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Aesthetic aspects in meaning making - an explorative study of dance education in a PETE programme

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The article focuses on how aesthetic aspects of experience are involved in meaning making within an educational setting of body movement practice. The study explores stories of how physical education student teachers feel when participating in a dance lesson, with attention given to aesthetic aspects of embodied experiences in relation to meaning making. The study draws on Dewey's theory of experimental learning. Aesthetic experience is defined as the feeling of wholeness or fulfilment in the transaction taking place. The categorical analysis of content, inspired by pragmatic epistemology analyses, uses the operational concepts of gaps, encounters, and relations. Three categories of stories emerge linked by the resemblance of positive or negative feelings expressed. The aesthetic experiences seem to inform the students of the purpose of what is undertaken, how to value the experience, and how the meaning of the embodied experience is perceived.

INTRODUCTION

The aim of this article is to highlight how aesthetic aspects of experience are involved in the meaning-making process of embodied learning in body movement practices. The analysis of the aesthetic aspects focuses on a specific learning situation in dance education in a physical education teacher education (PETE) programme. Aesthetic experience is defined in relation to John Dewey's educational philosophy and his theory of experimental learning, which notes the transaction between the organism and the environment and how experience and feelings construct meaning making (learning) processes (Biesta & Burbules, 2003).

In this article, the definition of embodiment draws on social constructionist research from a pragmatic perspective (Holstein & Gubrium, 2008; Sparkes & Smitt, 2008; Turner, 2008). Our understanding of embodied learning is grounded in a focus on the moving body constantly involved in transactions with its environment (Dewey & Bently, 1949). Learning is, therefore, seen as the acquiring of a complex set of predispositions to act or ways to respond to the world, or, as in this article, to a specific learning situation in an educational setting (Biesta & Burbules, 2003). The world becomes infused with meaning through the transaction of movements within the body and the environment (Dewey, 1934/2005; Stinson, 1995; Bresler, 2004; Biesta & Burbules, 2003). This study aims to explore aesthetic aspects of experience and, more precisely, how physical education student teachers (PETE students) feel when

participating in a dance lesson, with attention given to what aesthetic aspects of experiences that emerge and how the valuing and direction of these aesthetic experiences can be understood in relation to meaning making and the body movement exercise.

PE RESEARCH AND AESTHETIC EXPERIENCE

Research in physical education (PE) has seldom had the moving body as its point of departure and aspects of aesthetic experience are scarcely explored. The field has, to a large extent, been dominated by questions of the regulations and normalization of children's bodies (Kirk, 2006, 2001), and lately gender differences and unjust educational and social outcomes have been given attention (Evans, Davies & Wright, 2004; Wright, 1996a, b; Gard, 2003; Ohman & Quennerstedt, 2008; Scraton, 1990). Less focus has been on students' embodied experiences in PE classrooms in relation to aesthetic aspects of learning and meaning-making processes and the constructedness of embodiment, the construction of gendered bodies, and the materialization of these bodies (Sparkes & Smitt, 2008). This latter criticism has also been accompanied by a more general criticism of constructionist research, which, according to Turner, tends to neglect our embodied experiences (Turner, 2008). Turner argues that aesthetic judgements cannot be separated from the embodiment of the social beings who are doing the judging. He states that aesthetic judgement is 'essentially bound up with an emotional orientation to reality and cannot be divorced from sentiment'. It is, therefore, possible to argue that PE activities most clearly give rise to aesthetic experiences which accordingly could be examined and communicated, both as aesthetic appreciations and from the point of view of a person's capacity to respond to the world.

THE EDUCATION OF MOVING BODIES IN PE

Gard (2003) has shown an interest in how physical movement can be used to explore meanings and emotions generated by moving bodies. Gard points to how dance can offer both discomfiting and pleasurable experiences which can be used in anti-oppressive teaching, for example in PETE programmes or within schools. In line with this, Maivorsdotter and Lundvall (2009) observe that aesthetic aspects within PE seem to be neglected due to the tradition of viewing learning as being technical or instrumental. By analyzing the aesthetic aspects of a sample of stories written by PETE students, Maivorsdotter and Lundvall show how the described learning processes in multiple ways were connected to the embodied experience and feelings and how these experiences interplayed in the transaction in the new educational setting. In this study, all students started their stories by writing about their previous experiences of that which was the focus of the lesson, namely playing a ball game. Those students who were familiar enough with the ball game, but not too familiar, were the ones who seemed to be most pleased with their experiences of the lesson. Nevertheless, their experiences were not

in a simple way connected to their former experience in terms of being able to perform. A longing to reach a sense of fulfilment seemed to be the driving and cementing force in their learning process and their evaluation of this process. A conclusion was that the students valued their feelings in relation to a former bodily experience, for example as a basketball player or a former gymnast, and towards an embodied feeling of fullness/wholeness in relation to that which was undertaken (Maivorsdotter & Lundvall, 2009).

