This research deals with the activity of a pre-service teacher in physical education (PE) during a PE teacher training course using multimodal resources. The main purpose of this training program was to prepare pre-service teachers for teaching PE, and develop their ability to analyze certain teaching skills during the successive stages of a PE lesson (e.g. verbal instruction). Our approach is based on an analysis of the teacher’s activity in the classroom. Our aim was to show how a video-enhanced environment for physical education teacher education (PETE) could approach the corporeal experience of teaching PE in classroom situations and help learners teach PE. Our theoretical framework is course-of-action theory (Theureau, 2002) in cognitive anthropology, based on the hypothesis of situated action (Suchman, 1987), distributed cognition (Hutchins, 1995) and enaction (Varela, Rosch & Thompson, 1991). This framework helped us understand emotion, cognition, concerns and perception in situ, during a university workshop. Our results
showed that (a) PE pre-service teachers emphasized face-to-face situations and whole-class discussion during the lesson, and on the teaching skills developed during these situations, and (b) multimodal resources enabled pre-service teachers to approach corporeal experience during face-to-face situations and whole-class discussion during the lesson.

1 Introduction

1.1 Using video in teacher education and in physical education teacher education (PETE)

Calandra & Rich (2014), state that “digital video use is becoming prevalent in teacher education” (preface VII), yet using video in teacher education is far from new (Allen & Ryan, 1968) including in PETE (Greenberg, 1971). Recently, the European Commission Communication “Improving the Quality of Teacher Education” (2007) stressed “the need for [teachers] to have sufficient practical experience”. However, studies have underlined the difficulties met linking theory to practice (Darling-Hammond & Bransford, 2007) and “teachers and student-teachers often question the relevance of pre-service teacher education programs, criticizing them as being too abstract, theoretical, and remote from the ‘real world’ of the classroom” (Ling Wong et al., 2006, p. 1). Video should thus be a powerful tool to address students’ and the teachers’ concerns (Goeze et al., 2014) and allow better dialog and better preparation toward a professional discourse on teaching and learning (Darling-Hammond & Bransford, 2007). Video can be considered as an artifact, a powerful tool to support pre-service teacher learning (Borko et al., 2008): “sharing classroom video is likely to seem more threatening to teachers than sharing other artifacts such as student work and lesson plans” (p. 420–421). In teacher education, different types of video should be used (Blomberg, Stürmer, & Seidel, 2011; Zhang et al., 2011): (a) own videos, (b) videos of others, and (c) published videos (e.g. from https://www.teachingchannel.org/). As underlined by Zhang et al. (2011), few programs have integrated these three types of video to foster teacher learning, but videos are of no use unless they are part of an instructional program (Blomberg et al., 2013).

In France, recommendations from the Ministry of Education (2013) define the competencies that need to be learnt for teaching: teachers must know how to “organize the work of students in the classroom”, “organize the space and the different stages in a lesson”, and “adapt teaching and communication to the student’s level and capacities”. In addition, the Ministry underlines that teachers’ education must be optimized, and pre-service teachers must learn to do the “real job”, based on a real practical approach. To learn these competencies, two main stances can be taken (Blömeke, Gustafsson, & Shavelson, 2015): (i) a restrictive approach that defines competence as an addition of
cognitive and motivational resources, and (ii) a holistic position “in which cognition, affect-motivation, and performance are complexly linked together” (p. 6). Competence should be modeled as a continuum with many steps: disposition (cognitive and affect-motivation aspects), situation-specific skills (perception, decision-making and interpretation) and performance (observable behavior). The holistic approach is of interest because it focuses on all the aspects of the competencies and not only on cognitive aspects. For example, a lot of research has focused on the development of professional vision (Seidel & Stürmer, 2014; Steffensky et al., 2015). According to Sherin (2001), teachers need to develop the capacity to notice features of classroom events that are relevant for student learning, and to analyze and interpret those events using prior content knowledge and prior pedagogical content knowledge. With this approach, teaching skills in a real classroom situation are not considered, and in particular none of the corporeal aspects and embodied knowledge of teaching skills. Kinsella (2015) underlines the fact that attention to the body has been largely absent in professional practice, learning and education. We believe that corporeal aspects of teaching skills in PE (but not only in PE) are important aspects of a teacher’s competencies. We agree with Gal-Petitfaux (2010), for whom teaching skills in PE are based on corporeal action (perceptual, motor, emotional, and language aspects) and meaning action (not only movement but gesture with meaning, in a specific context), and are enacted from interactions between teacher and pupils, and spatial organization of the task. We partially share Siedentop’s (1976) definition, which considers teaching skills in PE only as gestures (classroom management, interpersonal relations, planning for instruction, execution of instruction, supervising students’ learning). We extend this definition, because for us teaching skills are not mere gestures, but gestures with a meaning in a particular situation (context is physical but also human).

