamics
- d. phrasing
- e. vibrato

III. Technical means:

- a. fingering
- b. hand position
- c. left hand pressure
- d. vibrato
- e. shifting

- f. posture
- g. intonation
- h. bowing
 - in general
 - changing strings
 - bowings (which support the musical idea)
 - contact
 - position
 - bow geography
 - pressure & speed
- i. instrumental

2.6.2. Categories of teacher's strategies to attain goals

Similar to goals.

2.6.3. Categories of teacher's communication strategies

- I Verbal instructions:
 - a. giving direction
 - b. instructions based on the material
 - c. instructions by stating what he hears and what he would like to hear:
 - d. explanation
 - e. metaphors, references, comparisons
 - f. encouraging critical thinking (when an independent decision-process is encouraged) through
 - instructions which involve an independent decisions process
 - questions
 - response
 - instructing to do something differently
 - g. diplomatic rhetoric
 - h. anticipating instructions
 - i. instructions which are linked to emotions

- j. colloquial phrases, noises, counting
- k. giving feedback (positive/negative)

II Non-verbal instructions:

- a. Singing
- b. conducting
- c. playing alone
- d. playing along
- e. playing with accompanist
- f. nonverbal instructions based on the material
- g. imitating student (exaggerating) proposing his idea
- h. giving feedback (positive/ negative)
- i. demonstrating playing *air-cello*

III Being insistent (snapping, repeating instructions)

IV Summing up (agreeing on content, summary)

Having into account the amount of data we had to deal with this methodology seemed the most appropriate to systemise the data.

Chapter III

3. Results

3.1. Description of results and analysis: student 1

The lesson takes place in ESMAE, room 210, at 10.00 a.m. The people involved were the teacher and the student, henceforth (t) and (s). The material of the lesson was Robert Schumann's Adagio & Allegro op. 70 in A-flat-Major for cello and piano.

The setting of the lesson was the following: The student is sitting in the middle of the room. A piano is behind her. At her right, she has her scores on a music stand, close enough for her to reach it but not in the way of the teachers' sight. The teacher is sitting approximately one and a half meters in front of her with his cello *play-ready* (between his legs) and a music stand in front of him.

The lesson could be structured into three main parts:

- I. Detailed work on *Adagio*
- II. Detailed work on *Allegro*
- III. Communication about organization: preparations of exam

In the following section each part of the lesson will be described in detail according to the three main questions of analysis:

- I. What is the goal?
- II. How does the teacher approach the goal?
- III. How does the teacher impart the information?

The interactions transcribed as a dialogue were transformed in descriptions that included the description of the body movements of both student and teacher as well as field observations. For instance, I interaction I, the dialogue was as follows:

t: "What are you going to do? (1-4) Start up-bow.

It is extremely difficult, change after g1.

Give it more bow, it looks as if you don't have enough bow. Vibrato!

Very slow

Okay, it's better."

And then described in the following way:

Interaction 1

At 00:00:06 t asks s: "What are you going to do?" and walks towards her. He stands beside her to her left and looks into her score. T seems to think about stroking since he moves his right arm as if he would be stroking the bow. "Start up-bow", he suggests. While t is going back to his chair s tries the new stroking. T observes and states "It is extremely difficult, change after g1." He exemplifies and continues with suggesting "Give it more bow, it looks as if you don't have enough bow. Vibrato! Very slow." S tries several times and T observes. After following his instructions to now change again on g1 the result seems to convince him more. T is giving her a positive feedback: "Okay, its better." To prevent repetition, it was decided to exclude the dialogues and maintain this description as it is more complete.

Finally, the three questions were answered for each interaction, having into account the established categories.

1. What is the goal?

II. Interpretative: c. dynamics: The goal is to realize the dynamic which is crescendo from bar 1 to Bar 2 with the high point of it on g1 and then to decrescendo in bar 2.

2. How does the teacher approach the goal?

Technically: h. bowing- bowings which support the musical idea: They are trying to find a suiting bowing for her to feel as comfortable as she can to realize the dynamic given and to be aware of the development of the vibrato according to the dynamic.

3. How does the teacher impart the information?

I. t encouraging critical thinking through questions, II. c. playing alone, I. a. giving direction, I. k. giving positive feedback: T asks her what she is doing for a bow. He

tries out by himself only by moving the right arm in the air as well as several times on his cello. He is telling her that she is running out of bow while she is trying to realize the dynamic, which means he starts pointing out technical problems.

Interaction 2

T goes on with telling S she should play without vibrato and that it is a crescendo towards the g1 instead of coming to the g1 and being still in piano. To solve the problem, he tries a technical approach by telling her to use less bow on the very first note e-flat 1 and more on e1. Going on, he suggests her to generally use the bow more to form the phrase and explaining her once again that it should be a crescendo towards the g1 not a sudden forte on the note itself.

1. What is the goal?

II. Interpretative: c. dynamics: The goal is the same as before: realizing the dynamic given in bar 1 and bar 2.

2. How does the teacher approach the goal?

III. Technically: h. bowing- bow geography, II. c. dynamics: T now tries a technical approach: He tells her to not do vibrato to be entirely focused on the bow and to work on the bow division according to the crescendo and decrescendo, which means using less bow on the very first note e-flat-1 to increase the amount of bow used on e-1 and finally using the most of it on g1.

3. How does the teacher impart the information?

I. a. giving direction, I. c. instructions by stating what he hears and what he would like to hear, I. d. explanations, III. Being insistent:

T tells her the difference between what he hears and what he wants to hear. He tries to play and he explains her with words and exemplifying one possible way to do the bow division necessary to do the crescendo.

Interaction 3

The following version of S is an improvement and T now wants her to try it with the component of vibrato. After she tried T works on the development of the vibrato along the musical line by instructing her to do a little bit of vibrato in the piano on e-flat1, to

increase it on e1 and to increase it even more on g1. When she tries, he tells her to open (“without forgetting...”). T gives her the positive feedback that it is better.

1. What is the goal?

II. Interpretative: e. vibrato: The goal is to include the component of vibrato as a stylistic device to emphasize the musical line, leading towards the g1 and going away from it again.

2. How does the teacher approach the goal?

II. Interpretative: e. vibrato: By Developing various forms of vibrato to enrich the musical line.

3. How does the teacher impart the information?

I. a. giving direction, I. k. giving positive feedback: He explains it to her and encourages her by giving positive feedback.

Interaction 4

06:51 working on bar 4 to bar 8:

S plays until bar 8. T tells her: “make everything legato and you should be very light on the c1, bar 6.” T exemplifies how he imagines and is exaggerating what S was doing before.

1. What is the goal?

II. Interpretative: c. dynamics, b. articulation: The goal is to play pp when starting on the c1, bar 6, to then crescendo toward b-flat-1.

2. How does the teacher approach the goal?

II. Interpretative: c. dynamics, b. articulation: By playing legato and being lighter on the c1 and by following the dynamic instructions.

3. How does the teacher impart the information?

I. a. giving direction, II. c. playing alone, II. g. imitating student, proposing his idea: He gives both right and wrong examples and states what he wants. He furthermore exemplifies how A was doing it and how he imagines it.

Interaction 5

S. tries again, T stops her by playing himself. He says: “a bit of tension”, where supposedly he is referring to the uncomfortable left-hand positions, followed by “let me just think” while he is still playing and “again” where he is asking S to start again from c1, bar 6. S tries. T wants her to continue the line from bar 6 to bar 7 (“you must keep going”). He is singing and emphasizing the connection between g1, bar 6 and the appoggiatura in bar 7. S tries several times and T is responding with playing and giving her examples several times as well. At 09.51 he tells her to connect the f1 to the g-flat-1 according to the dynamic development. S tries two more times and T nods in approval. S goes on.

1. What is the goal?

III. Technical means: b. hand position, II. Interpretative: d. phrasing: The goal is to feel more comfortable with the position of the left-hand bar 6 and to create one musical line from Bar 6 to Bar 8.

2. How does the teacher approach the goal?

III. Technical means: b. hand position, II. Interpretative: d. phrasing strategies/solutions: To create a bigger line by connecting certain notes. Telling her the importance of listening to oneself.

3. How does the teacher impart the information?

I. a. giving direction, II. c. playing alone, II. a. singing, II. h. giving feedback: T tells her what to do, exemplifies and sings. He is trying out himself to find solutions for her.

Interaction 6

T indicates: “crescendo to g-flat-1.” He exemplifies and plays along with her. T wants her to keep on the crescendo and to connect e-flat-1 and g-flat-1, bar 11.

1. What is the goal?

II. Interpretative: c. dynamic, d. phrasing: The goal is to grasp the dynamic and to create the phrasing slur written in bar 11.

2. What are the skills that they are developing to achieve the goal?

II. Interpretative: c. dynamic, d. phrasing:

3. How does the teacher show that information?

II. c. playing alone, II. d playing along: T exemplifies and is playing along with her.

Interaction 7

Bar 13 T tells S: “make more sound in between the vibrato” (on the c). T demonstrates by using a wide vibrato and by changing it along with the musical line, in bars 14 and 15.

1. What is the goal?
 - II. Interpretative: e. vibrato, a. character of sound: The goal is the development of the sound quality and character of the c through vibrato, according to the dynamic development.
2. What are the skills that they are developing to achieve the goal?
 - II. Interpretative: e. vibrato
3. How does the teacher show that information?
 - I. a. giving direction, II. c. playing alone: T gives direction and is exemplifying.

Interaction 8

T tells her to go on to repeat bars 17 and 18 again. He wants to hear the crescendo much more from bar 17 to 18. He exemplifies and tells her that she should change the speed of the bow. He does not continue to explain, but he shows accelerating on e1 and slowing the bow down in g-flat-1 to f1, bar 18.

1. What is the goal?
 - II. Interpretative: c. dynamics: The goal is to realize the dynamic.
2. What are the skills that they are developing to achieve the goal?
 - III. Technical: h. bowing-pressure & speed: To vary the bow speed to create the written dynamic.
3. How does the teacher show that information?
 - I. a. giving direction, I. d. explanation, II. c. playing alone: He exemplifies and gives verbal instructions.

Interaction 9

12:20: T states: “show the syncopation a bit more.” (bar 21, 1).

1. What is the goal?
 - I. Compositional structure: c. rhythmic structure-rhythm: The goal is to bring out the rhythmical idea.
2. What are the skills that they are developing to achieve the goal?
 - I. Compositional structure: c. rhythmic structure-rhythm
3. How does the teacher show that information?
 - I. a. giving direction, II. c. playing alone: By giving instructions and demonstration.

Interaction 10

After S played until bar 24, T tells her to go again from bar 23, plays along and simultaneously tells her to wait before the subito piano bar 24. Furthermore, he wants her to emphasize the crescendo including the last beat of bar 23 which leads to it. In addition, he wants her to use less weight on the a1 in bar 23 to not emphasize the beginning of the crescendo.

1. What is the goal?
 - II. Interpretative: c. dynamics: The goal is to bring out the dynamics.
2. What are the skills that they are developing to achieve the goal?
 - II. Interpretative: c. dynamics, III. Technical: h. bowing-pressure & speed: Realization of the dynamics and to use timing to bring out a sudden change in dynamic (sub. p.), as well as to gain consciousness about bow pressure/weight.
3. How does the teacher show that information?
 - I. a. giving direction, II. c. playing alone: G. gives comments, shows her by playing himself.

Interaction 11

T lets S play twice from bar 23 to bar 27 and observes. At 13:53 he moves to her and asks: “How is the vibrato in there?” He is moving his right arm as if he is checking bowings. Tells her to go again from bar 23, which she does. He interrupts, telling her “crescendo”, bar 24, and plays along with her to bar 27.

1. What is the goal?
 - II. Interpretative: c. dynamics: To realize dynamic written in the score.

2. What are the skills that they are developing to achieve the goal?
 - II. Interpretative: c. dynamics
3. How does the teacher show that information?
 - I. t t encouraging critical thinking through questions, II. i. demonstrating playing *air-cello*, I. b. instructions based on the material, II. d. playing along

Interaction 12

T tells her to go again from bar 23 and stops her by saying: “look, e-flat is a bit low” (bar 23 e-flat-1). In addition, T exemplifies the shift from a-flat-1 to e-flat-1.

1. What is the goal?
 - III. Technical means: g. intonation, e. shifting: The goal is to play the e-flat-1 in tune, in this specific case, higher. T is also working on how to get to it by exemplifying the shift from a-flat-1 to e-flat-1.
2. What are the skills that they are developing to achieve the goal?
 - Technical: III. Technical means: g. intonation, e. shifting: intonation, shifting: playing in tune, listening, being aware of the note after the shift
3. How does the teacher show that information?
 - I. a. giving direction: T tells her that a specific note is too low. He then exemplifies the shift: how to get to it.

Interaction 13

15.10 T tells her to start again bar 23 and suggests: “Look out to the right hand” and “use the vibrato more”. He plays along from bar 24 on telling her “always vibrate until the position”. He states that in bar 24/25 but it is not clear which position he is referring to. Since afterwards he is exemplifying bar 25 it is likely that he meant the connection from f1 to g1 and b-flat-1 bar 25.

1. What is the goal?
 - III. Technical means: h. bowing, d. vibrato: T wants S to first concentrate on the right-hand, bar 23, and then to focus on continuing the vibrato, starting from the piano subito, supporting the crescendo in bar 24-25.

2. How does the teacher approach the goal?
 - III. Technical means: h. bowing, d. vibrato
3. How does the teacher impart the information?
 - I. a. giving direction

Interaction 14

S tries again bar 23, T stops her right in this bar exemplifying the practice of the shift from a-flat-1 to e-flat-1 by going back and forth. S looks at him and tries once gazing to T with a questioning look. She tries again, goes on and while playing, T is giving her the instructions “crescendo” towards bar 24, “piano subito” bar 25, pointing at her with the bow, “sempre vibrato” on the g-flat-1, bar 25, and “forte” on f2, bar 26. At the d-flat-2 in bar 26 he tells her that this is the end of the phrase and that she should concentrate on the bow. He does not explain further but exemplifies holding the contact of the bow until the last notes of the phrase.

1. What is the goal?
 - III. Technical means: e. shifting, d. vibrato, h. bowing, II. Interpretative: c. dynamics: Realizing the shift from a-flat-1 to e-flat-1 (bar 23) as well as the continuity of the vibrato from bar 25 on, ending the phrase focusing on the bow.
2. How does the teacher approach the goal?
 - II. Technical means: e. shifting, d. vibrato, h. bowing, II. Interpretative: c. dynamics
3. How does the teacher impart the information?
 - III. Being insistent, II. c. playing alone, I. b. instructions based on the material, I. a. giving direction: T is repeating instruction 11, he is exemplifying the shift, bar 23, calling out the dynamics while S is playing and giving her instructions regarding vibrato bowing.

Interaction 15

T tells S to try it one more time. S starts from bar 24 again. T stops her telling her: “Vibrato, stop, look”. T exemplifies telling her: “more legato”, meaning the connection between the notes in bar 24/25. T tells her to lower the shoulder bar 25 and to “pull less”, before the shift bar 26, meaning the bow on f1 bar 26. Before going to the D-string in bar

26 he tells her to stay in contact on the f2 on the tip until changing the bow and bow crossing to continue the line. He goes on by saying that she should move to the other side. By that he means that the whole body should help with the string crossing. T is not satisfied with S, tries, and suggests that she uses the accord (bar 26/27).

1. What is the goal?

II. Interpretative: b. articulation (legato): III. Technical means: e. shifting, h. bowing-string crossing: The first goal is to sound more legato from g1 to b-flat-1, bar 24 to 25. Going on, T tries to find ways to first stabilize the shift, bar 26, to then solve the technical difficulty of going from A-string to D-string (string crossing), bar 26.

2. How does the teacher approach the goal?

II. Interpretative: b. articulation (legato),

III. Technical means: e. shifting through t posture and h. bowing-pressure & speed,

III. Technical means: h. bowing-crossing strings through I.

Compositional means (focusing on music in string crossing).

3. How does the teacher impart the information?

III. Being insistent, I. b. giving instructions based on the material, I. a. giving direction, I. d. explanation: T is repeating the instruction of using vibrato, bar 25. With telling her to do “more legato” he is referring to the phrasing slur, bar 24/25.

Interaction 16

They start again from bar 24, T reminds her to lower the shoulder. He lets S play until bar 27 before he communicates the following: “there is a mistake here. Don’t you feel it in the bow?” T is not communicating where, he is just generally showing it in the air, exaggerating the wrong angle of stroking/ stroking out of line (18:04). S tries again, T suggests: “take the weight from the right shoulder” when changing the string, bar 26. He recommends her to practice the place carefully at home.

1. What is the goal?

III. Technical means: h. bowing-string crossing: T is going on, trying to find a way to find a solution for the technical difficulty of string changing, bar 26, as he did in Interaction 15.

2. How does the teacher approach the goal?

III. Technical means: h. bowing (stroking out of line) and t posture

3. How does the teacher impart the information?

III. Being insistent, I. t encouraging critical thinking through questions, I. a. giving direction, I. k. giving positive feedback, II. i. demonstrating playing *air-cello*

Interaction 17

T wants her to play again from bar 23 but before he plays the phrase by himself S plays one bar and stops. T asks her what she was thinking but she does not respond verbally but goes again from bar 23. She plays until bar 27. Only in bar 26 T points out: “Be careful with the D-flat, you are taking too much time.”

1. What is the goal?

I. Compositional structure: c. rhythmic structure-rhythm: The goal is to be accurate with the eight note → not take too much time on it.

2. How does the teacher approach the goal?

II. Compositional structure: c. rhythmic structure-rhythm

3. How does the teacher impart the information?

III. t encouraging critical thinking through questions: since S stops her playing, T is asking for the reason why. S is not answering but tries again.

