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Chapter 30

THE USE OF DIGITAL MEDIA IN PHYSICAL EDUCATION

A Sport Pedagogical and Media Pedagogical
Challenge?

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THE USE OF DIGITAL MEDIA IN PHYSICAL EDUCATION

A Sport Pedagogical and Media Pedagogical Challenge?

*Steffen Greve, Mareike Thumel, Florian
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Introduction

Usually, two central tasks are attributed to Physical Education (PE). On the one hand, students are to be enabled and encouraged to do sport throughout their lives, giving sport its own personal sense of purpose. On the other hand, students should be educated through sport, i.e. PE should impart values and develop educational potential (Gröben & Prohl, 2012; Kirk, 2012). This discussion in German-speaking sports pedagogy is underpinned by the double contract of PE (Prohl, 2012). These two interlinked components are referred to as: 'education for sport' (movement education) and 'education through sport' (general education) (for more information see Gröben & Prohl, 2012). This understanding has many parallels to English-language discourses of PE, such as those mentioned by Kirk (2012).

In Germany, more than two-thirds of all school-age children and young people are members of a sports club (Breuer & Feiler, 2023). Sports clubs have a long tradition in Germany and are an important part of German (sports) culture. The sports clubs and sports associations in Germany have established a very large sports competition system for children and young people, which is completely independent of the school system and PE. This means that sports clubs (and therefore sports activities in sports clubs) are much more important for children and young people in Germany than PE or other sports programmes at school. In addition, cooperation between schools and sports clubs (e.g. to expand sports programmes in all-day schooling) is still in its infancy in Germany (Braun & Albert, 2020). So, PE is strongly influenced by social changes, and this is due to the phenomenon of sport itself. Sport is usually a fundamental part of students' lives outside of school. Students are active in sports clubs themselves, and many pursue sporting activities or follow major sporting events.

Digital media are omnipresent in students' lives. Accordingly, digital media have an enormous influence on the educational system. Learning with and about media has thus become a cross-cutting task for all subjects in school (Ferrari et al., 2020; ; Tulodziecki et al., 2019). Schools must prepare students for the mediatised world. And of course, digital media are also used to shape learning and teaching processes at school.

In the context of PE, learning processes can be supported by digital media (e.g. learning technical and tactical elements through the use of video feedback). On the other hand, students should also learn what influence digital media can have on their sports activities (e.g. what happens to personal data when young people use a fitness app). This area of tension between the educational mandate of PE and the educational mandate of media pedagogy and the influences on life outside of school has hardly been researched so far. In the following, sports pedagogy and media pedagogy axioms will be related to each other and discussed. It will be shown how PE lessons can fulfil this task of media education without neglecting its two central tasks.

Mediatised Lifeworlds and Extracurricular Media Use

The lifeworlds of children and young people are mediatised, which means that almost all areas are permeated by media, realised through media and shaped by media (Hepp, 2020). Increasing digitalisation has been and is accompanied by enormous changes in everyday communication. Society is in constant processes of change. In this process, the development of digital technologies is interrelated with social changes. The development of media and technologies should not be seen as a purely technologically driven process, but as a social event. Social practices, rules and interpretations are socially constructed. In the lifeworlds of children and youth, media and digital artefacts are now taken for granted (Medienpädagogischer Forschungsverbund Südwest, 2023). Children and young people have to find their way in a society that is strongly influenced by media.

Children and young people have access to mobile devices and the range of moving images and audio is being expanded, e.g. through streaming services. In addition, numerous other artefacts have arrived in children's lifeworlds shaped by digitalisation. This affects everything, including sport. For example, recordings can be made of all sporting events without much effort, which can be distributed (worldwide) with a few clicks. It is common for even amateur sporting events and competitions of children and young people in organised sport to be live-streamed (e.g. via Facebook or Instagram). Likewise, informal sporting activities are simply filmed and disseminated via mobile devices, for example, the football match with friends in the park, or the daredevil course action in the city centre. In addition, there are numerous apps on mobile phones pertaining to sport and exercise that can be used to record activity and track biometric data (e.g. heart rate, step counts) and/or used to promote physical activity (e.g. 'nudges' to stand during the day, instructional exercise videos). Digital artefacts and media thus play a central role in the lifeworlds of children and young people. This also means that they have numerous experiences in this context.

