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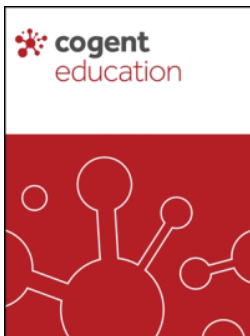
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EDUCATIONAL ASSESSMENT & EVALUATION | RESEARCH ARTICLE

“Things that are taken from one culture don’t necessarily work well in another culture.” Investigating epistemological tensions through preservice teachers’ views on the assessment of a games course in Swedish PETE

Erik Backman^{1*}, Anna Tidén², Dan Wiorek³, Fredrik Svanström² and Lars Pihl²

Abstract: As a part of the discussion about how movement knowledge is valued in physical education teacher education (PETE), issues of assessment have been brought to the fore. Studies have shown that how and when movement knowledge is assessed is strongly culturally dependent and based different epistemological orientations. The aim of this paper is to analyse and discuss how preservice teachers in Sweden perceive assessment in an invasion games course according to the games performance assessment instrument (GPAI). The empirical material presented in this study is based on a web-survey carried out at the end of the invasion games course where the participants were asked to write comments of how they experienced GPAI and its relevance in school physical education. The findings suggest that the preservice teacher experience prediction and measurement of appropriate and non-appropriate behaviours in GPAI as problematic from a didactic perspective. The ideas of “correctness” and “appropriateness”, which are

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PUBLIC INTEREST STATEMENT

In the study reported in this paper we investigated how preservice teachers studying physical education teacher education (PETE) in Sweden perceive assessment in an invasion games course using the Games Performance Assessment Instrument (GPAI). The preservice teachers participated in a web-based survey carried out at the end of the invasion games course by responding to questions about how they experienced GPAI on the course and its relevance in school physical education. The result of the study shows that some preservice teachers felt GPAI was problematic. They disliked students being assessed on their “correct” or “incorrect” actions in a game. These preservice teachers also felt that measuring game performance according to “correctness” sends the wrong signals about what forms of knowledge young people should strive to develop through playing games in physical education. We discuss these results in relation to different knowledge traditions within the teaching of physical education in Sweden and other countries.

fundamental in GPAI, is discussed in the relation to the socially critical constructivist epistemology that underpins Swedish PETE.

Subjects: Physical Education; Higher Education; Teachers & Teacher Education

Keywords: games performance assessment instrument; movement knowledge; physical education teacher education; epistemology

1. Introduction

A global tendency in physical education teacher education (PETE) is that courses focusing on students' knowledge of and about movement (in this paper further mentioned as *movement knowledge*) have witnessed a significant reduction during the last few decades (Kirk, 2010). The limited time for knowledge courses in PETE has led to a discussion of what type of content and what abilities should be prioritised in PETE courses (Backman & Barker, 2020; Herold & Waring, 2017; Iserbyt et al., 2017). While most scholars agree that the development of students' teaching ability should be a priority for PETE, there are different ideas with regards to the meaning and function of movement knowledge for developing teaching ability.

Some researchers argue that it is important to test skill proficiency in movement knowledge courses in PETE (see e.g., Baghurst et al., 2015). There are also those who suggest that physical performance should not be the focus in movement courses but rather critical reflection on the purpose of movement in physical education (see e.g., Capel et al., 2011). In addition to these somewhat dichotomised positions, there are also calls for a balanced discussion of the meaning of movement knowledge in PETE (see e.g., Herold & Waring, 2017).

As a part of the discussion about how movement knowledge is valued, issues of assessment have been brought to the fore. Studies have shown that *how* and *when* movement knowledge is assessed is strongly culturally dependent (Backman & Pearson, 2016; Siedentop, 2009; Tinning R, 2010). In our overall efforts to understand how assessment of movement knowledge relates to epistemological understandings (Backman & Larsson, 2016; and Backman, Nyberg & Larsson 2020) we have been inspired by Tinning R's (2006) work that explores how different views on the meaning of PETE courses relates to various epistemological understandings. In some movement knowledge areas, mostly within game pedagogies, assessment-models have been developed and investigated in PETE (Ayvazo et al., 2010; Forrest, 2015; McNeill et al., 2008). One of the more established models for the assessment of games is the games performance assessment instrument (GPAI, see Araújo et al., 2016; Arias-Estero & Castejón, 2014; Harvey et al., 2010; Memmerth & Harvey, 2008; Oslin et al., 1998). In this paper we will show how preservice teachers in Sweden perceive assessment in an invasion games course using GPAI.