PURPOSE OF THE STUDY

This study has a pedagogical and movement-oriented focus since research in educational science and PE seldom has had the moving body and meaning-making processes as its point of departure. The purpose of this study has therefore been to explore how aesthetic aspects of embodied experience are involved in meaning making within an educational setting of a PETE programme. The more precise research question is:

How do PETE students feel when participating in a dance lesson, with attention given to what aesthetic aspects of experiences that emerge and how the valuing and direction of these aesthetic experiences can be understood in relation to meaning making and the body movement practice.

THEORETICAL FRAME OF REFERENCE

Our theoretical framework draws on Dewey's theory of experimental learning (Dewey, 1934/2005; Biesta & Burbules, 2003). Dewey's transactional perspective on meaning making focuses on how meaning making is constructed in action—and what influence the experiences have in terms of how they interact in a new situation (Dewey & Bentley, 1949/1991). Meaningful learning is grounded in personal experience and refined through qualified experience, characterized by reflections and feelings (Dewey, 1938/1997). Dewey points to the principle of continuity in which every experience includes something of that which has gone on before and modifies the quality of that which comes after (Dewey, 1938/1997). Dewey also points out that every experience may have qualities, but not all experiences are genuinely or equally educative. The reflected value of every experience, the quality, is judged on the basis of what it moves towards and into (Dewey, 1938/1997). Dewey's interpretation of aesthetic experience includes experiences of different kinds, where the quality of the experience, the feeling of wholeness or fulfilment, will define whether the experience is to be seen as aesthetic or not (Dewey, 1934/2005; Jackson, 1998). In relation to aesthetics as a mode of knowing, aesthetic experience is characterized by certain relations and orders of relations, a coordinated response, which creates a feeling of wholeness (Biesta & Burbules, 2003). The opposite is then the lack of fulfilment where the encounters in the transaction have not been established resulting in not coordinated relations. And as for example Wickman (2006) points out the process of re-

lations and differentiating are emotional, and hence aesthetic experiences.

RESEARCH SETTING

The data was collected from a class of PETE students who participated in a compulsory course in expressive dance, aiming at communication and body awareness. The course, was part of their compulsory study programme, led by a female rhythmic dance teacher. A purposeful sample of PETE class was made (Patton, 2002). All students, except two students who had to leave before the ending of the lesson, participated in the study. Twenty-seven students (seventeen female and ten male), aged between twenty-two and thirty-two, participated, all studying their third year at one of Sweden's higher education institutions. The participation was voluntary, and not part of an exam or assessment. The study is part of a research project collecting stories from different practical courses within the specific PETE programme.

In order to capture the experiences of the students, they were asked to write them down immediately after the lesson in which they had participated. The students were asked to write about their experience of the lesson and how they felt during their participation. The students wrote from a couple of sentences up to one page. This took them between five and thirty minutes.

DATA PROCESSING

All stories were first subjected to a categorical analysis of content (Lieblich et al., 1998). By reading the stories as openly as possible, categories emerged. In the analysis, we focus on the aesthetic aspects of the students' experiences in terms of the expressed feelings. Inspired by pragmatic epistemological analysis (PEA), we also focus on the valuing of the aesthetic aspects that emerge from the experienced feelings through the analytical concepts of gaps, encounters, and relations (Wickman & Östman, 2002a, b; Maivorsdotter & Wickman, forthcoming). This means that the aesthetic aspects of experiences are analyzed by the content and form of the expressed feelings and how the encounter and order of relations emerge, including the analysis of potential gaps between what the individual sets out as a purpose of what was undertaken, the individual's former experience and the encounter of new relations to be added. When the individual is making relations to fill in the gaps, the individual is making meaning of the situation at hand. A gap can be identified by the student's hesitation, or question, or—as in this case—through an expressed feeling.

