

## School sport facing digitalisation: A brief conceptual review on a strategy to teach and promote media competence transferred to physical education

TOBIAS VOGT<sup>1,4</sup>, KONSTANTIN REHLINGHAUS<sup>1</sup>, DANIEL KLEIN<sup>2,3</sup>

<sup>1</sup>Institute of Professional Sport Education and Sport Qualifications, German Sport University Cologne, GERMANY

<sup>2</sup>Institute of Sport Didactics and School Sport, German Sport University Cologne, GERMANY

<sup>3</sup>Institute of Outdoor Sports and Environmental Science, GERMANY

<sup>4</sup>Faculty of Sport Sciences, Waseda University, JAPAN

Published online: July 31, 2019

(Accepted for publication: June 25, 2019)

DOI:10.7752/jpes.2019.s4206

### Abstract:

Digitalisation more and more impacts today's everyday life, not least our schools and, thus, pupils. Accordingly, educational concepts as well as teaching strategies have been revised considering media competences as an integrative part of all school subjects' curricula. However, possible implementations of media competences into school sport or, more precisely, physical education remain to be elucidated. On the basis of a media competency framework, six defined media competences were conceptually reviewed regarding their potential to meet the aims of physical education in Germany. Suggesting practical ideas for selected pedagogical perspectives, findings underline a promising potential of teaching and promoting media competences in physical education; however, remaining challenges were identified. Consequently, combining aims of the core curriculum as well as the media competency framework seems crucial, whereas a separated approach may be questionable.

**Key Words:** Learning concept, Educational framework, Digital teaching, Curriculum, Physical activity, Competency

### Introduction

Today's digital impact on society (re)shapes our everyday lives, including our work and education. Enjoying the chances but facing the challenges of a mobile internet accessibility (e.g. smartphones, tablets) and its concomitant 'being-always-on' habituation, practical teaching and learning strategies are of utter importance, in particular for our pupils in school. The educational mandate and responsibility of schools in Germany claims to enable pupils to conscientiously partake in the social, economic, professional, cultural and political life (MFSuW NRW, 2005). Consequently, the teaching and promoting of media competences need to become an essential part of the learning culture in schools.

In 2016, the German Standing Conference of the Ministers of Education and Cultural Affairs presented 'Education in a digital world' as their strategy of action towards a future-oriented education policy (KMK, 2016). With this, the teaching of media competences in accordance to a media competency framework as well as the integration of a digital learning process into the teaching form key objectives for schools' education. These key objectives, however, are often not part of a superordinate curriculum but are rather planned as integrative elements within each school subjects' core curriculum. Yet, the core curriculum for physical education as well as the framework for school sport in e.g. North Rhine-Westphalia (Germany's most populous federal state with nearly 2.48 million pupils; MSB NRW, 2018) remained untouched to date. Although first practical approaches on a 'digital physical education' have been suggested (André, 2018; Hebbel-Seeger et al., 2014; Veit, 2015), the integration of a digitalisation in physical education may be considered as insignificant so far (i.e., digital teaching and learning concept for physical education). Previously having stated a reason for this, Kretschmann (2010) discussed an ambivalent relation of physical education and media consumption itself (i.e., inactivity vs. activity). Additionally, this may result from a rather exceptional role of physical education compared to other school subjects (e.g. classroom vs. gym management; Opperman, 2018).

Therefore, this brief conceptual review aims to present teaching approaches on media competences in physical education, according to the media competency framework of North Rhine-Westphalia (Medienberatung NRW 2018a) that refers to the 'Education in a digital world' strategy (KMK, 2016). Further, this conceptual review is to meet a rather lack of international literature and to provide physical education teachers with a potential substructure in order to adapt school-internal physical education curricula. For that matter, practical ideas will also be suggested. The main focus, however, lies on an analytical linking between given school sport guidelines, the promotion of media competence and its resulting approaches in teaching, respectively.