Interaction 18

19’43’’. S goes on from bar 28. While playing T tells her “crescendo” (bar 29). He stops her in bar 31 and states: “It’s very well the forte and the piano, although it seems as if you are pulling too much on the bow” (bar 31). He exemplifies the whole line doing the sf in bar 28 and building up the crescendo in bar 29. A goes again from the same place.

1. What is the goal?

IV. Interpretative: c. dynamics: T wants her to convincingly realize the crescendo in bar 29 and execute the forte piano (Fp) in a more efficient way.

2. How does the teacher approach the goal?

V. Technical means: h. bowing-pressure & speed

3. How does the teacher impart the information?

I. a. giving direction, I. k. giving positive feedback, II. c playing alone

Interaction 19

20:17 T sings along the crescendo. He does not seem not convinced and tells her that she is too strong with the dynamic and the pressure of the bow, bar 29, on first and second beat to build the crescendo up on beat three and four of the bar.

1. What is the goal?
 - II. Interpretative: c. dynamics: The goal is the same as in Interaction 19 which would be to convincingly realize the crescendo in bar 29.
2. How does the teacher approach the goal?
 - III. Technical means: h. bowing (pressure & speed)
3. How does the teacher impart the information?
 - III. Being insistent, II. a. singing, I. d. explanation

Interaction 20

S tries again. T states: “You should give more importance to b (20:27). If it is very difficult, change the bow”. T exemplifies, S tries the stroking. T says: “There are two ways. One might be better than the other.” To play bar 28 and first beat of 29 on down bow, or to play bar 29 and first beat of 30 up-bow and change to down-bow again at the second beat of bar 30. S goes again from bar 28, using the bow she did originally.

1. What is the goal?
 - II. Interpretative: a. character of sound: To play towards the b-flat and give more importance to it.
2. How does the teacher approach the goal?
 - III. Technical means: h. bowing- bowings which support the musical idea
3. How does the teacher impart the information
 - I. a giving direction, II. c. playing alone, I. t encouraging critical thinking through instructions which involve an independent decision process

Interaction 21

22:01 T tries the fp bar 30 and says: “Maybe harmonically the other is sf (bar 28) and this one is heavier.” S tries again. Going to the forte in bar 31, T says. “Just do this:” showing her to hold the c1 bar 31 in the air before going to the forte b. On the b, with S trying after each comment, he recommends: “full sound”, “vibrato”, “it should be full”. 23:36 after S tried several times, T suggests playing on the C-string: “imitate the sound of the A-string.” S tries. T responds: “stronger from the beginning of the note”.

1. What is the goal?
 - II. Interpretative, c. dynamics, a. character of sound, e. vibrato
2. How does the teacher approach the goal?
 - II. Interpretative: different solutions to attain the right dynamic and character of sound.
3. How does the teacher impart the information?
 - I. a. giving direction, II. c. playing alone

Interaction 22

24:20 T tells S “the third beat of bar 32 needs to be piano”. He plays himself while shouting

“sf” on the g-flat-1 bar 33. “Again” he says, meaning going from bar 32.

1. What is the goal?
 - II. Interpretative: c. dynamics
2. How does the teacher approach the goal?
 - II. Interpretative: c. dynamics
3. How does the teacher impart the information?
 - I. a. giving direction, II. c. playing alone, I. b. instructions based on the material

Interaction 23

S plays up until bar 36 and T interrupts. He does not finish his thoughts but states: “First g-flat-1 is already..., you are doing...” exemplifying that she is doing diminuendo on the first g-flat-1 bar 33. S tries.

1. What is the goal?

- II. Interpretative, c. dynamics
- 2. How does the teacher approach the goal?
 - II. Interpretative, c. dynamics
- 3. How does the teacher impart the information?
 - I. b. instructions based on the material, II. c. playing alone, II. g. imitating student

Interaction 24

25:08 T asks: “Where is the diminuendo.?” and shows how to play the diminuendo bar 33 once more. He sings the diminuendo, bar 33, and the crescendo bar 34. S tries.

- 1. What is the goal?
 - II. Interpretative, c. dynamics
- 2. How does the teacher approach the goal?
 - II. Interpretative, c. dynamics
- 3. How does the teacher impart the information?
 - I. t t encouraging critical thinking through questions, II. c. playing alone, II. a. singing, III. Being insistent, II. t non-verbal instructions based on the material

Interaction 25

25.28 T interrupts, showing her the crescendo at bar 34, first and second beat. T tries to play bar 35 focusing on third and fourth beat.

- 1. What is the goal?
 - II. Interpretative, c. dynamics
- 2. How does the teacher approach the goal?
 - II. Interpretative, c. dynamics
- 3. How does the teacher impart the information?
 - I. b instructions based on the material, II. c. playing alone, III. Being insistent

Interaction 26

At 25:48 T smiles and says: “Let’s go, bar 35 with the eight notes more connected”. They are separating third and fourth beat of bar 35 with the bow. A tries again. T says: “It’s less complicated”. He shows the place on one bow.

1. What is the goal?
 - II. Interpretative, b. articulation (legato)
2. How does the teacher approach the goal?
 - III. Technical means: h. bowing-using less complicated bowing, original bow
3. How does the teacher impart the information?
 - I. b. instructions based on the material, II. c. playing alone

Interaction 27

26: 35 S asks something. Because of the very difficult acoustics it is very hard to understand. T did not seem to understand either, since he is showing her two different fingerings for bar 36/37 although she wants to know the bowing for bar 35 fourth beat. S does not interrupt T immediately when he is showing her something she did not ask for. Only after he exemplified, she explains and T responds with: „Oh that!” He demonstrates to her separating the third and fourth beat in bar 35, being down bow on bar 36 and doing up bow in bar 37. After realizing that is not what she is doing, since she is doing third and fourth beat in bar 35 on one bow, he shows her to stroke up bow in bar 36 and on the fourth beat to change to down bow, playing everything under one bow until first beat bar 38. S writes it down into her score, while he is trying/ practicing on the cello for himself, going to bar 42. 28:20 S goes from second beat bar 35 again.

1. What is the goal?
 - III. Technical means, h. bowing-bowings which support the musical idea
2. How does the teacher approach the goal?
 - III. Technical means: h. bowing-bowings that support the musical idea
3. How does the teacher impart the information?
 - I. t encouraging critical thinking through responds, II. c. playing alone

In the following minutes they work on the sound quality of the b-flat-1 in bar 35.

Interaction 28

T: “The b-flat-1 needs to sound beautiful, you sound worried. Use your arm, it can be more open.” (bar 35). While T plays, he looks at his left arm and states: “it gives you more time...” With that comment he is most likely referring to the timing of the shift in bar 35, since he is repeating it.

1. What is the goal?
 - II. Interpretative: a. character of sound, III. Technical means: e. shifting
2. How does the teacher approach the goal?
 - III. Technical means: t posture
3. How does the teacher impart the information?
 - I. a. giving direction, I. d. explanation, II. c. playing alone

Interaction 29

S tries, and T asks her: “How is the b-flat-1 sounding to you?”. S does not respond verbally and after one more try, T suggests playing only the b-flat-1 looking for the desired sound. While she is trying to find the right sound, he adds, at 30:28: “It has a small amplitude” and is using a small but fast vibrato exemplifying it. With S continuing on one note, T suggests: “Press more on...” (b-flat-1, bar 35). S keeps trying and T says: “Okay, now try to imitate that sound”, wanting her to play the original version with the specific sound in mind on the b- flat-1 (30:45).

1. What is the goal?
 - II. Interpretative: a. character of sound
2. How does the teacher approach the goal?
 - IV. Technical means: d. vibrato, c. left hand pressure
3. How does the teacher impart the information?
 - I. t t encouraging critical thinking through questions, I. a. giving direction, II. c. playing alone, III. Being insistent

Interaction 30

S is doing first finger on the d-string, bar 36, at first beat, and then continues on g-string. Probably because of the sound quality T wants her to change the fingering, doing second finger on d-string, bar 36, and then doing first finger on d-string, continuing to fourth on

a-string, bar 37. He continues questioning and suggesting different fingerings in bar 37, showing her two ways of doing it: “How are you going to do? This or that?”. T wants her to try the fingering and S starts from bar 35 on the b-flat-1 again.

1. What is the goal?
 - III. Technical means: a. fingering
2. How does the teacher approach the goal?
 - III. Technical means: a. fingering
3. How does the teacher impart the information?
 - I. t. encouraging critical thinking through questions, II. c. playing alone.

Interaction 31

T is not satisfied regarding the duration of the note and suggests: “Stay longer on the b-flat-1. Play that again once more.”. S tries it again twice and T calls out: “Bravo!”

1. What is the goal?
 - I. Compositional structure: c. rhythmic structure- timing
2. How does the teacher approach the goal?
 - I. Compositional structure: c. rhythmic structure- timing
3. How does the teacher impart the information?
 - I. a. giving direction, I. k. giving positive feedback

Interaction 32

S goes on and T reminds her: “Don’t forget the second finger” (fingering on first beat, bar 36). She notes. Going on from second finger she explores fingering options after. T tries as well and suggests: “Try to do that”, meaning upbeat to bar 37 first finger on d-string and on first beat bar 37 fourth finger on a-string. They go on discussing fingerings for the whole phrase until bar 42. She notes.

1. What is the goal?
 - III. Technical means: a. fingering
2. How does the teacher approach the goal?
 - III. Technical means: a. fingering-different solutions fingering

3. How does the teacher impart the information?

I. a. giving direction, II. c. playing alone

Interaction 33

34:19 T tells S to go again from e-flat, bar 36. She plays, and he interrupts since she has difficulty with the shift, bar 37, and with reaching first finger on the upbeat to bar 38 to fourth finger on the first beat bar 38. T explains: “S, you should be comfortable with the first finger (a-flat bar 37) and in the last moment you should open up to fourth finger. “Don’t do...” exemplifying a stretched hand position. T looks for sound quality and flexibility of the hand and wants that she stretches it only in the last very moment before the shift. After she tried this several times, he recommends that she practices this kind of shifting at home in a chromatic octave scale over two strings. He shows her how to do it, at 35:42. S tries again. It seems to work better, and she goes on.

1. What is the goal?

III. Technical means: e. shifting

2. How does the teacher approach the goal?

III. Technical means: e shifting-different solution shifting

3. How does the teacher impart the information?

I. d. explanations, II. c. playing alone, II. g. imitating student, proposing his idea

Interaction 34

In bar 40 T shows S how to play the fourth beat more expressively.

1. What is the goal?

II. Interpretative: a. character

2. How does the teacher approach the goal?

II. Interpretative: a. character

3. How does the teacher impart the information?

II. c. playing alone

Interaction 35

Going from bar 41 to bar 42, T wants S to play the connection from G to A-flat slower. He wants her to lead to it and is looking for a certain sound quality. Moreover, he wants her to add vibrato to it.

1. What is the goal?
 - II. Interpretative: d. phrasing, a. character of sound, e. vibrato
2. How does the teacher approach the goal?
 - II. Interpretative: d. phrasing, a. character of sound, e. vibrato
3. How does the teacher impart the information?
 - I. a. giving direction

Interaction 36

T is looking to her playing for a bigger gesture in the crescendo towards bar 44. S goes on and

T indicates that she must give a little bit more crescendo in bar 47 towards d. He shows by playing.

1. What is the goal?
 - II. Interpretative: c. dynamics
2. How does the teacher approach the goal?
 - II. Interpretative: c. dynamics
3. How does the teacher impart the information?
 - I. b. instructions based on the material, II. c. playing alone

Interaction 37

S plays up until bar 41 and T suggests an alternative fingering for the last eight note, bar 48, where he is going to d-string instead. He asks her: “Do you want to do like that?”. “Ah”, he says and tries fingerings in bar 49. S replies with the question: “Would you like me to do that?”. F thinks and responds: “You can do this (shows going down on A-string bar 49), instead of doing this (showing stretched hand position going to D-string bar 49)”.

T is playing while she is taking notes.

1. What is the goal?
 - III. Technical means: a. fingering
2. How does the teacher approach the goal?
 - III. Technical means: a. fingering-different solutions fingering
3. How does the teacher impart the information?
 - I. t encouraging critical thinking through questions, responses, II. c. playing alone

Interaction 38

S starts from bar 46. T apologizes for interrupting her again at bar 47 but insists that she is doing crescendo in the middle of the bar as they worked on before. T seems slightly out of patience. S tries again, this time T is conducting the crescendo and he leaves it uncommented.

1. What is the goal?
 - II. Interpretative: c. dynamics:
2. How does the teacher approach the goal?
 - II. Interpretative: c. dynamics
3. How does the teacher impart the information?
 - III. Being insistent, I. b. instructions based on the material, II. b. conducting, I. g. diplomatic rhetoric,

Interaction 39

39:41 T asks S to refer to bar 48/49: “It’s almost like a cadenza, isn’t it?” S tries twice concentrating still on new fingering bar 48, before she goes on in bar 50 where T sings along until bar 54.

No goal.

Interaction 40

40:29 T: “Link the notes”. He asks: “That e-flat-1 does what? Goes where?” (bar 52). In his playing he is showing that it goes to c1 bar 53 before the line ends and at the same

time continues in bar 54. He plays until the end of the Adagio and comments: “You can change the bow on the last e-flat-1”. He stops playing moves to her and looks into her score: “You should listen to the chords of the piano” he suggests.

1. What is the goal?
 - II. Interpretative: d. phrasing, a. character of sound, III. Technical means: h. bowing-bowings
2. How does the teacher approach the goal?
 - II. Interpretative: d. phrasing, a character of sound, III. Technical means: h. bowing-bowings
3. How does the teacher impart the information?
 - I. a. giving direction, I. t encouraging critical thinking through questions, II. c. playing alone

The second part of the lesson begins.

Interaction 41

41:44 “Let’s go from the second part “says T and they start the second part of the piece which is titles as *Rasch und Feurig* and is the Allegro part of the piece. S plays until Bar 65 until T interrupts telling her: “Stronger, it can be more marcato.” He gives her an impression of the sound quality playing two bars. S tries and goes on playing until Bar 76. This is the longest until that point of the lesson, she has played something in one piece. T wants her to link the eight notes better going from Bar 74 to 75. S tries, and T responds in approval: “That’s it!”

1. What is the goal?
 - II. Interpretative: b. articulation: marcato, legato
2. How does the teacher approach the goal?
 - II. Interpretative: b. articulation: marcato, legato
3. How does the teacher impart the information?
 - I. a. giving direction, I. k. giving positive feedback

Interaction 42

T wants her to go from beginning of the part again a bit slower but then starts playing by himself giving comments to the first bars, saying: “Here you need to pick”. He goes on playing until he reaches Bar 68 in which he suggests: “Let’s hear the horn”. He sings the bar again to emphasize his musical idea.

1. What is the goal?
II. Interpretative: b. articulation, a. character of sound
2. How does the teacher approach the goal?
II. Interpretative: b. articulation, a. character of sound
3. How does the teacher impart the information?
I. a. giving direction, II. c. playing alone, II. a. singing, I. e. metaphors, references, comparisons

Interaction 43

S tries, and T recommends: “With more bow” and when she starts accelerating as a result, he warns her by saying “Without to run”. S goes playing until the bar 68 where T suggested earlier to imitate the sound character of a horn. S implemented this idea immediately and T comments in approval: “That’s it!”

1. What is the goal?
III. Technical means: h. bowing-pressure & speed, I. Compositional structure: c. rhythmic structure-tempo
2. How does the teacher approach the goal?
III. Technical means: h. bowing, I. Compositional structure: c. rhythmic structure-tempo
3. How does the teacher impart the information?
I. a. giving direction, I. k. giving positive feedback

Interaction 44

S goes on and T advises: “Be careful here” pointing out the sound quality. When he exemplifies, he keeps the contact at the tip of the bow, attacking the sixteenth notes. When

S tries this place, T suggests: “Listen to the sixteenth notes”. While still trying he goes on telling her to mark them.

1. What is the goal?
 - II. Interpretative: a. character of sound, b. articulation
2. How does the teacher approach the goal?
 - I. Compositional structure: c. rhythmic structure-rhythm
3. How does the teacher impart the information?
 - I. a. giving direction, II. c. playing alone

Interaction 45

When they go on coming to the scale, bar 65, S plays slightly out of tune and T points it out by telling her: “Be careful here.” S tries and T is satisfied (T: “That’s it!”).

1. What is the goal?
 - III. Technical means: g. intonation
2. How does the teacher approach the goal?
 - III. Technical means: g. intonation
3. How does the teacher impart the information?
 - I. a. giving direction, I. k. giving positive feedback

Interaction 46

In bar 68 they try to solve intonation problems by pointing them out, and by playing slowly once and then returning to the original tempo (F: “faster”).

1. What is the goal?
 - III. Technical means: g. intonation
2. How does the teacher approach the goal?
 - III. Technical means: g. intonation-different solution for intonation
3. How does the teacher impart the information?
 - III. Being insistent, I. a giving direction

Interaction 47

As S is having problems in bar 69 with the difficult fingering shifting with the thumb, T stops her and tries to find alternative fingerings. S asks something in a shy manner which one cannot understand whereupon T responds with “What?” and moves next to her looking in her score. S explains: “It’s here” pointing out a place. He explains the fingering he would do in bar 69: not shifting with the thumb but using a specific kind of fingering on A and D-string (T: “That is replacing, you move backwards and forwards”). They discuss the matter, and T exemplifies again what he exactly means. S tries and T says: “It’s about phrasing. Now you need to separate the bow”. S tries once again but does not seem convinced yet. T notices that and asks: “What is there in the score?” whereupon she exemplifies the thumb version fingering. They try to figure out what is better for her: to do the fingering 3 thumb, or 3-1, 3-1. S tries and T does not seem convinced yet and asks her: “Here, what is it going to happen? It shows again, the going backwards and forwards”, referring to the 3-1, 3-1 version. S tries. Finally, T decides: “Let’s do that one.”