The purpose of the paper is twofold. Firstly, we aim to thematically analyse preservice teachers' experiences of taking part in an invasion games course according to GPAI at one Swedish university that teaches PETE. Secondly, we discuss the preservice teachers' experiences in relation to different epistemological views on the meaning of PETE courses. In a discussion where the perspectives are often limited to researchers and/or PETE educators, important insights can be gained from students' voices about the forms of knowledge that are important for future physical education teachers.

2. Movement knowledge in PETE

Movement knowledge is broadly conceptualised and comprises many different movement activities and sports. Seen as content in PE and PETE, some movement practices and sports are global while some are unique cultural expressions. Viewed as a knowledge base in PETE, movement knowledge courses are taught and assessed differently in different countries. This makes general descriptions problematic (Kirk, 2010; Siedentop, 2009; Tinning R, 2010). In some countries, the selection of activities in movement courses in PETE is strongly related to the movement activities of physical

education as taught in schools, while in other countries the relationship between the movement knowledge courses in PETE and in school physical education is more diffuse (Backman et al., 2019).

Movement knowledge has also been conceptualised in different ways. “Motor ability”, “motor skill competence”, “skill” and “movement capability” are some of the different concepts used; each is underpinned by different epistemological perspectives (Barker et al., 2018; Nyberg et al., 2019). In Sweden, where this study is contextualised, assessment of movement knowledge has been complex and ambivalent. As a reflection of the international debate displayed above, a prominent issue in the discussion has been whether to assess PETE students’ physical performance (that is, their movement ability) and/or whether to assess their ability to teach (Backman & Pearson, 2016; Larsson et al., 2018; Maivorsdotter et al., 2014).

3. Game pedagogies: models for teaching and assessment

During the last few decades, various models for games have been developed that are frequently used in school physical education and in PETE. One of the most widespread and established is Teaching Games for Understanding (TGfU, see Bunker & Thorpe, 1982). In TGfU, the idea has been to build the learning of games around small groups, problem-based pedagogy, student-centred decision-making, peer teaching and in-depth understanding of the game (Forrest, 2015). The development of teaching models and understanding is not as developed in individual movement activities and sports as it is in team activities (Backman et al., 2019). Parallel with the introduction of pedagogical models for games such as TGfU, different models for game assessment have also been developed. For example, preservice teachers’ teaching abilities focusing on time-management, the delivery of games and questioning strategies have each been assessed (Forrest, 2015; McNeill et al., 2008). One well-established model for game assessment is the Games Performance Assessment Instrument (GPAI, see Oslin et al., 1998).

The idea with GPAI is that assessment of three categories of games—*invasion, net/wall and field/run/score*—should be carried out in their authentic context instead of as de-contextualised skills. According to Oslin et al. (1998: 231), GPAI was “designed to measure game performance behaviours that demonstrate tactical understanding, as well as the player’s ability to solve tactical problems by selecting and applying appropriate skills”. Criteria such as decision-making, skill execution, support and adjust are assessed during short games, sometimes through peer assessment (Oslin et al., 1998). GPAI has proven to be more common in physical education compared to competitive sport outside PE (Arias-Estero & Castejón, 2014).

Although studies of GPAI have shown that it is more common for students to be assessed after the game (using video recording), rather than during it, Arias-Estero and Castejón (2014) have argued for more assessment to be performed by peers in live situations. GPAI routinely observes offensive qualities, however Harvey et al. (2010) have shown that it is well suited to assess defensive qualities as well. Their study also showed that match-orientated learning often led to quicker reactions among participants. Araújo et al. (2016) have recommended that variation in participants’ skill levels should be considered in future studies using GPAI. In order to develop GPAI, Memmerth and Harvey (2008) emphasise the importance of giving students enough time to learn the model and that the criteria for assessment are clearly defined.

In the Scandinavian countries of Sweden, Norway and Denmark, PETE educators have been inspired by TGfU in their development of pedagogic models for invasion games (Halling et al., 2009; Teng, 2013). In the Swedish PETE context, systematic use of internationally established models of assessment in games, such as GPAI, have not previously been implemented.