**Procedure on promoting media competence as a new educational mandate for schools**

Within the teaching and educational frameworks of Germany's federal states, competences to actively and self-determinedly partake in a digital world are implicated, commencing primary schools. This, however, is not implemented in a single school subjects' curriculum but is meant to be an integrative part of all school subjects' curricula (i.e., cross-sectional). Accordingly, each school subject allows for specific access to media competences and the digital world by means of its own factual connections and contexts of action; thus, acquiring specific as well as fundamental media competences for a digital world. Eventually, the experiencing of and learning to deal with media (similar to reading and writing) will be multifarious (KMK, 2016). This brief conceptual review refers to the media competency framework of North Rhine-Westphalia (Medienberatung NRW, 2018a) and its defined six overall media competences (Fig. 1):

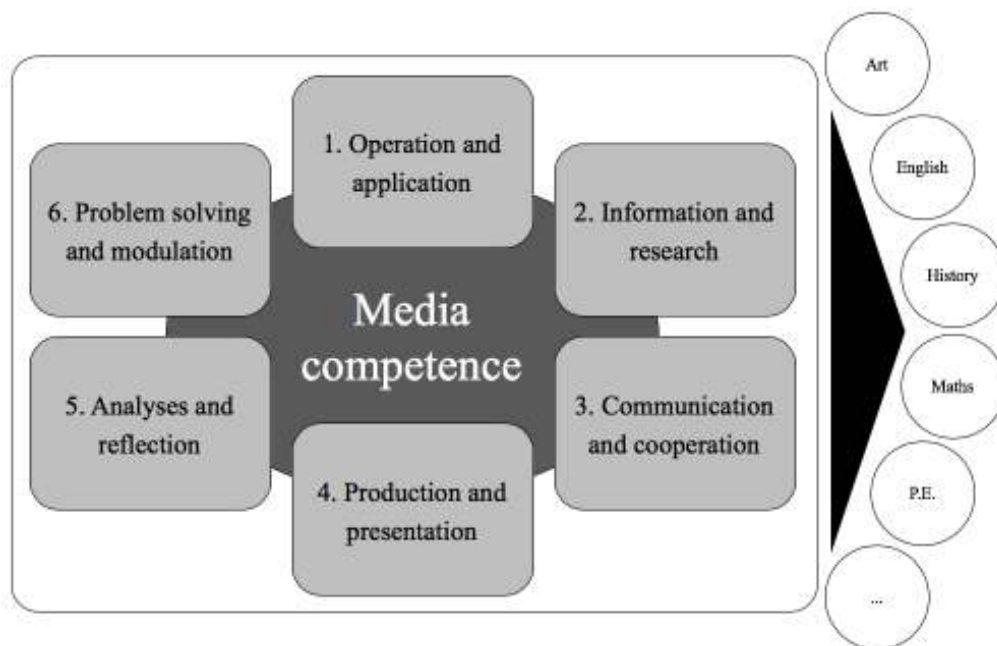


Fig. 1. Displayed are the six media competences (1. to 6.) according to the German media competency framework of North Rhine-Westphalia (Medienberatung NRW, 2018a) as an integrative part of all school subjects' curricula, including e.g. physical education (P.E.).

These media competences are to be mastered by all pupils subsequent to their compulsory school attendance. Precisely, pupils may acquire technical skills as well as a critical handling of media contents, knowledge creation and opinion forming (Medienberatung NRW, 2018b).

Consequently, this brief conceptual review aims to suggest links between a physical education and the promotion of a media competence. Moreover, a reciprocal approach will be discussed, on the one hand pointing out how objectives of physical education and school sport may be enhanced when including a promotion of media competence. And on the other hand, how and in which parts specifically physical education and school sport may serve the promotion of media competence (e.g. discussing a 'perfect body' in fitness apps), and, not least, how media competence in physical education may contribute to a more general educational approach in schools.

*1. Operation and application*

The media competence of 'operation and application' (Medienberatung NRW, 2018b) gives attention to a safe and sensible handling of media devices (e.g. computers, tablets) and its software such as apps. At the same time, pupils are to learn an adequate use, also with respect to a protection of data privacy (Medienberatung NRW, 2018b).

