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From the first World Summit on Physical Education (PE) held in Berlin, in November 1999 (ICSSPE, 2001) to the second edition held in Magglingen, Switzerland, on December 2005, sport pedagogists from all over the world developed a broad international debate on the current state of physical education world-wide, which included its contents, objectives and role in the context of globalization. The results of their work were reflected in several international documents and an international comparison was published (Pühse & Gerber, 2005). However it has become necessary to review the scientific developments of the field during the past ten years that can help policy makers in their decision to promote quality physical education that is to make a distinctive contribution to all children, to girls and boys, to children with special needs, minorities, and disadvantaged youth.

Following educational researchers from situated perspectives who shed light on the role of distributed cognition and contextualized situations in education current researchers in PE have shown that teaching and learning are situated and constrained actions (Amade-Escot, 2000a, 2006; Durand, 1998/2000, 2001; Gal-Petifaux & Durand, 2001; Kirk, 2002; Kirk & Macdonald, 1998; Kirk & Almond, 1999; McCaughtry & Rovegno, 2001; Rovegno, 1998; Rovegno, Nevett, & Babiarz, 2001). The focus of contemporary research is to understand how teacher and students as individuals participate in a culturally situated environment, interact.
and develop shared practices with the aim of achieving educational purposes. From these lines of research, some scholars consider that the domain-specific content knowledge is a key element for the teaching/learning settings (Amade-Escot, 2000a, 2006; Cizeron & Gal-Petitfaux, 2005; Godbout, 2001; Griffin & Placek, 2001; Kirk & Kinchin, 2003; Kirk & Macdonald, 1998; Rovegno, 1998; Siedentop, 1989/2002; Tinning, 2002). These lines of research are based on the assumption that physical education is a result of shared and co-constructed processes between teacher, students and a specific learning environment. Thus current works provide a way of thinking about knowledge production in a more integrated and situated way. These assumptions have undergird and guided the following literature review from papers published in English and French language in the last 10 years (1995-2005). The goals of this review is to identify quality standards and benchmarks based on research for physical education as an essential component of culturally sensitive education which contribute particularly to personal and social development. Criteria of inclusion concern papers based on contextualized researches with a focus on effective practices and a special attention to PE content. The sources of the documents reviewed are:

- the AIESEP international proceedings because this association gives a broad view on what is at stake in the current PE research all around the world,
- the ARIS proceedings (French speaking association for research in sport pedagogy and physical education),
- the issues of the major American and European journals in physical education1,
- the latest handbooks in physical education and sport sciences.

Three interrelated cornerstones for quality physical education emerge from the sources: (1) Teacher Education, (2) Curriculum and content issues, (3) Student learning.

These three topics are the focus the three first sections of the review. The fourth section concludes with a summary of the major themes emerging from the review and suggests some possible developments for future research.

**Teacher Education and Quality Physical Education**

This review does not address the state-of-the-art research concerning teaching PE nor teacher professionalization but focuses on how the findings of these two lines of research can and/or might inform physical education teacher education (PETE).

In this section we will concentrate on teacher education as an important cornerstone for quality physical education. Almost ten years ago O'Sullivan (1996) suggested that there was little empirical work to support decisions of teacher educators in PETE programs. From the mid nineties up to now an emphasis on research on PETE has been developed coming with worldwide teacher education reform. For instance in France, the creation of the IUFM (type of college education) in the early 90's was intended to develop teacher professionalization through a competence-based model combining and articulating theoretical and practical knowledge.

**What do we Learn from Research on Teaching PE?**

Research on teaching PE has given a broad knowledge both theoretical and practical. The most important lesson learned from this body of research is that teaching is a complex endeavor (Armour & Yelling, 2004a; Durand, 1996, 1998/2000, 2001; Hanke, 2003; Marsenach, 1998; Piéron, 2002; Rovegno et al., 2001). This complexity has consequences for teacher education:

- Even if the broad range of knowledge brought by this research has some impact on PETE, it still remains idealistic to think that teacher education could be rooted only in this evidence-based knowledge.
Teacher education should rightfully be viewed as professional education in which the theoretical and practical knowledge must be integrated through situated and contextualized experiences of teaching.