4. Movement knowledge as epistemology

For the purpose of discussing preservice teachers’ experiences of GPAI in relation to different epistemological views on the meaning of PETE courses we have taken notice of Tinning’s work on theoretical orientations within PETE (2006). Tinning R (2006) has developed a model (see Table 1

Table 1. A model of theoretical orientations within PETE (Tinning R, 2006, p. 376)

Orientation	World view	Purpose of teacher education	Human interests	Research paradigm
Behaviouristic	Objective reality. Science for a better world	Prepare skilled technicians of teaching.	Technical. Prediction. Control.	Empirical-analytical. Natural science.
Personalistic	Multiple realities. Subjectivity meaning	To develop the individual teacher as a person.	Practical. Interpretive understanding.	Hermeneutic. Interpretive. Phenomenological.
Traditional/craft	Reality exists in “the field”, not in theory. Practice is best.	Prepare teachers for the current system.	Practical. Technical mastery.	Simple descriptive modelling.
Critical inquiry	Reality is socially constructed. Social inequities, power and oppression.	Challenge the school system where necessary.	Critical. Liberation. Emancipation. Critical theory.	Action research. Case study. Feminist. Poststructuralist.

below) in which dominant teacher orientations are viewed in relation to world views, the purpose of teacher education, human interest and research paradigms.

As GPAI in its original form includes assessment of correct and appropriate actions during games (Oslin et al., 1998), the model is based on the idea that there are practical behaviours on the field that can be *objectively predicted* and *empirically analysed*. In GPAI, both the observer and the observed are expected to master a number of *practical and technical* abilities. In that sense, it has a great deal in common with the behaviouristic and the traditional/craft orientation in Tinning R’s (2006) model above. To *critically question* the idea that only *one* behaviour is the preferred one, or that appropriateness in a game situation is in fact a *social construction* (as in the personalistic and the critical inquiry orientation), would be in fact to question the whole idea of GPAI and make it impossible to use in practice.

In general, Swedish PETE is positioned within a constructivist epistemology in the sense that context and culture are considered important elements of learning (Backman & Larsson, 2016). For example, the Swedish and Scandinavian literature on invasion games as well as on the net/wall-games that are being used in Swedish PETE (Halling et al., 2009; Teng, 2013) takes a similar constructivist approach to that of Forrest (2015). Other literature that is widely used in Swedish PETE is underpinned by a social constructivist perspective (Larsson, 2016; Larsson & Meckbach, 2012). This means that Swedish PETE students learn to ask questions such as: “Who benefits from this way of teaching invasion games?”, and “What does a correct and appropriate action in an invasion game mean?” Given the expected differences in epistemological assumptions, how is an assessment instrument like GPAI perceived by preservice teachers in Sweden? This analytical question lies behind our interest in investigating Swedish preservice teachers’ experiences of taking part in an invasion games course according to GPAI.

5. The context

5.1. Movement courses in the Swedish PETE context

There are seven universities in Sweden offering teacher education in PE up to the upper secondary level (for students aged 15–18) and one university offering it up to the primary, or compulsory, level (for students aged 7–15). The upper secondary school programme (being studied by the preservice teachers in this study) takes between five and five and a half years to study and is divided into three major areas: subject knowledge, general pedagogy, and practicum. Roughly described, the courses in subject knowledge in PE can vary from one and a half to two years (two years at the investigated university). The number of movement knowledge courses a programme

should have is not regulated at a national level and therefore varies between the PETE universities in Sweden (Backman & Larsson, 2016). Many of the PETE educators in Sweden that are involved in the teaching of games are also part of a Scandinavian network of game pedagogy (Halling et al., 2009). In general, it can be said that game pedagogy taught at Swedish PETE institutions builds on common constructivist ideas.

5.2. The invasion games course

Although school physical education at the school level in Sweden is organised by learning area rather than sport activity (Swedish National Agency of Education, SNAE, 2011a, 2011b), the movement knowledge courses at the PETE level are, at some universities and in some ways, organised by sport activity (Backman et al., 2019a). The invasion games course investigated in this study comprised three ECTS¹ (18 workshops of 90 min each) and involved six workshops each of football, handball and basketball. In this course, GPAI was one of several parts of the teaching and assessment. The course took place during the preservice teachers' first semester and was chosen for the study because of the variety of invasion games included in the course. The overall purpose of the course was for students to develop their ability to play invasion games, to teach invasion games and to reflect on the school-related and didactical aspects of invasion games. The course used elements of different instructional models, including direct instruction, peer teaching and cooperative learning (Metzler, 2011).