The aesthetic experiences that emerged in the empirical material have been analyzed in order to understand the valuing and direction of the embodied meaning making that is expressed. In the concluding part of the article, the direction of meaning making is reflected upon in relation to the subject matter undertaken in the context of a PETE programme.

THE PETE STUDENTS' STORIES

The findings of the study will be illustrated by five chosen examples representing the widespread content and form of the stories collected. When reading the stories written by the students, three main categories emerged. One category of stories expressing 'positive' feelings, a feeling of fulfilment, coming out of the embodied experience. This category of stories expresses a relation between the person and what he or she engages in, a feeling of a meaningful transaction between the embodied experience and the environment. A second category of stories describes negative feelings, feelings of alienation and unfamiliarity. These stories express feelings of a disconnection between the individual's purpose and experiences and the lesson under taken, a gap not filled by relations, where the meaning-making and learning process are interrupted. The third category of stories expressed neutral or negative feelings, but where the stories tell of an ongoing meaning-making process. The analysis of the three different categories of stories is presented by the chosen examples below.

Positive feelings - new relations added

The presentation starts with two examples from the category of positive feelings. First is the story of Sandra, who describes herself as having a broad movement repertoire—from football, athletics, handball, figure skating, gymnastics to different forms of fitness training (aerobics and spinning). At the moment, she is doing endurance sports, like biking, swimming, and cross-country skiing. In her story, Sandra reveals how making a specific movement in a certain way leads to the ability to communicate an expression. This stands out as her experienced purpose with the lesson under taken:

I used my body during the lesson as a means of communication. By doing a certain movement and in a special way, I learnt that I conveyed a feeling. This method contributes to creating a wholeness between my body and my personality. I also felt that I became more confident in myself when I was able to express myself with the help of my body.

Sandra, twenty-four years old

Sandra reflects on how this method of movement practice made her feel more confident due to her discovered mode of expression/communication. By doing a specific movement in a certain way, she experienced how she was able to learn how to express herself with her body. The aesthetic aspects of experiences that she provides express agreeable feelings of wholeness between her body and personality and the aspect of feeling confident.

The story tells of how the student construes a relation between what she has set out as the purpose with the lesson and the acquiring of being able to express herself through her body in a new way and feeling safe. In her concluding sentences, she values the elements of experiences that she will use

and continue with. Through the aesthetic judgements, she values how the specific movement practice felt and how this experience gave her meaning-making process a certain direction.. Her story tells of feelings of coordinated relations with the environment, where she has been able to fill the gap between the experienced purpose of the lesson, her former experience and new relations that have been added. An agreeable feeling of both wholeness and confidence is expressed.

In the next example, we meet Bella, who also has a broad repertoire of former experiences of body exercise. She has had an active childhood and has, among other things, danced ballet and played basketball and floorball.

The movement where we combined our day-to-day activities was fun and varied. It felt easy to start the movement exercise (improvisation) due to us having planned our own movements in advance. It felt easy to take on the different roles and movements. I was happy during the movement practice and felt alive and open to developing movements. Some people seemed to be slack and tired, which hindered my level of activity. I learned how to serenely and calmly walk in and dare to perform and show my feelings. It didn't feel hard to express oneself due to the small size of the groups. I found the movement practice safe and fun and, therefore, the performance also felt good.

Bella, twenty-six years old

Bella also expresses pleasurable feelings. She evaluates the moving activity, how it felt fun, varied, and easy, and that she felt happy and alive when performing. From her story, we also learn that the preparation time for the improvisation of the day-to-day activities was important for her performance and the feelings associated with it, namely feeling safe. She writes how some fellow students seemed to be slack and tired, and how this affected her and that her level of activity was hindered by this. As her story goes on, she seems to focus on her embodied experience and the encounter in action: it felt safe and, therefore, the performance felt good. The direction of her valuing and differentiating of experiences is based on her perceived purpose and her positive feelings of fulfilment, the joy of developing movements, and daring to show one's feelings.