1. What is the goal?
 - II. Technical means: a. fingering
2. How does the teacher approach the goal?
 - III. Technical means: a. fingering-different solutions to fingering
3. How does the teacher impart the information?
 - I. d. explanation, I. a giving direction, I. f t encouraging critical thinking through questions (decision made by T), II. c. playing alone, III. Being insistent

Interaction 48

Now T goes on with musical instructions, telling S: “I would like to hear more legato”. He tries slowly by himself and S imitates. At the end he recapitulates: “Okay, at home your work is to pay attention to a good sound, to the contact point of the bow and to the sound intensity.” He exemplifies once more and says: “It is that contact that should be there.”

1. What is the goal?
 - II. Interpretative: b. articulation, a. character of sound
2. How does the teacher approach the goal?

- II. Interpretative: b. articulation, a. character of sound through
- III. Technical means: h. bowing- contact
- 3. How does the teacher impart the information?
 - I. a. giving direction, IV. Summing up, II. c. playing alone

Interaction 49

“Go from e-flat-2.” (48:31). T instructs and shows to her a musical idea, which is to phrase towards bar 72 and breath a bit before going on with the first beat.

- 1. What is the goal?
 - II. Interpretative: d. phrasing
- 2. How does the teacher approach the goal?
 - II. Interpretative: d. phrasing
- 3. How does the teacher impart the information?
 - I. a. giving direction, II. c. playing alone

Interaction 50

S plays and goes on, T plays along for some bars and stops to observe again. When the musical idea of the beginning of the Allegro is repeated in bar 74, T gives impulse by shouting: “Three” and exemplifies after S tried the attack and contact of the bow again. While S plays, he shouts: “More!” (bar 76) and “longer” on the e-flat-1, in bar 78. He sings, and it becomes clear he does not want her to do decrescendo.

- 1. What is the goal?
 - I. Compositional structure: c. rhythmic structure- timing, rhythm, II. Interpretative: c. dynamics
- 2. How does the teacher approach the goal?
 - I. Compositional structure: c. rhythmic structure- timing, rhythm, II. Interpretative: c. dynamics
- 3. How does the teacher impart the information?
 - I. a. giving direction, II. a. singing, II. d. playing along

Interaction 51

49:41 they go on in bar 80. T corrects by giving instructions such as: “More definition, contact” (referring to the bow) and “Every time more.” (referring to the second time of the same musical idea bar 82), while playing along with her, bar 80 to 83.

1. What is the goal?
 - II. Interpretative: a. character of sound, b. articulation
2. How does the teacher approach the goal?
 - III. Technical means: h. bowing-contact
3. How does the teacher impart the information?
 - I. a. giving direction, II. d. playing along

Interaction 52

They go on and T tells her that she should emphasize the interval c1 and a-flat-1 bar 87. Exemplifying he takes time to show the gesture of the raising interval before going down the scale. S goes on playing.

1. What is the goal?
 - II. Interpretative: d. phrasing
2. How does the teacher approach the goal?
 - II. Interpretative: d. phrasing
3. How does the teacher impart the information?
 - I. a. giving direction, II. c. playing alone

Interaction 53

Coming to bar 89, T wants S to focus on phrasing. He does not explain further but brings in his example the structure of the intervals as well as the legato bows out. S tries, and F lets S proceed giving dynamic marks while she is playing as „crescendo” in bar 90 on the c, counting to four and “more crescendo” in bar 91.

1. What is the goal?
 - II. Interpretative: d. phrasing, c. dynamics
2. How does the teacher approach the goal?

- II. Interpretative: d. phrasing, c. dynamics
- 3. How does the teacher impart the information?
 - II. c. playing alone, I. a. giving direction

Interaction 54

51:09 A shortens pointed half note bar 98 whereupon T sings the bar and flips three quarter notes when she is repeating it.

- 1. What is the goal?
 - I. Compositional structure: c. rhythmic structure- rhythm
- 2. How does the teacher approach the goal?
 - I. Compositional structure: c. rhythmic structure- rhythm
- 3. How does the teacher impart the information?
 - II. a singing

Interaction 55

After S goes on playing up until bar 117, T starts singing, bar 113, emphasizing the rhythmical structure (pointed eighth note and sixteenth note.). S wants to try, and T exemplifies by playing up until bar 116. S tries again and seems to have difficulties. T interrupts her asking. “What sounds better? You are doing...” and exemplifies her fingering, playing very slowly, in a calm manner. He repeats the jump to the third beat in bar 114 a few times, showing two different fingerings (one of them is to change to third finger on first beat bar 114, doing the shift from e- flat-1 to the c2 with 1-3).

- 1. What is the goal?
 - I. Compositional structure: c. rhythmical structure- rhythm, II. Interpretative: a. character of sound
- 2. How does the teacher approach the goal?
 - I. Compositional structure: c. rhythmical structure- rhythm, II. Interpretative: a. character of sound through III. Technical means: a. fingering
- 3. How does the teacher impart the information?
 - II. a. singing, II. c. playing alone, I. t encouraging critical thinking through questions

Interaction 56

53:05. S seems to question the fingering in this bar, since she is saying something which one does not understand acoustically and showing with her left hand the movement of the fingers in the air. T tries, bar 115, and shrugs his shoulders. He wants her to play again slowly, from bar 113. S plays 112 slower and continues in bar 113, in the original tempo.

No goal.

Interaction 57

In bar 118 T wants S to play the a-flat-1 longer. He exemplifies slowly, S tries faster. F asks her:

“Why don’t you do this?” showing her to start at 118 on down bow at the tip, to the second beat in the middle of the bow and as it repeats, moving even more to the frog, which makes the crescendo in the fourth beat more comfortable.

1. What is the goal?
 - II. Interpretative: b. articulation, c. dynamics
2. How does the teacher approach the goal?
 - II. Interpretative: b. articulation, c. dynamics through III. Technical means: h. bowing- bowings
3. How does the teacher impart the information?
 - I. a. giving direction, I. t encouraging critical thinking through questions, II. c. playing alone.

Interaction 58

T looks for another sound character at bar 120, in the chromatic S is playing. Demonstrating, he seems to enjoy the chromatic steps and brings them out with a faster, more expressive vibrato than S used before.

1. What is the goal?
 - II. Interpretative: a. character of sound

2. How does the teacher approach the goal?
 - II. Interpretative: a. character of sound
3. How does the teacher impart the information?
 - I. a. giving direction, II. c. playing alone

Interaction 59

“You want to go on the d-string, isn’t that right?” (bar 124). S repeats and goes on up to bar 128. She pauses. T seems to think. “Mhhhh”, he says, “you want to go on the d-string, isn’t that right?”, referring to bar 124. S does not answer. He tries continuing on the a-string and tells her to play it again.

1. What is the goal?
 - III. Technical means: a. fingering
2. How does the teacher approach the goal?
 - III. Technical means: a. fingering
3. How does the teacher impart the information?
 - I. j. noises, I. t encouraging critical thinking through questions

Interaction 60

S starts once more at bar 120, T interrupts her right there: “You need to listen to the chromatic change”. “Surprise” he says, playing the fourth beat, bar 120. Before he goes to the fourth beat of bar 124, he states: “Now, second string”, playing until bar 128. S goes again from bar 120 and T comments: “Now, let’s hear everything!”

1. What is the goal?
 - II. Interpretative: a. character, III. Technical means: a. fingering
2. How does the teacher approach the goal?
 - II. Interpretative: a. character through I. Compositional structure: b. harmonic & melodic structure, III. Technical means: a. fingering
3. How does the teacher impart the information?
 - I. a. giving direction, I. i. instructions which are linked to emotions, II. c. playing alone

Interaction 61

55:42. T criticizes: “You have the sound too low, think about it.”, speaking of the sound intensity. He tries giving an example, starting at bar 124, emphasizing where the line is going to, by repeating it (bar 125 d-sharp-1 and bar 126 e1). He tells her: “once again” and S starts one last time, from bar 120. T counts: “One, two three four”, in bar 121, and plays along with her. 56:55. S takes notes in her score and T states: “The rest is all the same.”

1. What is the goal?

II. Interpretative: a. character of sound, d. phrasing, I. Compositional structure: c. rhythmic structure: tempo

2. How does the teacher approach the goal?

II. Interpretative: a. character of sound, d. phrasing, I. Compositional structure: c. rhythmic structure: tempo

3. How does the teacher impart the information?

I. a. giving direction, II. c. playing alone, I. j. colloquial phrases, noises, counting, II. d. playing along, IV. Summing up:

Interaction 62

T looks and at 57:11 says: “You may play from...”. There is no continuation of this sentence, but silence, which is broken by S who is telling him that she has a doubt and is playing from bar 147 to 149. T tries several times and repeats his statement: “It’s all the same”.

No goal.

Interaction 63

T wants S to only play the final part and they start at bar 196, after T has asked her “In what bar are you?”. S does not seem very happy but plays up to bar 203. It is more expressive, T finds, meaning the sf in bar 202.

1. What is the goal?
 - II. Interpretative: a. character, c. dynamics
2. How does the teacher approach the goal?
 - II. Interpretative: a. character, c. dynamics
3. How does the teacher impart the information?
 - I. i. instructions which are linked to emotions. II. c. playing alone

Interaction 64

S plays, and T goes on by drawing her focus to the c1, bar 203: “Careful with the colour of c1” he advises.

1. What is the goal?
 - II. Interpretative: a. character of sound
2. How does the teacher approach the goal?
 - II. Interpretative: a. character of sound
3. How does the teacher impart the information?
 - I. a. giving direction, I. t encouraging critical thinking through instructions which involve an independent decisions process

Interaction 65

S tries again and goes further to bar 206, where the theme of the beginning of the Allegro repeats for the last time. “How do you do it?” T asks, with reference to the fingering, since S seems to have difficulties with this transition, particularly with the shift. They do not change anything but practice the shift together, mainly by repeating it.

1. What is the goal?
 - III. Technical means: a. fingering, e. shifting
2. How does the teacher approach the goal?
 - III. Technical means: a. fingering, e. shifting
3. How does the teacher impart the information?
 - I. t encouraging critical thinking through questions, II. c. playing alone

Interaction 66

As S goes on, T tries to correct bar 210, since it has a low sound quality. He suggests: “Use the whole bow.” T does not seem convinced by the fingering in bar 210, he wants her to play with the first finger on e-flat-1 on the D-string, telling her “Do like that from e-flat-1” and exemplifying it.

1. What is the goal?
 - II. Interpretative: a. character of sound
2. How does the teacher approach the goal?
 - III. Technical means: h. bowing, a. fingering
3. How does the teacher impart the information?
 - I. a. giving direction, II. c. playing alone

Interaction 67

S plays up to bar 117 and T interrupts by showing to her and playing along with her, to not shorten the half notes, bar 112, until the end of the piece. He wants them marked and as precise as a musical gesture, which one can understand through hearing him sing. As she plays until the last bar, he reminds her to not forget to change the fingering in bar 220, from fourth finger to first finger, on the a-flat-1.

1. What is the goal?
 - I. Compositional structure, c. rhythmic structure- rhythm, II. Interpretative: b. articulation, III. Technical means: a. fingering
2. How does the teacher approach the goal?
 - I. Compositional structure, c. rhythmic structure- rhythm, II. Interpretative: b. articulation, III. Technical means: a. fingering
3. How does the teacher impart the information?
 - I. a. giving direction, II. a. singing, III. Being insistent

The lesson is based on the material finished but T tells her: “It still needs to have a lot of detailed work.” S nods and T continues asking: “Do you have the rest of the program by heart?” The video finishes by T telling S: “Next week I would like to have everything by heart.

3.2. Summary of results and analysis: student 1

We observed in total 67 interactions between the teacher and the student. In-between the interactions there were 101 goals set by the teacher. 10 of them in the category I. Compositional instructions, 62 in the category II. Interpretative forms of realisation and 29 goals were defined as III. Technical means.

As it could be seen, the maximum goals set in the category II. Interpretative forms of realisation, with 62 goals. The most used goals in this category were in the subcategory II. c. dynamics, with 21 goals. The number of goals set in the category III. Technical means represented 29 goals, and, in this category the most used goals were in the subcategory III. a. fingering, with 8 goals. The least goals were set in category I. Compositional structure, with 10 goals. Most goals set in this category lied in the subcategory I. c. rhythmical structure-rhythm, with 6 goals.

The above-described numbers seem to indicate that in this lesson the teacher worked primarily on interpretation, more precisely on the exact execution of the dynamics which are written in the score. Another focus lied in the development of technique along the music, with the teacher consistently looking for better fingerings for the student. The least attention went into the category of compositional instructions. Nonetheless, the teacher tried to stabilize the component of rhythm six times throughout the lesson. These results may well indicate the early stage of the process of learning a piece as well as the level of expertise of the student.

The number of approaches corresponds with the number of set goals. To attain a determined goal, the teacher used a determined similar approach, usually of the same type. For example, the goal in interaction 3 was the development of the musical line by varying vibrato (II. e. vibrato). In this case the teacher communicated his suggestion in detail and thereby has approached the goal with strategies of vibrato (II. e. vibrato). However, by contrast, in 18 interactions the teacher approached the goals with different strategies. For instance, in 12 interactions the teacher was being insistent, by insisting on a goal and repeating suggestions.

To communicate 101 goals the teacher often used more than one communication strategy to convey one goal. For instance:

18 times he uses 1 communication strategy to convey 1 goal

27 times he uses ~ 2 communication strategies to convey 1 goal

16 times he uses ≥ 3 communication strategies to convey 1 goal

4 times he uses 1 communication strategy to convey ≥ 2 goals

Additionally, the teacher gave 93 verbal instructions and 64 non-verbal instructions. He was being insistent with the student by snapping and repeating instructions 12 times in the lesson and was summing up on what they have worked on twice. Noticeable was his tendency to give direction verbally (I. a. giving direction: 44) and to play alone, exemplifying.

The teacher gave (mostly positive) feedback to the student 8 times. When he gave direction his use of language was rather direct, except in interaction 38 where he was being extra polite, apologizing to the student for having to interrupt her again. He interrupted her playing occasionally when not convinced by the outcome and was searching for solutions by himself by playing alone. His action to encourage critical thinking mostly through questions outweighed giving explanations. Usually, the questions stayed open as the student was not responding.

Furthermore, it was striking that in 8 of the 22 goals they were working on II. a. character/character of sound and in 7 they work on II. c. dynamics. Besides that, they worked on shifting, bowing and articulation. If one now looks at the approaches it becomes clear that III. h. bowing is the most used strategy to accomplish a goal (12 out of 22 approaches), next to III. f. posture.

Additionally, every time they worked on dynamics the teacher used strategies of bowing. Already in interaction 1 the teacher tried to find a suitable bow to make the realization of the dynamics easier for the student: “What are you going to do?”, “Start up-bow”, “It is extremely difficult, change after g1.”, “Okay, that’s better”. Moreover, he also used strategies of bowing when they were focusing on character/character of sound (3 out of 8 times) as they were for instance in interaction 20: “You should give more importance to the b. If it is very difficult, change the bow.” suggested the teacher bar 30. “There are two ways: One might be better than the other”, he explained. If he was not using strategies of bowing to develop character, he worked on III. f. posture, III. a. fingering, III. d. vibrato, III. c. left hand pressure, I. c. rhythmic structure and I. b. harmonic structure & melodic

structure. By looking at these results one can sum up that most of the time the teacher used technical strategies to work on the interpretative goal II. a. character/ character of sound. If they were not focusing on character nor dynamics their attention went to II. b. articulation as in interaction 26, 44, and 51. Again, the teacher turned to strategies of III. h. bowing, showing to the student which part of the bow to use to optimise connecting the eight notes in bar 35 and thereby working on II. b. articulation in interaction 26. By suggesting to: “Listen to the sixteenth notes” the teacher was instead approaching articulation through strategies of I. c. rhythmical structure (interaction44).

According to the data from the interactions it seems that in the interaction in which goal and approach differ, the teacher was using more verbal strategies (33 verbal of 55 in total) than non-verbal strategies (17 of 55) to impart information. Looking at all interactions we observed that most of the time the teacher is giving direction (I. a.) when expressing himself verbally. This observation is also reflected in the interactions in which goal and approach differ. Out of 55 communication strategies he used, 15 were giving direction (I. a.). In those 18 interactions, as according to the general data, exemplifying through playing alone seemed to be the most common non-verbal strategy and occurs mostly in combination with giving direction. In interactions where goal and approach differ, the teacher was explaining more often than in interaction with the same goal. The same applies to I. f. encouraging critical thinking and III. being insistent.

Finally, the teacher also used other additional strategies to impart information such as c. instructions by stating what he hears and what he would like to hear, I. b. instructions based on the material, i. demonstrating playing *air-cello* , II. a. singing, I. i. instructions which are linked to emotions or II. d. playing along.

Below is the summary of the data of student 1, according to the established system of coding and the identified dimensions:

Data student 1

Interactions in total: 67

- interactions without a goal: 3

What is the goal?

Goals in total: 101

Categories of goals

I. Compositional structure:

a. formal structure:

- sections and subsections:
- transitions:

b. harmonic structure & melodic structure (includes playing wrong/ right notes):

c. rhythmic structure:

- meter:
- tempo: 2
- rhythm: 6
- tempo modifications:
- timing (alone and together): 2
- timing entrances:

d. score (editions):

→ Compositional instructions in total: 10

→ Most used: c. rhythmical structure- rhythm: 6

II. Interpretative forms of realization:

a. character 3; character of sound: 16

b. articulation: 10

c. dynamics: 21

d. phrasing: 8

e. vibrato: 4

→ Interpretative instructions in total: 62

→ Most used: c. dynamics: 21

III. Technical means:

- a. fingering: 8
- b. hand position: 1
- c. left hand pressure: 1
- d. vibrato: 2
- e. shifting: 6
- f. posture:
- g. intonation: 3
- h. bowing: 2
 - in general:
 - changing strings: 2
 - bowings (which support the musical idea): 2
 - contact: 1
 - position:
 - bow geography:
 - pressure & speed: 1

IV. instrumental:

→ Technical instructions in total: 29

→ Most used: a. fingering: 8

How does the teacher approach the goal?