The challenge faced by PETE is to meet the aims of what teaching is today: to intent that educative experiences be social, connected to student previous experiences, embedded in meaningful contexts, and related to how students develop understanding for content within a constructivist approach to physical education (Doll-Tepper, 2000; Florence, Brunelle, & Carlier, 1998; Loquet, Refuggi, & Amade-Escot, 1999; O'Sullivan, 2003; Rink, 2001; Rovegno, 1998, 2003; Ward & Doutis, 2001).

What do we Learn from Research on Teacher Professionalization?

Research findings of teacher professionalization clearly state that learning to teach is a lifelong process. The induction phase, which plays an important role, is described as a transitional period between teacher preparation and continuing professional development (CPD) (Carlier, Renard, & Paquay, 2000; Durand & Arzel, 2002; Ria & Gal-Petitfaux, 2004; Stroot, 1996, 2003). In this long term process of teacher professionalization the impact of workplace conditions and the school culture are determinant (Armour & Yelling, 2004b, Ria, Sève, Theureau, Saury, & Durand, 2003; Keay, 2005; Rovegno, 1994, Rovegno & Bandhauer, 1997; Stroot, 1996). There is some evidence that support should be provided to teacher all along their career with the help of collaborative efforts between university and the teachers' workplace (Stroot, 1996).

Benchmarks for Professional Quality

The aim of PETE for pre-service and in-service teacher education is to increase quality in physical education in a way that improve students’ attitudes toward and participation in physical activities (O'Sullivan, 2003). It clearly appears that the goal of teacher education is not to train teachers to behave in prescribed ways, but to educate them to reason soundly.
about their teaching as well as to perform skillfully. Three elements rooted in constructivist and situated perspectives have been recognized as key points to improve physical education through PETE:

- Building integrated knowledge in action through reflective practice,
- Developing quality in supervision of student teaching,
- Investing in continuing professional development,
- Increasing collaborative relationships between university and school teachers.

**Building Integrated Knowledge in Action through Reflective Practice**


- The role of reflection in shaping teachers' educational values and practices is important for the integrated purposes of teacher education (Heikinaro-Johansson & Varstala, 2000; Keh & Jwo, 1998; Pascual, 2000; Ria, Saury, Sève, & Durand, 2001; Ria et al., 2003; Romar, 1995; Tsangaridou & O'Sullivan, 1997)

- Reflection on and during action helps teacher to construct their own professional knowledge which is enacted during field experiences and within “communities of practice” (Amade-Escot, 1998a; Baeza & Perez, 2004; Chaliès, Hauw, & Ria, 2004; Lave & Wenger, 1991; O'Sullivan, 2003, 2005; Patton et al., 2005; Ria & Gal-Petitfau, 2004, Sebren, 1995; Tsangaridou, 2002, 2005).

- A growing body of literature on teacher's situated knowledge has shed light on the need to relate pedagogy to subject matter. It is argued that when teachers adopt a reflective attitude toward the content they teach they engage themselves in a process of rendering questionable

- During field experiences reflective practice on the contents appears to play an important role in developing student teacher emergent PCK (Amade-Escot, 1998b, McCaughtry & Rovegno, 2003; Rovegno, 1998, 2003; Tsangaridou, 2002, 2005). Sometimes called "craft knowledge for teaching", this situated knowledge is "a form of expertise in which declarative knowledge is highly proceduralized and automatic and in which a highly efficient collection of heuristics exist for the solution of very specific problems in teaching" (Leihart, 1988, p. 146). This knowledge also contributes to economy of teaching (Rovegno et al., 2001, Tsangaridou, 2005).

**Developing Quality in Supervision of Student Teaching**

The major purpose of supervision in PETE is to help student-teachers to become competent teachers. The need for heavily supervised field experiences has been continuously underlined (Banville, 2001, 2002; Byra, 1996; O'Sullivan, 1996; Sarmento & Al. 2000). Connected with the theme already discussed on reflection in action the increasing research on supervision advocated some principles:

- Both cooperating teachers and university supervisors are important for the success of the student teaching experience (Byra, 1996; Dugal, 2004; Wright, 1998) even though a controversial debate appeared on the critical functions of their respective roles and the relevance of the supervision conference (Bertone, 2004; Byra, 1996; Chaliès & Durand, 2000; Trohel, Chaliès & Saury, 2004).

- Reflective assignments from supervisor help teachers to focus on various aspects of teaching, including PCK and the ethical and social aspects of their work (Tsangaridou &
O'Sullivan, 1997). But this must be supported by specific training of cooperating teachers in collaboration with university supervisors (Banville, 2001, 2002; Dugal, 2004). Findings advocate the use of clinical supervision and collaboration among partners.