6. Method

6.1. Participants

The study presented in this paper started in September 2016, when 140 preservice teachers started the PETE programme at the investigated university in Sweden, and ran until December 2016. After being divided into five different groups, in which the number of students ranged from 22 to 31, all of the preservice teachers received information about the study. However, due to difficulties with implementing the study into the course schedule, one group was excluded early in the process, leaving four groups and 118 preservice teachers able to take part. Of these 118 students, 93 completed at least two of the three invasion games included in the course and performed peer assessment according to GPAI (Oslin et al., 1998). The empirical material presented in this study is based on a web survey (with specific questions about GPAI) carried out at the end of the course where the participating preservice teachers were asked to evaluate the course. As part of the evaluation, the preservice teachers were asked to write comments (no word limit) about: a) how they planned to use GPAI when working as PE teachers in schools and, b) how they perceived being assessed according to GPAI. There were a total of 88 comments (34 on question a and 54 on question b) written by 58 preservice teachers. These comments are the empirical material analysed in this study. As the comments were written in Swedish, these have been translated by the authors. In the presentation of the results, the comments are coded to running numbers which represent the 93 preservice teachers participating in the study.

6.2. The implementation of GPAI

Before the collection of score sheets at the end of the course, the preservice teachers received training in GPAI. Of the total number of 18 workshops in the course, the preservice teachers practiced carrying out peer assessment according to GPAI (as described by Oslin et al., 1998) at two of the workshops for each game. During one of these GPAI practice workshop (90 min duration) each preservice teacher observed one peer participating in several games each lasting at least seven minutes. Qualities such as skills execution, decision-making and support were assessed on a score sheet according to predetermined definitions (Oslin et al., 1998: 233). The matches during the six GPAI workshops were played with small-sided teams (four players in basketball, five players in handball, six players in football). After each match, the preservice teachers practiced calculating indexes for game involvement, decision-making, skill execution and game performance (Oslin et al., 1998). At the end of the whole course, after the 18 workshops had been completed, two extra workshops of 90 minutes duration were held for

GPAI examination, after which the score sheets were collected by the PETE educators responsible for each group in the course. These two final occasions for GPAI examination were followed up by one final interaction, when each participating preservice teacher filled in the web-based university course evaluation.

6.3. Analysis

The analytic approach to the study is based on a critical constructivist orientation (Burr, 2003) and inspired by what Alvesson and Sköldböck (1994) describe as abduction, that is, an oscillation between empirical material and theory. The analytic process was divided into two steps. Firstly, we conducted a thematic analysis of the preservice teachers' written comments (Braun et al., 2017). In the process of identifying patterns, we tried to follow what has been described as different levels of qualitative analysis (Braun et al., 2017). The collected material was read through multiple times and comments with a similar meaning were identified and grouped into categories which were then labelled with different codes. We also carefully examined those parts of the transcripts that did not fit into the identified categories. Patton (2002) describes these two processes as convergence and divergence. The analysis was guided by the questions: "How do the participating preservice teachers perceive the relevance of GPAI in school PE?" and "What are the participating preservice teachers' experiences of being assessed with GPAI?" The analysis of the responses to these two questions resulted in the following themes:

- 1.The call for something else (question a),
- 2.Exposure and unfairness (question b),
- 3.Transparency in GPAI (question b),
- 4.Observing and documenting in action (question b).

The number of comments addressing each theme is indicated in parentheses (as a proportion of the total number of comments on each question). The purpose of this paper is not primarily to display the domination or marginalisation of certain ways of experiencing GPAI. Rather it is to discuss the epistemological assumptions underlying GPAI that are reflected in the preservice teachers' experiences. However, the number of written comments related to each theme says something about the representativeness of each theme in relation to the total material. As a second step in the analytic process, we tried to elucidate how the theoretical orientations in Tinning R's (2006) model are reflected in the identified themes and what this says about the epistemological assumptions underlying the construction of GPAI as well as those of the preservice teachers taking part in the study.