Approaches in total: 101

Categories of approaches: Same as categories of goals

How does the teacher impart the information?

Communication strategies in total: 171

Categorisation of communication strategies:

- I. Verbal instructions:
 - a. giving direction: 44
 - b. instructions based on the material: 9

- c. instructions by stating what he hears and what he would like to hear: 1
- d. explanation: 7
- e. metaphors, references, comparisons: 1
- f. encouraging critical thinking (when an independent decision-process is encouraged) through:
 - instructions which involve an independent decisions process: 2
 - questions: 14
 - response: 2
 - instructing to do something differently
- g. diplomatic rhetoric: 1
- h. anticipating instructions:
- i. instructions which are linked to emotions: 2
- j. colloquial phrases, noises, counting: 2
- k. giving explicit feedback
 - positive: 8
 - negative:

→ Verbal instructions in total: 93

→ Most used: a. Giving direction: 44

II. Non-verbal instructions:

- a. singing: 8
- b. conducting: 1
- c. playing alone: 42
- d. playing along: 5
- e. playing with accompanist:
- f. nonverbal instructions based on the material: 1
- g. imitating student (exaggerating) proposing his idea: 3
- h. giving feedback: 1
- i. demonstrating playing *air-cello* : 2

→ Non-verbal instructions in total: 63

→ Most used: c. Playing alone: 42

III. Being insistent (snapping, repeating instructions): 12

IV. Summing up (agreeing on content, summary): 2

Table 2 below illustrates the various combinations between goal, approach, and communication strategies. In the table, the interactions in which the approach to the goal differs from the goal itself are marked bold. Additionally, if there is more than one goal combined with more than one approach in one interaction, they are coloured to mark their affiliation (for instance interaction 15).

Table 2: Combinations between goal, approach, and communication strategies.

Interaction	Goal	Approach	Communication
1	II. c. dynamics	III. h. bowing-bowings which support the musical idea	I. f. t encouraging critical thinking through questions, II. c. playing alone, I. a. giving direction, I. k. giving explicit positive feedback
2	II. c. dynamics	III. h. bowing- bow geography, II. c. dynamics:	I. a. giving direction, I. c. instructions by stating what he hears..., I. d. explanations, III. Being insistent
3	II. e. <i>vibrato</i>	II. e. <i>vibrato</i>	I. a. giving direction, I. k. giving explicit positive Feedback
4	II. c. dynamics, b. articulation	II. c. dynamics, b. articulation	I. a. giving direction, II. c. playing alone, II. g. imitating student, proposing his idea
5	III. b. hand position, II. d. phrasing	III. b. hand position, II. d. phrasing	I. a. giving direction, II. c. playing alone, II. a. singing, II. h. giving feedback
6	II. c. dynamic, d. phrasing	II. c. dynamic, d. phrasing	II. c. playing alone, II. d playing along
7	II. e. <i>vibrato</i> , a. character of Sound	II. e. <i>vibrato</i>	I. a. giving direction, II. c. playing alone
8	II. c. dynamics	III. h. bowing-pressure & speed	I. a. giving direction, I. d. explanation, II. c. playing Alone
9	I. c. rhythmic structure-Rhythm	I. c. rhythmic structure-Rhythm	I. a. giving direction, II. c. playing alone
10	II. c. dynamics	II. c. dynamics, III. h. bowing-pressure, speed	I. a. giving direction, II. c. playing alone
11	II. c. dynamics	II. c. dynamics	I. f. t encouraging critical thinking through questions, II. i. demonstrating playing <i>air-cello</i> , I. b. instructions based on the material, II. d. playing along

12	III. g. intonation, e. shifting	III. g. intonation, e. shifting	I. a. giving direction
13	III. h. bowing, d. <i>vibrato</i>	III. h. bowing, d. <i>vibrato</i>	I. a. giving direction
14	III. e. shifting, d. <i>vibrato</i> , h. bowing, II. c. dynamics	III. e. shifting, d. <i>vibrato</i> , h. bowing, II. c. dynamics	III. Being insistent, II. c. playing alone, I. b. instructions based on the material, I. a. giving direction
15	II. b. articulation, III. e. shifting, III. h. bowing- string crossing	II. b. articulation, III. f. posture+ III. h. bowing, I. b. harmonic structure & melodic structure	III. Being insistent, I. b. giving instructions based on the material, I. a. giving direction, I. d. explanation
16	III. h. bowing-string crossing	III. h. bowing (stroking out of line) and f. posture	III. Being insistent, I. f. t encouraging critical thinking through questions, I. a. giving direction, I. k. giving explicit positive feedback, II. i. demonstrating playing <i>air- cello</i>
17	I. c. rhythmic structure-Rhythm	I. c. rhythmic structure-Rhythm	I. f. encouraging critical thinking through questions,
18	II. c. dynamics	III. h. bowing-pressure & speed	I. a. giving direction, I. k. giving explicit positive feedback, II. c. playing alone
19	II. c. dynamics	III. Technical means: h. bowing (pressure & speed)	III. Being insistent, II. a. singing, I. d. explanation
20	II. a. character of sound	III. h. bowing-bowings which support the musical idea	I. a. giving direction, II. c. playing alone, I. f. encouraging critical thinking through instructions which involve an independent decisions process
21	II. c. dynamics, a. character of sound, e. <i>vibrato</i>	II. c. dynamics, a. character of sound, e. <i>vibrato</i>	I. a. giving direction, II. c. playing alone
22	II. c. dynamics	II. c. dynamics	I. a. giving direction, II. c. playing alone, I. b. instructions based on the material
23	II. c. dynamics	II. c. dynamics	I. b. instructions based on the material, II. c. playing alone, II. g. imitating student
24	II. c. dynamics	II. c. dynamics	I. f. t encouraging critical thinking through questions, II. c. playing alone, II. a. singing, III. Being insistent, II. f. non-verbal

			instructions based on the material
25	II. c. dynamics	II. c. dynamics	I. b instructions based on the material, II. c. playing alone, III. Being insistent
26	II. b. articulation (<i>legato</i>)	III. h. bowing	I. b. instructions based on the material, II. c. playing alone
27	III. h. bowing-bowings which support the musical idea	III. h. bowing-bowings which support the musical idea	I. f. encouraging critical thinking through responds, II. c. playing alone
28	II. a. character of sound, III. Technical means: e. shifting	III. f. posture	I. a. giving direction, I. d. explanation, II. c. playing alone
29	II. a. character of sound	III. d. <i>vibrato</i>, c. left hand pressure	I. f. t encouraging critical thinking through questions, I. a. giving direction, II. c. playing alone, III. Being insistent
30	III. a. fingering	III. a. fingering	I. f. t encouraging critical thinking through questions, II. c. playing alone
31	I. c. rhythmic structure- timing	I. c. rhythmic structure- timing	I. a. giving direction, I. k. giving explicit positive feedback
32	III. a. fingering	III. a. fingering	I. a. giving direction, II. c. playing alone
33	III. e. shifting	III. e. shifting	I. d. explanations, II. c. playing alone, II. g. imitating student, proposing his idea
34	II. a. character	II. a. character	II. c. playing alone
35	II. d. phrasing, a. character of sound, e. <i>vibrato</i>	II. d. phrasing, a. character of sound, e. <i>vibrato</i>	I. a. giving direction
36	II. c. dynamics	II. c. dynamics	I. b. instructions based on the material, II. c. playing alone
37	III. a. fingering	III. a. fingering	I. f. t encouraging critical thinking through questions, responses, II. c. playing alone
38	II. c. dynamics	II. c. dynamics	III. Being insistent, I. b. instructions based on the material, II. b. conducting, I. g. diplomatic rhetoric,

39	no goal		
40	II. d. phrasing, a. character of sound, III. Technical means: h. bowing- bowings	II. d. phrasing, a. character of sound, III. Technical means: h. bowing- bowings	I. a. giving direction, I. f. t encouraging critical thinking through questions, II. c. playing alone
41	II. b. articulation: marcato, <i>legato</i>	II. b. articulation: marcato, <i>legato</i>	I. a. giving direction, I. k. giving explicit positive feedback
42	II. b. articulation, a. character of sound	II. b. articulation, a. character of sound	I. a. giving direction, II. c. playing alone, II. a. singing, I. e. metaphors, references, comparisons
43	III. h. bowing-pressure & speed, I. Compositional structure: c. rhythmic structure-tempo	III. h. bowing-pressure & speed, I. Compositional structure: c. rhythmic structure-tempo	I. a. giving direction, I. k. giving explicit positive feedback
44	II. a. character of sound, b. articulation	I. c. rhythmic structure- rhythm	I. a. giving direction, II. c. playing alone
45	III. g. intonation	III. g. intonation	I. a. giving direction, I. k. giving explicit positive feedback
46	III. g. intonation	III. g. intonation	III. Being insistent, I. a giving direction
47	III. a. fingering	III. a. fingering	I. d. explanation, I. a giving direction, I. f t encouraging critical thinking through questions (decision made by teacher), II. c. playing alone, III. Being insistent
48	II. b. articulation, a. character of sound	II. b. articulation, III. h. bowing-contact	I. a. giving direction, IV. Summing up, II. c. playing alone
49	II. d. phrasing	II. d. phrasing	I. a. giving direction, II. c. playing alone
50	I. c. rhythmic structure- timing, rhythm, II. c. dynamics	I. c. rhythmic structure- timing, rhythm, II. c. dynamics	I. a. giving direction, II. a. singing, II. d. playing along
51	II. a. character of sound, b. articulation	III. h. bowing-contact	I. a. giving direction, II. d. playing along
52	II. d. phrasing	II. d. phrasing	I. a. giving direction, II. c. playing alone
53	II. d. phrasing, c. dynamics	II. d. phrasing, c. dynamics	II. c. playing alone, I. a. giving direction

54	I. c. rhythmic structure- Rhythm	I. c. rhythmic structure- Rhythm	II. a singing
55	I. c. rhythmical structure- rhythm, II. a. character of sound	I. c. rhythmical structure- rhythm, III. a. fingering	II. a. singing, II. c. playing alone, I. f. t encouraging critical thinking through questions
56	no goal		
57	II. b. articulation, c. dynamics	II. b. articulation, c. dynamics, III. h. bowing- bowings	I. a. giving direction, I. f. t encouraging critical thinking through questions, II. c. playing alone
58	II. a. character of sound	II. a. character of sound	I. a. giving direction, II. c. playing alone
59	III. a. fingering	III. a. fingering	I. j. noises, I. f. t encouraging critical thinking through questions
60	II. a. character, III. a. fingering	I. b. harmonic & melodic structure/ III. a. fingering	I. a. giving direction, I. i. instructions which are linked to emotions, II. c. playing alone
61	II. a. character of sound, d. phrasing, I. c. rhythmic structure: tempo	II. a. character of sound, d. phrasing, I. c. rhythmic structure: tempo	I. a. giving direction, II. c. playing alone, I. j. colloquial phrases, noises, counting, II. d. playing along, IV. IV. Summing up
62	no goal		
63	II. a. character, c. dynamics	II. a. character, c. dynamics	I. i. instructions which are linked to emotions. II. c. playing alone
64	II. a. character of sound	II. a. character of sound	I. a. giving direction, I. f. encouraging critical thinking through instructions which involve an independent decisions process
65	III. a. fingering, e. shifting	III. a. fingering, e. shifting	I. f. t encouraging critical thinking through questions, II. c. playing alone
66	II. a. character of sound	III. h. bowing, a. fingering	I. a. giving direction, II. c. playing alone
67	I. c. rhythmic structure- rhythm, II. b. articulation, III. a. fingering	I. c. rhythmic structure- rhythm, II. b. articulation, III. a. fingering	I. a. giving direction, II. a. singing, III. Being insistent

Finally, Table 3 below illustrates the interactions in which goal and approach differ. To help identifying the combinations which are found the most, the category of a goal will be written in a certain colour if it occurs three times or more than three times, to highlight its affiliation. The same applies to the categories of approach as well as to the categories of communication with the difference that the categories of communication are marked in a certain colour, instead of written.

Table 3: Interactions in which goal and approach differ

Interaction	Goal	Approach	Communication
1	II. c. dynamics	III. h. bowing- bowings which support the musical idea	I. f. encouraging critical thinking through questions, II. c. playing alone , I. a. giving direction, I. k. giving positive feedback
2	II. c. dynamics	III. h. bowing-bow geography, II.c	I. a. giving direction , I. c. instructions by stating what he hears and what he would like to hear, I. d. explanation , III. Being insistent
8	II. c. dynamics	III. h. bowing-pressure & speed	I. a. giving direction , I. d. explanation , II. c. playing alone
10	II. c. dynamics	II. c, III. h. bowing-pressure & speed	I. a. giving direction , II. c. playing alone
15	II.b, III. e.shifting, III. h.bowing-string crossing	II.b, III. f. posture +III. h. bowing-pressure & speed, I. Compositional means	III. Being insistent , I. b. giving instructions based on the material, I. a. giving direction , I. d. explanation
16	III. h. bowing-string crossing	III.h+III. f. posture	III. Being insistent , I. f. encouraging critical thinking through questions, I. a. giving direction , I. k. giving positive feedback

			II. i. demonstrating playing <i>air-cello</i>
18	II. c. dynamics	III. h. bowing-pressure & speed	I. a. giving direction, I. k. giving positive feedback, II. c. playing alone
19	II. c. dynamics	III. h. bowing-bowings which support the musical idea	III. Being insistent, II. a. singing, I. d. explanation
20	II. a. character of sound	III. h. bowings-bowings which support the musical idea	I. a. giving direction, II. c. playing alone, I. f. encouraging critical thinking through instructions which involve an independent decision process
26	II. b. articulation (legato)	III. h. bowing	I. b. instructions based on the material, II. c. playing alone
28	II. a. character of sound, III. e. shifting	III. f. posture	I. a. giving direction, I. d. explanation, II. c. playing alone
29	II. a. character of sound	III. d. vibrato, III. c. left hand pressure	I. f. encouraging critical thinking through questions, I. a. giving direction, II. c. playing alone, III. Being insistent
44	II. a. character of sound, II. b. articulation	I. c. rhythmic structure-rhythm	I. a. giving direction, II. c. playing alone
51	I. a. character of sound, II. b. articulation	III. h. bowing-contact	I. a. giving direction, II. d. playing along
55	I.c./ II. a. character of sound	I.c./ III. a. fingering	II. a. singing, II. c. playing alone, I. f. encouraging critical thinking through questions
57	II.b/ II. c. dynamics	II. b/ III. h. bowing-bowings	I. a. giving direction, I. f. encouraging critical thinking through questions, II. c. playing alone
60	II. a. character, III. a	I. b. harmonic & melodic structure, III.a	I. a. giving direction, I. i. instructions which are linked

			to emotions, II. c. playing alone
66	II. a. character of sound	III. h. bowing, III. a. fingering	I. a. giving direction, II. c. playing alone

3.3. Description of results and analysis: student 2

The lesson of subject takes place in ESMAE, room 3.3 at 15.00 in the afternoon. The people involved are the teacher, the student and a professional pianist/accompanist. Material of the lesson is the first and third movement of Cesar Franck's Sonata for cello and piano in A-Major.

The lesson could be structured into four main parts:

- I. One on one work first Phrase, first movement: 00:01-01:04
- II. Tuning and playing through the first movement with accompanist: 01:32-08:40
- III. Detailed work from beginning to end first movement and third movement: 08:55-36:04
- IV. One to one work: 36:20-49:25

As with the description and analysis of student 1 results, each part of the lesson was described in detailed and analysed according to three main questions:

- I. What is the goal?
- II. How does the teacher approach the goal?
- III. How does the teacher impart the information?

The setting of the first part is as following: The student is sitting in the middle of the room with her back towards the door. The piano is behind her, on her left. At her right, she has her scores on a music stand, close enough for her to reach it but not in the way of her teachers' sight. The teacher is sitting approximately one and a half meters in front of her, with his cello *play-ready* (between his legs).

Interaction 1

00:00 A. is playing the very beginning of the first movement. The teacher is searching for a different colour in her playing. He is referring to the compositional instructions of the first phrase "molto dolce" and looks for a simpler character. S tries and understands, plays until bar 12. T. likes it ("bem").

1. What is the goal?
 - II. Interpretative: a. character of sound: T. wants her to play as the compositional instruction suggests: “molto dolce” and simpler.
2. How does the teacher approach the goal?

SAME: II. Interpretative: a. character of sound
3. How does the teacher impart the information?
 - I. b. instructions based on the material, I. k. giving positive feedback: T communicates his suggestion by referring to the compositional instruction. S. picks it up immediately and translates his suggestion on the cello.

Interaction 2

T tells the student to keep the sound. S writes down and asks: “Not too much flautato?”
T replies “no” and tells her to use more bow for the sound to develop (01:03).

1. What is the goal?
 - II. Interpretative: a. character of sound
2. How does the teacher approach the goal?
 - III. Technical means: h. bowing-pressure & speed: F. speaks about sound development through the use of bow.
3. How does the teacher impart the information?
 - I. d. explanation, I. f. encouraging critical thinking through response: F. explains in response to A’s question.

They are interrupted by the accompanist entering the room.

Herewith the second part of the lesson begins. The accompanist sets up. Teacher and student are greet him and choose another chair for him to play on. A. now moves the music stand a little more on her left. They tune and start a run through the first movement (02:07). S. plays the first phrase with eyes closed. T listens and follows the score which is placed on the table right to him. 04:02. The accompanist stops but t tells him to continue. S seems to know the music very well. There is no stop, or any mistake in playing together.

With The teacher telling them to go again from the beginning of the first movement, the third part of the lesson starts. To be able to observe S, the teacher asks and moves her music stand to her left.