Better communication between university and school supervisors must be developed (Albuquerque, Graça, & Januário, 1999; Banville, 2002; Chaliès & Durand, 2000; Desbiens, 2004; Dugal, 2004). Researchers highlight the need for cooperating teachers who understand and support the same constructs of content development taught in the university. But it has been pointed out also the need for university supervisors who recognize and support the unique knowledge of cooperating teachers (Dugal & Amade-Escot, 2004; Griffin & Ayers, 2005; Veal & Rikard, 1998). PETE mentoring has been also explored in depth. Effective mentors possess rich and sophisticated content, curricular, and pedagogical knowledge that have to be acknowledged (Dugal, 2004; Griffin & Ayers, 2005).

**Investing in Continuing Professional Development**
Providing high quality professional development has become a cornerstone of education policies. In many countries, it is required to provide CPD for teachers as an attempt to raise educational standards. The traditional model of CPD, mainly one or two day's off-site courses, is perceived to have poor impact on teachers’ practices. Recent studies have focused on compensatory professional development within "schools communities of practice" as an alternative way of improving quality physical education (Armour & Yelling, 2004a; O'Sullivan, 2005). Learning from each other appears as the new challenges and opportunities for professional development for PE teachers in contemporary schools. Some scholars consider that these communities of practices might act as non hierarchical situated mentoring relationships between teachers and thus might favor their professional capacities as instructional and curricular leaders in their school (Armour & Yelling, 2004c; McCaughtry, Cothran, Hodges Kulinna, Martin, & Faut, 2005; O'Sullivan, 2005, Trohel et al., 2004).
This pleads for the development of collaborative actions between university and schools to sustaint change in schools and in teacher education.

**Increasing Collaborative Relationships between University and School Teachers**

Interactions between university researchers and practitioners are vital to engage teachers in professional development, to sustain changes in schools, and thus to improve the quality of PE (Carlier & Renard, 2004; Dugal & Amade-Escot, 2004; O'Sullivan, 2003, 2005; O'Sullivan, Tannehill, Knop, Pope, & Henniger, 1999; Ward, 1999). The setting of cooperative partnership between teacher educators and cooperating teachers is facilitated when "professional development schools" exist (Siedentop & Locke, 1997; Ward, 1999). Participation in research projects also helps the supervision system (Banville, 2001; Carlier et al. 2000; Chaliès & Durand, 2000; Dugal, 2004; Keh & Jwo, 1998). There is large evidence that collaborative research, when based on a socio-constructivist approach of learning, plays an important role as a form of CPD for teachers (Amade-Escot & Léziart, 1997; Dugal, 2004; Durand, 2001; Marsenach, 1998; Marsenach & Amade-Escot, 2000; O'Sullivan, 2005; O'Sullivan et al., 1999) as well as facilitates the emergence of local communities of practice in which PE teachers, mentors and researchers learn from each other (Armour & Yelling, 2004c; O'Sullivan, 2005; Patton et al., 2005).

**Concluding Remarks Regarding Teacher Education as the First Cornerstone for Quality Physical Education**

In this review it appears that teacher education requires reflective practice, collaborative partnerships and quality of supervision and mentoring. These are inescapable tools to promote and sustain good quality of PE in school settings. Nevertheless, there are some limitations to these principles in teacher education. It became clear from the literature that it is not easy to transform teacher beliefs and action through PETE because individuals tend to interpret teacher education contents to reinforce their existing beliefs and way of doing rather than to
challenge or modify them. The difficulties encountered by student teachers as well as in-service teachers to develop communities of practice have also been demonstrated. To overcome these difficulties recent findings suggest however that teacher education programs should: (1) focus more on the situated and constrained teacher practice (Amade-Escot, 1998a; Durand & Arzel, 2002; Rovegno, 2003) and at the same time (2) help in training teachers as professionals who are willing to cross the boundary of current practice (Siedentop, 2001).

**Curriculum, Content Issues and Quality Physical Education**

Curriculum and content, the second cornerstone for quality physical education, will be developed in three major sections. The first one will give a brief overview of the current changes in PE curricula brought up by educational reforms in many countries. The second one will underscore what we learned from research on alternative curricula. The third section will focus on some remaining challenges within the worldwide crisis in PE.

