

Prescriptions and the practical epistemology of music teachers: the case of “orchestra à l’école” (orchestra in schools)

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RESUMEN

This study focuses on research into the work of music teachers and visiting music teachers in a primary school in France between 2018-2021. Their teaching activities are part of the "Orchestre à l'école" (Orchestra in schools) scheme. This scheme enables children from working-class and sometimes disadvantaged backgrounds to access and develop skills in instrumental and orchestral playing at different times of the week. The observations were made at the request of the music teachers, who wanted to take stock of their work after several years. The pedagogical quality of these music and music teaching professionals, the institutional framework and the friendly atmosphere of the project enabled this participatory research to take place under the best possible conditions. The study focuses on the effects of the prescriptions given by the instrumental teachers on their practical epistemology. The hypothesis is that the polymorphous nature of the prescription, of the instruction, has as much effect on the pupils as on the teacher's practical epistemology. To verify this hypothesis, the analysis of the data collected during this participatory research concerns the transcripts of simple self-confrontation interviews conducted with the teachers. After a review of the literature on the concepts of prescription and practical epistemology, the article describes the main methodological aspects and undertakes an analysis of interview snippets, before proposing a discussion. While the top-down prescription reveals the teacher's practical epistemology, the pupils' bottom-up prescriptions seem to reveal what makes it evolve.

PALABRAS CLAVE: practical epistemology; school orchestra; prescription; music didactics; music pedagogy.

Las prescripciones y la epistemología práctica de los profesores de música: el caso de la orquesta escolar

RESUMEN

Este estudio se centra en la investigación sobre el trabajo de los profesores de música y los músicos visitantes en una escuela primaria de Francia entre 2018 y 2021. Sus actividades docentes forman parte del programa "Orchestre à l'école". Este programa permite a los niños de clase trabajadora, y a veces desfavorecidos, acceder y desarrollar la práctica instrumental y orquestal en diferentes momentos de la semana. Las observaciones se realizaron a petición de los profesores de música, que querían hacer balance de su trabajo después de varios años. La calidad pedagógica de estos profesionales de la música y de la enseñanza musical, el marco institucional y el ambiente cordial del proyecto permitieron que esta investigación participativa se desarrollara en las mejores condiciones posibles. El estudio examina los efectos de las prescripciones establecidas por los profesores de instrumento sobre su epistemología práctica. La hipótesis es que el carácter polimorfo de la prescripción, de la instrucción, tiene tanto efecto sobre los alumnos como sobre la epistemología práctica del profesor. Para verificar esta hipótesis, el análisis de los datos recogidos durante esta investigación participativa se refiere a las transcripciones de las entrevistas simples de autoconfrontación realizadas a los profesores. Tras repasar la bibliografía sobre las nociones de prescripción y epistemología práctica, el artículo describe los principales aspectos metodológicos y desarrolla un análisis de fragmentos de entrevistas, antes de proponer un debate. Si la prescripción descendente revela la epistemología práctica del profesor, las prescripciones ascendentes de los alumnos parecen revelar lo que la hace evolucionar.

PALABRAS CLAVE: epistemología práctica; orquesta escolar; prescripción; didáctica de la música; pedagogía musical.

Introduction

Teachers' practical epistemology or pragmatic approach to epistemology guides their pedagogical action (Amade-Escot, 2014; Östman & Wickman, 2014; Schön, 2011; Terrien et al., 2023). Generally based on the experience of musical and pedagogical practice, it reflects the teacher's values, conceptions and also beliefs about what should be done during an instrument lesson to enable the pupil to learn. Drawing on a combination of scientific, academic and experiential knowledge, the music teacher develops a didactic approach that structures the learning of his or her pupils. This pedagogical progression enables the teacher to organise the acquisition of the musical knowledge and skills needed to master instrumental playing. Once this planning has been thought out, it will be subject to the constraints of the didactic environment (Brousseau, 1998; Terrien, 2017). Among these, the formulation of a prescription, of instruction, is perhaps the most insidious. Indeed, the scientific literature on

prescriptions (instructions) shows that they are two-sided and can be under-defined (Rayou, 2018; Rivière, 2006). The nature of the utterance may seem clear and precise to the teacher, but there is always something implicit in it (Bernstein, 2021; Terrien & Huart, 2018;). Consequently, does the prescription, which engages the pupil in an activity, and which is based on the teacher's conceptions of musical knowledge or practice, not ultimately influence his/her reflection on his/her practical epistemology? The hypothesis would be that if a prescription has a two-way movement (top-down/bottom-up) then the teacher's practical epistemology of musical knowledge or practice will evolve in real time.

To answer this question, and to verify the hypothesis, this study focuses on the functions and nature of the prescriptions given during instrument lessons and the activities they elicit in the participants (pupils and teacher). The analysis of the scope of the prescriptions is based on transcripts of lessons and simple self-confrontation interviews with teachers.

This article begins with a reminder of the main research works on prescription and practical epistemology (pragmatic approach to epistemology) before presenting the context and methodology applied for this study. After commenting on the results of the data collected in this study, there is a discussion of the hidden consequences of prescriptions on the epistemology of the music teachers who worked in this orchestra in schools scheme.