1.2 Video-based university course in PETE

Brophy (2004) reminds us that video is not a curriculum but a technology, and that this technology is integrated into different kinds of course. We can list different ways in which video is used in teacher education. The first use of video is the “video study group” (Tochon, 1999), a viewing situation in a collective setting designed to improve teaching skills. The second type of video training situation is the “video club” (van Es & Sherin, 2008), defined as “a group of teachers who meet to watch and discuss excerpts of videotapes of their instruction”, in order to “learn to notice” and identify relevant clues about the cognitive activity of students in a classroom situation. Situations of collective viewing therefore lead to changes at the cognitive level (e.g. capacity to identify and understand teaching skills), but which have so far been scanty.
studied in the context of learning to teach PE. The third type of video-based course is the micro-teaching situation meant to help teachers learn to understand and think about teaching situations (Ostrosky et al., 2013). We can identify three important orientations in using video in PETE: (i) a normative approach (Greenberg, 1971), where video is used to learn certain effective teaching skills (effective behavior) by observing them, and trying to apply them in a classroom situation, (ii) an approach centered on a reflective process, where using video enables us to develop different levels of thinking about teaching PE (Calandra, Gurvitch, & Lund, 2008), and (iii) a developmental approach, centered on the analysis of the real activity of PE teachers during teaching situations (Flandin & Ria, 2014; Roche & Gal-Petitfaux, 2013, 2014). This last approach (which is our own), differs from the others in that it is centered on the analysis of the working activity so that we can extract training situations.

2 Research question

We addressed two main research questions in this study: (i) what kind of activity (constructed meaning, emotions felt) was developed by student-teachers in this video-enhanced environment, designed for learning to teach PE? and (ii) what kind of resources (multimodal resources) can be used to learn teaching skills in PE, and access embodied knowledge directly linked to teaching skills?

3 Research design

3.1 Intervention

When using video in teacher education we need to think about the impact of audiovisual material design and its effect on professional development in pre-service teacher education. According to Seidel et al. (2013), designing a module at university level depends on specific learning goals, and video can be used either as an illustrative example (rule-example) or as an anchor on student-teacher knowledge (example-rule). Video can be used to acquire knowledge (behavioral approach) or to help pre-service teachers build this knowledge from practice (developmental approach). Our approach to designing the program was based on the analysis of the teacher’s activity in the classroom, i.e. on the real activity (Durand, 2013; Leblanc & Ria, 2014) with students during a PE lesson. In our program (based on workshops and an internship) we opted to use different modes (Kress, 2009) during university workshops to pursue the construction of meaning in teaching situations: (a) iconographic resources (photographs taken during PE lessons), (b) textual resources (e.g. excerpts from self-interviews of teachers), (c) videos (own video, other video, self-interview
video, published video or subjective video, Figure 1).