**Change in Formal Curricula**

Comparative studies on the recent curricular reforms that occurred in the last decade in western countries highlight the various impacts on real practice (Banville, Desrosiers, & Genet-Volet, 2002; Bos & Amade-Escot, 2004; Careiro Da Costa & Piéron, 1997; Ennis, 2003; Hardman, 2001; Klein, 1997, Macdonald, 2003; Penney & Kirk, 1996, Piéron, 2002). Within educational reforms most OECD countries have promoted a shift from curricula rooted in an objectives approach to curricula rooted in a broad range of competences (Kirk, 1993, Tinning, 2001, Macdonald, 2003). Traditional curricula in PE are based on elemental fragments of knowledge and skills while the new curricular models try to promote learning environments conceived as rich, meaningful, whole experiences. Curricular reform in PE as well as in other school discipline consists in implementation of a "competence-based curriculum" (Hardman, 2001; Klein, 1997). In some countries when a tradition of national curriculum exists (like in Canada, France, Great Britain, Portugal, or Sweden) the change is
accompanied by a strong institutional teacher training (or CPD) to implement the new PE curriculum. While the focus on PE curricula changed within the school reforms during the nineties, there still remains a gap between curriculum as text and curriculum in practice with a lack of attention given to students’ experience (Carreireo Da Costa, 2001; Kirk, 1999; Macdonald & Hunter, 2005; McCaughtry, Sofo, Rovegno, & Curtner-Smith, 2003; Poggi-Combaz, 2002).


**Alternative Curricula for Quality Physical Education**

Research on alternative PE curricula indicates that physical education gains in quality but some limitations must be addressed for the future. I will discuss this issue from three types of alternative curricula.

*Alternative Curricula rooted in a Cultural Perspective for Content in PE: Sport Education and the Didactic Curriculum Models.*

Both of these alternative curricula in contrast to the current multi-sport curriculum are rooted in a philosophy of play education, a cultural perspective of PE and a student centered teaching strategy (Delignières, 1999; Goirand, Journet, Marsenach, Moustard, & Portes, 2005; Kirk, 2004; Kirk & Kinchin, 2003; Marsenach & Amade-Escot, 2000; Marsenach et al. 1991; Mérand, 1990; Siedentop, 1994, 1998/2002; Walhead & O'Sullivan, 2005). Their purpose is to increase quality PE through positive sport experiences, including a creative definition of
sport (Goirand et al., 2005; Kirk & Almond, 1999; Oslin, 2002). There is now some evidence of the impact of this type of curriculum on teacher activity and students achievements. Findings emphasize its contribution in providing more meaningful experience during the teaching and learning process:


- Beyond the motor skill outcome and sporting competences, it has been shown that the Sport Education model offers young people a range of additional learning experiences such as the development of social skills and critical consumerism (Hastie & Buchanan, 2000; Kirk & Almond, 1999; Oslin, 2000; Walhead & O’Sullivan, 2005).

- Teaching Games for Understanding (TGFU) which was at its beginning rooted in a cognitive and instructional perspectives can be considered today as an alternative PE curriculum that promotes student tactical awareness and which integrates skills related to tactics (Amans-Passaga, 2005; Grehaigne & Gotbout, 1995; Hastie, 1998a; Kirk, Brooker, & Braiuka, 2000; Light, 2005; Siedentop, 1998/2002).

All these curricula which emphasize cultural perspectives have much in common, notably their positive impact which helps students to become "literate" in sport issues including the capacity to critically analyze sport practices as well as eventually to change them. However, limitations might be in the potential discrepancies between the physical activities promoted by these curricula and the ones that students identify to be culturally significant for them. This highlight the influence of the physical culture in which PE is rooted (Delignières, 1999, Delignières & Garsault, 2004, Goirand et al., 2005; Kirk, 1999, 2002, 2004; Tinning, 2002)
Alternative Curricula Favoring Values: Sport For Peace and Teaching Personal and Social Responsibility

In place of the multi-activity model which undermines physical education, specially in deprived urban zones, with disengaged students or at-risk youth, some scholars have implemented curricula which focus on responsibility, respect for differences and conflict resolution. The “Sport for Peace” model (Ennis, 1999, Ennis et al.,1999) and “Teaching Personal and Social Responsibility” model (Hellison, 1995/2003; Martinek, Duffy, & Schilling, 2001; Martinek, Schilling, & Johnson, 2001) are examples of physical education related to the making of citizens. In Europe also, the question of socialization through PE curricula arose (Briot, 1999; Klein & San José, 2000; Flavier, Bertone, Meard, & Durand, 2002; Florence et al.,1998). The major aims are to teach students how to develop self-responsibility, self-awareness and how to interact in non-sexist, non-racist ways. The limitations of these types of alternative curricula are that teachers might used them as a tool for student control or as a disciplinary device in contrast to the purpose of empowerment held by the curriculum designers (Bos & Amade-Escot, 2004; Buchanan, 2001; Tinning, 2001).