Prescription and practical epistemology

Forms of prescription

A prescription, also known as a pedagogical instruction, is most often an injunction issued by an authority, the teacher, or a supervisor or educational manager, to a learner (Rivière & Guichon, 2014). It is a prelude to action (Rivière, 2006). It is generally contextualised to a situation. In the case of a lesson, it may represent an ideal for the organisation of pupil activity by the teacher (Daguzon & Goigoux, 2007). Nevertheless, the utterance of a prescription is not always explicit, intentional and unidirectional (Rayou, 2018; Rossi et al., 2012). While it has the function of communicating information, this can be unclear (Bernstein, 2021). In the latter situation, "we are typically in the realm of under-prescription, where the invention of both the objectives to be achieved and the means of achieving them rests entirely with the worker, without the latter being able to apply known rules, derived from history, to construct one or the other" (Daniellou, 2002, p. 2). It can therefore be seen that the formulation of a prescription can be infinite (Bernstein, 2021, p. 16). The prescription may in fact be multiple, internal, external, implicit, explicit, bottom-up, top-down, intentional, unintentional (Bernstein, 2021), because it is interconnected to an infinite number of implicit prescriptions linked to the environment and the situation. This is how forms of regulation come into being between the prescriber (the teacher) and the prescribed (the pupil or group of pupils), leading to infinite variability in understanding and realisation (Bernstein, 2021). It is a question of "choosing the right level of language, knowing that he/she [the teacher] can reformulate and simplify, while placing the cursor where it needs to be: between an overly long explanation and simplification,

while avoiding an elliptical style" (Zakhartchouk, 2004, p. 74). The pupils' questioning about the meaning of the instruction indicates the distance in their relationship to the musical knowledge or practices based on this knowledge. The teacher's reformulation attempts to clarify the implicit part of the prescription. A study of prescriptions in music education shows the extent to which those written in instrumental tutor books leave plenty of room for the implicit (Terrien & Huart, 2018). A prescription, however explicit it may seem, always has an implicit element.

Rivière describes the two functions of a prescription: setting out a task and carrying out activities (2008, p. 31). The task requires the pupil to engage in the activity. A prescription sets goals to be achieved, and often procedures to be followed. The statement must be meaningful for the pupil and enable him/her to determine his/her activity. The prescription contains the terms of the didactic contract between the pupil and the teacher, but it can also devolve the methods of action to the pupils (Bernstein, 2021; Brousseau, 1998). The prescription is the starting point for the pupils' engagement in the activity. In education, the prescription has a strong link to the epistemology of knowledge or the practice of this knowledge (Goigoux, 2007; Vergnaud, 1999). Indeed, the task that the pupils have to perform is based on a history of knowledge or practices relating to this knowledge (Johsua, 1996). This history may be documented and epistemologically founded, or it may be implicit and hidden by tradition.

In addition to these two defined or undefined forms of prescription, Six distinguishes two movements: top-down prescriptions and bottom-up prescriptions (Six, 1999). Top-down prescriptions come from the prescriber, the teacher, to the prescribed, the pupil, and bottom-up prescriptions come from the pupils to their teacher (Espinassy & Terrien, 2018). Daniellou explains that bottom-up prescriptions come "from matter, from the living, from the psyche, from collectives" (2002, p. 10). In a music lesson, the matter is the knowledge, the living is represented by the pupils, the psyche is what the pupils think about the knowledge, and "collectives" are what they do together with this knowledge (Bernstein, 2021). Thus, the difficulties involved in mastering a technical and musical skill on the instrument, the relationship that pupils have with specific knowledge, what they can do with others. Observing the pupil's verbal and/or gestural responses to the teacher's prescription provides information on the pupil's skills at a given moment and reveals his or her ability to solve the task set. It is in the interplay of this two-way movement between top-down and bottom-up prescriptions that the practical epistemology of the teacher and the pupils can be discerned. We can therefore hypothesise that the verbalisation of a prescription and the responses given to it provide information on the participants' state of knowledge, on their practical epistemology.

Epistemology and practical epistemology

Work on practical epistemology stems from practical philosophy and "pays serious attention to practices as a basis for theorising" (Claveau, 2020, p. 68). Reflections on the history of the development of knowledge and its practices (Kuhn, 1970; Foucault, 1969) have guided studies on the social foundations of knowledge since the 1960s. This orientation of research on the epistemology of science questions the social and shared

dimension of the constitution of knowledge by taking account of the practices relating to this knowledge. This leads to different levels of understanding and discussion about knowledge, which underlines the complexity of the knowledge and the practices associated with it (Claveau, 2000; Goldman & Whitcomb, 2011).

The nature of practical epistemology is therefore based on layers of discourse from different stakeholders: those in the field, those in research and those in engineering. Each group of stakeholders forms a community that aims to eliminate the incommensurable aspect of the discourse. Even so, the members of these communities may find it difficult to understand each other, to create intersubjectivity around the definition of a concept or notion. It is by clarifying what is implicit in the discourse and practices that the collective (teacher, trainer, researcher) works on the epistemic dimension of knowledge. Practical epistemology makes it possible to grasp "the increasingly strong emergence of certain indeterminate areas of practice that fall outside the categories of technical rationality" (Schön, 2011, p. 202). This first approach addresses the concept of practical epistemology at its entry point. In other words, the values, beliefs, and conceptions on which teachers base the didactic content of their teaching represent the sum of acquired experience and knowledge and guide their didactic reflections and pedagogical actions (Amade-Escot, 2014; Östman & Wickman, 2014; Sensevy, 2007; Terrien, 2010; 2022).