Different viewing situations were used during the workshops: (a) self-viewing, (b) individual viewing of other teachers’ videos (peer or experienced teachers), (c) collective viewing of other teachers’ videos, and (d) peer viewing of self-videos and discussion by peers. The main goal in our training program was to prepare pre-service teachers for teaching PE and develop their ability to analyze, recognize and identify certain teaching skills during the different stages of a PE lesson (e.g. beginning of the lesson, verbal instruction). We studied a multimodal set-up because “to be useful, [video] must be embedded in appropriate instructional contexts” (Seidel et al., 2013, p. 56). Some studies such as those of Loo (2013) have shown that a multimodal approach can lend insight into the trainers’ practices, but the author did not focus on the use of modes for training and designing a multimodal course for teacher training. Thus we made the hypothesis that modes should be considered as complementary in teacher training. According to Kress (2009), a mode is “a socially shaped and culturally given resource for making meaning. Image, writing, layout, gesture, speech, moving image, soundtrack are examples of modes” (p. 54): different kinds of modes can therefore create the same meanings according to individual differences. In our course, the role of the facilitator during the course was to help pre-service teachers develop their ability to analyze and identify certain teaching skills for particular stages in a PE lesson (e.g. verbal instruction).

The training sessions lasted six months, and consisted of several steps: (i) a period of internship (3 weeks) in which students taught (students were in pairs during their internship, and supervised by an experienced teacher). During this period, students were asked to create some personalized video vignettes of their teaching illustrating some stages in the PE lesson on which the pre-service teachers want to reflect, (ii) one period of university workshops (six, lasting two hours each), using and viewing students’ video clips, (iii) a second period of internship of three weeks and (iv) a second period of university workshops (six, lasting two hours each). The aim of our study was to show how a multimodal set-up could approach
the corporeal experience of teaching PE, identifying teaching skills used in the class and helping to understand how to build them. Teaching skills are not only gestures or words, but are meaningful for the teacher, and rely on some perceptual, motor, emotional and language aspects. Teaching skills are intentional actions that cannot be reduced to observable behavioral features. They are the result of the interactions between teacher, pupils, and the physical and spatial environment, and so are enacted from interactions in the classroom.

3.2 Data collection

Our theoretical framework was course-of-action theory (Theureau, 2002) in cognitive anthropology, based on the hypothesis of the situated action (Suchman, 1987), distributed cognition (Hutchins, 1995), and enaction (Varela, Rosch & Thompson, 1991). Six postulates directed this situated approach to action and cognition. First, all human action is conceived as situated (Suchman, 1987), i.e. bound to a particular spatial, physical and social context, which helps to construct it. This being the case, training actions must be studied in situ, taking into account all the environmental, human and physical conditions from which it emerges. Considering the action as a coupling of action and situation turns the environment into a provider of resources for the actions, acting to structure the activity of the individuals according to their intentions in situ (Norman, 1993). Second, the action is autonomous in the sense that it possesses self-organizing properties. It consists of an asymmetric structural coupling between the actors and their environment (Varela, 1989). This coupling is asymmetrical insofar as the actors specify only what is relevant to them, from their point of view, at the time considered, i.e. what constructs their own world perceived subjectively (as a function of their prior experience). In other words, this coupling produces a lived experience for the actors, i.e. meanings through which they construct their action and its process. In this sense, no actual world exists objectively, independent of the actors (according to their history, their prior experience): the world is brought into existence only by the subjective meanings the actors ascribe to it as they perceive it. During a training situation (with reference to the structural coupling, Varela, Rosch & Thompson, 1991), concerns are specified in the action by the aspects of the situation that the pre-service teachers perceive and that are meaningful to them. Third, saying that the situated action is a construction of meanings signifies that it presents acquired knowledge and constructs new knowledge. This new knowledge is constructed in and through action, and is thus embodied (Varela, Rosch & Thompson, 1991). Its concrete character is explained by the fact that it is mobilized in the activity according to its practical efficacy in situ. Fourth, the activity is continuously transformed in relation to the dynamics of the situation, which evolves constantly according
to the interactions between the individual and the artifact. Thus the action is a course of action, and a course of meanings. The individual’s activity is transformed as the situation proceeds, and the meanings the actor ascribes to it also evolve. Fifth, the physicality of the situation acts as an artifact (Norman, 1993), structuring the in situ construction of the action and facilitating cognitive operations (Hutchins, 1995). Artifacts are important tools for constructing action and meaning, and they enable us to construct concerns, change emotions, and help interpret the situations. Thus action with an artifact is not the same as without an artifact. Videos and modes are artifacts.