Curricular Reforms and the Promotion of Health.

As developed by Tinning (2001) it is clear that the health promotion message pervades the curricular reforms. McKenzie (2001b) defines “Health-Related Physical Education” as a process to prepare children and adolescents to develop and maintain a lifelong physically active lifestyle. The scope of such curricula is to address the challenge of developing a significant rate of physical activity that has an effect on the physical fitness of a child and an impact on long term objectives. The primary aim is to teach youth to manage their own physical activity. For many scholars the health related curriculum for PE appears to be the solution to overcome the physical education crisis all around the world (Hardman, 2001; ICSSPE, 2001; UNESCO, MINEPS III, 1998). In Europe, current national reforms advocate physical education related to health purposes while researchers indicate the difficulty of
implementation (Annerstedt & Patriksson, 2000; Cogerino, 2000; Perrin, 2004; Piéron, Telama, Almond, Ledent, & Careiro da Costa, 2001b). Despite many efforts (Feingold, 1995/2000; McKenzie, 2001a, 2002b; Sallis et al., 1997) it has not been clearly established that quality PE enhances student attractiveness to an active lifestyle when adult and contributes to the development of a healthy way of life (for a controversial discussion on health, obesity and curriculum see Evans, 2003; O'Sullivan, 2004; Tinning, 2001; Tjeerdsma-Blankenship & Solmon, 2004)

**Concluding Remarks on PE Curriculum as the Second Cornerstone for Quality Physical Education**

Whereas research on alternative curricula gives some evidence of their effect in terms of quality physical education, some limitations exist and potential unexpected consequences must be addressed

**Rethinking PE Curriculum: Interest and Remaining Challenges**

The principal interest of the curricular reforms was to highlight the multidimensional aspects of the content of the school discipline. Quality PE contents encompass: values, tactical and motor skills, affective and social knowledge, understanding and the like. But the current marginalization of PE in many countries and the so-called and real physical education crisis combined with the new evolution of our societies (Klein, 2003; Macdonald & Hunter, 2005; Siedentop, 1998; Tinning, 2001) might have undesirable impacts on curricular issues. Reports point out a diminishing status, as lack of societal relevance, an identity crisis for physical education (Doll-Tepper, 2000; Siedentop, 1998; UNESCO, MINEPS III, 1998). Within the framework of curricular reforms some critical aspects should be discussed: (1) PE related to health and the mirage of healthism, (2) The risk of the idealistic postmodern perspectives, and (3) The underestimation of the enacted curriculum.
Physical Education and the "Healthism", a mirage?
Feingold, (1995/2000) among other scholars defends the idea that PE related to health purposes could be a new strategy to promote PE. As said previously it is not obvious that scientific literature strongly supports the promotion of health in PE (Evans, 2003; O'Sullivan, 2004). The current shift in many countries to a health related PE curriculum within the new competence-based reform might also have problematic consequences. The first is the dependency of PE to extrinsic educational endings and its returns under the umbrella of the medical power. We must be warned by the discrepancy between the ambition of PE curricular reforms and the little space allocated to PE in the school time table (Annerstedt & Patriksson, 2000; Tinning, 2001,). Complex social issues cannot be solved only by school commitments. The danger of reducing PE to activities that are only related to the development of physical fitness as an individual duty is linked to the underestimation and the non acknowledgment of the social construction of bodies (Kirk & Wright, 1995; Macdonald, & Hunter, 2005; Wright, 2000).

