

ANALYSIS OF THE PEDAGOGICAL KNOWLEDGE OF PROSPECTIVE PHYSICAL EDUCATION TEACHERS

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Abstract:

This study examined how pedagogical knowledge emerges in the teaching practice preservice teaching and supports the construction of pedagogical content knowledge of prospective physical education (PE) teachers. Four pairs of prospective PE teachers were purposefully selected to represent each of the four stages of a PE licensure. Data were collected during three academic semesters by means of interviews and structured reflective logs. The transcribed material was first divided into meaningful units, and then classified into three categories of analytical scope of pedagogical concern (macro, meso, and micro levels). Themes and patterns were sought by looking for similarities and differences among the data from analytical levels and prospective teacher pairs. Findings demonstrated that prospective PE teachers at the beginning of the program confined their primary educational concerns at the micro level, while those about to finish can also discern pedagogical issues at the meso level, but not yet at the macro level. Nevertheless, excessive concerns with a single lesson, with surviving, self-centered objectives and with a strict adherence to the planned strategies suggest a superficial share of pedagogical knowledge in the teaching practice preservice teaching and in the construction of the pedagogical content knowledge of the prospective teachers investigated.

Key words: *pedagogical content knowledge, knowledge base, knowledge for teaching, teaching practices, preservice teaching, teacher education*

Introduction

As argued by several authors (Cochran, King, & DeRuiter, 1991; Graça, 1997; Grossman, 1990; Shulman, 1987), the knowledge base for teaching refers to the area of knowledge needed for teaching delivery in different instructional contexts to obtain the objectives of student learning and training. Cochran et al. (1991) accord pedagogical content knowledge (PCK) the central role in a teacher's professional knowledge as it is integrated by and an integrator of the other types of knowledge (students, context, general pedagogy and context). Therefore, PCK can be considered the one teachers "use according to their objectives, the reality of the students, and characteristics of the teaching and learning context. The knowledge allows teachers to convoke, manage and integrate the components of their knowledge base for teaching to adapt, transform and implement the content knowledge in a comprehensible and teachable way" (Marcon, Graça, & Nascimento, 2011b, p. 332).

Among the components of the knowledge base for teaching, pedagogical knowledge may

be depicted through the educational principles and conceptions of teaching expressed by prospective teachers, as well as through the pedagogical strategies they use to plan, organize and manage teaching and learning situations in order to overcome the mere repertoire of content knowledge and pursue broader educational goals and learning outcomes (Amade-Escot, 2000; Behets & Vergauwen, 2006; Grossman, 2008; Metzler, Tjeerdsma, & Mozen, 2000; Morine-Dershimer & Kent, 1999; O'Sullivan & Douthett, 1994; Rink, 1997; Rovegno, 2008; Schincariol, 2002; Seel, 1999; Whipple, 2002). The importance of pedagogical knowledge is not overlooked by Shulman (1986) in his reference to the "missing paradigm", i.e. the untenable absence of the content in educational research, as he also observes that "mere content knowledge is likely to be as useless pedagogically as a content-free skill" (p. 8).

In reinterpreting the original proposal by Shulman (1987), Grossman (1990) suggests that general pedagogical knowledge is responsible for bringing together "a body of general knowledge, beliefs, and

skills related to teaching”, which includes knowledge about the students and the learning, the curriculum and the instruction, and an additional component known as “classroom management” (pp. 5–6). Along with Grossman (1990), Metzler et al. (2000), Morine-Dershimer and Kent (1999), and Seel (1999) also sustained that the levels of learners’ engagement and achievement are strongly related to the quality and significance of pedagogical strategies adopted by the teachers. In general, the provision of pedagogical knowledge intends to establish the theoretical foundations and methodological resources for teaching performance which enable prospective teachers to envisage the tasks and issues involved in teaching and learning regardless of the area in which they work.

Marks (1990) examined the sources of PCK and the way those sources interact to derive PCK. The author was able to distinguish three different derivations: (1) a process of *interpretation*, rooted in subject matter knowledge, in which “content is examined for its structure and significance, then transformed as necessary to make it comprehensible and compelling to a particular group of learners” (p. 7), (2) a process of *specification*, rooted in general pedagogical knowledge, consisting of “an appropriate instantiation of a broadly applicable idea in a particular context” (p. 8), and (3) a process of *synthesis*, in which there is no primacy of subject matter or general pedagogical knowledge, but it involves both of them together with prior PCK.