Interaction 3

08:56 They start. They play the first six bars. T asks her to take the tempo which the accompanist introduces and to create a bigger line, flowing from two bars to the next two bars (four bars) instead. He sings the line and moves with his arms accordingly.

1. What is the goal?
 - I. Compositional: c. rhythmic structure-tempo, a. formal structure-sections and subsections
2. How does the teacher approach the goal?
 - I. Compositional: c. rhythmic structure-tempo, a. formal structure- sections and subsections
3. How does the teacher impart the information?
 - I. a giving direction, II. a. singing, II. i. playing *air-cello*: T sings and conducts the musical line with a movement more similar to the one of playing a cello than the one of a conductor.

Interaction 4

The accompanist plays the intro. The teacher asks him for sound difference according to the harmonic change and plays to exemplify (10:10).

1. What is the goal?
 - II. Interpretative: a. character of sound
2. How does the teacher approach the goal?
 - I. Compositional: b. harmonic structure & melodic structure: change of character of sound because of harmonic change.
3. How does the teacher impart the information?
 - I. a. giving direction, II. e. playing with accompanist: F. is giving direction and plays the harmonics along to emphasize the change of character based on the change of harmonics.

Interaction 5

The teacher conducts two bars, before playing along with her student, bar 7-12, to give her the idea. S focuses on the teacher's playing, looks at him and follows.

1. What is the goal?
 - I. Compositional: a. formal structure- sections and subsections
2. How does the teacher approach the goal?
 - I. Compositional: a. formal structure- sections and subsections
3. How does the teacher impart the information?
 - II. b. conducting, II. d. playing along: T conducts at first to create more fluent tempo and plays along after to give her the idea of the bigger line/section.

Interaction 6

At bar 12 s goes on alone and comments by facial expressions on something which is bothering her in bar 14. The teacher picks up the problem, which is the imbalance of the sound changing from d string to a string, bars 13 and 14, referring to the given instruction of the composition at bar 13: "sempre dolce". By changing the string from d to a, the a string shouts out too loudly and thereby interrupts the musical line.

1. What is the goal?
 - II. Interpretative: a. character of sound, d. phrasing
2. How does the teacher approach the goal?
 - III. Technical means: h. bowing- changing strings
3. How does the teacher impart the information?
 - I. d. explanations, II. c. playing alone: T states that s must be aware of the imbalance between d string and a string when changing. He does not explain further how to handle it to avoid it, but he exemplifies by playing.

Interaction 7 - 12

11:11 The student goes again from her entrance, bar 5. While playing along the teacher gives her the following verbal and nonverbal instructions:

Interaction 7

t: “Take the harmonics with the bow out of the instrument.” (bar 7)

1. What is the goal?
 - II. Interpretative: a. character of sound
2. How does the teacher approach the goal?
 - I. Compositional: b. harmonic structure & melodic structure: t is referring to the compositional structure
3. How does the teacher impart the information?
 - I. a. giving direction, II. c. playing along: the teacher explains it while also playing along and thereby exemplifying it.

Interaction 8

t.: “now different” (bar 10)

1. What is the goal?
 - II. Interpretative: Since bar 9 and bar 10 are equal in their compositional structure and the teacher wants her to realize musically each one differently. What she should do, (a change in character, dynamics, phrasing et cetera) the teacher is not defining verbally.
2. How does the teacher approach the goal?
 - II. Interpretative: d. phrasing: T gives example of a different emphasize when the 9th bar repeats in bar 10. He plays towards the middle of the bar.
3. How does the teacher impart the information?
 - I. f. encouraging critical thinking through instructing to do something differently, II. d. playing along: The teacher suggests doing something different but leaves it to her what to do. By playing along he only shows one option of many on how to realize bar 10 differently to bar 9. The student follows.

Interaction 9

At Bar 11 t catches her attention to the transition, bar 12, by stretching the last eight note, bar 11, from a1 to g-sharp-1.

1. What is the goal?

II. Interpretative: d. phrasing: The teacher gives an example of phrasing, going to g-sharp-1, bar 12 ,by stretching a1 in bar 11.

2. How does the teacher approach the goal?

II. Interpretative: d. phrasing:

3. How does the teacher impart the information?

II. d. playing along: T exemplifies by playing along and catches her focus smiling at her at the place of attention.

Interaction 10

t: “sh” (bar 15)

1. What is the goal?

II. Interpretative: a. character of sound: t. wants s. to change character, bar 15.

2. How does the teacher approach the goal?

II. Interpretative: a. character of sound

3. How does the teacher impart the information?

I. a. giving direction, II. d. playing along, II. j. noises: T gives direction with a simple “sh” and plays along to exemplify the change in the character of the sound.

Interaction 11

t.: “different colour” (bar 16, last eighth note, transition to bar 17)

1. What is the goal?

II. Interpretative: a. character of sound: T is searching for a different colour in her sound.

2. How does the teacher approach the goal?

II. Interpretative: a. character of sound

3. How does the teacher impart the information?

- I. f. encouraging critical thinking through instructing to do something differently, II. d. playing along: T is searching for a different colour in her sound. He is not defining the colour he is looking for but leaving to her to search for it and choose.

Interaction 12

t.: “without too much crescendo” (bar 19)

1. What is the goal?
 - II. Interpretative: c. dynamics: Since there is no dynamic written in bar 19 in the score, T Does not want her to make a big crescendo.
2. How does the teacher approach the goal?
 - II. Interpretative: c. dynamics
3. How does the teacher impart the information?
 - I. b. instructions based on the material, II. d. playing along: T is playing along and instructing her to play “without too much crescendo”.

Interaction 13

12:15, bar 25, t stops playing and lets s going on alone. The teacher starts singing accordingly to the development of the “molto crescendo” bar 29 telling her “even more” and playing along, bar 30, fortissimo at the point of the climax.

1. What is the goal?
 - II. Interpretative: c. dynamics: T wants her to bring out the dynamic climax from bar 28 to bar 31.
2. How does the teacher approach the goal?
 - II. Interpretative: c. dynamics
3. How does the teacher impart the information?
 - II. a. singing, I. a. giving direction, II. d. playing along: F. observes her and is using the three strategies of communications listed above to convey the development of the dynamics.

In the following interactions (12:39) the teacher is pointing out the crucial points of what they worked on upon to this point as well as in the music (letter A, bar 32). Therefore, the communication strategy of instruction 14, 15 and 16 can be all described with IV. Summing up.

Interaction 14

T. stops and tells her that until letter A, bar 32, she should be more fluent and that she can relax a bit in certain parts.

1. What is the goal?
II. Interpretative: d. phrasing
2. How does the teacher approach the goal?
II. Interpretative: d. phrasing
3. How does the teacher impart the information?
IV. Summing up, I. f. encouraging critical thinking through instructions which involve an independent decisions process: T. is pointing out that generally s. should be more fluent in phrasing and to be aware of where she should go forward and where she can relax in the music.

Interaction 15

Furthermore, he explains that sometimes she thinks too much in three (eight notes) and thereby stops the musical line. T exemplifies by singing two opposite ways: the way she is doing it and the way he would like her to do it. While he sings, he is supporting his idea of phrasing with a movement of his arms/ conducting.

1. What is the goal?
II. Interpretative: d. phrasing: F. goes further in the idea of being more fluent and dynamic (interaction 14). He wants her to think less in three (eight notes) to create a bigger line.
2. How does the teacher approach the goal?
II. Interpretative: d. phrasing
3. How does the teacher impart the information?

IV. Summing up, I. d. explanation, II. g. imitating student (exaggerating) proposing his idea, II. a. singing, II. b. conducting: F. explains verbally what the reason could be for her stopping the music. He exemplifies by singing the phrasing she is doing as well as the way how she could do it. To emphasize his idea of phrasing, he conducts his singing.

Interaction 16

Finally, he wants her to use more bow. S notes the given information in her score and they move on from Letter A, bar 32.

1. What is the goal?

II. Interpretative: d. phrasing: For the music to become more fluent, T is referring to the technical means of bowing. He wants her to use more bow (bow speed) to help creating a bigger line.

2. How does the teacher approach the goal?

III. Technical: h. bowing-pressure & speed

3. How does the teacher impart the information?

I. a. giving direction: The teacher is instructing her to use more bow and giving her an impression of the movement, he is looking for, by moving his right arm in the air, pretending he is striking the bow.

Interaction 17

The teacher stops the student, bar 50, and tells her that she must introduce a new musical idea and not to repeat the once before. S goes again, t sings along, snaps, and conducts.

1. What is the goal?

II. Interpretative: T wants her to introduce a new musical idea, bars 49/50, and not only to repeat the one she had for bars 47/48. With his statement he is not defining what it is he is searching for but leaves her to find the answer herself. What is clear is that he is talking about interpretation, in aspects such as character, dynamics, expressive tools or phrasing.

2. How does the teacher approach the goal?

II. Interpretative

3. How does the teacher impart the information?

I. f. encouraging critical thinking through instructing to do something differently: F. is instructing her to do something different but not defining it further.

Interaction 18

Bar 53, T throws in a “calmo” and plays along.

1. What is the goal?

II. Interpretative: a. character: F. wants A. to have a calmer character in general. Thereby he could be referring to for example character of sound, tempo, and emotions.

2. How does the teacher approach the goal?

II. Interpretative: a. character

3. How does the teacher impart the information?

I. a. giving direction, II. d. playing along: F. is instructing her to play “calmer”. He listens shortly and is joining in on her playing to exemplify to her the quality he is looking for.

Interaction 19

The teacher stops playing and conducts the student to go forward, bar 57, telling her that if she is losing too much time in the beginning it will be difficult to finish the phrase. The student writes down the information in her pause (letter B).

1. What is the goal?

II. Interpretative: d. phrasing: T wants s to create bigger bows and phrases.

2. How does the teacher approach the goal?

I. Compositional structure: c. rhythmic structure-tempo: T wants s to create bigger bows and phrases and tells her that if she goes forward with the tempo in bar 57 it will be easier for her to realize the phrase.

3. How does the teacher impart the information?

I. a. giving direction, II. b. conducting: F. stops playing and starts conducting, showing her to go forward bar 57.

While playing from Letter B to Letter C (bar 60 to bar 94) T gives s the following inputs:

Interaction 20

Before her entrance, bar 63, t reminds her of the instruction written in the score: “dolcissimo”.

1. What is the goal?
 - II. Interpretative: a. character of sound
2. How does the teacher approach the goal?
 - II. Interpretative: a. character of sound
3. How does the teacher impart the information?
 - I. b. instructions based on the material: F. is reminding her of the continuation of the compositional instruction “dolcissimo”.

Interaction 21

Bar 65. The teacher conducts and tells the student to play on the tempo of the piano.

1. What is the goal?
 - I. Compositional structure: c. rhythmic structure-tempo, timing: Playing together, which in this case means to listen to the voice of the piano and to take its tempo.
2. How does the teacher approach the goal?
 - I. Compositional structure: c. rhythmic structure-tempo, timing
3. How does the teacher impart the information?
 - I. a. giving direction, II. b. conducting: F. points out the problem by giving her the instruction to take the tempo from the piano and conducts both of them to bring them together.

Interaction 22

The teacher instructs: “don’t do too much” (bar 68)

1. What is the goal?

- II. Interpretative: a. character of sound, c. dynamics: To stay in the character of “dolcissimo”.
- 2. How does the teacher approach the goal?
 - II. Interpretative: a. character of sound, c. dynamics
- 3. How does the teacher impart the information?
 - I. a. giving direction: T is instructing s to not do too much, while smiling at her.

Interaction 23

Bar 69: To draw the students’ attention towards him, the teacher conducting movements get bigger to show her that he wants to lead with the last eighth note, bar 69, into bar 70. When they move on from it t nods in approval and continues conducting.

- 1. What is the goal?
 - II. Interpretative: d. phrasing: t wants s to connect bar 69 with bar 70, and to create a musical line until bar 70.
- 2. How does the teacher approach the goal?
 - II. Interpretative: d. phrasing
- 3. How does the teacher impart the information?
 - III. b. conducting, II. h. giving positive feedback: T shows s the phrasing he imagines by leading her playing through conducting.

Interaction 24

The teacher tells the student to “do something different” (bar 72).

- 1. What is the goal?
 - II. Interpretative: d. phrasing: Since bar 72 is a variation of bar 71 F. is telling A. while she is still realizing bar 71 to think of something different musically for bar 72. What she should do, (a change in character, dynamics, phrasing et cetera) F. is not defining verbally. (A. reacts nonetheless and is stretching the a1 a little longer in bar 72 than in bar 71.)
- 2. How does the teacher approach the goal?
 - II. Interpretative: d. phrasing
- 3. How does the teacher impart the information?

I. f. encouraging critical thinking through instructing to do something differently: F. instructs her to do something different but leaves it to her what to do.

Interaction 25

The teacher stops playing and sings intensely the musical line, bar 79, where the “sempre crescendo” starts, emphasizing the connection between the a-sharp-1 to d-sharp-1. Afterwards, he snaps for s not to fall behind in tempo.

1. What is the goal?

II. Interpretative: d. phrasing, I. Compositional structure: c. rhythmic structure-tempo: To bring out the expressive character of the Interval a-sharp-1 to d-sharp-1 but despite emphasizing it, not to lose tempo afterwards.

2. How does the teacher approach the goal?

II. Interpretative: d. phrasing, I. Compositional structure: c. rhythmic structure-tempo

3. How does the teacher impart the information?

II. a. singing, III. Being insistent: F. sings expressively along to show her what he wants her to emphasize and starts snapping afterwards bar 80 for her to stay on top of the tempo.

Interactions 26 & 27

The teacher snaps and then picks up singing, bar 85, as the musical line rises and climaxes dynamically, saying “more” (bar 86).

1. What is the goal?

I. Compositional: c. rhythmic structure-tempo, II. Interpretative: a. character, c. dynamics: The goal of the interactions is to be expressive and convincing with the developing character and dynamic (“crescendo”, “con tutta forza”) of the phrase, while staying first in tempo to then help the dramatic character, bar 87, with a “molto ritardando.”

2. How does the teacher approach the goal?

I. Compositional: c. rhythmic structure-tempo, II. Interpretative: a. character, c. dynamics:

3. How does the teacher impart the information?

III. Being insistent, II. a. singing, I. b. Instructions based on the material, II. f. nonverbal instructions based on the material: t first snaps in order that the student stays on the tempo, while he is supporting the musical development by singing and finally instructing her on the high point of the development to do even more with an encouraging “more”.

Interaction 28

16:11. Student and accompanist start working from Letter C. The teacher interrupts them, bar 101, and points out a wrong note, bar 99, (17:00) in the piano voice. Trying to make it clear, t plays along with s.

1. What is the goal?
 - I. Compositional: b. harmonic structure & melodic structure: The goal is to play the written notes.
2. How does the teacher approach the goal?
 - I. Compositional: b. harmonic structure & melodic structure
3. How does the teacher impart the information?
 - I. a. giving direction, II. e. playing with accompanist: T explains to the accompanist the context of the right note and demonstrates it by playing the specific place with him.

Interaction 29

The student is running out of bow at the last eighth note, bar 116, before the last bar of the movement. T suggests a different stroking, which she notes in her score.

1. What is the goal?
 - III. Technical means: h. bowing-bow geography: Since A. is running out of bow, F. wants to make it easier for her by suggesting a different bowing.
2. How does the teacher approach the goal?
 - III. Technical means: h. bowing-bow geography
3. How does the teacher impart the information?

I. f. encouraging critical thinking through instructions which involve an independent decisions process: T is suggesting different stroking but, in the end, leaving it to the student's choice.

19.00. The work on the third movement Recitativo-Fantasia continues. T puts his cello aside and alternates between following the score and observing s.

Interaction 30

Starts conducting and pointing out the “rallentando”, bar 16. While going on t tells s to exaggerate the “molto lento” letter A, bar 17. He conducts the musical line as if he is playing the cello.

1. What is the goal?

I. Compositional: c. rhythmic structure-tempo modifications: The goal is to exaggerate the instruction written in the score in order to be musically persuasive.

2. How does the teacher approach the goal?

I. Compositional: c. rhythmic structure-tempo modifications

3. How does the teacher impart the information?

II. b. conducting, I. b. instructions based on the material: F. uses the strategy of conducting as well articulating himself to convey the information.

Interaction 31

Letter B, A. misses to give clear entrance for piano.

1. What is the goal?

I. Compositional: c. timing entrances

2. How does the teacher approach the goal?

3. How does the teacher impart the information?

Interaction 32

The teacher asks the accompanist about the score, bar 30. Apparently, there is an added information in the score about the different editions for violin and cello. They leave the discussion for the moment and continue.

1. What is the goal?
 - I. Compositional: d. score (editions): To be familiar with different editions, their background differences and relation to the Urtext.
2. How does the teacher approach the goal?
 - I. Compositional: d. score (editions)
3. How does the teacher impart the information?
 - I. f. encouraging critical thinking through questions: Through his question t is encouraging a thought process involving an independent decision.

Interaction 33

The teacher calls the student's attention to stay quite, bar 41.

1. What is the goal?
 - II. Interpretative: a. character, c. dynamics: Although in bar 41 it says in the score "poco crescendo" T reminds s of the "dolcissimo sempre" character and to only start building up the crescendo from bar 41 on.
2. How does the teacher approach the goal?
 - II. Interpretative: a. character, c. dynamics
3. How does the teacher impart the information?
 - I. b. instructions based on the material: T is referring to a character instruction in the score as well as to a dynamic change instruction.

Interaction 34

T sings along and indicates going forward with his movements, bar 46.

What is the goal? I. Compositional: c. rhythmic structure-tempo modification: The goal is as the instruction in the score says: "poco animato" to go slightly forward in the tempo.

How does the teacher approach the goal? I. Compositional: c. rhythmic structure-tempo modification

How does the teacher impart the information? II. a. singing: F. sings to lead the motion of going forward in tempo.

Interaction 35

The teacher stops their playing in bar 58, explaining to the accompanist that one needs little more time on the cello than on the violin to realize the music in bar 45.