Negative feelings creating gaps

The next example comes from the category of stories which describe negative feelings, feelings of alienation and unfamiliarity. These stories are all short in form and content. Tom, who has participated in organized sport since an early age, mainly as a golfer, writes about his experience of the lesson as follows:

This lesson felt awkward. I don't like to express myself and, actually, I have never liked it. It is hard to experience something when one doesn't know what the meaning of the exercises is or where they are heading.

Tom, twenty-nine years old

Tom starts by stating what this lesson felt like. It felt awkward, he doesn't like it, and he has 'actually' never liked things that he has just experienced. He also adds that it is difficult to experience something when one doesn't understand (or experience) the purpose of the movement exercise. He constructs his story around aspects of being negative to the sort of body movement practice that he has encountered during the lesson, and that he has difficulty 'to experience due to the lack of information'. Tom doesn't give any examples of movement practice, other than mentioning the 'exercise'. The story signals a disconnection between the individual and his embodied feeling Tom values elements of experience from his encounter with the moving activity and the educational setting. These feelings revealed to him an unfamiliarity and what he doesn't like. These judgements are examples of a gap in the specific situation, influenced by his uncertainty about the purpose of that which is undertaken. There is no relation emerging from his encounter with the educational setting and its content and no direction that can be interpreted, other than a negative, or not established meaning-making process.

An unclear, but ongoing process

Two short examples illustrate the third category of stories, expressing neutral or negative feelings. The first examples are written by Carl, who used to play ball sports, mainly floorball. He starts his story by evaluating his performance capacity on this day:

*Been very tired today and fairly uncreative.
Improvisation and daring to perform, even though it feels uncomfortable, are some of the things I have developed during the course.*

Carl, twenty-seven years old

Carl constructs a short story where he reveals a gap between his learning of improvisation and feeling both tired and uncreative and the struggle to dare to perform. He has discovered a purpose, but also a gap between what is demanded by the educational setting and his capacity when evaluating the movement practice undertaken. He writes that he has developed his capacity to handle this challenge, although he points out that this still requires some courage because it feels uncomfortable. His feelings tell him about something unfamiliar, which, at the moment, has not yet become a part of him. Carl seems to be beginning to add new relations, or order of relations, to his former experiences.

The second example comes from Angelica, who has been doing football since the age of six, equestrian sport, and folk dancing.

We have been doing lots of different moving practices where the majority have been about different tempos and movements and how to interact with other people. I feel quite ridiculous and uncomfortable with several of the exercises. I have to practise a lot how to perform and do the movements to be able to experience the purpose of the exercise.

Angelica, twenty-one years old

Angelica's story starts like many of the others by telling of the body movement practice, the teaching she has just experienced. Angelica reflects upon the demands on her performing that she has to practise a lot to be able to do the movements; otherwise, she will not be able to experience the purpose of the movement practice. Although she values her feelings negatively, referring to them as ridiculous and uncomfortable, the experiences of the encounter and transaction give a direction to what she defines as her purpose or the meaning of the body movement practice she had undertaken: she has to practise in order to fill the gap between her experiences of performing and what she defines as the purpose of this performing; to 'master' the expression of movements. It's possible to interpret her judgements of the aesthetic experiences as moving towards a meaning-making process, establishing relations of a coordinated response.

DISCUSSION

The study has a pedagogical and movement-oriented focus in order to explore how aspects of aesthetic experience are involved in meaning-making process of embodied learning in body movement practice. Through this study, we have become aware of the wide range of different aesthetic experiences among the group of students whose stories were explored. These aesthetic experiences emerged from the encounters in the transaction, the interaction between the individual, groups of individuals, and body movement practice (the educational setting). But we have also learned how these aspects of aesthetic experiences are embodied and differentiated in types of positive or negative feelings and how these feelings seem to inform the direction of what the student defines as the meaning of the perceived embodied experience.

Through the categorical content analysis, three categories emerged, where each category is linked by the resemblance of feelings expressed; one category of stories expressing 'positive' feelings, a second category expressing negative feelings, feelings of alienation and unfamiliarity, and a third category expressing neutral or negative feelings. The analysis of these experienced feelings, inspired by the pragmatic epistemological analysis, opened up for a continued exploration of the student's evaluation and differentiation of means of mean-

ing, where the direction and the value of the experience could be understood on the basis of what the meaning making seemed to be moving towards or into.