However, Brousseau shows that the didactic environment is a system that is antagonistic to the system being taught (Brousseau, 1998, p. 93) and that this has an impact on the teacher's practical epistemology. Studies arising from this second approach study practical epistemology at its exit point, i.e. after the lesson. They take into consideration the transformation of the teacher's practices through interactions with pupils (Amade-Escot, 2014; Schön, 2011; Sensevy, 2007). These studies broaden the understanding of the notion of practical epistemology by taking account of pupil action. Indeed, if a pupil also has beliefs, values, and conceptions about knowledge, then it is possible that these are not shared by other pupils, and that they have as much impact on the didactic environment as on the teacher's actions. The teacher's practical epistemology is distinct from the pupils' practical epistemology. It is the tensions between the two that create what we call the didactic palimpsest¹, which allows us to observe practical epistemology at its exit point.

Östman and Wickman's work on the Pragmatic Approach on Epistemology (2014) studies the changes undergone by teachers' and pupils' knowledge in the interplay of confrontations and interactions. They describe changes in the relationships to each other's knowledge, based on: "a more social and transactional epistemological concept, which is more a consequence of ongoing communication, action, and practice. As such, it necessarily also includes values" (Östman & Wickman, 2014, p. 375).

There are other works in French on the epistemology of music education (Güsewell et al., 2019; Leroy, 2003; Marchand 2009; Terrien, 2015, 2022; Tripier-Mondancin et al., 2015), and in English (Allsup, 2020; Cleaver & Ballantyne, 2014; Conway, 2014; Nielsen, 2010). All of them question the fundamental concepts of the knowledge and practice of music teaching. This research highlights points of uncertainty or confusion

¹ We use the term didactic palimpsest to refer to the set of relationships that intersect, overlap and merge between subjects in a didactic environment (Terrien, 2017).

about knowledge or musical practice by questioning the beliefs, conceptions and values of teachers and their pedagogical practices. Their analyses reveal the non-axiomatic² dimension of musical knowledge, where the principles of isomorphisms³ could partly resolve learning (Güsewell et al., 2017, 2019; Terrien, 2012). They situate music teaching in a permanent paradigm of musical performance including for the acquisition of theoretical knowledge. The concept of practical epistemology proves useful for understanding the conceptual foundations of teachers' didactic activity. While a study of the practical epistemology of music teachers explains their values, beliefs and conceptions, the non-axiomatic dimension of musical knowledge can explain the implicit aspects of their prescriptions. And conversely, a study of teachers' prescriptions should reveal their practical epistemology.

Consequently, this study proposes to observe how the practical epistemology of a teacher evolves in contact with the activities of his/her pupils. The analysis of a lesson situation in an *orchestre à l'école* scheme should verify the following hypothesis: if the top-down didactic prescription reveals the teacher's practical epistemology, then the pupils' bottom-up prescriptions should reveal what makes it evolve. This study would thus make it possible to distinguish the evolution of the teacher's practical epistemology at the beginning, before the lesson, and at the end, after the lesson.

Research context and methodology

This is participatory research commissioned by the head of an "Orchestre à l'école" (OAE) project on behalf of his team of teachers. It was carried out between 2018 and 2021. The visiting music teachers wanted to take stock of their eight years of teaching practice in a primary school. Two meetings were held with the team in June and September to explain the framework of the participatory research, and to note the expectations of the music teachers and the school. These discussions enabled the various participants to agree on the conditions and framework of the participatory research, and on what each of them undertook to do. Another information meeting was held with the pupils and the various participants at the beginning of September 2018. Each group of participants was informed in advance about the ethical charter for research in ecological situations⁴.

² Unlike the axiomatic presentation of knowledge in mathematics (Brousseau, 1998, 47), the vast majority of musical knowledge cannot be presented axiomatically, because it is based on practices embodied in the experience of a body that is experienced. This is probably one explanation for the limitations of musical instrument tutor books, where everything that can be experienced by the individual is very rarely made explicit. It is also possible that this non-axiomatic dimension of musical knowledge makes any didactic research into music impossible.

³ Isomorphism is considered here as a convergence of behaviour (Raisky, 1996; DiMaggio and Powell, 1983). "Professional knowledge, itself a model of professional practices, and the knowledge at work in didactic action must be organised along the same lines; their internal logic, i.e. the issue of values and aims which determines them, will be the same" (Raisky, 1996, 54).

⁴ AVIS131 National Consultative Ethics Committee for Health and Life Sciences. <https://www.ccne-ethique.fr/fr/publications/avis-131-cadre-ethique-de-lexperimentation-pedagogique-en-situation-reelle>
<http://www.orchestre-ecole.com/>

Background

Orchestre à l'école (OAE/orchestra in schools)⁵ is a scheme that brings together different categories of participants: visiting music teachers, teachers, pupils, and parents. The aim of the scheme is to create a social link between schools and families through musical practice, so that they can get to know each other. Several partners (the school inspectorate, the local education authority, local government and local associations) are involved, providing financial and social support for the scheme. The school in this study is in a highly disadvantaged socio-demographic environment⁶. The specific nature of this OAE is based on the joint participation of pupils, teachers, parents, the school's administrative staff, people from local associations and visiting music teachers. The aim of the OAE is to develop pupils' citizenship skills, i.e., autonomy, initiative, openness to others, respect for others, the ability to work as part of a team, a sense of responsibility, and the ability to live together in the community.

Several types of instrumental activities are organised in the pupils' weekly timetable: group instrument lessons (violin, cello, flute, clarinet, trumpet, percussion), sectional rehearsals, orchestra rehearsals, and time spent working in small groups of learners in complete autonomy.