Children and young people gradually acquire the media repertoire depending on the social environment, the structure of the media, their action-guiding themes as well as their stage of development (Theunert, 2015). With media appropriation, an actor-related perspective is adopted that places children and young people at the centre as acting subjects along with their decision-making and action conditions. They integrate technological or media affordances that fit into their lives and interpret them against the background of their own individual, social and situational factors. In this way, media appropriation opens up specific potentials and risks. Opportunities are as numerous as potential dangers. Children and young people develop skills and competencies that shape their actions and their interactions with their environment. Thus, they need guidance, support and suggestions to use the opportunities of digital artefacts and media and to avoid their dangers.

Digital Influences in the Sporting Lifeworlds

The described circumstances of opportunities and risks of digital artefacts and media in the lifeworlds of children and young people are also to be discussed in the context of physical activity and sport. With regard to extracurricular sporting activities, it should be noted that media use has traditionally been very important in the context of club and competitive sport. Competitions have been accompanied and processed by the media for over 100 years. Technical developments such as slow motion have revolutionised the possibilities of sports broadcasts (see Chapter 4, Antunovic & Bien-Aimé). The development and spread of social media has also led to completely new possibilities in viewer interaction. All of these possibilities have found their way into amateur and popular sport through the use of smartphones, so the immediate living environment of many children and young people is also affected. Today, for example, it is quite common for video feedback to be used in football training from an early age. In the same way, apps are used to document attendance for training and competitions, as well as completed running distances or fitness exercises.

Schools now have the task of equipping children and young people with the appropriate competencies to enable them to act in this world. And not only that, they should critically engage with this world and find their way in it. This addresses two important components of the school's educational mission: learning with media and learning about media (Tulodziecki et al., 2019). It can be assumed that learning with media finds its way into PE relatively unreflectively. This is due, among other things, to the presence of technical aids in club and competitive sport (e.g. video evidence in various sport, competition analysis via video feedback, or the Instagram account of professional athletes). And precisely through the relative unity of using such aids now also in PE, e.g. via smartphone or tablet. But technical use does not per se imply learning via media. This raises the question of how appropriate learning, e.g. about data protection, the right to one's own image, dealing with recordings that are unpleasant for oneself and others, etc., can and must be staged and accompanied. This is followed in the next point by a look at the existing research results.

Review of Key Literature

The research results on the use of digital media in PE were compiled by Jastrow et al. (2022) in a systematic review. There, the objectives of a total of 78 studies were analyzed and the current state of research on the possibilities and limitations of the use of digital media in PE was presented. Jastrow et al. (2022) showed that a research focus is necessary that takes a pedagogical perspective (in addition to looking at the technical applications). They were also able to show that, on the one hand, it is the understanding of digital media itself that influences the use of digital media. And on the other hand, it is the respective understanding of PE that influences the use of digital media in PE.

As discussed earlier in this chapter, PE in Germany is underpinned by the double contract of two interlinked components: (i) 'education for sport' (movement education) and (ii) 'education through sport' (general education). However, these two components are not equally addressed in research on digital media in PE. For example, research on digital media in PE focuses on physical activity and the functional use of digital media (Jastrow et al., 2022). This can possibly be explained by the widespread use of digital media in professional sport (e.g. video feedback) (see Chapter 9, Toner). Since club sport is also considered a role model for PE in a traditional understanding of sport, and many teachers have such an

understanding, it is obvious that digital media are also used in this way in PE. This creates various problems. For example, in video feedback, the teacher has to take into account that self-observation can have an impact on self-image. Students want to look good in the videos (Casey & Jones, 2011; Greve et al., 2022). Moreover, hierarchies of desirable bodies are unconsciously established by teachers (van Doodewaard et al., 2018). These effects, which can play a role independent of performance improvement, must therefore be reflected by teachers when using digital media. However, only a few studies deal with these effects (Jastrow et al., 2022).