Aspects of aesthetic experiences

The category of stories containing positive embodied feelings tells of a feeling of wholeness and confidence, where a relation is created in the encounter and transaction between the body movement practice and the individual. The valuing of the experienced feeling gives a direction where, in the eyes of the student, the embodied experience has a purpose and the meaning making becomes clear. In contrast, the negative feelings express an embodied feeling of unfamiliarity (awkwardness and difficulty) or that the encounters cause a feeling of displeasure (anxiety). These negative feelings, often expressed at the end of the stories, seem to determine whether the student is able to find a purpose to that which has been undertaken, to relate to former embodied experience and/or to add new relations. The aesthetic experiences, seem to tell the students how to value and judge the quality of the experience, influencing the evaluating and differentiating process of the direction of the making meaning. This process has been shown elsewhere in research done by Wickman, (2006), Jakobson & Wickman (2008), and Maivorsdotter & Wickman (forthcoming). One conclusion of the study is that the gap between new relations to be added to the former experiences was neither discovered nor filled by those students experiencing only negative feelings. In the analysis the gap was noted by the feelings expressed. The meaning and the continuation of what it moved towards became unclear, the encounter of the individual and the environment was not coordinated (Biesta & Burbules, 2003).

Qualified experiences

The diversity in the form and content of the stories in this study differs greatly to the study by Maivorsdotter & Lundvall (2009) based on stories written by PETE students participating in a ball-game lesson. None of the students in this study recall former experiences in relation to the body movement practice they had just participated in. Dewey emphasizes the principle of continuity, in which every experience includes something of that which has gone on before and modifies the quality of that which comes after. In this study, none of the students related their experience of participating in the moving activity to earlier forms of embodied experience, although, for example, both Sandra and Bella described a broad movement repertoire/background. How come they didn't put forward their former experiences in their reflections? One answer could be that in the context of a PETE class, the lesson content of expressive dance could not function as a starting point in relation to the students' earlier forms of movement experiences.

In his story, Tom tells about something feeling awkward. A handful of stories points to the fact that this type of course differs from other courses in the PETE programme. Bella and Carl summarize their stories by reflecting on

'courage'. Why the feeling of needing courage, in relation to the moving activity of dance, seems to be so central is not developed in their stories. But the inexperience, the unfamiliarity, stressed may give a reasonable explanation for the need for courage. Encountering a new form of body movement practice, where to create and expand movements from non-distinct, technically based sports movements (often masculine connoted), seems to create feelings questioning the purpose of what has been undertaken, and in a provocative way, challenge several of the PETE students, and their ambition to 'master' the task.

The difficulties of not finding an immediate purpose of the lesson undertaken can be reflected through the logic of sport. In the dance lesson the students meet a movement culture without competition and ranking as its fundamental principle. Even though dance has been part of the PETE training programme since the beginning of the 1900s, and still has a defined place in the school syllabus of PE and Health, it has mostly been connected to the female PE culture, which disappeared gradually after the 1970s (Carli, 2004). Through this study it is possible to claim there is a need for naming and reflecting on embodied learning and meaning-making processes in PE.

CLOSING THOUGHTS

As PE and meaning making processes have been less studied in the field of PE, the value of collecting empirical data on how to communicate and share aspects of learning processes have been guiding the choice of method. Therefore, the approach to collecting data has been through stories. By doing this, the reflected experiences, and not the transaction 'in action', have been able to analyze. What is gained is the possibility to explore the mode of knowing, the meaning making, through formulated reflections.

The aim of the article has been to highlight how aesthetic aspects of experience are involved in the meaning making within an educational setting of body movement practice. By introducing the exploration of embodied feelings as a mode of knowing, the study contributes to the examination of meaning-making and learning processes in the field of PE. In this study, the students' awareness of being able or unable to communicate with their bodies is interesting for further research on PETE students. But perhaps more interesting is the need to continue to explore methods of examining the communication and verbalization of learning and meaning-making processes within the field of physical education and embodied learning, and to be able to qualify these learning and meaning-making processes.