Addressing the activity with an anthropological approach consists in taking simultaneous account of the behavioral, perceptive, cognitive, affective, cultural and social dimensions of an actor’s activity deployed in a work situation.

Our approach focuses on (a) extrinsic analysis of the action in context, based on an ethnographic description (e.g. the action of the facilitator and pre-service teachers during the university course) and (b) intrinsic analysis of the cognition in context (e.g. the meaning that pre-service teachers construct during workshops). To this end, we used a self-confrontation interview (Theureau, 2002) to show what kind of experience a teacher had during the use of the audiovisual set-up. With the self-confrontation interview we prompted the teacher to describe the concerns, perceptions, emotions and interpretations that emerged during the situation. The aim was to bring the subject to verbalize the meaning they ascribed to the situation at the time they experienced it and at the time it took place. The self-confrontation interview was designed to put the individual back into the experienced situation by showing them an audiovisual record of their activity (in our case, the video-watching situation) in order to avoid any a posteriori rationalization, and get as close as possible to the in situ experience by watching the video.

The approach based on course-of-action theory (Theureau, 2002) seemed to us potentially fruitful in the broader framework of video-assisted training of teachers for two reasons. First of all, this approach was not centered only on academic knowledge to be transmitted to learners, but enabled us to approach the real activity deployed by teachers in class. In addition, this approach enabled us to take into account both cognitive and corporeal aspects, which for example is not documented by any of the research on professional vision (Seidel & Stürmer, 2014; Steffensky et al., 2015). Our approach aimed to take into account cognitive and corporeal aspects. Few studies have centered on the experience of student-teachers watching videos in an enactive perspective. Thus self-confrontation interviews are a way to explore the experience of actors (interview with student-teachers) in order to understand what they feel and experience when watching a video. But they also constitute a resource that can be used in training (e.g. self-confrontation videos made with teachers whose
videos are watched by student-teachers during training). This approach, thanks to recourse to self-confrontation, enables student-teachers to grasp the reasons for the choices made by the teachers being watched, and gives them access to the reasons for the choices made in situ by the teacher. This approach thus makes it possible to envisage teaching as an in situ construction, an emergence of teaching skills, rather than a reproduction, a mere application of teaching skills, in the enactive perspective of Varela (1989).

Course-of-action theory studies action and cognition, and specifies categories for analyzing human action and cognition. For studying action, course-of-action theory allows categories such as verbal behavior and motor behavior (gestures, positions of the body, movements). For studying cognition, the categories that enable us to document the meaning people give to the situations are: (a) concerns (e.g. intentions when a person does something), (b) perceived meaningful aspects of the situation (e.g. what is perceived and on what element attention is focused), (c) emotions (e.g. feelings during a teaching situation), and (d) knowledge used in the situation (e.g. knowledge used to understand the situation, and to teach in this situation).

Our study was qualitative (based on a case study) and conducted with one student-teacher (ST) who belonged to a group of 15 student-teachers in a PE program. Three kinds of data were collected to approach students’ corporal experience and meaning construction during training time: (a) an ethnographic description during three workshops, based on videos produced during that time: the purpose of these videos was to study interactions between student-teachers, student-teachers and facilitator, and student-teachers and videos used during workshops, and (b) data from a self-confrontation interview (Theureau, 2002) with the ST.

### 3.3 Data analysis

Data analysis was carried out in two stages: first a description of the ST’s activity (during workshops) from the ethnographic description, and then an analysis of his activity during the training situation. The description of the ST’s activity was constructed as presented in a protocol with four columns: the first corresponding to the time code of the workshops, the second highlighting the ST’s actions during the workshop, the third presenting the ST’s verbalizations during the self-confrontation interview, and the fourth consisting of an analysis of content. Data processing reconstructed the ST’s course of action during training by retranscribing his actions and communications during training, while respecting the time course. Self-confrontation interviews were analyzed using the categories defined by course-of-action theory (concerns, perceived meaningful aspects of the situation, emotions, knowledge used in the situation)
in order to show what kind of experience students have during a university workshop (Table 1).