1. What is the goal?

III. Technical means: i. instrumental Since the sonata was originally composed for violin and piano T wants the pianist to be conscious about the differences of technics of the two different instruments. A cellist in comparison to a violinist needs more time to realize the music because of the bigger distances between the left hand and arm fingerings, positions and shifting.

2. How does the teacher approach the goal?

III. Technical means: i. instrumental

3. How does the teacher impart the information?

I. d. explanation: F. mentions to S. the different challenges of technic according to the two different instruments: violin and cello.

Interaction 36

The teacher now snaps and conducts at the same time. His movements are now based on the rhythmical structure.

1. What is the goal?

I. Compositional: c. rhythmic structure-timing: Playing together

2. How does the teacher approach the goal?

I. Compositional: c. rhythmic structure-timing

3. How does the teacher impart the information?

III. Being insistent- snapping, II. b conducting

Interaction 37

The teacher stops them, and they go again from bar 45 up until bar 51. T tells S. to move more with the bow, bar 48. By singing to her, he indicates that he wants her to exaggerate the “ritardando,” bar 52.

1. What is the goal?

II. Interpretative: a. character of sound, I. Compositional: c. rhythmic structure- tempo modification: The goal is the optimization of the sound bar 48 and to exaggerate the tempo modification “ritardando” which is written in the score bar 52.

2. How does the teacher approach the goal?

III. Technical means: h. bowing-pressure & speed: The goal is to use more bow for the sound to develop in bar 48, I. Compositional: c. rhythmic structure- tempo modification.

3. How does the teacher impart the information?

I. a. giving direction, II. f. nonverbal instructions based on the material, II. a. singing: F. instructs her to use more bow bar 48 and exaggerates “ritardando”, bar 52 by singing to her.

Interaction 38

Bar 59, t shows and suggests that s should play “flat, without waves.”.

1. What is the goal?

II. Interpretative: a. character: T seems to want s to stay calmer, without so much movement.

2. How does the teacher approach the goal?

II. Interpretative: a. character

3. How does the teacher impart the information?

I. e. metaphors, II. i demonstrating playing *air-cello*: T uses the metaphor “wave” to depict the movement in the student’s playing, bar 59, and following. He is showing a very calm movement with his right arm as if he was stroking.

Interaction 39

He stops them in the middle of bar 71, telling s to play expressively and dramatically, but with less attack. He wants her to keep to herself what is coming next, to create a surprise (forte and accents, from bar 75 on).

1. What is the goal?

II. Interpretative: a. character, b. articulation: T wants s to play dramatically and expressively, but at the same time not to give too much of an attack to her bows. He wants the listener to stay in the unknown of what is coming next and S to surprise the listener.

2. How does the teacher approach the goal?

II. Interpretative: a. character, b. articulation

3. How does the teacher impart the information?

I. i. instructions linked to emotions

Interaction 40

They go again from bar 70 and T stops them, bar 74, suggesting s to vibrate less in the beginning of the phrase, concentrating on the bow, and to develop the vibrato along the development of the motive.

1. What is the goal?

II. Interpretative: e. vibrato, III. Technical: h. bowing-in general: T wants s to vary the vibrato according to the development of the musical line. He furthermore wants her to give attention to the bow.

2. How does the teacher approach the goal?

II. Interpretative: e. vibrato, III. Technical: h. bowing-in general

3. How does the teacher impart the information?

I. g. diplomatic rhetoric

28:42 they go again from Bar 71. This time s plays the whole phrase while t is leading her with the following instructions:

Interaction 41

t.: “poco vibrato” (bar 73)

1. What is the goal?

II. Interpretative: e. vibrato: In order to still have potential to develop the vibrato along the musical line, the goal is to start the phrase (bar 73) with only a little vibrato (“poco vibrato”)

2. How does the teacher approach the goal?

II. Interpretative: e. vibrato

3. How does the teacher impart the information?

I. a. giving direction: F. verbally instructs her to do a little bit of vibrato.

Interaction 42

Teacher says to student “developing vibrato” (bar 75).

1. What is the goal?

II. Interpretative: e. vibrato: The goal is to develop the vibrato according to the development of the phrase bar 75.

2. How does the teacher approach the goal?

II. Interpretative: e. vibrato

3. How does the teacher impart the information?

I. a. giving direction: T is guiding s with a verbal exclamation to develop the vibrato.

Interaction 43

Bar 77. T is showing movement of accentuating quarter notes on beats three and four and saying “accent”.

1. What is the goal?

II. Interpretative: b. articulation: T wants s to realize the dramatic character by exaggerating the accents on the third and fourth beats written in the score, bar 77.

2. How does the teacher approach the goal?

II. Interpretative: b. articulation

3. How does the teacher impart the information?

I. b. instructions based on the material, II. i. demonstrating playing *air-cello*: F. moves with his arms as if he would accentuate, supporting his verbal instructions to give accents.

Interaction 44

The teacher says: “sh”, “piano” (bar 79)

1. What is the goal?
 - II. Interpretative: c. dynamics: The goal is to play piano, bar 79, at the end of the musical line (bar 72-79).
2. How does the teacher approach the goal?
 - II. Interpretative: c. dynamics
3. How does the teacher impart the information?
 - I. b. instructions based on the material, I. j. noises: By “shushing” her, he is referring to the dynamic instruction “piano” written in bar 79.

Interaction 45

The teacher says: “no waves” (bar 81).

1. What is the goal?
 - II. Interpretative: a. character: T wants s to stay calmer without so much movement, as he already suggested for bar 59.
2. How does the teacher approach the goal?
 - II. Interpretative: a. character
3. How does the teacher impart the information?
 - III. Being insistent: T is repeating the instruction he gave for bar 59, since it has different notes but the same interval structure as well as the same rhythmical structure.

Interaction 46

The teacher stops the student and the accompanist, at 29.50, asking diplomatically to him but addressing them both: “What are we doing wrong, here?” The accompanist responds

with: “Are we going too far behind in tempo?” He continues with his opinion on the “molto dolce” bar 81, being dragged, loosing breath and not fluent enough. He is giving example and the student is immediately getting in.

1. What is the goal?

I. Compositional structure: c. rhythmic structure- tempo: T wants them to realize that starting from bar 81 (molto dolce) they are losing too much of tempo.

2. How does the teacher approach the goal?

I. Compositional structure: c. rhythmic structure- tempo

3. How does the teacher impart the information?

I. f. encouraging critical thinking through questions, I. g. diplomatic rhetoric: T is diplomatically asking them what they are doing wrong but using the first person plural to address them, counting himself in.

They go again from Bar 81. T gives s the following instructions:

Interaction 47

t.: “no waves” (bar 81)

1. What is the goal?

II. Interpretative: a. character: T is repeating his previous instruction (bar 59) for s to stay calmer without so much movement.

2. How does the teacher approach the goal?

II. Interpretative: a. character

3. How does the teacher impart the information?

III. Being insistent: T is repeating the instruction he already gave in Interaction 45.

Interaction 48

t.: “harmonics” (bar 83)

1. What is the goal?

II. Interpretative: a. character of sound

2. How does the teacher approach the goal?
 - I. Compositional: b. harmonic structure & melodic structure
3. How does the teacher impart the information?
 - I. a. giving direction

Interaction 49

Bar 87 F. snaps implying not to lose tempo.

1. What is the goal?
 - I. Compositional structure: c. rhythmic structure-tempo: T does not want them to lose tempo but to continue the phrase, not getting stuck.
2. How does the teacher approach the goal?
 - I. Compositional structure: c. rhythmic structure-tempo
3. How does the teacher impart the information?
 - III. Being insistent: F. is insisting on the continuation of a steady tempo.

Interaction 50

They go above Letter D and T interrupts them, bar 95, telling them that they have to be careful about the entrance of the student, bar 93. T tells her to listen to the triplets of the piano.

1. What is the goal?
 - I. Compositional structure: c. rhythmic structure-timing entrances: The goal is for s to be precise and on perfect timing in her entrance, bar 93.
2. How does the teacher approach the goal?
 - I. Compositional structure: c. rhythmic structure-timing
3. How does the teacher impart the information?
 - I. a. giving direction: T is explaining s that listening to the triplets of the piano can help her feeling of timing and therefore with a correct entrance.

Interaction 51

They play again up until bar 98 where T notes that a correct tempo introduced by the pianist is not achieved, bar 97, which makes it hard to get it together.

1. What is the goal?

I. Compositional structure: c. rhythmic structure-tempo, timing: T wants s to feel which tempo the pianist is introducing in his triplets before. He wants her to take it from the pianist. He wants both to feel and play as a unit.

2. How does the teacher approach the goal?

I. Compositional structure: c. rhythmic structure-tempo, timing

3. How does the teacher impart the information?

III. Being insistent: Since it is the same problematic and equal material as in Interaction 50 (bar 93), F. is repeating himself and being insistent on the idea of playing in tempo and as a unit.

Interaction 52

They go again and try several times the entrance at bar 93 until T counts down and continues to conduct.

1. What is the goal?

I. Compositional structure: c. rhythmic structure- timing entrance: The goal is, as in interaction 50, for the student to be precise and on perfect timing with her entrance, bar 93. Since his communication of explaining has not worked in interaction 50, he is now counting to stabilize tempo and timing.

2. How does the teacher approach the goal?

I. Compositional structure: c. rhythmic structure- timing entrance

3. How does the teacher impart the information?

II. b. conducting: T is counting down to help with her entrance bar 93.

Interaction 53

The teacher's focus shifts again to the student and the musical line (bar 99), giving examples along her playing, by singing and showing the movement with his arms and telling her to do accents on the quarter notes, bar 107, at the high point of the phrase.

1. What is the goal?
 - II. Interpretative: d. phrasing, b. articulation: T wants s to do accents on the third and fourth beat (quarter notes) bar 107 on the “sempre forte, fortissimo”.
2. How does the teacher approach the goal?
 - II. Interpretative: d. phrasing, b. articulation
3. How does the teacher impart the information?
 - I. a. giving direction, II. a. singing, II. i. demonstrating playing *air-cello*: T tells her to accentuate the quarter notes, bar 107.

Interaction 54

33:20 T interrupts, bar 111. He is searching for another character and suggests her to think about something sad, whereupon s asks him: “without vibrato?” The teacher replies: “No, different sound, intonation, bow pressure, painful, difficult.”

1. What is the goal?
 - II. Interpretative: a. character of sound: the teacher is searching for a different character in the student’s playing. He wants her to play sad and with: “...different sound, intonation, bow pressure, painful, difficult.” T wants her to experiment with bow pressure, to support the idea of another sound character.
2. How does the teacher approach the goal?
 - II. Interpretative: a. character of sound through character of sound strategies as well as III. Technical means: h. bowing-pressure & speed, g. intonation
3. How does the teacher impart the information?
 - I. i.: instructions which are linked to emotions I. a. giving direction.: T is giving an instruction which is linked to the emotion of sadness. S seems to not understand how to create a sad character in sound and asks him if she could realize it by playing without vibrato. T negates and goes on, giving her direction by stating further instructions which are linked to emotions such as: “painful, difficult” as well as linked to interpretation and technic: “different sound, intonation, bow pressure.”

Interaction 55

The student tries, and it sounds very different and much more painful and sad, but t says it is maybe too slow.

1. What is the goal?

I. Compositional: c. rhythmic structure-tempo: Although the compositional instruction says, “molto lento e mesto” T criticizes that the tempo chosen by s might be too slow.

2. How does the teacher approach the goal?

I. Compositional: c. rhythmic structure-tempo

3. How does the teacher impart the information?

I. a. giving direction: T states that the tempo chosen by s, bar 111, might be too slow.

Interaction 56

The teacher plays along, and s stops playing and starts observing him. T is experimenting with the idea of changing intonation and playing without much vibrato. He says he was not doing much vibrato but does not want to force his idea on her.

1. What is the goal?

II. Interpretative: a. character: As in interaction 54, t is still searching for another character for the “non troppo dolce”. He is experimenting with intonation and vibrato, exemplifying what he is looking for in the student’s playing.

2. How does the teacher approach the goal?

II. Interpretative: d. vibrato, III. Technical means: g. intonation

3. How does the teacher impart the information?

II. c. playing alone, III. Being insistent: F. is exemplifying a change of intonation and vibrato to change character.

Interaction 57

T tells s to play ugly and not sweet.

1. What is the goal?

II. Interpretative: a. character: T goes on with searching for another character. He is looking for an ugly and not sweet character.

2. How does the teacher approach the goal?

II. Interpretative: a. character

3. How does the teacher impart the information?

I. i. instructions which are linked to emotions: T is referring to the emotions of sweetness and ugliness.

36:10 T tells the accompanist that he wants to work alone with the student on the beginnings of the two movements, and he leaves the room. The fourth and last part of this lesson begins.

Interaction 58

The student wants to reassure herself about the essence of the beginning of first movement by speaking of the technical difficulties of playing pianissimo (pp) as shaking and putting her right wrist very high to take weight off the string. The teacher suggests that she should think about a piano dolce instead of pianissimo and to be conscious about being present in between the piano.

1. What is the goal?

III. Technical: h. bowing-in general: The goal is for s to feel more comfortable with her right arm and hand while playing pianissimo. Since she is afraid of shaking with her right hand due to tension, she puts her right wrist very high to take weight off the string and is not feeling comfortable.

2. How does the teacher approach the goal?

II. Interpretative: c. dynamics

3. How does the teacher impart the information?

I. a. giving direction: T suggests dealing with the problem by playing tricks to her mind by thinking of a piano dolce instead of a pianissimo and focusing on a present sound.

Interaction 59

The teacher exemplifies, 37:07, and tells the student: “this with vibrato”. S tries. T wants her to be more fluent and not to emphasize the f1 sharps too much, to create line.

1. What is the goal?
 - II. Interpretative: d. phrasing: T wants her to create a bigger line and suggests not to emphasize the f1-sharps too much.
2. How does the teacher approach the goal?
 - II. Interpretative: d. phrasing
3. How does the teacher impart the information?
 - I. a. giving direction.

Interaction 60

They speak about stroking and the teacher suggests that she should think of a lullaby.

1. What is the goal?
 - II. Interpretative: a. character, d. phrasing: T wants s to play as a lullaby. T does not go on with explaining his suggestion. One might assume that he is searching for something simple and beautiful in character and phrasing.
2. How does the teacher approach the goal?
 - II. Interpretative: a. character, d. phrasing
3. How does the teacher impart the information?
 - I. e. metaphors, references, comparisons: In search of a different character and phrasing, t is drawing a comparison/ making a reference to the character of a lullaby.

Interaction 61

The teacher wants the student to connect the change of the string better, bar 6, by using less pressure and more bow on f sharp.

1. What is the goal?
 - III. Technical: h. bowing-changing strings: F. wants to optimize the string changing bar 6 by using less pressure and more bow on the f sharp.
2. How does the teacher approach the goal?
 - III. Technical: h. bowing-pressure & speed

3. How does the teacher impart the information?

I. a. giving direction: T suggests a different balance of speed and pressure in the bow to optimize the change of strings.

Interaction 62

The teacher plays along 38:55. He suggests a different emphasis on repetition, bar 10, by giving it glissando and vibrato and wants her to not think in three, bar 11. Student writes down. Teacher waits.

1. What is the goal?

II. Interpretative: d. phrasing: Through the use of a different way to shift (glissando) and through vibrato, t wants to change emphasis on bar 11, which is a repetition of bar 10.

2. How does the teacher approach the goal?

II. Interpretative: d. phrasing

3. How does the teacher impart the information?

I. a. giving direction: T is instructing s to play the repetition differently.

Interaction 63

The teacher explains that the stroking does not matter, as long as the music flows.

1. What is the goal?

II. Interpretative: d. phrasing: T wants s to play fluently and not to stop the music.

2. How does the teacher approach the goal?

II. Interpretative: d. phrasing

3. How does the teacher impart the information?

I. a. giving direction: T states that as long as the music flows, the stroking does not matter.

The student seems distracted, tells him that her next lesson is ahead. The teacher asks her if she needs to eat something before. She says no, and they go into the beginning of the third movement, 42:29.

Interaction 64

The teacher starts with demonstrating. The student is doing a different stroking from him in the beginning, and losing force by having not enough bow on the g1, bar 5. T shows her to change on the trill before and tries to find ways to show her. Asks her and me if we hear the changing of the bow on it. As we say no, he explains the strategy he uses, which is to change the bow on the upper note of the trill.

1. What is the goal?
 - II. Interpretative: a. character of sound: T wants her to be able to play a strong g1, bar 5, and to have enough bow to do so.
2. How does the teacher approach the goal?
 - III. Technical means: h. bowing-bowings which support the phrasing
3. How does the teacher impart the information?
 - II. c. playing alone, I. d. explanation: T starts searching for a solution, then reassuring himself by questioning us and in the end explaining the technical strategy he used.

Interaction 65

The teacher tells the student to make the appoggiatura shorter, bar 4: he uses open strings to exemplify. Furthermore, he wants her to use more hair of the bow on the accord but then go earlier to only the g1.

1. What is the goal?
 - I. Compositional structure: c. rhythmic structure-rhythm
2. How does the teacher approach the goal?
 - I. Compositional structure: c. rhythmic structure-rhythm and III. Technical means: h. bowing-contact
3. How does the teacher impart the information?
 - I. a. giving direction.

Interaction 66

They go on until bar 10 to the B1 flat where he asks for a more consistent sound with more center.

T tells s that she does not have to do vibrato, but to put more weight on the string instead.

1. What is the goal?

II. Interpretative: a. character of sound: T is searching for a more centered sound on the b1 flat.

2. How does the teacher approach the goal?

III. Technical: h. bowing-pressure & speed

3. How does the teacher impart the information?

I. a. giving direction: F. is suggesting putting more weight on the arm to achieve the goal.

49:35 the lesson is over.