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References

- Biesta, G. J. J. & Burbules, N. C. (2003) *Pragmatism and educational research* (Lanham, MD, Rowman & Littlefield).
- Carli, B. (2004) *The making and breaking of a female culture - the history of Swedish physical education 'in a different voice'*. (diss) (Gothenburg University).
- Bresler, L. (2004) "Dancing the Curriculum: Exploring Body and Movement in Elementary Schools", in L. Bresler (ed.), *Knowing Bodies, Moving Minds: Towards Embodied Teaching and Learning* (Norwell, MA: Kluwer Academic Publishers).
- Dewey, J. (1934/2005) *Art as Experience* (New York: Perigee Books).
- Dewey, J. (1938/1997) *Experience and Education* (New York: Touchstone).
- Dewey, J. & Bentley, A. F. (1949) *Knowing and the Known* (Boston, MA: Beacon Press).
- Evans, J., Davies, B. & Wright, J. (2004) *Body Knowledge and Control: Studies in the Sociology of Physical Education and Health* (London: Routledge).
- Gard, M. (2003) "Using Dance in an Anti-Oppressive Teaching", *Educational Review*, vol. 55, no. 2, pp. 211–223.
- Holstein, J.A. & Gubrium, J.F. (2008) *Handbook of Constructionist Research*, (New York: Guilford Press).
- Jackson, P.W. (1998) *John Dewey and the lesson of art*. (New haven, C, T, Yale University Press).
- Jakobson, B. & Wickman, P-O. (2008) "The Roles of Aesthetic Experience in Elementary School Science", *Research in Science Education*, vol. 38, no. 1, pp. 45–65.
- Kirk, D. (2001) "Schooling Bodies through Physical Education: Insights from Social Epistemology and Curriculum History", *Studies in Philosophy and Education*, vol. 20, no. 6, pp. 475–487.
- Kirk, D. (2006) "Learners and Learning in Physical Education", in David Kirk, Doune Macdonald, and Mary O'Sullivan (eds.), *The Handbook of Physical Education* (London: Sage), pp. 189–190.
- Lieblich, A., Tuval-Mascinach, R. & Zilber, T. (1998) *Narrative Research: Reading, Analysis, and Interpretation* (Thousand Oaks, CA: Sage).
- Maivorsdotter, N. & Wickman, P-O. (forthcoming) "Skating in a Life Context: Examining the Significance of Aesthetic Experience in Sport Using Practical Epistemology Analysis". *Sport, Education and Society*.
- Maivorsdotter, N. & Lundvall, S. (2009) "Aesthetic Experience as an Aspect of Embodied Learning: Stories from Physical Education Student Teachers". *Sport, Education and Society*, vol.14, no. 3, pp. 265–279.
- Patton, M. (2002) *Qualitative Research and Evaluation Methods* (3rd edn., London: Sage Publications).
- Scraton, S. (1990) *Gender and Education* (Geelong: Deakin University).
- Sparkes, A. C. & Smitt, B. (2008) 'Narrative Constructionist Inquiry', in J. A. Holstein and J. F. Gubrium (eds.), *Handbook of Constructionist Research* (New York: Guilford Press), pp. 295–314.
- Stinson, S. (1995) "Body of Knowledge". *Educational Theory*, vol. 45, no. 1, pp. 43–54.
- Turner, B. S. (2008) "The Constructed Body", in J. A. Holstein and J. F. Gubrium (eds.), *Handbook of Constructionist Research* (New York: Guilford Press), pp. 493–510.
- Wickman, P-O. (2006) *Aesthetic Experiences in Science Education: Learning and Meaning-Making as Situated Talk and Action* (Mahwah, NJ: Lawrence Erlbaum Associates).
- Wickman, P-O. & Östman, L. (2002a) "Learning as Discourse Change: A Sociocultural Mechanism", *Science in Education*, vol. 86, no. 5, pp. 601–623.
- Wickman, P-O. (2002b) "Induction as an Empirical Problem: How Students Generalize during Practical Work". *International Journal of Science Education*, vol. 24, no. 5, pp. 465–486.
- Wright, J. (1996a) "The Construction of Complementary Physical Education". *Gender and Education*, vol. 8, no. 1, pp. 61–79.

- Wright, J. (1996b), "Mapping the Discourses of Physical Education: Articulating a Female Tradition". *Journal of Curriculum Studies*, vol. 28, no. 3, pp. 331–351.
- Öhman, M. & Quennerstedt, M. (2008), "Feel Good – Be Good: Subject Content and Governing Processes in Physical Education". *Physical Education & Sport Pedagogy*, vol. 13, no. 4, pp. 365–379.