Working methods

Various data collection methods used in the ergo-didactics of the arts (Espinassy & Terrien, 2018) were used: ethnological observations by immersion in the teaching environment; video recordings; simple and/or cross-confrontation interviews (Clot et al., 2000; Clot & Leplat, 2005) with the visiting music teachers, teachers, and parents. The protocol for the self-confrontation interviews was based on the participants' choice of extracts from the videos recorded during the sessions. The video recordings (lessons and self-confrontation interviews) were transcribed. For this study, only extracts from lesson sessions and simple self-confrontation interviews were taken and analysed. These analysed data were shared with the participants and were the subject of action reports (Bednarz et al., 2015; Carbonneau et al., 2017) for discussion and debate.

Data collection method:

This study focuses on group instrument lessons (flute and clarinet). Each group was made up of 7 participants: 1 teacher, 5 pupils and 1 parent.

The exchanges between the teacher and the pupils are transcribed in full. The sentences are broken down into clauses. The verbal or gestural prescriptions or instructions of the teacher or the pupils are classified chronologically by time phase of the lesson. All the attitudes of the participants have been taken into consideration and added to the table.

⁵ <http://www.orchestre-ecole.com/>

⁶ The area where the OAE scheme is located is one of the poorest working-class neighbourhoods in a former mining town in the south of France. The families had developed a form of rejection of school. Links with the institution were weakened. The relationship with culture was virtually non-existent.

The tables below present extracts of top-down instructions - from the teacher to his/her pupils and from one or more pupils to another - and bottom-up prescriptions - from the pupils to the teacher and from the pupils to each other. Two other columns consider the quality of the prescriptions: a defined or under-defined prescription (Bernstein, 2021). Thus, this table describes four categories of prescription: top-down (PD)/bottom-up (PR); defined (D)/under-defined (SD). For each of these categories, a teacher (P) and pupil (E) column is completed according to the nature and function of the prescription.

Table 1

Extract from a table of clarinet course requirements: Top-down/bottom-up; defined/sub-defined

Top-down prescription (PD) teacher => students	defined		sub-defined		Bottom-up prescription (PR) students => teacher
	P	E	P	E	
1. Clarinet teacher	P	E	P	E	1. Clarinetists
0.00				1	0.00 Students assemble their instruments independently.
					Once the instrument is set up, they play extracts of melodies.
					They talk loudly amongst themselves.
4.10 "Those who have set up their clarinet, sit down"	1				
7.05 (Teacher looks at his score on the floor)					4.25 They sit down on the teacher's command.
"OK, thank you and please be quiet.	1				
Are you ready?			1		7.20 They listen to the teacher's instructions about setting up for the beginning of the lesson.
Silence... Thank you"	1				
7.20 "I'd like it if, from now on, when we set up our clarinet, we sat down and avoided making all this mess. [...]"			1		
It's normal for you to want to play, but we haven't been able to hear each other for the past few minutes.»					
7.40 "Today we're going to learn a new piece".			1		
			1		7.40 A pupil plays with the lid of his mouthpiece.
"You put it back on your clarinet and stop fidgeting, thank you"	1				
7.56 "I'm just going to take the time to check with you, because we don't know each other at all, I don't know your level at all.			1		
Can you finger a note, the one you want?"			1	1	8.09 response from student (Ey) to teacher: "It's upside down... no it's not upside down...".

Table 2

Extract from a table of flute course requirements: Top-down/bottom-up; defined/sub-defined

Top-down prescription (PD) teacher => students	defined		sub-defined		Bottom-up prescription (PR) students => teacher
	P	E	P	E	
2. Flute teacher	P	E	P	E	2. Flautists
0.00 the teacher supports the students in this phase of assembling the flute .../...				1	0.00 informal exchanges between students .../...
4.50 "So last week, we tried to refresh our memory by remembering the fingerings" .../...			1		4.50 The students all do it except Ae.
"Ae, well we're going to [pupil absent from previous lesson].					
Can you please finger a G "	1				
[Je, show [Ae] counting fingers]: "So, 1, 2, 3, 4"	1				
[Je, stand up for the first time and goes towards him] "It's a long time ago, look, here it is".					
[Je. take my hand and fingers and place them on the flute]	1				
"Very good, you remember the right hand, indeed the little finger. Perfect Ae"	1				
5.30 "Is the G OK for everyone?"		1	1		5.35 Everyone plays a G except Ae.
So, we all do a G together"	1				
5.48 "Ae, but that goes for everyone too, try to behave like an orchestra, ok?"			1		
6.21 "Ae, do you remember how to blow the air?"			1	1	6.21 Ve and Qn: "In front", "In front".
Where do you blow?"			1		
In front. Precisely...; very good		1	1		Teacher and students alternate between G and A.
now we're going to do A"	1				
7.27 "And the air hole, is it big or small?"			1		
"Yes, it's small because the trick is to leave a big hole between the lips.		1	1		7.30 Ae: "And the air hole, is it big or small? Ae: "It's small".
You're going to wear yourself out because a lot of air is going to come out all at once, so you must reduce it a bit... "			1		
8.14 "We're going to do B flat"	1				

These extracts from the prescription tables show the variety of interactions between teachers and their pupils (Table 1 and 2). Prescriptions may relate to the atmosphere of the lesson (a request for silence), a reminder of acquired knowledge (a fingering reminder), a specific activity (playing a note), knowledge or practice (blowing into the instrument). These extracts also indirectly reveal the ways in which the teacher conducts the lesson, leaving more or less room for the pupils' initiatives.

Data analysis method

The first step was to analyse the transcripts of the lessons. This involved an a priori analysis based on a transcript of the exchanges between the teachers and their pupils, whether verbal, postural or gestural. The exchanges were analysed using a qualitative approach inspired by semantic analysis (Lebahar, 2007; Prieto, 1975).