3.4. Summary of results and analysis: student 2

In the lesson of student 2 we observed a total of 66 interactions between the teacher and the student. We noted that 3 of those (interactions: 4, 28, 35) were specifically addressed to the accompanist, whereas 63 concerned the student or the student together with the accompanist.

In total there were 79 goals set in between the interactions. Three of them concerned the accompanist, 76 concerned the student. The categories of goals addressed were: 21 goals in the category I. Compositional structure, 52 goals in the category II. Interpretative forms of realization and 6 goals in the category III. Technical means.

As it could be observed the maximum on goals set lied in the category II. Interpretative forms of realization, with 52 goals. Within this category, most goals were in the subcategories II. a. character of sound and II. d. phrasing, with a total of 14 goals. The number of goals set in the category of I. Compositional structure represented 21 goals and in- between this category the most set goal was I. c. rhythmic structure-tempo with 7 goals. The least goals were set in the category III. Technical means, with 6 goals. Most of the goals set in this category lied in the subcategory III. h. bowing-in general with 2 interactions (40, 58).

The above-described data seems to indicate that in this lesson the teacher worked primarily on interpretation, with a special focus on the character of sound and on questions of phrasing, followed by work based on the composition itself, paying special attention to the subject of tempo. The least work was based on technique. These results may well correlate with the advanced level of expertise of the student.

To attain a determined goal, the teacher used a determined similar approach, usually of the same type as it will be shown ahead, in table 4.

For instance, in interaction 1 the teacher was looking for a different colour and for simpler character in the students playing, referring to the compositional instructions of the first phrase (“molto dolce”). Only through the teacher pointing at the goal, the student was able to understand it, which the teacher commented in return with an approving “good”.

With a total number of 104 communication strategies, it becomes clear that the teacher uses often more than one communication strategy to convey a determined goal. For

instance, in 10 out of 13 interactions in which goal and approach differ the teacher used ~ 2 communication strategies to convey one goal, which could mean that he tends to use more than one communication strategies in interactions where stating the goal is not enough but having to find a different approach to realize the goal.

The teacher gave 58 verbal instructions and 36 non-verbal instructions. He was being insistent with the student by snapping and repeating instructions eight times in the lesson and was summing up on what they have worked on twice. Within verbal communication strategies, he mostly gave directions (I. a. Giving direction: 26) whereas in the non-verbal communication strategies one could observe that there is a tie in the subcategories II. a. singing, II. b. conducting and II. d. playing along, with 8 times each.

The teacher did not give a lot of feedback but, when he did, it was of positive kind. He was phrasing criticism, especially when addressing both the student and the accompanist, rather diplomatically. He sang, conducted, and played along when exemplifying rather than playing alone. Moreover, his action to encourage critical thinking outweighed giving explanations.

In general, there was a one approach to one goal pattern except for interaction 54 and 56, where two different approaches to realize one goal were used. Both had in common that they dealt with the goal character/character of sound.

Twice the teacher approaches the goal character/ character of sound with strategies referring to I. b. harmonic & melodic structure (interaction 4 and 7). In interaction 54 where he is looking for another character (bar 111, first movement, Franck) recommending her to think about something sad and going on suggesting: “No, different sound, intonation, bow pressure, painful, difficult” he suggests III. h. bowing-pressure & speed but also III. g. intonation. Being insistent and not yet satisfied with the result of his approach he goes on trying to find the character he is looking for in the students playing through means of II. d. vibrato and III. g. intonation.

According to the data regarding interactions, it also seems that the interaction in which goal and approach differ that the teacher is using more verbal strategies than non-verbal strategies to impart information (14 of 24 communication strategies are verbal). When there are ≥ 2 communication strategies to convey one goal the teacher uses frequently one verbal communication strategy and one non-verbal communication strategy.

The observation, when looking at all interactions, that most of the time the teacher is giving direction (I. a.) when expressing himself verbally, also reflects in the interactions in which goal and approach differ. Out of 24 communication strategies he uses, 9 are giving direction (I. a.), 4 are playing alone (II. c.) 2 are explanations and 2 are encouraging critical thinking. Furthermore, he uses communication strategies such as II. e. playing with accompanist, II. d. playing along, II. b. conducting, II. f. nonverbal instructions based on the material, II. a. singing and III. Being insistent.

Below is the summary of the data of Student 2, according to the established system of coding and the identified dimensions:

Interactions in total: 66

Interactions of teacher with student: 63

Interactions of teacher with accompanist: 3 (interaction 4, 28, 35)

What is the goal?

Goals in total: 79

- Goals relating to student 76
- Goals relating to accompanist: 3

Categories of goals

V. Compositional structure:

a. formal structure:

- sections and subsections: 2
- transitions:

b. harmonic structure & melodic structure (includes playing wrong, right notes):1

c. rhythmic structure:

- meter
- tempo: 7
- rhythm: 1
- tempo modifications: 3
- timing (alone and together): 3

- timing entrances: 3

d. score (editions): 1

→ Compositional instructions in total: 21

→ Most used: c. rhythmic structure-tempo: 7

VI. Interpretative forms of realization: 2 (not further distinguished):

a. character: 10; character of sound: 14

b. articulation: 3

c. dynamics: 6

d. phrasing: 14

e. vibrato: 3

→ Interpretative instructions in total: 52

→ Most used: a. character of sound and d. phrasing: 14

VII. Technical means:

a. fingering:

b. hand position:

c. left hand pressure:

d. vibrato:

e. shifting:

f. posture:

g. intonation: 1

h. bowing:

- in general: 2
- changing strings: 1
- bowings (which support the musical idea):
- contact:
- position:
- bow geography: 1
- pressure & speed:

i. instrumental: 1

→ Technical instructions in total: 6

→ Most used: h. bowing: 2

How does the teacher approach the goal?

Approaches in total: 79

Approaches relating to student: 76

Approaches relating to accompanist: 3

Categories of approaches: same as categories of goals

How does the teacher impart the information?

Communication strategies in total: 104

Categories of communication strategies

VIII. Verbal instructions:

a. giving direction: 26

b. instructions based on the material: 8

c. instructions by stating what he hears and what he would like to hear:

d. explanation: 5

e. metaphors, references, comparisons: 2

f. encouraging critical thinking (when an independent decision-process is encouraged) through:

- instructions which involve an independent decisions process: 2

- questions: 2

- response: 1

- instructing to do something differently: 4

g. diplomatic rhetoric: 2

h. anticipating instructions:

i. instructions which are linked to emotions: 3

- j. colloquial phrases, noises, counting: 2
- k. giving explicit feedback
 - positive: 1
 - negative:

→ Verbal instructions in total: 58

→ Most used: a. Giving direction: 26

IX. Non-verbal instructions:

- a. singing: 8
- b. conducting: 8
- c. playing alone: 4
- d. playing along: 8
- e. playing with accompanist: 2
- f. nonverbal instructions based on the material: 1
- g. imitating student (exaggerating) proposing his idea: 1
- h. giving feedback: 1
- i. demonstrating playing *air-cello*: 4

→ Non-verbal instructions in total: 36

→ Most used: a. Singing, b. Conducting and d. Playing along: 8

X. Being insistent (snapping, repeating instructions): 8

XI. Summing up (agreeing on content, summary): 2

Table 4 below illustrates the various combinations between goal, approach, and communication strategies. In the table, the interactions in which the approach to the goal differs from the goal itself are marked bold. Additionally, if there is more than one goal combined with more than one approach in one interaction, they are coloured to mark their affiliation.

Table 4: Combinations of goal, approach and communication strategies

Interaction	Goal	Approach	Communication
1	II. a. character of sound	II. a. character of sound	I. b. instructions based on the material, I. k. giving explicit, positive feedback
2	II. a. character of sound	III. h. bowing-pressure & speed	I. d. explanation, I. f. encouraging critical thinking through response
3	I. c. rhythmic structure- tempo/ I. a. formal structure-sections and subsections	I. c. rhythmic structure-tempo/ I. a. formal structure-sections and subsections	I. a. giving direction, II. a. demonstrating through singing, II. i. playing <i>air-cello</i>
4 (accompanist)	II. a. character of sound	I. b. harmonic structure & melodic structure	I. a. giving direction, II. e. playing with accompanist
5	I. a. formal structure-sections and subsections	I. a. formal structure-sections and subsections	II. b. demonstrating through conducting, II. d. playing along
6	II. a. character of sound, d. phrasing	III. h. bowing-changing strings	I. d. explanations, II. c. playing alone
7	II. a. character of sound	I. b. harmonic structure & melodic structure	I. a. giving direction, II. c. playing along
8	II. Interpretative	II. d. phrasing	I. f. encouraging critical thinking through instructing to do something differently, II. d. playing along
9	II. d. phrasing	II. d. phrasing	II. d. Playing along
10	II. a. character of sound	II. a. character of sound	I. a. giving direction, II. d. playing along, II. j. noises
11	II. a. character of sound	II. a. character of sound	I. f. encouraging critical thinking through instructing to do something differently, II. d. playing along
12	II. c. dynamics	II. c. dynamics	I. b. instructions based on the material, II. d. playing along
13	II. c. dynamics	II. c. dynamics	II. a. singing, I. a. giving direction, II. d. playing along

14	II. d. phrasing	II. d. phrasing	IV. Summing up, I. f. encouraging critical thinking through instructions which involve an independent decisions process
15	II. d. phrasing	II. d. phrasing	IV. Summing up, I. d. explanation, II. g. imitating student (exaggerating) proposing his idea, II. a. singing, II. b. conducting
16	II. d. phrasing	III. h. bowing-pressure & speed	I. a. giving direction
17	II. Interpretative	II. Interpretative	I. f. encouraging critical thinking through instructing to do something differently
18	II. a. character	II. a. character	I. a. giving direction, II. d. playing along
19	II. d. phrasing	I. c. rhythmic structure-tempo	I. a. giving direction, II. b. conducting
20	II. a. character of sound	II. a. character of sound	I. b. instructions based on the material
21	I. c. rhythmic structure- tempo, timing:	I. c. rhythmic structure-tempo, timing:	I. a. giving direction, II. b. conducting
22	II. a. character of sound, c. dynamics	II. a. character of sound, c. dynamics	I. a. giving direction
23	II. d. phrasing	II. d. phrasing	II. b. conducting, II. h. giving feedback
24	II. d. phrasing	II. d. phrasing	I. f. encouraging critical thinking through instructing to do something differently
25	II. d. phrasing, I. c. rhythmic structure-tempo:	II. d. phrasing, I. c. rhythmic structure-tempo:	II. a. singing, III. Being insistent
26	I. c. rhythmic structure-Tempo	I. c. rhythmic structure-tempo	III. Being insistent
27	II. a. character	II. a. character	II. a. singing, I. b. Instructions based on the material, II. f. nonverbal instructions based on the material
28 (accompanist)	I. b. harmonic structure & melodic structure	I. b. harmonic structure & melodic structure	I. a. giving direction, II. e. playing with accompanist
29	III. h. bowing-bow Geography	III. h. bowing-bow geography	I. f. encouraging critical thinking through instructions which involve an independent decisions process
30	I. c. rhythmic structure- tempo modifications	I. rhythmic structure-tempo modifications	II. b. conducting, I. b. instructions based on the material
31	Missing	content	
32	I. d. score (editions)	I. d. score (editions)	I. f. encouraging critical thinking through questions

33	II. a. character, c. dynamics	II. a. character, c. dynamics	I. b. instructions based on the material
34	I. c. rhythmic structure- tempo modification	I. c. rhythmic structure- tempo modification	II. a. singing
35 (accompanist)	III. i. instrumental	III. i. instrumental	I. d. explanation
36	I. c. rhythmic structure- Timing	I. c. rhythmic structure-timing	III. Being insistent - snapping, II. b conducting
37	II. a. character of sound, I. c. rhythmic structure- tempo modification	III. h. bowing- pressure & speed	I. a. giving direction, II. f. nonverbal instructions based on the material, II. a. singing
38	II. a. character	II. a. character	I. e. metaphors, II. i demonstrating playing <i>air-cello</i>:
39	II. a. character, b. Articulation	II. a. character, b. articulation	I. i. instructions linked to emotions
40	II. e. vibrato, III. h. bowing- in general	II. e. vibrato, III. h. bowing-in general	I. g. diplomatic rhetoric
41	II. e. vibrato	II. e. vibrato	I. a. giving direction
42	II. e. vibrato	II. e. vibrato	I. a. giving direction
43	II. b. articulation	II. b. articulation	I. b. instructions based on the material, II. i. demonstrating playing <i>air-cello</i>
44	II. c. dynamics	II. c. dynamics	I. b. instructions based on the material, I. j. noises
45	II. a. character	II. a. character	III. Being insistent
46	I. c. rhythmic structure- Tempo	I. c. rhythmic structure- tempo	I. f. encouraging critical thinking through questions, I. g. diplomatic rhetoric
47	II. a. character	II. a. character	III. Being insistent
48	II. a. character of sound	I. b. harmonic structure & melodic structure	I. a. giving direction
49	I. c. rhythmic structure- Tempo	I. c. rhythmic structure-tempo	III. Being insistent
50	I. c. rhythmic structure- timing entrances	I. c. rhythmic structure-timing entrances	I. a. giving direction
51	I. c. rhythmic structure- tempo, timing	I. c. rhythmic structure-tempo, timing	III. Being insistent
52	I. c. rhythmic structure- timing entrance	I. c. rhythmic structure-timing entrance	II. b. conducting
53	II. d. phrasing, b. articulation	II. d. phrasing, b. articulation	I. a. giving direction, II. a. singing, II. i. demonstrating playing <i>air-cello</i>:
54	II. a. character of sound	II. a. character of sound, III. h. bowing- pressure & speed, III.	I. i. instructions which are linked to emotions I. a. giving direction

		g. intonation	
55	I. c. rhythmic structure- Tempo	I. c. rhythmic structure-tempo	I. a. giving direction
56	II. a. character	II. d. vibrato, III. g. intonation	II. c. playing alone, III. Being insistent
57	II. a. character	II. a. character	I. i. instructions which are linked to emotions
58	III. h. bowing-in general	II. c. dynamics	I. a. giving direction
59	II. d. phrasing	II. d. phrasing	I. a. giving direction
60	II. a. character, d. phrasing	II. a. character, d. phrasing	I. e. metaphors, references, comparisons
61	III. h. bowing- changing strings	III. h. bowing- pressure & speed	I. a. giving direction
62	II. d. phrasing	II. d. phrasing	I. a. giving direction
63	II. d. phrasing	II. d. phrasing	I. a. giving direction
64	II. a. character of sound	III. h. bowing- bowings which support the phrasing	II. c. playing alone, I. d. explanation
65	I. c. rhythmic structure- rhythm	I. c. rhythmic structure- rhythm, III. h. bowing- contact	I. a. giving direction
66	II. a. character of sound	III. h. bowing- pressure & speed	I. a. giving direction

Finally, Table 5 below illustrates the interactions in which goal and approach differ. To help identifying the combinations which are found the most, the category of a goal will be written in a certain colour if it occurs three times or more than three times, to highlight its affiliation. The same applies to the categories of approach as well as to the categories of communication with the difference that the categories of communication are marked in a certain colour, instead of written.

Table 5: Interactions in which goal and approach differ

Interaction	Goal	Approach	Communication
2	II. a. character of sound	III. h. bowing-pressure & speed	I. d. explanation, I. f. encouraging critical thinking through response
4 (accompanist)	II. a. character of sound	I. b. harmonic structure & melodic structure	I. a. giving direction, II. e. playing with accompanist
6	II. a. character of sound, II. d. phrasing	III. h. bowing-changing strings	I. d. explanation, II. c. playing alone
7	II. a. character of sound	I. b. harmonic structure & melodic structure	I. a. giving direction, II. c. playing alone
8	II. Interpretative	II. d. phrasing	I. f. encouraging critical thinking through instructing to do something differently, II. d. playing along
16	II. a. character of sound, d. phrasing	III. h. bowing-pressure & speed	I. a. giving direction
19	II. d. phrasing	I. c. rhythmic structure-tempo	I. a. giving direction, II. b. conducting
37	II. a. character of sound, I. c. rhythmic structure-tempo modification	III. h. bowing-pressure & speed, I. c. rhythmic structure-tempo modification	I. a. giving direction, II. f. nonverbal instructions based on the material, II. a. singing
54	II. a. character of sound	II. a. character of sound, III. h. bowing-pressure & speed, III. g. intonation	I. i. instructions which are linked to emotions, I. a. giving direction
56	II. a. character	III. d. vibrato, III. g. intonation	II. c. playing alone, III. Being insistent
58	III. h. bowing-in general	II. c. dynamics	I. a. giving direction

64	II. a. character of sound	III. h. bowing-bowings which support the phrasing	II. c. playing alone, I. d. explanation
65	I. c. rhythmic structure-rhythm	I. c. rhythmic structure-rhythm, III. h. bowing-pressure & speed	I. a. giving direction
66	II. a. character of sound	III. h. bowing-pressure & speed	I. a. giving direction

Chapter IV

4. Discussion

4.1. Performance Goals

The analysis of the data concerning the question *What is the goal?* indicated three categories: *I. Compositional structure*; *II. Interpretative forms of realization* and *III. Technical means*. Category *I. Compositional structure* included the subcategories formal structure, harmonic and melodic structure, rhythmic structure, and score (editions); Category *II. Interpretative forms of realization* included the subcategories character and character of sound, articulation, dynamics, phrasing, and vibrato. Category *III. Technical means* included the subcategories fingering, hand position, left hand pressure, vibrato, shifting, posture, intonation, and bowing.

The results indicated that the two students displayed differences in setting goals, according to their developmental levels and according to the stage they were in the proficiency of the proposed repertoire.

In the class of student 1, 101 goals were set. 62 in the category *II. Interpretative forms of realisation*, 29 goals in the category *III. Technical means* and 10 goals in the category *I. Compositional instructions*. The results also indicated that in this lesson student and teacher worked primarily on interpretation, more precisely on dynamics. Another focus lied in the development of technique, looking for adequate fingerings. The least attention went into the category of compositional instructions, namely rhythm. These results indicate an early stage in the process of learning a piece as well as the level of expertise of the student.