Rather, the functional use of digital media has been the focus of many studies. It is not surprising, for example, that filming each other's physical activities and game scenes in PE lessons offers new roles and tasks for students. This also creates opportunities to get more students interested in sport-specific topics (Diekhoff & Greve, 2023). For example, when talking about a game scenario, students can explain or correct a tactical action, even if they could not apply it in an ad hoc manner during the game themselves. It should also be noted in this context that students can 'hide' behind the camera (Goodyear et al., 2014; Greve et al., 2022).

Very few studies have investigated learning through media. Here, questions of data protection, legal aspects or other media pedagogical topics were taken up (e.g. Engen et al., 2018). However, even in the few studies in which a learning objective addressed the topic area 'about media', digital media were primarily used as a tool to enhance performance and activity (Jastrow et al., 2022). The learning objective that addressed 'about media' was always secondary.

To this end, the possibilities of using digital media to adapt learning materials in PE emerged. Learning through self-assessment and self-regulated learning can also be improved through digital media in PE (e.g. O'Loughlin et al., 2013). It also became clear that the use of digital media can create a connection between the media world inside and outside school. Here, digital media serve as a tool to increase activity, motivation and fun. A typical example in the studies is exergames in PE. However, these are associated with a high preparation effort and high costs for the acquisition of the equipment. This is a limiting factor for their use in PE. Likewise, the lack of accessibility at home is mentioned as a problem by some students (Marttinen et al., 2019).

In the aforementioned review, the perspective of PE teachers was also examined. Here it was analyzed that teachers need better training and preparation regarding the use of digital media in PE (Jastrow et al., 2022). This is due to the fact that the impact of the use of digital media largely depends on the presentation and additional instructions by the teacher (Østerlie & Mehus, 2020; Roure et al., 2019). As a result, teacher education and training on digital media in PE should focus on didactic, methodological and media pedagogical content, as the tools used (e.g. apps, devices) will continue to change over time (Jastrow et al., 2022). Teachers should focus on critical engagement with media content (De Araújo et al., 2020) so that they can teach students a reflexive approach to digital media use (Bodsworth & Goodyear, 2017). Learning with and about media (Tulodziecki et al., 2019), as well as the influence of digital technologies on the body and one's own sporting activities, must be addressed in PE for the school to fulfil its educational mission. A mere focus on the use of digital media, e.g. for the purpose of improving athletic performance (learning with media), is not sufficient here (Jastrow et al., 2022).

Applied Insights

On the basis of the above analysis, learning via media seems to be a component of PE with digital media that has received too little attention so far (see also Greve et al., 2020). On the basis that PE addresses not only movement education but also the general education of the students (e.g. Prohl, 2012; Kirk, 2012), the media pedagogical components of learning with and about media (Tulodziecki et al., 2019) should be taken into account. In the best case, there should be a focus on building connections between teaching units focused on sport pedagogical and media pedagogical objectives.

It is important at this point that the overarching goals of media pedagogical action are clear to teachers. In this context, children and young people should be enabled to use media in an appropriate, self-determined, creative and socially responsible ways (Tulodziecki, 2015). These competences are considered a crucial prerequisite for fulfilling participation in cultural and social life (Kammerl & Irion, 2018). The acquisition of corresponding competences takes place in the context of school through the use of digital media. This offers opportunities and risks at the same time. Therefore, this acquisition of competences must be accompanied pedagogically by teachers (Eickelmann et al., 2014), which also applies to PE (Greve et al., 2022). According to Baacke (1999), the concept of media literacy comprises four dimensions:

- **Media criticism:** People should be able to grasp information (which is conveyed via the media) in an analytically appropriate way, to relate resulting analytical knowledge reflexively to themselves and their own actions, and to judge these from a social and ethical perspective.
- **Media studies:** Current knowledge about media and media systems can be differentiated in two dimensions. On the one hand, there is an instrumental-qualificational dimension, which describes skills on how to use media. On the other hand, there is an informative dimension that includes information on how to use media for oneself.
- **Media use:** The description of the interactive use as well as the receptive use of media.
- **Media design:** The accumulation of options for changing and further developing media, as well as the creative design of the same.