The second analysis concerns the transcripts of the two teachers' simple self-confrontation interviews. The teachers spoke in the 1st person. The data collection takes into account their explanations of excerpts from situations that they have previously selected.

Each teacher focused on scenes that were unique to their teaching approach. The flute teacher, for example, focused on situations where her prescriptions and her affective relationship with the pupils were in tension, whereas the clarinet teacher was interested in the consequences of his prescriptions on the activities in the lesson. In the case of the former, the reflexive analysis of her prescriptions was masked by her relationship with a pupil in difficulty, whereas the reflexive analysis of the latter enabled him to uncover the foundations of his teaching practices. In both cases, these analyses reveal the practical epistemologies of the instrument teachers.

Analysis of lesson transcripts (1)

The first analysis concerns the clarinet lesson. The top-down prescriptions given by the teacher inform the pupils precisely what they have to do both in terms of their attitude and instrumental playing activities: "Go and sit down"; "both feet flat"; "let's play an A"; "let's play G# A G one after the other". The so-called defined bottom-up prescriptions come from the pupils and are their responses to the teacher's questions. They manifest themselves in instrumental playing, through signs of a request to speak (i.e. a raised hand), or a precise response to the teacher's question. For example, they may be addressed: 1) to the teacher in response to one of his questions or instructions (the pupil performs the task requested: play a note; go and sit down), 2) to another pupil, or 3) to the teacher and the pupil: "when you blow the clarinet, don't puff out your cheeks".

Under-defined top-down prescriptions are linked to very general instructions addressed to the group or to an individual pupil: "Are you ready?"; "Today we're going to learn a new piece"; "What can we say to him?"; "OK, you'll have to practise at home in front of a mirror". The pupils' under-defined bottom-up prescriptions manifest themselves in questioning glances at the teacher, in one or more attitudes that draw the teacher's attention.

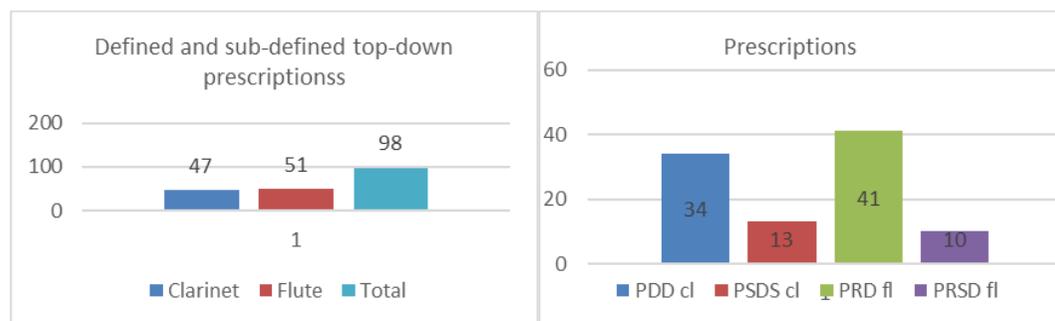
In the flute lesson, we see a different kind of prescriptive activity, focused on a pupil's difficulties. If the teacher asks the pupils about the knowledge acquired the previous week "remembering the fingerings", it's to help the pupil in difficulty (Ae) to make up for his shortcomings. Most of the prescriptions, whether verbal or postural, are aimed at supporting this pupil's activity during the lesson. Consequently, there are as many defined top-down prescriptions as there are under-defined ones. And there

are more defined bottom-up prescriptions than under-defined ones, because the pupils respond precisely to the teacher's injunctions to help their classmate. This lesson situation shows that prescriptions can play a role in supporting pupils in difficulty when the teacher uses them as a pedagogical tool.

Whether they are defined or under-defined, this analysis informs understanding of the concepts and the activities to be carried out. The table below describes the number of defined and under-defined top-down prescriptions (PDD and PSDS) and the number of defined and under-defined bottom-up prescriptions (PRD and PRSD) for the two 20-minute lessons.

Figure 1

Graphs of defined and under-defined top-down prescriptions (PDD/PSDS) and defined and under-defined bottom-up prescriptions (PRD/PRSD)



In these diagrams, the total number of top-down prescriptions for the two lessons is slightly lower than the total number of bottom-up prescriptions. That said, there are proportionally more defined prescriptions in the bottom-up category (PRD) than in the top-down category (PDD), which highlights the pupils' commitment to their activity. On the other hand, the number of under-defined prescriptions is more or less the same for both categories (PSDS; PRSD). These results also show how much scope teachers give their pupils.

This initial information is confirmed by the analysis of the verbatims of the simple self-confrontations carried out with the two teachers.

Analysis of interviews with the flute teacher (2)

This analysis of the self-confrontation interviews presents firstly that of the flute teacher and secondly that of the clarinet teacher. The flute teacher began her simple self-confrontation interview by returning to her first top-down prescription: "Can you finger a G, please? She explained that from the start of the session she focused on the pupil with the most difficulties (Ae). She noticed that the other pupils made up for this by talking to each other: "We see Ve and Qn asking about fingerings. They ask each other questions. Ve tries to ask me a question, but I don't answer him". The teacher thinks that this lack of attention to the group is one of the factors that contributed to

the group's lack of cohesion: "maybe that's why there's no cohesion in this group". She notes that "[...] the positive side is that they [the pupils] help each other, they ask each other questions [...] and they don't make mistakes". An analysis of the prescriptions for this lesson reveals the importance of affect in her teaching, even if this state of mind is detrimental to the work of the group. This belief in the need to pay attention to the pupil with the most difficulties shows that the teacher's practical epistemology is dominated by the affective dimension.