6.4. Ethical considerations

Inspired by Hayes et al. (2008), the authors of this paper (of which the second, third, fourth and fifth authors were also PETE educators on the investigated course) were very much aware of the complexity and dependency involved in investigating their own students. All of the participating preservice teachers received informed consent information prior to the study. In addition to the written information, the preservice teachers were also orally informed that their participation was voluntary and that they could cancel their participation in the study at any time without negative consequences for them. Cancelling participation would mean that comments made on the web-based course evaluation would not be used as empirical material. As the preservice teachers could have felt pressurized to take part if asked by the PETE educator leading their own group, the informed consent (both oral and written) was presented to each of the four participating groups by a PETE educator who was not teaching that specific group. In this way, we have tried to mitigate the sensitivity surrounding some of the authors' dual role as researcher and educator. The authors of the study have followed the ethical guidelines regarding informed consent, anonymity,

confidentiality, consequences and the role of the researcher as stipulated by the Swedish Research Council (Swedish Research Council, SRC, 2015).

7. Findings

The thematic analysis of the preservice teachers' comments resulted in the four themes presented below. The number connected to each quote represents one of the 93 preservice teachers participating in the study.

7.1. *The call for something else (18 of 34 comments on question a)*

Some preservice teachers thought GPAI had developed their ability to play invasion games as well as their analytical ability. One preservice teacher said that s/he “had got a concrete view of how individuals act in the game, both by players taking initiatives and how they were included by other players” (43). Another preservice teacher emphasised that the GPAI project had led to “an increased understanding of the game and certain qualities of the game, such as giving support and to show that you are playable” (44).

Despite the occasional positive comments about GPAI for the purpose of developing understanding of the game, one of the dominant impressions from the analysis was the doubt expressed about using GPAI as grounds for grading in school. One student mentioned that “I would like to use GPAI to motivate pupils and to give them feedback, but I wouldn't grade them using only this method” (31). Another student wrote that “the way that GPAI is structured today I wouldn't use it for grading in physical education. It doesn't consider movement without the ball which is an important part of the game” (28). Below follows a third comment, also with doubts about using GPAI in school:

I think GPAI can serve a purpose for us [preservice teachers] to practice analysing games but I don't believe in using it to assess pupils in school. There are other ways for making the assessment more individual, and where aspects like which team you belong to doesn't matter as much [as in GPAI]. (89)

The comments within this theme indicate that although the preservice teacher experience saw benefits with GPAI (such as, for example, giving feedback and analysing games), several of them wanted to use another kind of information as grounds for their grading. These and other comments in the material highlight an implicit request for “something else”, that is, another tool for assessment. What this “other” way of assessing games in school could be was never articulated more specifically. This unarticulated call for something else was also expressed by preservice teacher 34 who wrote that, “perhaps a more developed version of GPAI could be used as some kind of basis for grading”. Except for GPAI the preservice teachers in this study named no other concepts or tools that they would use to talk about games assessment.

7.2. *Exposure and unfairness (13 of 54 comments on question b)*

Another dominant impression from the analysis was the feeling of exposure and unfairness that several preservice teachers experienced with GPAI. Some commented that their classmates who were already skilled ballplayers because they played football, basketball or handball during their leisure time would benefit from the GPAI assessment compared to those who had no prior skills in these games. A few preservice teachers also felt, as expressed in the quote below, that it was unfair that skills acquired before entering PETE would reward some preservice teachers on the course and not others.

I think that how skilled you are in a certain sport affects your attitude during the assessment. For example, I'm not as good in basketball and handball as I am in football. When I didn't succeed in football I was more disappointed, irritated and angry with myself compared to when I failed doing something in the other two sports. I think that was quite unfair (67).

Another dimension of unfairness was claimed by preservice teacher 90 who felt that “low-skilled students would perhaps benefit from an instrument such as GPAI”. Different aspects of unfairness

in the GPAI assessment was something that was expressed by several students. In the comments about unfairness there was also a call for *preciseness* as with preservice teacher 75 who wrote that “I doubt whether it [GPAI] is precise enough to use for grading”.

A dominant impression also highlighted the pressure and exposure some preservice teachers felt having their peers both assessing their skills in invasion games and watching them from the audience. One student wrote that “in our sports class I think most of us can take it, but still, I think many [preservice teachers] experience it as being stared at” (23). Another preservice teacher pointed out how assessment situations can lead to low self-confidence: “I thought it [GPAI] led to a lot of pressure and low self-confidence in certain situations” (66). Yet another preservice teacher thought that some players might “hide themselves during the game instead of running the risk of failing” (86). As the comment below indicates, peer assessment using GPAI could also be experienced as beneficial as long as it is done under certain conditions:

It can be good for the pupils to help each other develop the ability to play invasion games – as long as it takes place in a relaxed way and without too much pressure to compete (14).