Hebbel-Seeger et al. (2014) suggests that the additional use of media in physical education benefits competences regarding a know-that (i.e., knowledge instruction) as well as a know-how perspective (i.e., skill acquisition). With respect to practical implementations of media into a physical education, the focus may largely be on an integration of technical devices in support of movement analyses, which would be in line with the core curriculum's objective for media competence on school sport in North Rhine-Westphalia. Herein, physical education on the one hand may prepare and structure practical actions within movement processing; on the other hand, physical education may consider methods of movement analyses (MfSuW NRW, 2011). With this, e.g. tablets and apps may be used to enhance the visualization of a movement and to improve movement learning by using currently popular apps (i.e., *Coach's Eye* or *Video Delay*). Further, in physical education potentials and risks of health apps such as *Health*, *Runtastic* or *Freeletics* may be discussed and reflected within a pedagogical perspective on 'health promotion and developing health awareness' (MfSuW NRW, 2014). The pupils' use of

such apps outside of the school may also add, at least in part, to an extracurricular participation in sports or to a health awareness respectively as defined in the school sports' two-fold mandate: promoting pupils' 'development through moving, playing and sports' (MfSuW NRW, 2014) as well as their 'accessing into a moving, playing and sports culture' (MfSuW NRW, 2014). Moreover, teachers may support, enable and motivate pupils to participate in extracurricular physical activities in the sense of health promotion.

Therefore, it must be considered that even handling, e.g. a movement analysis app, benefits an operating of digital media. Thus, physical education provides numerous opportunities to promote the handling of media equipment or digital tools in accordance to a media competency framework (Medienberatung NRW, 2018a) as well as to make the responsible use of personal data a subject of discussion, in particular with respect to rather delicate possible images resulting from the participation in physical education or, more general, in sports (e.g. swimsuits, tight sportswear).

#### 2. Information and research

The media competence of 'information and research' (Medienberatung NRW, 2018b) addresses the pupils' learning to investigate resources and contents purposeful as well as to examine any detected information regarding its adequacy and expediency.

In comparison to other media competences, this media competence may be more difficult to implement into the practical parts of school sport; more applicable, it may be seen within an ongoing discussion on the theoretical parts of a physical education (Serwe-Pandrick, 2013). However, this in particular may be of greater relevance according to the core curriculum when aiming for a method competence; herein method competence concentrates fundamental techniques in order to acquire, structure and apply sports-related information and expertise (e.g. know-that, know-how) to appropriately take on and, eventually, ideally solve a problem (MfSuW NRW, 2011). A physical education that promotes the research on sports-related topics while at the same time considers media competence-related responsibilities (e.g. developing a research strategy, filtering and evaluating information) does not necessarily contradict a primary aim of school sports (i.e., focussing on physical activity). Within a pedagogical perspective on 'body perception and developing movement skills' (MfSuW NRW, 2014), pupils may e.g. enumerate fundamental methods to improve psycho-physical performance parameters, characterize their relevance for the human organism from a health perspective, as well as to draft and transfer an action plan to improve these performance parameters (e.g. endurance) (MfSuW NRW, 2011). Notably, a media competence of information and research rarely separates from other media competences; e.g. subsequent to acquiring information, the processing of information may follow, indicative for the media competence of production and presentation.

#### 3. Communication and cooperation

The media competence of 'communication and cooperation' (Medienberatung NRW, 2018b) focusses on promoting an awareness for different digital communication channels and platforms in pupils. Further and with respect to rules and standards of communication, pupils may learn how to handle an appropriate communication within a digital world. Accordingly, cyberbullying and its consequences are a subject of discussion in this media competence of 'communication and cooperation' (Medienberatung NRW, 2018b).

Probably, there is hardly any other school subject than physical education that provides as much potential for the development of commonly shared values regarding a cooperation and social interaction. The herein referred to framework for school sport underlines this within a principle of 'communication and participation' (MfSuW NRW, 2014) as well as within the pedagogical perspective on 'cooperating, competing and communicating' (MfSuW NRW, 2014). The pedagogical perspective characterizes physical education to have a specific potential in promoting social responsibility and social learning; precisely, pupils may develop their social competence to act and learn playing a part in sportive cooperation, communicating appropriately as well as helping to shape typical situations of cooperation and competition responsibly when moving and playing in sports (MfSuW NRW, 2014). To this, sports-related social networks are on the rise (e.g. *Strava*, *Runtastic*, *Freeletics*) allowing to exchange experiences or even compare one's physical performances with others. Physical education may discuss the potentials and risks of such social networks, not least accentuating the respect for each other. In addition, a principle of 'communication and participation' expresses a succeeding cooperation as well as conflict management and problem solving among pupils (MfSuW NRW, 2014). This is certainly of great value in physical education but also in extracurricular school sports as well as in life in general; appropriate communication and cooperation standards that have been experienced may be reflected and, eventually, transferred to the digital world. Accordingly, physical education holds a specific responsibility in order to address topics such as cyberbullying not only to benefit interpersonal relationships and social interaction in class but to impact the (digital) everyday life of pupils.