Table 1
SAMPLE OF DATA ANALYSIS

<table>
<thead>
<tr>
<th>Time code: video of PE lesson</th>
<th>Ethnographic description of the ST’s activity during workshop</th>
<th>Self-confrontation interview</th>
<th>Content analysis (based on course of action categories)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16'57</td>
<td>The ST views with attention the video in which he was teaching. He’s very concentrated.</td>
<td>R: “At this moment, when you are viewing your video, when you check if all the students are there, what are you feeling? And what facts is your attention focused on?” ST: “This moment was very uncomfortable for me. I was afraid of forgetting to call out a student. Watching my video, I have the same feeling, and I’m sure this moment is a key point of the lesson, but I don’t know how to manage it. If you don’t show your authority at the beginning of the lesson, after it’s going to be very difficult to manage the whole class. That’s the reason why I’m really stressed in this video. Now, I was so focused on my instructions that I didn’t notice the students who moved between the gymnasium and cloakroom”</td>
<td>Emotion: the ST doesn’t feel good Concerns: to be a teacher with authority Emotion: the ST is stressed Perception: the ST only perceives his own action</td>
</tr>
</tbody>
</table>

Thus the aim was to find the meaning that the ST constructed when watching the video and during the training situation. The data processing aimed to account for the ST’s characteristic concerns throughout the workshops, and his interactions with the different resources in order to identify (i) the meaning he ascribed to the situation according to his concerns, and (ii) the knowledge he mobilized to understand the situation, and its evolution during the interactions with the different resources used in the set-up.

4 Results

We made two important findings. The first was at the beginning of the course, when the ST focused his attention on one particular stage in the PE lesson: face-to-face situations and whole-class discussion during the lesson. Face-to-face situations with all students were experienced as a very uncomfor-
table situation by the ST. This situation led him to focus on these classroom moments and to think about how to teach better without stress. Thus it is because he was in trouble during these whole-class discussions that he wanted to learn skills to improve his teaching. Accordingly, video editing and analysis were focused on whole-class verbal instruction and face-to-face situations with students. The second finding was that the use of multimodal resources allowed the ST to approach corporeal experience during face-to-face and whole-class discussion during the lesson and helped him to transform corporeal experience into knowledge for teaching.

4.1 Learning to identify some teaching skills in the flow of the lesson

4.1.1 An emerging need among pre-service teachers: learning effective skills for teaching during face-to-face situations

After the first period of internship, 80% of the edited videos (by all students in the group) were centered on face-to-face situations with the whole class, and pre-service teachers discovered different kinds of face-to-face situations during a PE lesson: taking the register, presenting the task and evaluating the lesson. These times in a PE lesson are very important, and problematic for them. The most important concerns and all the questioning were about the face-to-face time with the whole class during the lesson. The ST’s concerns were how to manage the presentation of the task and what teaching skills could be used. Thus developing thinking about this specific stage in the PE lesson appears to be a need for pre-service teachers in PETE.

This stage appears to be experienced and perceived by pre-service teachers as a very uncomfortable moment: “The presentation of the task is a bit like tightrope walking [...] when we begin, we are a little bit lost” (from self-confrontation interview with the ST). This feeling arises for different reasons. Face-to-face situations are destabilizing because the ST never knows what is going to happen; this situation is very unpredictable. In this situation, students are immobile and this immobility scares the ST because he does not know what students can or cannot do. Furthermore, this is a time when the ST thinks he cannot afford to make mistakes (e.g. forget something during the presentation of the task, mistake the name of a student). For the ST, this time is when he can demonstrate to all the students his own competencies for teaching PE. To do this, he has to show students that he knows how to talk without making mistakes. Furthermore, face-to-face situations are considered for the ST as a “key moment” in the progress of the lesson: these moments are determining for the subsequent situations, rather like a pivotal moment during a lesson. For example, if the explanation of the task is clear and short, it is most likely that the students
will understand the task and begin to do it in the “right” way; it is a double-or-nothing moment: “a critical moment that will determine what follows [...] a good moment, with some nice aspects but also a stressful moment” (from self-confrontation interview with the ST).