Concerned with the questions related to the treatment given to the content of teaching, Amade-Escot (2000, p. 87) presented didactics as an alternative to the unsatisfactory way research on teaching physical education (PE) thought about teaching practices. For that purpose, the author divided the analysis of the field into three scales: *macro*, *meso*, and *micro* levels of analysis. Attending to these three levels of analysis makes it possible to examine the prospective teachers’ pedagogical knowledge just in the interfaces of learners and learning, curriculum and instruction, or classroom management and, therefore, to probe how all these components concur to the construction of PCK.

– The *macro* level – encompassing the structure of the school curriculum – refers to the permeability, inter-disciplinarity, and coexistence of different subject areas in a school curriculum structure, to the particular contribution of physical education to the attainment of the educational goals of the entire school system, and ultimately to the justification of the presence of physical education within a school curriculum.

– The *meso* level – focuses on the organization of knowledge to be accessible to students – refers to the ways in which knowledge and content topics

may be purposefully and coherently assembled, combined, structured, and sequenced in order to design, implement and evaluate teaching over periods much longer than a single lesson. Teaching strategies, styles, methods, and models are assets that teachers may adopt or adapt to facilitate the construction of new knowledge by the students.

– The *micro* level – aiming at the direct intervention of teachers with students in the classroom – refers to the planning and implementation of various strategies to meet the demands of specific teaching and learning situations, by attending to the characteristics, interests and needs of the students. The micro level includes the negotiations, adjustments, and changes engendered by the uniqueness of dilemmas and problem situations that permeate the practice of teaching.

The structuration and gradual improvement of pedagogical knowledge provide prospective teachers with the required conditions to advance consistently in the construction and refinement of the core component of the knowledge base for teaching, i.e. PCK (Amade-Escot, 2000; Cochran, et al., 1991; Segall, 2004; Shulman, 1987). This relationship is highlighted by Graça (1997), who describes PCK as “an amalgam of content and pedagogy, or as the fruit of marriage between subject matter knowledge and general pedagogical knowledge” (p. 86).

Based on findings and claims of several authors (Amade-Escot, 2000; Behets & Vergauwen, 2006; Grossman, 2008; Metzler, et al., 2000; Morine-Dershimer & Kent, 1999; O’Sullivan & Doutis, 1994; Rink, 1997; Rovegno, 2008; Schincariol, 2002; Seel, 1999; Whipple, 2002), it is reasonable to presume that the PCK of those who are beginning their professional preparation in physical education is primarily constructed at the *micro* level of pedagogical concerns, in so far as at the very beginning, prospective teachers may have great difficulty in visualizing broader contexts, which depends critically on the *meso* and *macro* levels of pedagogical reasoning.

How this process grows throughout a teacher-education program and how it assists PCK construction is inadequately known and deserves the attention of the research community. Therefore these issues not only direct the purpose of this investigation but also justify the focus of the research agenda *set forth*, in the last few years, *to analyze* how prospective teachers’ PCK is created and how it develops throughout the initial PE teacher education. As a part of this agenda, the present study intends to examine how the three levels of pedagogical knowledge emerge in the teaching practices at different stages of initial PE teacher education, and how pedagogical knowledge contributes to the construction of the prospective PE teachers’ PCK.

Methods

Research design and protection of participants

A three-semester long qualitative case study was designed to fulfill the purpose of the research (Denzin & Lincoln, 2005; Thomas, Nelson, & Silverman, 2011; Yin, 2009). The research proposal was approved by the Ethics Committee for Research with Human Beings of the hosting institution. Board members of the institution and each of the participants signed informed consent forms, explicitly detailing voluntary participation and confidentiality conditions.

Participants and setting

The participants of this study were prospective PE teachers enrolled in a four-year physical education licensure from a Brazilian (State of Rio Grande do Sul) higher education institution with more than thirty years of experience in graduating PE teachers, and of providing various forms of field experiences and pedagogical training.