#### 4. Production and presentation

The media competence of 'production and presentation' (Medienberatung NRW, 2018b) involves the creating, generating and presenting of media contents by means of digital devices and resources. Herein, media contents may range from audio and imaging to video formats (Medienberatung NRW, 2018b).

Physical education may put this media competence into practice by creating and generating e.g. short tutorial video clips in selected topics. Recently, a number of apps such as *Videoscribe* or *Explain Everything* have been launched, assistive for learners (i.e., pupils) and teachers. While short tutorial video clips may be more

laborious and time-consuming for both teachers and pupils on the one hand, on the other hand they may result in greater motivation among pupils and, thus, may serve as a promising alternative to common short presentations. In addition, most recent research suggests embedding tutorial video clips into long-term educational concepts to improve movement learning (i.e., sport-specific technique performances; Born et al. 2018). At the same time, the process of creating, generating and presenting e.g. a short tutorial video clip teaches pupils to also apply their knowledge and, thus, meeting the media competence of operation and application. Moreover, it seems reasonable that tutorial video clips may provide teachers with an opportunity to attract different types of learners (i.e., pupils) other than those attracted by a teachers' more classical lecturing. Even more specific for this media competence of 'production and presentation', creating short music video clips within an educational movement field of e.g. the dancing and shaping of movements seems promising and may offer alternative formats to evaluate and grade pupils' performances. Again, a number of assistive apps have been launched, e.g. *Tik-Tok* (formerly *Musical.ly*) that is prominent among pupils, allowing the production of short video clips to be combined with music. But also, more classical programs such as *Movie Maker* or *iMovie* may serve well.

#### 5. *Analyses and reflection*

The media competence of 'analyses and reflection' (Medienberatung NRW, 2018b) encourages to critically deal with media contents, media products, one's own media behaviour as well as a self-regulating use of media (Medienberatung NRW, 2018b).

By now there are several fitness apps that e.g. purport quick muscle gain or a slim body. This conception is supported by muscular ideals, serving as virtual coaches and role models in such apps. Similar questionable images are presented in some casting shows on television, partly using abnormal skinny models as supposable ideal of beauty. Following a previous media competency framework (MfSuW NRW, 2011), an educational movement field of e.g. the dancing and shaping of movements may serve as an appropriate link for pupils to evaluate an acceptable and questionable 'perfect body' image in relation to health aspects. Physical education may contribute to pupils reflecting on their perception of fitness apps as well as on their critical use and consuming of such apps. If so, physical education may also benefit an extracurricular physical activity, similar to the media competence of operation and application. With this, a critical use of media is of greater relevance during phases of self-discovery and, thus, in particular for e.g. pupils in adolescence. Moreover, pupils' daily exposure to media may be discussed and reflected with respect to a health perspective as e.g. excessive screen time has previously been associated with adverse health outcomes in adolescents (Nightingale et al., 2017).

#### 6. *Problem solving and modulation*

Within the media competence of 'problem solving and modulation' (Medienberatung NRW, 2018b), pupils may secure an informed fundamental media education. Moreover, pupils may acquire initial algorithms as well as basic skills on programming (Medienberatung NRW, 2018b).

In contrast to others, this media competence of problem solving and modulation may be more difficult to be implemented in physical education. Currently, existing learning portals for programming languages do not take sports-related topics into account. While the functionalities of e.g. running apps, including step counts or energy consumption (i.e., calories), may be of interest for a physical education, at the same time, the functionalities of other digital tools such as fitness watches may be discussed. However, physical education teachers may require such devices to be able to implement these topics with a particular focus on the pupils' needs respectively.