4.1.2 Multimodal resources help the ST to construct similarities between face-to-face situations

Resources used in the multimodal set-up enabled the ST to construct links between different face-to-face situations. The use of a peer’s video helped the ST to discover teaching skills that he perceived as useful and easy to apply in face-to-face situations. Viewing a peer’s video and exchanges with peers during the workshop caused the ST to think and ask himself questions about what teaching skills to apply in similar situations. The ST discovered that it was possible to give verbal instructions to a small group (organized by levels or motor skills), in order to explain each task for each level of practice: “Jordan groups a few students to explain a task for a short time and after he walks to the other group to give quick instructions [...] this is a possibility “ (ST’s self-confrontation interview). The ST considered this teaching skill relevant for all the face-to-face situations with the students, because in all the face-to-face situations it is necessary to speak briefly, and to adapt speech to the students’ capacities. Also, the ST discovered during the exchanges with the other pre-service teachers after collective viewing situations, that face-to-face situations were decisive in the lesson’s progress. Each student after viewing a video in a collective setting, reported his own experience in this teaching situation, and a common interpretation and comprehension appeared on these tricky situations. This is because situations recur lesson after lesson.

Viewing a video of another teacher allowed the ST to go back and forth between his own teaching and the teaching skills used by the teachers who were viewed. The ST developed capacities to make a comparison between his own activity and the activity that he viewed. Also, a kind of mimetic activity began to appear through the use of videos of other teachers: “Seeing an experienced teacher gives me some ideas for the future teacher situations, it gives clues” (ST’s self-confrontation interview).

4.1.3 Identifying teaching skills more accurately

Through the multimodal set-up, the ST began to consider teaching skills with bodily aspects. The ST learned to reconsider bodily aspects of teaching skills. For example, the ST learned to step back from his emotions to consider behavioral, linguistic and perceptive aspects of teaching skills. Furthermore, during the course, the ST’s analyses moved from the sole consideration of his
own classroom activity to the representation of the classroom situation as the result of interaction with students and the spatial organization of the situation. At the beginning of the course, and during his first teaching situations, the ST was characterized by a kind of “blindness” to students. He never perceived the students’ activity, and was heavily concentrated on his own activity (e.g. how to speak, how to position his body in front of the whole class) “I was so focused on my instructions that I didn’t notice the students who moved between the gymnasium and cloakroom” (ST’s self-confrontation about his own activity during viewing situation during workshop, Figure 2).

Initially for the ST, the explanation of the task (in the face-to-face situation) should clarify for students all the elements of the task they would then undertake “A good explanation is a detailed explanation in which all the information must be given“ (ST’s self-confrontation interview following second workshop). During the set-up, the ST built a new approach to explaining the task. By viewing videos of experienced teachers in this situation, he discovered new teaching skills. For example, explaining first only the organization of the task and after a few minutes of practice explaining how to succeed in the task: “I realize that if I provide information that’s not relevant to them at that moment when they first try to visualize the situation, they don’t understand what to do” (ST’s self-confrontation interview following the fifth workshop). The ST discovered some language aspects of the teaching skills with the help of the facilitator.
Exchanges with peers led to a transformation of the video analysis of the self-video. During his first analysis of his own video, the ST made an emotional, egocentric analysis, focusing on emotional aspects (e.g. discomfort). His own analysis moved to a more situated and interactional analysis, and exchanges with peers during cross-viewing situations helped the ST to analyze and consider teaching skills not just emotionally. Exchange with peers provided them with a new angle of analysis of their own video and opened for them a perceptual “new window” for analyzing teaching skills. “I showed my video of presentation of the task to Marc and I interpreted the situation directly, while he was focused only on observable aspects” (excerpt from ST’s self-confrontation).