Four pairs of participants were purposefully selected in order to cover all the extensions of the program and optimize the possibilities of making *meaningful* comparisons. The licensure program was divided into four stages: P1 – up to 25% of the PE didactics program; P2 – between 25% and 50% of the program; P3 – between 50% and 75% of the program; P4 – more than 75% of the program. One pair of participants was selected to represent each stage of the program. In order to strengthen comparability, the following criteria were adopted for selecting participants: being female, being aged between 18 and 22 years, having completed secondary school education in public schools, having obtained higher academic marks and a higher number of course credits within the respective stage, having greater sport experience (years of practice and levels of practice, i.e. local, national, or international), having longer pedagogical experience (either autonomous or as an assistant in public or private educational institutions, or in sport, recreational, or social clubs, or in tourism resorts, hotels, or similar establishments).

Data collection

Data were collected during three academic semesters through: (a) interviews conducted by the first author at the beginning and at the end of the three-semester observation period, (b) structured reflective logs reporting each field experience, and (c) informal interviews.

The framework of the initial interview was built upon the theoretical foundations of the knowledge base for teaching and PCK (Cochran, DeRuiter, & King, 1993; Cochran, et al., 1991; Grossman, 1990; Shulman, 1986, 1987), pedagogical know-

ledge (Amade-Escot, 2000; Behets & Vergauwen, 2006; Grossman, 2008; Metzler, et al., 2000; Moline-Dershimer & Kent, 1999; O'Sullivan & Doutis, 1994; Rink, 1997; Rovigno, 2008; Schincariol, 2002; Seel, 1999; Whipple, 2002), and the peculiarities of the forms of field experience that involve participants in teaching practice exercise (Marcon, Graça, & Nascimento, 2011a; Park & Oliver, 2008; Tsangaridou & O'Sullivan, 1994; Valli & Rennert-Ariev, 2002; Zeichner, 2008).

The first interview was semi-structured with open-ended questions that asked for biographical information and sought to find out how each prospective teacher envisaged the participation of pedagogical knowledge in their respective teaching practice sessions. The interviews amounted to a total of ten hours and 56 minutes, and took 55 hours and 47 minutes to be transcribed. The transcriptions were sent to the participants for confirmation and comment.

Preliminary analysis of data from the first interviews added to the theoretical framework to elaborate the structured reflective log, a data collection tool designed to grasp information about the prospective teachers' thoughts, actions, and reflections related to the teaching practice exercises they undertook. The reflective log included both open-ended and closed questions (some of them using a Likert scale) that elicited participants to reflect about the types of knowledge they applied for in their teaching intervention. Every two weeks, throughout the period of the study, prospective teachers sent to the first author (by either hand or e-mail) the reflective logs they completed after each session of their teaching interventions of any kind, from peer teaching in university to student teaching in schools. The informal interviews were set periodically, face to face or by e-mail, with the purpose of complementing the information about the way the participants were using the various types of knowledge in their field experiences, to verify the adjustment of the reflective tool to their specific experiences and to the research requirements, and also to motivate prospective teachers to go deeper into their reflections.

The final interview was a designed analysis of the data collected from the other sources, based on an approach similar to the one adopted by O'Sullivan and Tsangaridou (1992). The semi-structured format included open and closed-ended questions seeking to probe prospective evaluations about the set of experiences, processes, outcomes, about the pedagogical concerns and the resources needed to face the challenges of the teaching practice situations. The final interviews amounted to a total of seven hours and 33 minutes, and took 16 hours and 12 minutes to be transcribed. Participants had the opportunity to confirm and validate the content of the transcripts of their interviews.