She explains that this focus on the pupil in difficulty invalidates all her prescriptions: "I explain how to position the lips to get the finest jet of air, and I don't make them do it! [...] I explain, and that's it, I don't get to the end [of my explanation]...". A little later in the interview, she justifies this behaviour: "maybe unconsciously I hear the others blowing their flutes, trying to show me and remind me that they're there ...", and she admits that she doesn't accomplish her teaching intention. The teacher's reflexive analysis enabled her to point out that she was "afraid of spending too much time with a child [in difficulty]", and yet that's what she did with Ae without achieving the desired result.

The teacher had also noted an extract in a didactic prescription concerning the positioning of the lips and the direction of the breath. Although the prescription was defined with precise learning objectives, the atmosphere in the group and the excessive disparity in the pupils' instrumental skill levels distracted the teacher from her initial aim. The atmosphere, the ethos, in the class and the group hinders the progress of the lesson. Even so, some pupils are able to recall and develop their instrumental knowledge and practice. The initial prescription based on an explanation of how to position the lips to guide the breath is thwarted by a series of interactions between pupils, and between pupils and their teacher. This disturbance leads the teacher to lose control of her teaching activity. The teacher's practical epistemology is impeded by the group's activities. However, during the simple self-confrontation interview, the teacher noticed that the pupils were helping each other and asking for her help: "They're helping each other now..."; "They're asking me how many fingers you need to use for the right fingering"; "I'm answering them". The bottom-up prescriptions from the pupils allow the session to continue and the teacher's teaching activity to pick up again.

The last example analysed during the interview was taken from a pupils' bottom-up prescription on a written document on fingering that the teacher had given out at the end of the lesson. The document given to the pupils didn't give them all the explanations they wanted. They asked the teacher for clarification. This situation seems to indicate that the teacher thought that a written prescription would be sufficient to inform the pupils. In studies on prescriptions in tutor books (Terrien, 2022; Terrien & Huart, 2017), results have demonstrated the under-defined and implicit dimension of a written prescription. A diagram or written explanation reveals only part of the knowledge about musical practice. Thus, the prescription may appear to be defined and yet have a large implicit component, often linked to the relationship that the subjects have with the knowledge (Beillerot, 1996; Johsua, 1996). The belief in the written word as a sufficient medium for the explanation of knowledge is one of the elements of the teacher's practical epistemology.

Analysis of interviews with the clarinet teacher (3)

The simple self-confrontation interview with the clarinet teacher reveals other aspects of the links between prescriptions and practical epistemology. In the first few minutes, the teacher explains what led to his choice of extracts: "something to do with instructions [prescriptions]".

The first prescription is associated with the behaviour of the pupils at the beginning of the lesson: "My attention was not on the group". This attitude on the part of the pupils is of the order of a under-defined bottom-up prescription, as it challenges the teacher's attitude. This sequence enabled him to justify his first top-down prescription: "From now on, when you've finished putting your clarinet together, you sit down and don't play". He explained that this allowed him to focus on the lesson and on what he had to do "to prepare for the session", that "it allows [everyone] to wait for each other and respect each other". The reflexive feedback on his attitude is uncompromising: "I'm revising in my corner [...]"; "you could say that as soon as you enter the room something has to happen". He is very critical: "Even setting up the instruments is part of the session, so if the teacher, or at least the person responsible for ensuring that the session runs smoothly, is in his corner revising what's going to happen, he's not with his pupils...". He added a little later in the interview: "...I mixed up a lot of unrelated information at the same time, and the result is that it's not necessarily perceived as a rule [that will enable us to work together]". With this awareness, he puts forward the idea of a "rule" for working together.

This first-person analysis reveals the teacher's thoughts on how to conduct the beginning of a lesson. His prescription allows the pupils to be autonomous during the instrument assembly phase (an act of didactic devolution), while learning to respect certain rules of behaviour once this activity has been completed: "sit down and don't play". The instruction helps to teach the pupils to respect others, one of the five fundamental skills in the official curricula of the French Ministry of Education. This prescription also allows him to free up time "to prepare for his session", "to concentrate on what he has to do". His criticism of his management of the start of the lesson focused on his professional actions as a teacher. For him, the lesson begins when "we enter the classroom", and the teacher is "responsible for running the session". While the analysis of the situation suggests that the teacher has not prepared or defined the objectives of the group lesson, his reflections on the didactic situation show his ability to discuss them. His comments help us to better understand the utility of the prescription. He gives the pupils relative autonomy in setting up their instrument. He encourages collective behaviour to create a calm and serene atmosphere. He talks about the experience he has gained, his thoughts on professional behaviour, and his ideas on managing a group instrument lesson. For this teacher, group work must be subject to rules of procedure. This is one of the foundations of his practical epistemology concerning the management of a lesson: rules that must be institutionalised, integrated and acquired by all the members of the group, and observed. And these rules must be prescribed as clearly and as precisely as possible in

order to structure interpersonal relations in the teaching environment.

Another aspect of the organisation of this learning environment that he describes in this interview concerns the spatial management of the group and the ergonomic dimension of the teaching activity. The teacher comes back to the arrangement of the pupils to make it easier for them to work together. He arranged the group in a circle because "it means we can all see each other [...], it makes them [the pupils] more responsible [...], and it creates relationships between them". For the teacher, the circle arrangement smoothed out the "wide disparities in levels" between the pupils. This testimony reveals his views on the pedagogical values of the circle, to which he attributes a pedagogical quality.