This makes clear the complex task of teaching media competence in schools. It is not only about using the media at school, but also about acting competently in the digital world.

With regard to PE, it is important to dovetail the acquisition of these competencies with the goals of PE. In the following, the two components of learning with and learning about media will be related to PE. This is followed by a consideration of the synergies that can arise from the interlocking.

Learning with Media in PE

In the area of learning with media in PE, the three areas of representation, individualisation and cooperation (Irion & Scheiter, 2018) can be considered first. Forms of representation include, for example, the use of videos or audio recordings to provide information, or for the students to produce their own media. In PE, this can be watching an instructional video on a certain movement sequence, which can be stopped accordingly and watched several

times (in slow motion). Students can also film each other doing sport and use the videos in a variety of ways (Greve et al., 2020).

The area of individualisation includes the staging of adaptive teaching formats. Each student should be supported and challenged according to his or her individual level of achievement. The realisation of this claim can be promoted through the use of digital media, e.g. if different teaching videos on a topic are available on a tablet, which differentiate the handling of different teaching materials (e.g. different balls) and the different learning levels (e.g. different movement tasks on a topic). Then the students can choose the videos and decide which ones they want to use (Greve et al., 2020).

The area of cooperation includes the support of cooperative learning and working processes through digital media. This is addressed, for example, when students record each other, watch each other's videos, give each other tips and use apps to compare videos directly with each other (Diekhoff & Greve, 2023; Greve et al., 2022). On the one hand, the students acquire competencies to make a goal-oriented selection from existing media and to use them in a goal-oriented way. On the other hand, they acquire competencies to design and disseminate their own media contributions (Tulodziecki et al., 2019). This happens, for example, when students shoot an action trailer in PE lessons. In addition to the various devices and ideas for exciting movements, the students use a tablet and a film app with which they cut together, delete and edit scenes (Thumel et al., 2019). This comprehensive acquisition of competencies for learning with media must generally be staged in an interlocked way with learning processes about media (Greve et al., 2022).

Learning About Media in PE

Learning about media in PE is based on the transformation processes in society as a whole. The digitalisation of everyday life can also be observed in all fields of sport. It is therefore only logical that, with a view to learning via media, various points of contact can also be found in PE. Opportunities, risks and limits of the use of digital media can be dealt with and reflected upon in PE in relation to movement, play and sport (Greve et al., 2020). This means that children and young people must be informed about data protection, copyright and personal rights, e.g. in the case of self-produced videos in PE. Likewise, pictures of sport-specific poses or situations offer occasions for discussion, for example, if a certain body part is focused on in the recording (e.g. the backside at the starting block in sprinting) or if pictures should be deleted due to shame (e.g. due to an unsuccessful movement in gymnastics).

The extended possibilities should also be addressed. For example, videos of one's own sporting actions can be edited. With the appropriate apps, music can be added to the video of a gymnastics routine. Or changes of setting or slow-motion sequences can be inserted so that the video becomes more impressive through the creative means. In this way, the students also learn the elements of film language, which is also a media pedagogical goal.