Data analysis and trustworthiness

The procedures adopted in data analysis were based on the standards of qualitative research methods (Denzin & Lincoln, 2005; Yin, 2009). The verbatim transcription of all interviews and the textual material of the structured reflective logs were analyzed and coded in QSR NVivo 8 software. First, all the passages deemed to reflect, in some sense, pedagogical knowledge were filtered for further analysis. The material coded in this broad category was subsequently broken down into meaningful units, and then classified into three categories of analytical scope, respectively macro, meso, or micro level pedagogical concerns, according to the theoretical ground derived from Amade-Escot (2000), Grossman (1990) and Shulman (1987). At this stage the coding process required a qualitative content analysis of the meaningful units, in order to grasp the participants' perspectives and the underlying messages they imparted by submitting them to a process of contextualization – de-contextualization – re-contextualization, i.e. reading and interpreting the messages within the “text” and the (personal and pedagogical) context they were produced in, then parting the text files into meaningful units and coding them into categories, and finally perceiving new meanings and patterns from the multiple comparisons across data sources (triangulation), and across, among, and within pairs and/or analytical levels categories (Denzin & Lincoln, 2005; Thomas et al., 2011; Yin, 2009). This process also relied on the counts of references to pedagogical knowledge within the categories by pairs and individual participants.

The criteria adopted to select participants, research tools and procedures for collecting and analyzing data, informed by the tenets of qualitative research methods, and theoretical frameworks

related to pedagogical knowledge and PCK, were complemented with specific procedures to warrant data trustworthiness, namely: participants' checking of transcripts, triangulation of data source, and an active search for disconfirming information to avoid biased interpretations and prevent unwarranted conclusions. Nevertheless, in this study interpretations and extraction of conclusions were tentative because of the influence of the individual idiosyncrasies.

Results

The number and diversity of teaching practices experienced by the prospective teachers during the three semesters under analysis were dependent not only on the number and nature of the courses in which they were enrolled and field experiences at that period, or the available conditions for implementing those practices, but also on the particularities of the participants involved in extracurricular teaching practices.

Table 1 summarizes the characteristics of the teaching practices experienced by prospective teachers (names are fictional) during three academic semesters.

In general, the curricular teaching practices of each of the four pairs investigated can be characterized as follows. In P1 most of the teaching practices were in some form of peer teaching, and only a few activities were administered to students of the community at the campus. In P2 there were fewer teaching practices for colleagues and more activities for the community students at the campus, whereas in P3 the teaching practices taught to the community students at the campus were reduced as more classes were being taught in elementary schools (early field experiences and student teaching). Finally, in P4

Table 1. Frequency of teaching practices occurrences by the participants

Pairs	Prospective teachers	Curricular	Extra-curricular	Total	%
P1 (up to 25% of the program)		17	2	19	8.05
	Aline	11	0	11	4.66
	Amanda	6	2	8	3.39
P2 (25 – 50% of the program)		30	45	75	31.78
	Barbara	20	36	56	23.73
	Bianca	10	9	19	8.05
P3 (50 – 75% of the program)		26	32	58	24.57
	Camila	22	3	25	10.59
	Carina	4	29	33	13.98
P4 (> 75% of the program)		84	0	84	35.60
	Daiana	50	0	50	21.19
	Dalila	34	0	34	14.41
Teaching practices analyzed		157	79	236	100.00

Table 2. Ratio of references in the categories of pedagogical knowledge per teaching practices for pairs of prospective PE teachers in distinct stages of licensure process

Pairs	P1	P2	P3	P4	Total
Teaching practices analyzed (TP)	19	75	58	84	236
Pedagogical knowledge (PK)	13	41	51	41	146
PK/TP ratio	0.68	0.55	0.88	0.49	0.62
Macro level concerns	0.00	0.00	0.00	0.00	0.00
Meso level concerns	0.26	0.12	0.57	0.06	0.22
Micro level concerns	0.42	0.43	0.31	0.43	0.40

activities were taught exclusively in elementary schools (student teaching).

Teaching practice in the form of extra-curricular activities was completely absent in P4, as it was completely taken by student teaching activities. It was also almost absent in P1, but in P2 and P3 the high incidence of practices was strongly influenced by the peculiarities of Barbara and Carina. Barbara had more than five years of experience of instructing and training swimming teams. In contrast, the numerous extra-curricular teaching practices by Carina were distributed among various sports, which defies any explanation based on specialization.

Based on the information about pedagogical knowledge, the distribution of the frequency and rate of pedagogical references per teaching practice are presented in Table 2.

It is evident that pedagogical concerns at the micro level generally stood out more than those at the meso level, while there was no concern identified at the macro level among the participants' reflections. On the micro level scale, there was a little variation in the rate of pedagogical references among the pairs, at odds with the sharp disparity between P3 and P4 at the meso-level concerns, with P3 referring the most to these issues and P4 referring the least.