However, the circle was not enough for him. It was necessary to create groups of two and three that work "in a supportive way". In this way, he trusts his pupils to manage small periods of group work independently. He explains that this system encourages the pupils' commitment and perseverance in the activities, and that it "works effectively".

This example shows the impact of the teacher's practical epistemology on the organisation and management of the learning environment. On the one hand, he believes in the pedagogical values of the circle, which encourages the work of group members, delegates responsibility in relation to work, reduces disparities in levels and helps to create better interpersonal relations. On the other hand, he emphasised that the circle arrangement was not enough and that he had set up a collaborative arrangement with groups of two and three pupils. To the spatial organisation, he adds a group teaching system that supports the pupils' activity, by developing each one's autonomy and commitment and perseverance with work, in a supportive spirit.

The analysis of the prescriptions formulated and explained by the teacher partly reveals his practical epistemology on the organisation of the didactic environment in a group learning situation. He bases his pedagogy on the ergonomic articulation of the learning environment (the circle) and on pedagogical management (organisation of group work).

A final aspect of this analysis of the interview concerns the pedagogical organisation and the meaning of his prescriptions. He goes back to one of them which, in his opinion, shows his way of managing his pedagogical relationship with the pupils: "We'll each have a turn when we've learnt the whole phrase". He explains why his statement makes no sense to his pupils: "I never tell them we're learning the first phrase of the piece". For him, he never explained the objectives of the work session. His pupils didn't know what they were learning or why they were learning it. He realised that he had never played the whole phrase to them beforehand. And above all, he points out: "What concerns me is that there's a big difference between what I had in my head at the time [and what he observes]". He makes this clear during the interview: "I'm going to teach them this piece, starting from the beginning and breaking it up into sections". In this interview extract, he goes back over his ideas and practices for learning a snippet of a musical phrase: 1) play the phrase to the pupils; 2) teach them by "sections" through imitation; 3) once they've learned it, have them play the phrase

individually; 4) then play it all together. A practical epistemology of learning linked to his experience as a music teacher that he does not apply to this sequence.

When the video was shown, the teacher was challenged by the situation because it did not correspond to his pedagogical concepts. He explains why and shows that his teaching practices are not as secure as he thought. It was the prescription "we'll each take a turn when we've learnt the whole phrase" that made him realise that he hadn't observed his own pedagogical phases and strategies in this sequence. In this extract from a simple self-confrontation interview, his attachment to his pedagogical conceptions, his practical epistemology, enabled him to identify his errors. The teacher's analysis of the meaning of a prescription and of his activity reveals the failings of his conceptions to him.

Discussion

This study of the prescriptions of two teachers based on the a priori analysis of the activities of a lesson and on the analysis of simple self-confrontation interviews offers the possibility of tracing the practical epistemology of the teacher. It reveals that the prescriptions are the manifestation of the teacher's practical epistemology. They say something about their conceptions of knowledge (breathing) or of the practice of this knowledge (breath in the flute; fingerings) (Bernstein, 2021), about their beliefs in forms of group practice (the circle; support between members of a group) (Daguzon & Goigoux, 2007; Rossi et al., 2012), and about the values of collective musical practice (Terrien et al., 2023). This study shows that the teacher's practical epistemology, beliefs, conceptions, and values have an impact on how the prescription is formulated. An under-defined top-down prescription requires verbal reformulations by the teacher. In return, pupils' lack of understanding, as expressed by their attitudes, postures and glances towards the teacher or between peers, represent under-defined bottom-up prescriptions that the teacher must interpret (Güsewell et al., 2017, 2019).

These prescriptions also reveal the state of the teacher's knowledge of a concept. Clumsy wording reveals epistemological weaknesses in instrumental or musical knowledge and know-how. When they look back on their practice, they note the gap between "what they had in mind", their representation of a piece of knowledge or a situation, and the consequences of their prescriptions for the pupils (Ibid.). They recognise that an under-defined prescription leaves space for activity that does not meet the intended learning outcomes. Analysis of the teaching situations by the teachers makes them aware of the importance of the wording of a prescription, and of what it commits them to. For example, the flute teacher became aware of the extent to which affect, the attention paid to one pupil, prevented her from taking the work of others into consideration. By commenting on her activities, she reveals her practical epistemology, particularly as regards what the relationships between the people involved in this lesson should be. When the clarinet teacher looks back on his lesson, he realises that these prescriptions put the organisation of his lesson and his practical epistemology to the test.

Diversity in the verbalisation of prescriptions demonstrates the vitality of the lesson, the attention that each participant pays to the activity, and the goodwill that can prevail between the members of the group (Rayou, 2018). The pupils' bottom-up prescriptions indicate their commitment and provide information about what they have already learned. A top-down prescription that elicits a metacognitive effort from the pupils about what they have previously learnt enables them to verbalise their knowledge and describe their practice of the clarinet or flute. It creates a space for intersubjectivity, enabling the group to express and demonstrate their communal musical and instrumental practice.

The bottom-up prescription is a sign of the pupils' commitment to their musical activity. It is also a sign of their perseverance in their work. It is an expression of support for the group's activity through mutual aid, dialogue and goodwill.

Conclusion

This analysis of prescriptions provides information on the foundations of teachers' practical epistemology. Their formulation reveals the teachers' pedagogical orientations, the unconsidered aspects of a teaching situation, and the constraints weighing on the teaching environment. This study shows how a teacher's top-down prescription is the manifestation of their conceptions of knowledge and practice, whether musical or pedagogical.