4.2 The importance of the scenario in facilitating learning of teaching skills

4.2.1 A scenario written by the facilitator based on student needs

Different modes were used throughout the program. Their utilization was organized by the facilitator during the course, when some needs were expressed by the pre-service teacher. The scenario was not planned beforehand, but built during the interactions between facilitator and pre-service teachers, and resources were used and introduced by the facilitator in response to the needs of the pre-service teachers. At the beginning of the course, the facilitator allowed the pre-service teachers to express their needs, and he organized the work of the group in response to those needs. After the first internship, pre-service teachers expressed difficulties and discomfort during face-to-face situations. Accordingly, the facilitator chose to organize the viewing sessions on self-video (in response to the need they expressed about their own problems). Because of the discomfort felt during face-to-face situations, video clips edited by the pre-service teachers were not viewed with the whole group but only (at first) in a cross-viewing format. The main goal of the facilitator was to help them feel less guilty about their difficulties with managing this stage in the lessons. Peer viewing of his self-video helped the ST to consider new aspects of teaching skills. He began to look at teaching skills as based on language, behavior and emotional aspects constructed in the classroom situation during the interaction with students.

The confrontation with video resources (self, others, or experienced teacher), image resources or excerpts from self-confrontation, enabled the ST to see the teaching situation as (a) always situated, i.e. built in and from a particular context (based on the interactions between teacher and students), and (b) based on spatial organization (e.g. space “framing” of students on delivering instructions), body positioning (e.g. proximal or distal position relative to stu-
dents) and language aspect (e.g. content of the teacher’s instructions concerning the organization of the classroom or the criteria for the achievement motive, and forms of enunciation of instructions). Watching self-videos enabled the ST to assess his own teaching, and to report on his feelings, and his own experience during the situation: “When I saw the video, I made essentially negative judgments, I was focused on what was wrong and I couldn’t detect positive skills because that situation was highly uncomfortable for me” (self-confrontation interview the ST following first workshop). The self-confrontation and the workshop led the ST to explain the reasons for his discomfort in the teaching situation, led him to somehow “get out of himself”. Analysis of audiovisual recordings of his own activities in class thus shifted from a “perceptive, emotional” analysis, focusing on what he felt in situ, to a more “external” analysis not based only on feelings during the face-to-face situation. In this way, the ST began to consider teaching skills in multiple dimensions; he discovered other constitutive dimensions of the activity and the effects that the teacher could have on students by adopting particular teaching skills. The ST discovered that the teaching skills are built from different dimensions, and are not only the result of the application of behavior, but are built in the classroom situation, during the interaction with students. For example, ST had been encouraged by the facilitator (for this purpose he introduced pictures of teaching situations, Figure 3) to think and ask themselves about shaping a proximal or distal position relative to the students: “Pictures let us see that different positions of the teacher are possible during face-to-face situations. But the pictures don’t show whether these approaches are relevant positions” (from the ST’s self-confrontation interview).

Fig. 3 - Pictures of face-to-face situations during PE’s lesson
4.2.2 A specific layout of resources for learning teaching skills