Synergies of Subject-Specific and Digital Competences

The synergies of subject-related and digital competence acquisition already indicated should now be presented again systematically. This is done on the basis of four approaches published by the Gesellschaft für Fachdidaktik (2018) in Germany. These were discussed in detail by Thumel et al. (2020) with regard to PE:

- Promote subject-specific competencies digitally: Digital media should support the development of subject-specific competencies, and students are enabled to transfer subject-specific competencies to digital fields of application and action, taking into account subject-specific characteristics. In PE, special apps such as Coaches Eye or Videocatch can be used to provide video feedback for learning about movement, play and sport (Diekhoff & Greve, 2023).
- Promote digital competences in a subject-specific way: Media literacy promotion is done using subject-specific content. For example, when students create an audio file with movement tasks for their classmates, they develop a detailed description of the movement sequences. On the other hand, this development takes place with the help of digital end devices, whereby the use is practised.
- Subject-specific digital competences: This is about changes in subject-specific objects through digitalisation. In PE, for example, changes in the rules of the game and the impact on the respective sport can be discussed (e.g. the current debate on video evidence in football and the role of referees; Greve, Diekhoff et al., 2022).
- Promote digital personal education in subject lessons: Subject-specific reflection and critical faculties in a digitally networked world should be promoted. When creating an action trailer, the students learn how image settings work. During the production, questions of copyright and personal rights are also addressed (Greve, Thumel et al., 2022).

Of course, other examples and areas are also important and need to be discussed. With regard to social media, which is also omnipresent in the context of sport, students must be appropriately competent. Here, the presentation of a fitness influencer on Instagram can be a topic in PE. On the one hand, this can encourage students to reflect on their own body image, which in turn must be accompanied by pedagogical measures. On the other hand, it can also open up an exchange about the commercial structures of social media applications. Here, too, the intertwining of learning with media and learning about media becomes visible.

Summary and Future Research Directions

The interweaving of a media pedagogical and a sport pedagogical perspective is to be seen as an added value. This interweaving opens up a theory-based orientation for the design of modern and innovative PE. This is a reaction to the fact that the students' world is co-shaped by digital media, and that sport, and thus PE, must not close their minds to this. In addition, there is the educational mandate of the school, and thus also of PE. PE is connected to the students' lifeworld and should therefore stimulate educational processes and impart necessary competences (Greve et al., 2020).

Learning about sport with and via media offers various possibilities in PE, e.g. to support the learning of new movement skills and to improve sport-motor performance. In addition, in an aesthetic dimension, one's own sporting activities and individual staging practices can be experienced and critically reflected upon in the virtual world through media (Greve et al., 2020; Thumel et al., 2020). All of this ultimately leads to the overarching goal formulated at the outset of enabling children to use media in an appropriate, self-determined, creative and socially responsible manner. However, media literacy promotion in PE is different from that in other subjects, since PE is fundamentally different from classroom lessons in terms of their content and goals. In order to meet the requirements of schools, learning

with and via media and the influence of digital technologies on sporting activities must be addressed in research.

The majority of known research on the use of digital media in PE focuses on physical activity and sporting performance. Research rarely focuses on other educational goals. In this context, learning with and via media, as well as the influence of digital technologies on the body and one's own sporting activities must be addressed in research and schools in order to meet the requirements of schools and lessons (Jastrow et al., 2022).

Future research should also investigate how digital media can help to deal with the heterogeneity of learning groups in PE (Diekhoff & Greve, 2023). This is important because, according to the understanding outlined here, PE is the place where all students can and should participate in a self-determined and joyful way. PE therefore does not serve the purpose of selection, but rather the qualification for sport outside of school. And digital media, as part of the living environment of children and young people, can also contribute to this.

In addition, an important component is the training and further education of teachers. Many (older) teachers are reserved about the use of digital media (Jastrow et al., 2022). Here it may be necessary to have external competencies. PE teachers can involve the school's media officer, seek advice from outside the school or enter into cooperation with partners from outside the school (Thumel et al., 2023). The general prerequisite is a corresponding openness towards the foreign subject discipline. Looking beyond one's own discipline can be seen as profitable and in this case, as shown, a necessary learning opportunity for all those involved, which is due to current social developments.

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