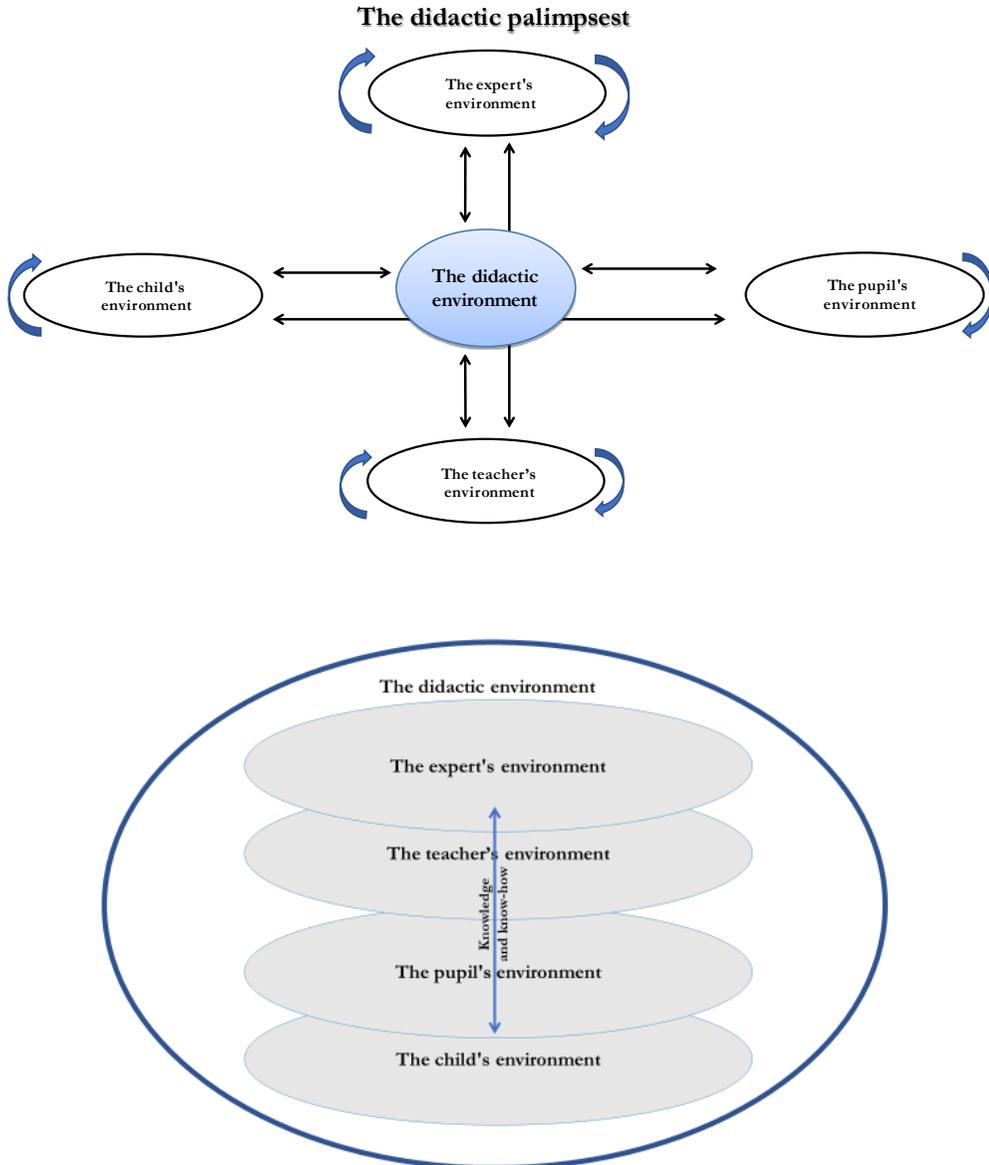
This study also reveals that the teacher's practical epistemology is constantly evolving. From the didactic conception of the lesson, with its identified and declared objectives, to its pedagogical implementation, with the interactions between the members of the group, the feedback expressed by the bottom-up prescriptions, and the adjustments made by the teacher in real or delayed time, the teacher's practical epistemology evolves, is refined and enriched. It shows that the practical epistemology at the entry point is different from that at the exit point. Listening to pupils, keeping a critical distance from events, and reflecting on activities all feed into the teacher's professional experience.

However, this study also has limitations due to the very small number of teachers who agreed to take part, the small number of extracts chosen by the teachers, and the time allowed for the interviews, which was constrained by the environment. Similarly, the environment in which the *Orchestre à l'école* scheme is implemented must necessarily have an impact on data collection and analysis.

Nonetheless, the study of prescriptions provides information on the constraints weighing on the teaching environment and makes it possible to identify some of them. As the analysis of the interviews reveals, the performer's experience is not the same as that of the teacher. A musician may have a conception of his/her activity as a performer and not be able to transform it into a pedagogical activity, just as a child may master instrumental skills that are constrained by a prescription linked to the didactic situation and not be free in his/her performance. These constraints are those described by the concept of the didactic palimpsest illustrated below (fig. 2a and b).

Figure 2a and b

Diagram of the didactic palimpsest (Terrien, 2017)



These constraints have as much impact on the formulation of prescriptions as on the practical epistemology of teachers. Consequently, it is conceivable that the analysis of the prescriptions will not only reveal the practical epistemology of the teacher and that of his/her pupils.

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