However, the general impression from the preservice teachers’ comments was that they never made clear how a *pressing situation* in the assessment of invasion games could form itself in more detail, or what peer assessment under *more relaxed conditions* could mean. It appears that what is being requested is a form of assessment that is fair, that does not merely measure previously acquired skills, and which does not involve too much pressure or exposure for the preservice teacher being assessed.

7.3. Transparency in GPAI (10 of 54 comments on question b)

Several preservice teachers perceived GPAI made the assessment of invasion games transparent and clear. One preservice teacher, who was positive about GPAI, thought that it gave “a confirmation of the achievement” (90). Another preservice teacher who was more sceptical felt that “the only purpose [of GPAI] was for teachers to keep their back free” (39). The expression “*black and white*” was often used to refer to the transparency of the assessment in GPAI. One preservice teacher wrote that “you can see the ability to play in black and white, but it leaves out certain aspects” (29) while another wrote that a motive for using GPAI in a school setting could be “for the pupils to get it in black and white how they move and how much they participate in the game” (15). There were also those, as in the quote below, who thought that the black and white dimension of GPAI did not capture the complexity involved in invasion games.

GPAI is black and white without nuances and it would be difficult to base the grading only on GPAI as grading should be based on the ‘whole’ and not on the number of errors. Much of what could be considered inefficient or inappropriate could also be considered as valuable depending on the situation. For example, one player could deliberately ‘miss’ a pass, which could be assessed as an inefficient skill regarding receiving, but which could lead to an opening for other attacking players on the team. (40)

In the quote above, the preservice teacher describes a complex interplay between players on an attacking team which could lead to an incorrect peer assessment depending on how the situation is interpreted and documented. The description of GPAI as “black and white without nuances” involves partly a critique of the bluntness built into GPAI, and partly a resistance to the quantitative measurement of content knowledge in invasion games. The element of transparency within the GPAI assessment was, therefore, perceived as both a strength and a weakness.

7.4. Observing and documenting in action (11 of 54 comments on question b)

Some preservice teachers were quite specific in their criticism of the GPAI model. They pointed to the peer documentation in GPAI as especially problematic. One preservice teacher, who was generally positive in his/her comments on GPAI, stated that “there are so many aspects involved, for example, which student does the peer assessment, what team you are placed on, and so on”

(16). One thing that appeared to be especially problematic was for the observer to perform the observation and complete the documentation at the same time and “*in action*”. One preservice teacher wrote: “as an observer, it’s hard to fill in the assessment sheet in such a short time and get it correct. (...) I don’t think the results that we filled in are reliable enough” (33). Another preservice teacher felt that “a game is far too complex to document in action” (47). This questioning of the correctness and trustworthiness of the documentation was claimed to be due to the short time allocated for observation and documentation. One preservice teacher questioned how a single PE teacher was supposed to manage the time restrictions. He/she stated that “GPAI is difficult enough to use in the observation of one single player. I can’t imagine what it would be like using it in a whole class” (39). As an answer to that critique yet another preservice teacher suggested that “in order to get it correct, the observation and documentation should be done afterwards, using filmed material” (44).

7.5. Summary and analysis of the findings

The preservice teachers’ views on the relevance of using GPAI in schools (theme one) and their experience of being assessed according to GPAI (themes two, three and four), show significant variation and it is therefore difficult to generalise about their perceptions of GPAI. Some comments were mainly positive, others were mainly negative, and some gave constructive suggestions for improvement.

A majority of the comments on the relevance of GPAI for the purpose of assessment in school physical education contain doubt and scepticism (theme one). These comments suggest that the prediction and measurement of appropriate and non-appropriate behaviours in GPAI is experienced as “wrong” by many preservice teachers in the study. Some of the preservice teachers could identify what aspect of GPAI they find problematic from a didactic perspective (for example, that GPAI does not acknowledge movement without the ball as much as movement with the ball) but they could not formulate solutions to the problem.