The Pitfall of Idealistic Post Modern Perspectives
Radical relativism and radical socio-constructivism, despite their humanistic views, might hide the built up of a non egalitarian curriculum, and thus social iniquities. We have to remember that policy-makers are very skillful in recycling educational concepts for diminishing the financial support of quality education. For example, disconnection between socialization aims and cultural learning outcomes in PE might have consequences in terms of inequalities for different groups based on ethnicity, social class and gender. This appears most often on behalf of an ambiguous message for cultural relativism for PE curriculum by policy-makers (Bos & Amade-Escot, 2004). Specific learning achievement might also disappear for the benefit of social control of at-risk youth. The ambitions of the new curricula expressly set out to help individuals to become lifelong learners, with a clear articulation of the making of the future citizen. That is, a citizen multi-skilled, competent, self-regulating, critically reflective and capable of constructing his own healthy lifestyle! In contrast, there is a big contradiction between the declared aims of educational systems and the reality of the consumer world in which young people are embedded (Tinning, 2001). Thus we must clearly
bear in mind that the success of such ambitious projects seems to be problematic (Bos & Amade-Escot, 2004; Buchanan, 2001; Siedentop, 1998,; Tinning, 2001). Our conviction is that PE curricula must find a prospective coalition to teach values grounded in culturally, socially, and meaningful content knowledge (Hastie & Buchanan, 2000; Siedentop, 1998).

The Underestimation of the Fact that the Curriculum is Enacted.
Curriculum designers and policy-makers sometimes seem to forget this fact clearly established by researchers. Most of them worry too much about the misapplications of the text of curriculum and explain them in terms of teacher resistance. They underestimate the fact that teaching and learning is ongoing through shared practice and that the content knowledge is the result of an evolving co-constructed process. They underestimate also the ingenuity of teachers in dealing with the day-to-day practices, which has been highlighted by situated and contextualized research (Amade-Escot, 2003, 2004, 2006; Azzarito & Ennis, 2003; Ennis, 1995; Kirk & Macdonald, 1998; Rovegno et al., 2001; Rovegno, Nevett, Brock, & Babiarz, 2001).

Research on Student Learning and Quality Physical Education
Research on motor learning and cognitive research on student learning have consistently informed PE teaching from decades. This body of knowledge has a strong implication because quality PE is grounded in learning theories (Griffin & Placek, 2001; Lee, 1997; Rink, 1999/2000, 2001; Rovegno, 1998; Rovegno et al., 2001). The incredible scope of literature on both subjects would request specific reviews. Our concerns in this last section of this review are to overview the contribution of research on student learning to PE, to suggest the need for more research on both student's relationships to the domain-specific knowledge and the situated classroom interactions, and to point out new expanding area of research (gender and students with special needs).
Overview on Research on Student Learning

Motor learning research has become most and most specialized over the recent years and its contribution to PE seems today scarcely concrete (Rovegno et al. 2001; Siedentop, 1998). One suggestion would be to develop collaboration with colleagues in this sub-discipline to design research able to respond to the questions originated in practice. Unfortunately today there are very few examples of research programs based on long term collaboration. Thus the translation of findings into practice remains unfortunately under the responsibility of practitioners. Yet, it is not the same landscape regarding research on learner cognition. This trend of research, rooted in cognitive approaches of learning within the framework of sport psychology, has a strong background and its contribution to quality PE is significant:

- Cognitive research on student learning has shed light on how students' perception, conception, and motivation are mediating variables affecting the interrelated teaching and learning processes. Lee's mediational model of student thinking and behavior (1997) help to understand how learners bring to the learning environment other aspects of cognition such as attitude, motivation, interest, perceptions of self and others, and the like (Lee, 1997; Solmon, 1996; Pieron et al., 2001a, 2001b; Xiang, McBride & Guan, 2004).

- Almost all surveys show that a large number of adolescents have a positive attitude toward physical education (Piéron et al., 2001a). However, in depth investigation has shed light on the factors which determine positive and negative attitude toward PE. In summary student attitudes are influenced first by the teacher (Hellison, 1995/2003; Silverman & Subramaniam, 1999) then by the school setting (Cothran & Ennis, 1999) and third by the structure of the curriculum as well as the motivational climate (Cothran & Ennis, 1998, 1999; Martinek, 1996/2000; Piéron et al., 2001b).

- Based on the seminal work on intrinsic and extrinsic motivation, researchers have studied the impact of motivation in motor learning during PE lessons (Careiro da Costa, Pereira,
- Gender differences as well as the level of skills in children’s conceptions of competence have also been established (Lee, Fredenburg, Belcher, & Cleveland, 1999; Piéron, Delfosse, et al., 2001; Solmon, 1996).