In the class of student 2, 79 goals were set. 52 goals in the category *II. Interpretative forms of realization*, 21 goals in the category *I. Compositional structure*, and 6 goals in the category *III. Technical means*. The results indicate that in this lesson the teacher worked primarily on interpretation, with a special focus on the character of sound and on questions of phrasing, followed by work based on the composition itself, paying special attention to the subject of tempo. The least work was based on technique. Moreover, these results indicate an advanced stage in the process of learning a piece as well as the more advanced level of expertise of the student, when compared to student 1.

In this way, our results are in line with Reids (2001) argument that music students learn through a hierarchy of levels. Reid (2001) determined five levels of learning: focus on physical skills/technical aspects of performance, on musical elements (dynamics, phrasing, articulation), on finding meaning within the music, on conveying that meaning to audience and on self-expression. The work on the category *III. Technical means* (looking primarily for adequate fingerings) that emerged in our data would speak for Reid's Level 1: focus on physical skills/technical aspects of performance. She also worked on *I. Compositional structure* (mainly on rhythmical structure), which could be going into Level 3 determined by Reid: *Meaning stage-meaning found within the music*. Finally, in-between the category of *II. Interpretative forms of realisation* student 1 worked mainly on how to realize the dynamics written in the score.

4.2. Mental representations

In the process of reaching expertise, a crucial goal for students is to learn to evaluate their own performance (Ericsson & Pool, 2016; Lehmann et al., 2007).

4.2.1. Goal imaging and Motor production:

As mentioned in Chapter I, *imitation* is a strong learning tool for students and goes along with the method of *aural modelling* (Lehmann et al., 2007). Both help not only to visualise and imitate movements (*motor production*) but also to create an idea, respectively a mental representation, of how the music should sound like (*goal imaging*).

The results confirm this hypothesis, for they demonstrate that the teacher was using the tool of imitation by demonstrating (*II.c. Playing alone*) primarily with the less advanced student 1. If demonstrating (aural modelling) to student 2, he played along with the students, sang, or conducted. Comparing the number of *Non-verbal communication strategies* used by the teacher, we could observe that he used aural modelling much more with student 1 (almost twice as much as with student 2). Since aural modelling applies to goal imaging and motor production, we assume that student 1 has so far a less developed mental representation of how the music should sound like and how to produce it than student 2. Highly supporting this idea is the fact that the student 1 worked on 62

interpretative goals and 29 technical goals whereas student 2 worked on 52 interpretative goals and 6 technical goals, which needs further discussions.

4.2.2. Self-monitoring

As already discussed, feedback is a crucial aspect for building mental representations. While advanced musicians and students can provide their own feedback, novices rely on their teacher to provide it (Ericsson & Pool, 2016; Lehmann et al., 2007; McPherson & Renwick, 2001), and the findings of this study are supporting this hypothesis. Indeed, we could observe that to student 1 needed more feedback than student 2. The teacher provided explicit verbal feedback eight times and non-verbal feedback (nodding) once to student 1, whereas to student 2 he provided explicit verbal feedback and non-verbal feedback only once.

4.2.3. Retrieval Cues

The results supports those of Chaffin et al. (2002) regarding the importance of retrieval cues. Those are necessary for practice and performance and are particularly important in alleviating the information overload students need to deal with (Foletto, Carvalho & Coimbra, 2013). Likewise, in accordance with what Colprit (2000) and Mac Pherson and Renwick (2001) described, during the lessons the teacher spent time demonstrating and modelling specific strategies that their students could try when practising, establishing mental landmarks in the music that could then be recalled automatically during performance.

4.3. Communication strategies

4.3.1. Communication Strategies vs. number of goals

The data indicates that there are more communication strategies used in the case of student 1 than in the case of student 2.

It has been observed that when comparing the distribution of the communication strategies the edge data is standing out: with the more advanced student 2 the teacher uses more often only one communication strategy to convey one goal than with the less advanced student 1. On the other hand, with the less advanced student 1 he uses more often ≥ 3 communication strategies to convey one goal than with the more advanced student 2.

Nearly the same number of times with both student the teacher used ~ 2 communication strategies to convey one goal.

Looking at the interactions in which goal and approach differed in the lesson with student 1 we observed the teacher used in eight out of eighteen interactions ≥ 3 communication strategies to convey a single goal and five times ~ 2 communication strategies to convey a single goal. It seems that, when looking for a different approach to realise the goal, he used various communication strategies. In the lesson with student 2 the teacher used in ten out of thirteen interactions in which goal and approach differed ~ 2 communication strategies to convey a single goal. This highly supports the hypothesis that he tended to use more than one communication strategies in interactions where stating the goal is not enough but having to find a different approach to realise the goal. Nonetheless, the four times when he used ≥ 3 communication strategies to convey one goal the approach did not differ from the goal itself. In those times there was no further regularity to monitor. So, with the less advanced student the teacher was using more communication strategies to attain his goals.

4.4. Verbal and non-verbal instructions

The teacher gave more verbal instructions than non-verbal instructions to the students. However, he was being insistent with student 1 by snapping and repeating instructions twelve times in the lesson, from which five times took place in interactions in which goal and approach differed.

Six times he insisted on matters of *II. c. dynamics*, three times on *III. h. bowing*. Furthermore, he was trying to solve problems insistently of matters of *III. a. fingering*, *III. d. vibrato*, *III. e shifting*, *III. g. intonation*, *II. a. character of sound*, *II. b. articulation and I. c. rhythmic structure- rhythm*. Most of the matters described were technical matters.

With student 2 he was being equally insisting by snapping and repeating instructions (eight times) in the lesson, with the difference that only one time applied to the interactions in which goal and approach differed. Striking was, that when he was being insistent, they worked either on *I. c. rhythmic structure-tempo, timing* (five times) which attributed often to the interaction between the cello and the piano (accompanist) or on *II. a. character* (three times).

When he repeated instructions in the lesson with student 1 (was being insistent) in most interactions the teacher was changing his communication strategies, trying to communicate the same set goal in an alternative way.

Differently he behaved with student 2, since in most cases he was not repeating instructions but reminding her by snapping and conducting to stay in tempo. By doing that, no further communication strategy was necessary to realise the goal.

When being insistent, working on character with student 2, he either chose the same strategy again as for example by repeating the metaphorical instruction of interaction 38 (“no waves”) or changed the communication strategy as he was doing in interaction 56 in which he was repeating instruction 54 recalling instructions which were linked to emotions to exemplifying by playing alone. In this single case of changing communication strategy, he also changed his approach.

4.5. The lesson

4.5.1. The pace of the lesson

Lehmann et al. (2007) expressed that the pace of music lesson is affected by the interchange between teacher instruction and student engagement. The results of this study were in line with this argument. The pace of the lesson might be slower with student 1 because teacher and student worked on fewer goals more repetitively. The first approximately 8-9 minutes of each of the lessons already gave insight to the different paces they would have: whereas teacher and student 1 worked on the first two bars until minute 06:00 and then continued working on bar 6 and 7 and 8 until minute 10:04, teacher and student 2 worked on the first musical line until bar 12 in the first 41 seconds on their own, before the accompanist came in. Afterwards, they rearranged seating, tuned and student and accompanist played through the first movement together until 08:40, before they went into detailed work with the teacher starting from the beginning of the movement.

However, despite the differences of the pace in the lesson, the teacher seemed to have an overview on what had to be done, not getting stuck. This thereby supports Goolsby’s

results (1996) on experts dividing more class time among all pieces to be rehearsed, not getting stuck on the first piece.

4.5.2. Intensity of the lesson

Results of our observation indicated that the teacher always keeps intensity with both students in line with Fredrickson's (1992) description of expert teachers. Also, in line with Byo (1990), the teacher maintained frequent eye contact with the students and added other factors to the quality of teaching such as physical gestures and movement.

Indeed, from our analysis it can be seen that the teacher maintained constant eye contact when verbally addressing the students. Even when aurally modelling he was looking at the student, often underlining expressive points with his eyes or sometimes with facial expressions. However, small differences in teacher intensity were noticeable regarding aspects such as movement and gesture. In contrast to the lesson with student 1, there is more movement to be noticed in the lesson with student 2. To begin with, while teaching student 2, the teacher changes his position a few times. He started with having the cello *play ready* in front of him teaching the first movement. Going to the third movement he put it next to him, listening and watching the student and accompanist play together while studying the score before returning to his instrument when demonstrating. So, although the space between teacher and student 1 and 2 was approximately the same, in the lesson with student 1, both, teacher and student, remained almost in the same position in which they began the lesson.

In summary, when considering body language/physical gestures and facial expressions the teacher intensity was noticeable higher with student 2. The data emerged from the non-verbal instructions confirmed this impression. Whereas with student 1 the most used non-verbal strategy was *II. c. Playing alone* (42 times) the most used non-verbal instruction with student 2 was *II. a. singing* and *II. b. conducting* (8 times each).

This also indicates that the teacher was focusing on aural modelling strategies with student 1, less advanced in the repertoire. As mentioned before in Chapter I, aural modelling is a very common tool helping to learn and often used to build mental representations of how the music should sound like and thus visualise better the goals to achieve (Ericsson & Pool, 2016; Lehman, Sloboda and Woody, 2007; McPherson & Renwick, 2001).

4.5.3. Teacher-student relationship

According to Lehmann et al. (2007) the relationship between student and teacher is based on two broad relationship-models, the Master-apprentice model, and the Mentor-friend model. They argued, however, that the relationships between teachers and students lie somewhere in between those two models, which went along with our observations. In the following we will describe which factors we observed, and to which model they relate.

The dominating communication strategies found in the lesson with student 1, *I. a. giving directions* (44 times) and *II. c. playing alone* (42 times) would indicate a more one-way direction of teaching, thus leaning more towards the *Master-apprentice model*, in which the teacher is giving verbal instructions and demonstrates by playing alone, demonstrating his craft, or asking the student to imitate (Lehmann et al., 2007). However, when the student was not able to adapt a goal the teacher was most of the time exemplifying, the teacher started searching for a different, individual approach, as well as trying to verbally address the problem differently. This indicates the usage of the *Mentor friend model, with the teacher being responsive to the individual needs of the student*. Another argument for the teacher being responsive to the individual needs of the students arises from the focus of the teacher on different goals, according to the level of the student.

Finally, the authors stated that the *Mentor friend model* is also marked by a greater exchange between teacher and student. Although the communication strategies the teacher used were more divers and balanced with student 2 and the student was more responsive and active, the data is showing that the teacher supported the student's autonomy by asking questions and to include him/her in the decision making

4.6. Adapting to the student's developmental stage

Starting the lesson of student 1 of with the question "What are you going to do?" the teacher is behaving according to Lehmann et al. (2007) results, showing that effective teachers ask more questions to check the students understanding. Additionally, the authors highlight the great importance to teach generalized practice concepts and to include the student in the process of decision making. The category *I. f. encouraging critical thinking* gave an insight on how the teacher motivated the student's autonomy in decision making. The category included the following sub-categories:

1. instructions which involve an independent decisions process

2. questions
3. responses
4. instructing to do something differently.

It could be observed that the teacher encouraged these types of skills more often with the lesser advanced student 1 (18 times) than with the more advanced student 2 (9 times). Despite the lack of response of student 1, the teacher asked fourteen questions, whereas he only asked two questions to student 2.

However, even without answers from student 1, it might have been that the teacher was encouraging an independent decision process anyway. Indeed, the total number of questions raised by the teacher in the lesson was 14. Usually not getting a verbalised answer back from the student but not seeming to wait for it either, the teacher often responded to his own questions verbally using most of the time the communication strategy *I. a. giving direction* or non-verbally demonstrating by *II. c. playing alone*. The verbal response of the student was one, in interaction 37 where the student asked about the fingering the teacher proposed. In addition to this, the student raised a question in interaction 47 about fingering.

With both students the teacher is verbalising instructions and questions in a very clear manner which identifies him as an expert teacher after the definition of Lehmann et al. (2007).

Conclusion

The aim of this work was to gain a deeper understanding of what strategies musicians use to develop their skills and achieve optimal performance levels in a music college context. In addition, it deepened the understand of the teacher's role in that process. More specifically, the aim was to understand the performance goals teachers devise with their students, the strategies they develop to put their goals into action and how they communicate them to their students.

The literature on the field was revised in Chapter I, to find an answer on how musicians acquire expertise and the role of the teacher in acquiring those skills with a special emphasis on the studies of Anderson Ericsson, Robert Chaffin, Andreas Lehmann, and John Sloboda.

As far as the study design is concerned, we opted for a case study design of inquiry, placed into a qualitative research paradigm. The study involved a detailed observation, description, and in-depth analysis of two cello lessons of 1h30m each in a music college context. The lessons were video recorded, transcribed *verbatim*, and then translated into English. The text was coded, and the presentation of the results was supported by quotes from the developed code, respecting the sequence of the events in the lesson.

Results indicated that in the case of student 1, the work was focused primarily on interpretation, more precisely on the exact execution of the dynamics which are written in the score. Another focus lied in the development of technique along the music, with the teacher consistently looking for better fingerings for the student. The least attention went into the category of compositional instructions, but, nonetheless, the teacher focused on stabilizing the component of rhythm throughout the lesson. These results may well indicate the early stage of the process of learning a piece as well as an earlier stage in the level of expertise of the student. As for student 2, results also indicated that the work was focused primarily on interpretation, but with a special focus on the character of sound and on phrasing, followed by work based on the composition itself, with a special attention to *tempo*. The least attention was on technique. These results indicate an advanced stage in the process of learning the piece as well as an advanced stage in the level of expertise of the student.

The analysis of the data showed that, generally, there was a *one approach to one goal* pattern, meaning that to attain a determined goal, like attaining *vibrato* variety by developing strategies of *vibrato*, although at times the teacher used more than one approach to attain a goal, e.g. using strategies of bowing to work on dynamics.

The results indicated that the teacher often used more than one communication strategy to convey one goal. It could be seen that most communication strategies used were verbal, e.g. giving directions, followed by non-verbal strategies like singing, conducting, and playing along. Finally, the teacher used communication strategies like being insistent or summing-up the information to a much lesser degree.

Likewise, in the interactions in which the teacher approached the determined goals with different strategies (for example to realize dynamics with the strategy of working on bowing), the teacher was using more verbal than non-verbal strategies to impart information. Looking at all interactions we observed that most of the time the teacher was giving directions.

Results indicated that students worked through aural modelling to create a mental representation of how the music should sound like (goal imaging). It could also be observed that the teacher used strategies like playing the piece alone or playing along with students, singing, and conducting to develop goal imaging and that he used aural modelling much more with student 1, less advanced in her studies. Moreover, the results suggest that both students and teacher were looking at specific strategies to establish mental landmarks in the music (retrieval cues) that could be recalled automatically during performance.

Finally, results indicated that the teacher adapted his actions to the developmental stage of the students, as well as to the stage of domain of the repertoire, and it was visible that student 1 needed more feedback than student 2. Besides adapting to the students' individual differences, the teacher asked questions to check their understanding and to develop their critical thinking, verbalising instructions, and questions, clearly. Therefore, our results suggest the presence of an expert teacher, one who is attentive to differences in students and promotes experiences to develop their talent.

As this was a case study, the methodology seemed appropriate, for it allowed to adapt different sources of information, triangulating video observations and transcriptions. The fact that the video recordings were transcribed *verbatim* and translated was very time

consuming but allowed us to claim further objectivity in the analysis and to gain access to richer data. In this regard, the coding system developed previously which identified the dimensions to be addressed provided a more standardised frame for analysis. Therefore, it was possible to develop and present a qualitative analysis protocol, we are convinced will be useful for those who intend to use this method of analysis in future studies.

However, the conclusions of the present work cannot be generalised, since it presents some limitations, such as the fact that with the small number of participants individual differences were not annulated. Therefore, it would be interesting to describe the goals teachers devise with their students, the strategies they develop to put their goals into action and how they communicate them with a larger number of performers.

Another limitation arises from the fact that we observed performers playing one piece of repertoire each and, again, individual differences according to type of repertoire played could not be annulated. Therefore, it would be interesting to address whether the same performer develops expertise in the same way with different repertoire.

As results showed both students worked primarily on interpretative goals. Secondly however, differences appeared between the students and the categories of the goals they worked on leading to the assumption for indication of differences of expertise as well as where they stand in the process of learning a piece. When conducting the study, the students were in the beginning of studying the piece with the teacher. It is to mention that we do not know if the students at some point in their cello studies have looked at the piece, played, practice or studied it before. Furthermore, the time they spend on practicing it was also not considered. In future studies it would be interesting to collect the data and control it.

The expertise level of the cellist could also have influenced the results, and indeed some differences emerged regarding the type of specific goals they addressed, as well as the teacher adaptation in developing them. This aspect could also be subject of further investigations, with the same kind of experiment with performers who are students and professionals with different levels of expertise.

Finally, we underline what we consider to be the main potential of this work: providing data on the work performers do to develop expertise. Because this was done in a music college context and included a cello teacher, it was possible to provide additional data on

the role of expert teachers in skill acquisition of performers and on how musicians communicate about what they do.

In summary, the added value of this study is the empirical underpinning of modern but mostly theory-based research. In a controlled, observational setting, predefined factors were used to evaluate teaching and learning methods through a case study. The selected method and analysis factors are reproducible without restriction in further studies due to the close-meshed description and the clear adherence to the limitations. The small number of participants did not enable a quantitative analysis of the setting, but it did provide deeper insights into the qualitative factors of the teaching and learning processes.

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CORDAS (VIOLONCELO)

An investigation into skill acquisition in Cello
performance and into the role of the teacher: A
case-study of two cellists preparing for a performance
in a Music College Setting
Klara Louise Rundel