Critique towards GPAI is also displayed in themes two, three and four (perhaps most clearly in themes two and four while theme three display more mixed attitudes). The ideas of “correctness” and “appropriateness”, which are fundamental in GPAI (Oslin et al., 1998) as well as in other instruments for measurement of content knowledge (see e.g., Ward & Ayvazo, 2016), reflects a *behaviour analytic epistemology* (Tinning R, 2006). The claims imbued in GPAI as a descriptive model to work in any game situation reflect a *traditional/craft epistemology* (Tinning R, 2006) that stands in contrast to viewing games as cultural and contextual phenomena. The general impression is that the preservice teachers’ critique towards GPAI is an expression of the social critical constructivist epistemology that underpins Swedish PETE.

However, from the experience of unfairness (theme two), and the search for transparency and preciseness (themes three and four), it seems that many of the preservice teachers have adopted the notion that assessment instruments should reflect an objective reality. Few of the preservice teachers acknowledge the dimension of *uncertainty* that follows a subjectivist and social constructivist view on the assessment of games (see exceptions in theme three and a further discussion of uncertainty in Backman & Barker, 2020).

When considering all four themes in the result in relation to Tinning R’s (2006) model of epistemological orientations in PETE it becomes clear that some basic ideas underpinning GPAI stands in conflict with the critical social constructive orientation that permeates Swedish PETE in general (Backman & Larsson, 2016; Larsson, 2016; Larsson & Meckbach, 2012), as well as game pedagogy in Swedish PETE more specifically (Halling et al., 2009; Teng, 2013).

The risks following a behaviour analytic and a traditional/craft epistemology in game pedagogy is that issues about learning games will be overshadowed by issues of assessment and grading of games. The ambition to develop precise assessment instruments that can predict, control and measure (technical) knowledge in games risks occurring at the cost of developing preservice

teachers' and students' learning processes in games. These observations will be developed further in the following discussion.

8. Discussion

In the following sections we will discuss the challenges outlined in the findings.

8.1. *Different discourse(s) for assessment in physical education and PETE in Sweden*

According to Redelius et al. (2009), physical performance and sport skills are by many Swedish PE teachers acknowledged as grounds for assessment in PE. Further, physical performance in sports has been shown to be a high priority among Swedish preservice teachers in physical education (Larsson et al., 2018; Maivorsdotter et al., 2014). Although many preservice teachers seem to like learning sport skills in PETE, they experience unfairness and exposure when they are assessed on their physical performance in invasion games through GPAI (themes one and two). One explanation for this might lie in the fact that in the Swedish physical education curriculum, and in research produced by Swedish PETE scholars, physical performance and measured results are not considered legitimate forms of knowledge to assess (Redelius et al., 2009; Swedish National Agency of Education, SNAE, 2011a, 2011b). Even though the investigated preservice teachers were only beginning their education at the time of the study, it seems that their ideas of assessment had already been shaped in accordance with this research and the national physical education curriculum. It might be that the preservice teachers' perception of unfairness was established even before they entered PETE. As Wiker (2017) argues, Swedish school children think assessment in school physical education is unfair.

This resistance to the assessment of physical performance on the part of the preservice teachers is a discourse of assessment that is similar to that of their PETE educators. In a study of Swedish PETE educators' views on assessment of movement knowledge, Backman and Pearson (2016: 60) found that "they [the PETE educators] feel they are doing something wrong" when they assess physical performance. This feeling of doing wrong was also expressed at an annual meeting for PETE educators in Sweden in 2016. When the present study was introduced at this meeting, and the authors explained their implementation of GPAI, it was strongly criticised by several Swedish PETE educators, who claimed measurement of physical performance to be out-of-date. Drawing on the critique demonstrated in this study towards the measurement of physical performance in invasion games it appears that: a) the research on assessment in school physical education (Redelius et al., 2009), and the national physical education curriculum (Swedish National Agency of Education, SNAE, 2011a, 2011b), has had an impact on the preservice teachers who took part in the investigation (or, at the very least, that their ideas of assessment are similar to this research and the national curriculum), and b) there is a gap between school physical education (Redelius et al., 2009) and PETE (Backman & Pearson, 2016) regarding which discourses of assessment in invasion games are dominant. These results will be further discussed in the conclusion of this paper.