In summary this line of research rooted in psychological cognitive frameworks provides general considerations about the effect of the connected variables as motivational climate, students' conceptions of ability, students' perceptions of learning and students' beliefs on the teaching and learning processes. It indicates also some directions for teaching. Nevertheless it appears that current approaches to student learning do not take into consideration enough their subjective experience, perception and the meaning they give to the situated context of the teaching/learning environments (Langley, 1997).

**The Need for Research on Student Conceptions Related to Domain-Specific Knowledge**

Studies on learners' domain-specific knowledge were originally developed within the didactique approach (Amade-Escot, 2000b, 2006; Reffugi, 1996, 2003). Within the information-processing framework a broad amount of literature investigated the student knowledge structures in terms of social and operational representations (Bouthier, 1993; Cadopi & Durand, 1996) and later in terms of conceptions (naïve conception, preconception, and misconception). Findings indicate clearly the need for the teacher to diagnose these conceptions to enhance the quality of their teaching, notably when designing the task and the learning environment (Aubert, 2003; Griffín & Placek, 2001; Placek, Griffín, & Dodds, 2001; Refugi, 1999, 2003; Rovegno, Nevett, Brock, et al., 2001, for a review in didactique see Amade-Escot, 2006).
An Expanding Field of Research on Student Learning: Gender and Students with Special Needs and Quality PE

Gender Issues in Physical Education
Comparative analyzes on gender equity in PE in different countries show that this important and problematic issue is today better studied all around the world, but still remains problematic for quality PE (for an overview see, Penney, 2002). Many studies report that physical education has a negative impact on girls’ interests in leading an active and healthy lifestyle. The multi-activity model of physical education fails to give equal opportunity to boys and girls (Cogerino & Ruby, 2002; Cothran & Ennis, 1998; Davisse, 2000; Ennis 1998, 1999; Kirk, 2003; Penney 2002; Williams & Bedward, 2001). Research suggests that equity is not gained merely by choosing between single-sex or co-educational classes. Beyond the report, researchers intend to develop new strategies in teaching and in curriculum development to favor gender equity. This needs to be accompanied by an explicit pedagogy that is actively anti-sexist (Costes & Amade-Escot, 2003; Davisse, 2000; Ennis, 1999; Hastie, 1998b; Kirk, 2003; Silva, Bothelho Gomes & Queiros, 2001; Talbot, 1993, 2003; Verscheure & Amade-Escot, 2004; Wright, 1997, 2000). Observation in everyday practice might help the understanding of the co-construction of gender bias in physical education. Exploratory works conducted in my lab have identified the constraints which interfere on teacher and students interactions when the teacher tries to implement equal opportunities for boys and girls. Findings indicate that subtle differentiations are co-constructed. Girls and boys interact differently with the learning environment provided by the teacher due to their specific representations and gendered identities. Thus the teacher has to face dilemmas like to slow down the pace to sustain girls and/or less-skilled student or to follow the lesson plan. Some assignments given to favor girls participation might interfere negatively with their understanding of the learning task (Costes & Amade-Escot, 2003; Uchan & Amade-Escot, 2004;
Verscheure & Amade-Escot, 2004). More research on the enacted curriculum is needed in the aim of better know the whole process.

**Students with special needs**
In the third millennium, quality PE should be more inclusive. Two populations might be followed: (1) Students with disabilities and, (2) Students at-risk.

**Students with disabilities**
Inclusion of students with disabilities as well as adapted physical education programs has been promoted since the last two decades. The debate about inclusion in APA research sheds light on the need for better teacher education regarding this issue. Strategies for individualizing instruction (adaptation of time, learning environment, material, rules …) should be implemented (Block, 1994; DePaw, 1996, 1997/2000). If these students cannot be described as a homogenous group, studies show that the tendency of teachers to prioritize traditional curriculum (team games for instance) serves to exclude rather than facilitate the full inclusion of many students (Morley, Bailey, Tan & Cooke, 2005; Smith, 2004). Others suggest that a paradigm of normativity prevails in physical education (Fitzgerald, 2005). Challenges have to be overcomed like segregation in special schools. Inclusive physical education is still an issue in some countries and specific implications for PETE are suggested (Miang, 2001; Morley, Bailey, Tan & Cooke, 2005).