Discussion and conclusions

As noted in the literature (Amade-Escot, 2000; Grossman, 1990; Morine-Dershimer & Kent, 1999; Shulman, 1987), pedagogical knowledge at the macro level dwells on the inter-disciplinarity and permeability among various school subjects. At this level, pedagogical knowledge envisages the inclusion and the role played by each subject in the curriculum structure to accomplish the mission of the school system, which implies understanding the contribution of physical education to the achievement of unique learning outcomes and common educational goals.

The prospective PE teachers in the study did not show pedagogical concerns at the macro level, though many of their teaching practices have been taught, for example, for school-age students in the

schools of basic education. This apparent disregard for macro level pedagogical knowledge can be analyzed in light of each of the teaching practice forms.

The teaching practices that are taught to colleagues, principally at the first stages of the PE licensure program, are fundamentally designed to transfer and apply the content knowledge. In some cases, prospective PE teachers were only able to reproduce in an incoherent and uncritical manner, teaching and learning tasks found in didactic manuals or used previously by their own teacher educators. In other words, as the literature suggests (Behets & Vergauwen, 2006; Calderhead & Shorrock, 1997; Chen, 2004; Marcon, Nascimento, & Graça, 2007; Metzler, et al., 2000; Park & Oliver, 2008), some teaching practices presented to colleagues only provide prospective PE teachers with a relatively superficial and narrow view of teaching and of the role of the PE teacher. Therefore, teaching practices administered to colleagues may significantly hinder the emergence of questions relative to pedagogical knowledge at a macro-, and even meso-level.

Regarding opportunities to administer teaching practices to schoolchildren in their own elementary schools, prospective teachers presumably should increase the horizons of teacher interventions and demonstrate greater concerns about meso and macrolevel pedagogical knowledge. Moreover, in this study observed introduction of prospective PE teachers to the context of elementary schools for only a short time period was not able to arouse the attention of the prospective teachers to macro or meso level pedagogical knowledge.

In the case of prospective PE teachers who are in the final stages of the licensure program, there was a clear discrepancy between the two observed pairs. The members of P3 referred primarily to meso level pedagogical knowledge, while the P4 maintained their statements almost at the micro level pedagogical knowledge. This means that P3 participants were able to extend their attention to issues related not only to class planning, but also to the interpretation and joint analysis of two or more teaching practice sessions, reporting relationships with one another or pondering how the content of teaching physical education can be structured and

sequenced through various classes in the function of improving students' skill level and learning capabilities.

Of the two members of P3, Camila reflected on the intention to relate different teaching practices to each other, with the explicit intent of solving problematic situations that she had faced through the lack of discipline and misbehavior of her students. As explained by Graber (1995), when prospective teachers are faced with student discipline issues, the solutions become the priority in their pedagogical interventions, which they end up addressing in their own planning of subsequent teaching and learning situations. Regardless, the emphasis on meso level pedagogical knowledge, which occurs in Camila's reflections, may result more in the need to overcome challenges than to consciously and intentionally take steps to plan and manage teaching practices.

Throughout the steps of the initial training in PE and primarily up to P3, the data suggest a relative rise in benchmark indices from the micro to meso level of pedagogical knowledge. Comparing this evolution of P3 participants' pedagogical knowledge with the more restrained scope of reflections of P4 participants, it can be tentatively hypothesized that changing to more demanding practices affect the scope of prospective teachers' reflections. Obviously we are admitting that P4 participants might also become more concerned with the meso and macro levels if their teaching practices were delivered to their colleagues or to children at the campus.

Perhaps the cooperating teachers were so overwhelmed by the peculiarities of the context of the student teaching situation, the expectations about student characteristics and the demands of performing in front of their students, that they were forced to divert their attention from macro and meso level pedagogical concerns to the primarily micro level concerns.

Another aspect to be emphasized is the characteristic assumed in the internships which fail to represent teacher interventions that are capable of trial and error, as is the case of some teaching practices. The internship requires teaching experience that entails a greater level of responsibility and competence. In effect, to emphasize, teaching practice would allow for reflection and would provide a path to instructional improvement, whereas internship would reduce errors as a result of the pressure of evaluation and grades. Whereas internship involves aspects that may conflict with a focus on teaching performance, an elevated concern with the instructional task and with oneself is naturally required from the intern, which may be to the detriment of the pedagogical intervention for teaching and student learning.