8.2. *Should GPAI be used for grading and/or for learning?*

The original idea behind GPAI was to provide an instrument for the assessment of game performance behaviours, including an understanding of tactical as well as technical skills (Oslin et al., 1998). This idea goes well with the research emphasising the need to secure and measure preservice teachers' content knowledge if they are to develop their teaching abilities (Ayvazo & Ward, 2011; Baghurst et al., 2015; Iserbyt et al., 2017). Illustrating the importance of content knowledge, Ayvazo and Ward (2011: 675) suggest that an "expert in teaching tennis to fourth grade students may identify a wrong grip and immediately provide a correction before the error escalates. A non-expert may not even notice an incorrect grip and continue to remediate the contact with the ball". Further, Iserbyt et al. (2017: 73) claim that "expert teachers [have] fewer inappropriate tasks compared to non-experts". However, from the expressions of the preservice teachers in this study, the main value of GPAI is the way it develops the ability to observe, analyse and give feedback on game performance, rather than on measuring the students' own game performance (themes one and two). This emphasis means using GPAI for developing both content knowledge and teaching abilities rather than for measuring only physical performance, and it also

means redirecting the focus from merely the observed to both the observer *and* the observed. Light and Georgakis (2007: 24) suggest that preservice teachers can “develop the confidence and the inclination to teach physical education despite a lack of specific game knowledge”.

Some of the comments raised by the preservice teachers had to do with the element of peer-assessment (instead of teacher-assessment) and with assessment in action (instead of using film recording afterwards). The questioning and doubts of some preservice teachers concerning the correctness and trustworthiness in their peers’ documentation must be understood in relation to the students’ concern for their grades. From the preservice teachers’ perspective, peer assessment in action is at the cost of a fair measurement of their game performance (theme four). However, they do claim benefits with regards to learning how to play the game (based on the feedback they received from their observer) and with regards to learning how to observe, analyse and give feedback on game performance (in their role as observers). Drawing on Oslin et al. (1998), GPAI can involve peer assessment in action, but as it is intended to be used as an instrument for evaluation and grading, the quest for correct measurement has meant that GPAI is mostly assessed afterwards using film recordings (Arias-Estero & Castejón, 2014).

9. Conclusion

The valuation of physical performance seems to be an element in the assessment of games whether or not a behaviourist (Ward et al., 2015) or constructivist perspective (Forrest, 2015) is taken. However, if a *critical social* constructivist perspective is taken—a perspective which many Swedish preservice teachers seem to acquire during PETE—measurement of physical performance does not seem to be a legitimate form of assessment in school physical education or in PETE (Backman et al., 2019; Tinning R, 2010). Still, history and research (Redelius et al., 2009; Wiker, 2018) has shown that many of the preservice teachers in this study, in their future work as physical education teachers, will value physical performance in their assessment and grading of schoolchildren. This identification points to a need for more knowledge about the transition from PETE to PE teaching. Some work has been done with regards to critical pedagogy and formative assessment (see, for example, Macken et al., 2020; Ovens, 2017; Philpot & Smith, 2018) but there are few studies taking a critical approach to the transition of movement knowledge from PETE to physical education teaching.

This study has also illuminated some crucial questions for the relationship between PETE and school physical education. How can the gap between the discourses for the learning and assessment of movement cultures in physical education policy documents (Swedish National Agency of Education, SNAE, 2011a, 2011b) and PETE (Backman et al., 2019a; Backman & Pearson, 2016), on the one hand, and PE school practices (Redelius et al., 2009) on the other, be bridged? How can pedagogies in PETE be enhanced so that they trickle down to physical education practice in schools? Ovens (2017: 303) calls for more transformative pedagogy in PETE and suggest that we need to “enable students to engage in critical activities that may challenge the status quo, reconstruct social-political-historical knowledge, question dominant ideologies”. An important conclusion from this study is that although the epistemological assumptions underlying the original purpose of GPAI did not match with the critical social constructivist epistemology that dominates Swedish PETE (Backman et al., 2019a; Larsson et al., 2018), some elements of GPAI were still of value. Hopefully, the preservice teachers involved in this study will have learned to independently and critically reflect on the parts of game pedagogy in PETE (of which on the course studied in this paper GPAI was only one part) they want to transform in their future physical education teaching.

About the authors

The authors of this paper are PETE educators in various movement practices at different universities in Sweden. To various extents, the authors are also involved in research relating to educational practices in PE and PETE. The research reported in this paper originates from the authors’ interests in game pedagogy and assessment in educational contexts.

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Note

1. The European Credit Transfer and Accumulation System is used in many European countries for the accreditation of university studies. In Sweden, one semester (half a year) corresponds to 30 ECTS. One week of full-time study corresponds to 1.5 ECTS.

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