Face-to-face situations were mostly considered initially by the ST as a frontal position, during which the teacher would be standing in front of students sitting: “Being high and visible is a situation for showing to the students: “I’m the teacher”, and proving this status to the students” (from the ST’s self-confrontation interview following the second workshop). So the facilitator chose to introduce videos of other teachers (not present in the group), during collective viewing situations, in order to show different ways to manage face-to-face situations. Accordingly, the ST was able to consider that this situation could be experienced differently by students; different meanings can be perceived according to the spatial organization (e.g. space between the sports material and the students). The ST discovered that the face-to-face situation could be a “moment of complicity”, a pleasant situation. The body position had an impact on the meaning of the situation. A distal position of the teacher’s body relative to students can be perceived as a formal situation, while a proximal position of the teacher’s body relative to students could be perceived as more informal. As a consequence, the ST saw teaching skills as not only behavioral but also corporeal attitudes, which create a meaning for students, and with a particular intention for the teacher. A proximal distance may be effective with one group of students, while a distal position may more effective with another group. During the workshops, the ST made some hypotheses in an attempt to discover the reasons for the use of this teaching skill and the meaning of the situation for the teacher. In order to help the ST to construct the meaning of the viewed situation, the facilitator introduced the video, and the transcription of a self-confrontation interview of the teacher viewed in the video, during a collective viewing situation. The introduction by the facilitator and the use of the different modes by the ST transformed his perception and understanding of the teaching skill used during face-to-face situations. Viewing an excerpt from a self-confrontation with a researcher, but also the use of transcription of a self-confrontation interview, contributed to this development: “I can see in this video the teacher will create a pleasant climate by her position facing the group. She promotes physical proximity to students and she’s very close and in the middle of her students” (the ST’s self-confrontation interview) (Figure 4). The facilitator’s choice emerged from interaction with students, when in the first place he organized the work to be done in face-to-face situations and whole-class discussion, in response to a student’s needs. In the second place, the facilitator introduced pictures of teaching situations to underline the importance of spatial organization during face-to-face situations. And in the third place, the facilitator introduced documents that reported feelings and perceptions of teachers who had been viewed in videos.
Throughout the program, the facilitator refrained from imposing any teaching skills, but he helped the pre-service teachers to explain their needs and contextualize their own teaching skills, and helped the pre-service teachers to construct some similarities between their own teaching skills and other teaching skills used by other teachers in a different context. He helped pre-service teachers connect ideas and teaching skills in a different context. The facilitator introduced resources at different stages in the program for orienting, redirecting and clarifying the pre-service teachers’ thinking about their own teaching skills, and to help them learn to identify teaching skills. Throughout the course, the facilitator’s concerns evolved during the interaction with pre-service teachers. Progressively, pre-service teachers considered behavioral, linguistic and emotional aspects of the teaching skills: this evolution resulted from the guidance and the introduction of different modes by the facilitator. By managing the introduction and the use of different resources throughout the course, the facilitator enabled students to consider teaching skills in different ways.

Conclusion

In this study we demonstrate that a multimodal set-up can show the activity of a pre-service teacher during a multimodal course used to learn teaching skills for teaching PE. We show that the use of different modes can help a student-teacher to identify teaching skills, think about them and consider what teaching skills are being used in face-to-face situations in teaching PE. The use of novice, expert, and also self-confrontation videos with text and pictures is a potentially useful framework for PETE. Although studies have been conducted on using self-videos and videos of others in teacher training (Seidel et
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al., 2011; Zhang et al., 2011), as far as we know no study has yet addressed the use of self-confrontation videos in PETE. Santagata & Angelici (2010) have shown, with their lesson analysis framework, the utility of a framework to identify and analyze teaching skills with greater accuracy in mathematics during videotraining. To our knowledge, this aspect is under-researched in PE, and we show that a scenario using multimodal resources can be effective in learning to identify teaching skills and also in accessing their corporeal aspects. We also show that the facilitator’s concerns move concomitantly with the pre-service teacher’s needs. Here we join Gröschner et al. (2014), who showed an evolution in the facilitation actions during a video-based teacher professional development program. Furthermore, according to Kwah & Goldman (2011, p.197) “teachers use embodied methods of explanation, such as hand movements, facial expressions, and tone and pitch of voice, to demonstrate complex ideas that cannot be communicated with words alone”, and the authors showed that teaching skills have some embodied aspects. With our study, we share this point of view, but we show that a multimodal set-up allowed a student-teacher to access this embodied knowledge. With this case study, we are seeking to make an “embodied turn” or “corporeal turn” (Kinsella, 2015), and now need to investigate these issues more thoroughly to obtain results with more pre-service teachers in PE to support our first results. The place of the body in teacher education (and not only in PETE) must be considered. We concur with Hunter (2011) in underlining the necessity to “reposition the body and its presence in teaching and learning”, and not only in teaching PE. Thinking and research must be developed on the use of the body in teaching situations and in teacher education for learning teaching skills.

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