As noted by various authors, such as Carter (1990), Chen (2004), Graber (1995), Intrator (2006),

Schincariol (2002) and Verscheure and Amade-Escot (2007), prospective teachers are clearly concerned with the following students and student characteristics, the level of their own content knowledge compared to their students' knowledge, the new context in which they will teach and the confidence and trust they receive from other teachers and students. This scenario imposes a great difficulty and uncertainty on prospective teachers, namely, many demanding situations have never been encountered yet, and they may not know if they have the ability to overcome situations in which the results are so unexpected. Additionally, there is traditionally a gap between most of the training institutions and elementary schools. The traditional structure of the initial training in PE programs does not consider the formative potential of the school context and does not allow for teaching experience in which prospective PE teachers transcend the meso level of pedagogical knowledge to reflect on the macro level. Therefore, one can assume that the evolution of the pedagogical knowledge of prospective teachers in PE, from the micro level to the macro level, reaches its peak in the meso level in the period between half and three quarters of the way through the course and before their internship has begun.

In this study, prospective PE teachers prioritized an isolated teaching and learning situation, which is what they were supposed to have done in the previous steps of teacher training program; a priority for teaching was demonstrated in the concerns of P1 and P2 participants. Results from Chen's (2004) investigations of prospective PE teachers also point in this direction. The author explains that prospective teachers tend to plan individual classes and that it is difficult for them to observe a logical and sequential organization throughout the PE course.

Behets and Vergauwen (2006) show that prospective teachers, whether before, after or primarily during teaching practices, find it difficult to organize and inter-relate their knowledge. The concerns about pedagogical knowledge at the micro level experienced by the members of P4 during the internship may be explained as the teaching practice administered to schoolchildren, in their own schools, and do not provide a prolonged and in-depth assertion of the prospective teachers in a school environment.

Although the curricular reforms of the initial teacher education programs in different countries call for an expanded internship period, the actual time student teachers get in schools seems to be insufficient to integrate themselves effectively into the school environment, and assume confidently the challenges of the profession. Stran and Curtner-Smith (2010) asserted that "teaching full-time in the same school for several weeks was a much different proposition to teaching one or two hours a week

in different schools” (p. 253). Consequently, this relative superficiality of insertion into the school context did not allow the prospective teachers who participated in this study to identify the relationship between PE and other curricular components or to justify the presence of their discipline in the school curriculum.

As a result of not being able to visualize these questions and given the need to solve more specific and meaningful problems that are related to the interaction with the class and the material, the student and content knowledge appear more frequently in the internships of prospective teachers. In addition to being highly valued by prospective teachers for the planning and management of teaching practices, student and content knowledge are intrinsically related to the micro level of pedagogical knowledge rather than the meso and macro levels. Similar results were found by Verscheure and Amade-Escot (2007).

The extra-curricular teaching practices in the present study did not allow for the identification of more generic interpretations about the inter-disciplinarity of the presence of PE in the school curriculum, which would involve pedagogical knowledge at the meso and macro levels. This lack is due to these extra-curricular teaching practices being presented outside of the proper school context, such as in businesses or other sport and recreational institutions outside basic education. We can suppose that the teaching practices would offer the prospective PE teacher an opportunity to improve his/her pedagogical knowledge at the micro level but that they would hardly allow for the direct development of pedagogical knowledge at the meso level, and even less at the macro level.

Overall, in the four stages of initial training in PE, the concerns of the prospective PE teachers include solving the questions related to teaching the material, the knowledge they have in the subject and the student demands. Prospective teacher concerns are related to their strategies of teaching and learning, their teaching practices and the results and immediate consequences of their pedagogical interactions with the students.