**Students at-risk**
Many scholars advocate that PE should contribute more to solving the deleterious social and health issues confronting underprivileged children and youth. The current literature reports on teaching experiences that improve quality of PE in such context (Briot, 1999; Doll-Tepper, 2000; Ennis, 1999; Ennis et al., 1999; Florence et al., 1998; Hastie, & Buchanan, 2000; Hastie & Sharpe, 1997; Hellison, 1995/2003; Martinek, 1996/2000, Martinek et al., 2001, Siedentop, 1998; Talbot, 2003; Ward, 2001). Challenge here is to promote physical education combining
in depth responsibility, socialization and quality content knowledge. As said earlier this challenge needs coalition in the curriculum approach (Hastie & Buchanan, 2000).

Concluding Remarks: Ongoing Dilemmas and Future Challenges

The scope of this review was to identify what are the current trends of contemporary research in physical education in both French and English literature. The focus was to review papers based on contextualized researches with a special attention to how the enacted curriculum is negotiated by teacher and students and how it influences teacher education and student learning. Assuming that teaching and learning are situated actions the review considered that these areas of research contribute to frame quality physical education as an essential component of culturally sensitive education which contribute particularly to personal and social development. Having pointed out the core elements of quality PE and discussed some critical issues the conclusion of this paper identifies what are the remaining challenges and suggests some possible directions for future research.

Literature advocates the complex nature of teaching and the importance of considering education as embedded in social settings with multiple variables affecting learning. Three major ideas emerges from current situated research: (1) Individual, activity and environment are inseparable, (2) Content in physical education must be considered in its multidimensional aspects, and (3) In classroom the didactic relationship evolves with the shared-construction of knowledge. Improving quality in PE must be sustained by accurate strategies of research. It is a tough challenge because it means studying simultaneously teaching, content, enacted curriculum, student learning, and teacher and students interactions in naturalistic environments (Amade-Escot, 2000a, 2006; Kirk & Macdonald, 1998; McCaughtry & Rovegno, 2001; Rovegno, 1998, Rovegno et al., 2001). In that framework the unit of analysis should be the irreducible links between the teacher, the students and the domain-specific
content at stake in the learning environment which has some consequences for future research:

- From a situated framework, the curriculum does not exist as a text but as a set of enacted events in which teachers and students together, negotiate content and meaning within the social context of the school setting. The enacted curriculum should be more studied in diverse contexts including deprived places.

- With the aim of helping students search for meaning as defended by contemporary learning theories researchers have to investigate in depth the real life of content in PE classrooms and to better understand the constraints which weight on the development of quality physical education.

- Rethinking quality for PE is also to recognize the ingenuity of teachers and their craft knowledge in the context of their workplace. Studies which sustain teacher development and PE changes in schools with the aim of developing more meaningfully experiences for diverse students should be encouraged.

- Current research points out the need for considering physical education as an apprenticeship experience in environments centered on the connections between the various elements of the content. A key challenge is in helping teachers to conceive and implement these meaningful environments.

The concepts of "community of practice" in situated learning theory (Kirk, 2002; Lave & Wenger, 1991) as well as that of "Social practices taken in reference" in French didactique (Amade-Escot, 2000a, 2003; Genet-Volet & Desrosiers, 1995; Gréhaigne, 2000; Loquet, 2004; Musard, Robien, Mahut, & Gréhaigne, 2004) give an opportunity to focus on meaningful content and domain-specific knowledge (Griffin & Placek, 2001). This supposes more investigations. Another insight from research concerns the semiotic aspect of the educational interaction. The role of language as a tool for promoting the constructivist
approach to content knowledge has been highlighted by recent research on the debate of ideas in PE classroom (Chevalier, & Mahut, 2002; Nachon, Mahut, Mahut, & Gréhaigne, 2001; Wallian & Gréhaigne, 2004; Wright, 1996). This type of studies should also be encouraged.

In brief, despite some work there is little research on effective teaching of social interactions and constructive learning processes that are part of many curricular models such as discussed in section 2. At the stage where we are, PE research needs content-specific studies embedded in naturalistic settings to provide research base to guide curriculum, teacher education and student learning. The challenge for research will be in the future to better know the teaching principles which create student apprenticeship, and this, at a level of specificity that can give clear guidelines to teachers and at a grain size that does not over simplify the act of teaching as well as the domain-specific knowledge. This research has to be non only content-specific but also specific to grade levels, specific to the diversity of the school settings, and specific to children with learning difficulties, to girls and boys, to children with special needs, and to disadvantaged youth. Research in Physical Education still has a heavy agenda.

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