In the present study, we observed that the prospective PE teacher concerns are not wide nor generic, that they do not consider the educational system at the macro level nor they are associated with the questions that would transcend the limits of their own classrooms and have the implications for the teaching and learning process in the training of students. Because of the marked overlap detected in the reflections about the administered teaching practices, the concerns with the micro-level pedagogical knowledge may have a great potential to provide prospective teachers with the vision of broader objectives that extrapolate from the pedagogical concerns of each class. Thus, teaching

practices taught by prospective teachers during the initial training in PE may have a limited power to contribute to the development of the meso and macro levels of pedagogical knowledge of future teachers. From this observation and the information analyzed in this investigation, the pedagogical knowledge of prospective PE teachers, particularly at the macro level, can only be improved throughout the teaching period. Improvement will come through diurnal interaction with schoolchildren, through different teaching and learning situations and, particularly, through the daily challenges that involve the collaboration of teachers from other disciplines, the school curriculum and the school objectives.

The findings of this study sustain the idea that prospective teachers in the first stages of PE training would have greater concerns with pedagogical knowledge at the micro level than with the broader context. Conversely, prospective PE teachers at the end of the course would focus their attention also on pedagogical knowledge at the meso and macro levels. The evidence indicates that teaching practices, experienced throughout the course, and internship were unable, at the level of initial training of teachers, to match the scope and importance that literature gives to the pedagogical knowledge. The prospective PE teachers demonstrated difficulty discerning and reflecting on the possibilities of inserting physical education into the pedagogical projects of the schools. They had difficulty considering the potential for integration and the inter-disciplinarity of their own discipline with other curricular components of basic education, and they also had difficulty considering the implications of their teaching intervention for the education and training of students.

Regarding the teaching practices and internship, pedagogical knowledge at the meso and macro levels does not significantly influence the constructive process and the development of pedagogical content knowledge in prospective PE teachers. Throughout the training, it is fundamental that prospective teachers have opportunities to gain experience and develop knowledge that will allow them to discover the importance of the prospective teacher role in the formation of knowledge and in the training of students. This knowledge is related to meso-level pedagogical knowledge, whereas the possibility of inserting PE course into the basic education curriculum relates to macro-level pedagogical knowledge. Therefore, we believe that the programs of initial training for teachers in PE may enhance the possibilities of achieving objectives related to the construction and development of pedagogical knowledge and, principally, of pedagogical content knowledge. The hope is to improve the academic, instructional and professional training of the prospective physical education teachers.

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ANALIZA PEDAGOŠKOG ZNANJA BUDUĆIH NASTAVNIKA TJELESNE I ZDRAVSTVENE KULTURE

Ova studija je istraživala kako se pedagoško znanje očituje tijekom stručne prakse te kako podržava konstrukciju sadržaja pedagoškog znanja u budućih nastavnika tjelesne i zdravstvene kulture. Četiri para budućih profesora tjelesne i zdravstvene kulture bila su ciljano odabrana kao reprezentanti svakoga od četiri stupnja u procesu stjecanja kompetencija za provođenje nastave tjelesne i zdravstvene kulture. Podaci su se prikupljali tijekom tri semestra sveučilišne nastave intervjuima i strukturiranim dnevnicima rada. Prepisani dokumenti su najprije raspodijeljeni u smislene jedinice, a potom klasificirani u tri kategorije analitičkog raspona pedagoškog promišljanja (na makro, mezo i mikro razini). Teme i struktura znanja su definirane na temelju sličnosti i razlika između podataka koji su prikupljeni s različitih analitičkih razina od parova budućih nastavnika. Rezultati su pokazali da

budući profesori tjelesne i zdravstvene kulture na početku svojeg školovanja ograničeno usmjeravaju pozornost na edukacijske vještine na mikro razini, dok oni koji su pri kraju svoje edukacije mogu prepoznati i pedagoške probleme na mezo razini, ali ne i na makro razini. Ipak, pretjerana zaokupljenost pojedinačnim nastavnim satom, preživljavanjem, osobnim ciljevima te strogom provedbom planiranih strategija sugerira površan doprinos pedagoškog znanja procesu obrazovanja i konstrukciji sadržaja pedagoškog znanja budućih nastavnika tjelesne i zdravstvene kulture koji su bili sudionici ovoga kvalitativnog istraživanja.

Ključne riječi: *pedagoško znanje, osnovno stručno znanje, znanje o poučavanju, stručna praksa, edukacija učitelja*