### **Conclusion**

In conclusion and according to a German media competency framework that refers to an 'Education in a digital world' strategy, the present approaches do not intend to form an exhaustive list but rather suggest practical ideas that may serve as a basis for initiating future discussions and implications, e.g. in line with a first draft on a new curriculum for physical education (MfSuW NRW, 2019). Further, it seems important to note that it is not an essential role of school sport to comprehensively address each and every media competence in physical education. In line with the two-fold mandate of school sport, media competence may be considered as an integrative part; however, an analogue promotion of pupils' motor, psycho-social, emotional as well as cognitive developments remains superordinate. Nevertheless, physical education may actively contribute to an overall media competence promotion in schools. Thus, this brief conceptual review aimed to point out defined media competences that may be easier to implement into a physical education than others in relation to a teaching and promotion of media competences in school sport. However, it became clear that the teaching and promotion of media competence may not be separated from the overall aims set by a core curriculum and by the framework for school sport. On the contrary, a linking of aims and, thus, a reasonable implementation of the teaching and promotion of media competences into school sport, and more specifically into physical education, seems crucial. Following this line of thought, adequate media competence qualifications of teachers seem essential and preconditioned.

### **Conflicts of interest**

All authors declare no actual or potential conflict of interest, including any financial, personal or other relationships with other people or organisations that could inappropriately influence, or be perceived to influence, the publication of this work.

**References:**

- André, M. (2018). Using social media in the Sport Education model. In Koekoek, J. & van Hilvoorde, I.: *Digital Technology in physical Education. Global Perspectives*. London/New York: The Routledge Studies in Physical Education and Youth Sport.
- Born, P., Nguyen, N.P., Grambow, R., Meffert, D., & Vogt, T. (2018). Embedding tennis-specific teaching videos into long-term educational concepts to improve movement learning and technique performances. *Journal of Physical Education and Sport*, 18(1), pp. 255-261.
- Hebbel-Seeger, R., Krieger, C. & Vohle, F. (2014). Digitale Medien im Sportunterricht. Möglichkeiten und Grenzen eines pädagogisch wünschenswerten Medieneinsatzes. *Sportpädagogik*, 38(5), 2-5.
- Kultusministerkonferenz, KMK (2016). The Standing Conference's „Education in the Digital World“ strategy Summary. [https://www.kmk.org/fileadmin/Dateien/pdf/PresseUndAktuelles/2017/KMK-Strategie\\_Bildung\\_in\\_der\\_digitalen\\_Welt\\_Zusammenfassung\\_en.pdf](https://www.kmk.org/fileadmin/Dateien/pdf/PresseUndAktuelles/2017/KMK-Strategie_Bildung_in_der_digitalen_Welt_Zusammenfassung_en.pdf). Access 14.04.2019.
- Kretschmann, R. (2010). Physical Education 2.0. In Ebner, M.: *Looking toward the future of technology-enhanced education*. Hershey: Information Science Reference.
- Medienberatung NRW (2018a). Medienkompetenzrahmen NRW. [https://www.schulministerium.nrw.de/docs/Schulsystem/Medien/Medienkompetenzrahmen/Medienkompetenzrahmen\\_NRW.pdf](https://www.schulministerium.nrw.de/docs/Schulsystem/Medien/Medienkompetenzrahmen/Medienkompetenzrahmen_NRW.pdf). Access on 14.04.2019.
- Medienberatung NRW (2018b). Broschüre Medienkompetenzrahmen NRW. <https://medienkompetenzrahmen.nrw.de>. Access 14.04.2019.
- Ministerium für Schule und Weiterbildung des Landes Nordrhein-Westfalen, MfSuW NRW (2005). Schulgesetz für das Land Nordrhein-Westfalen (Schulgesetz NRW – SchulG). <https://www.schulministerium.nrw.de/docs/Recht/Schulrecht/Schulgesetz/index.html>. Access 14.04.2019.
- Ministerium für Schule und Weiterbildung des Landes Nordrhein-Westfalen, MfSuW NRW (2011). Kernlehrplan für das Gymnasium – Sekundarstufe I in Nordrhein-Westfalen. Sport. <https://www.schulentwicklung.nrw.de/lehrplaene/lehrplannavigator-s-i/gymnasium-g8/sport-g8/index.html>. Access 14.04.2019.
- Ministerium für Schule und Weiterbildung des Landes Nordrhein-Westfalen, MfSuW NRW (2014). Rahmenvorgaben für den Schulsport in Nordrhein-Westfalen. [https://www.schulentwicklung.nrw.de/lehrplaene/upload/klp\\_SI/HS/sp/Rahmenvorgaben\\_Schulsport\\_Endfassung.pdf](https://www.schulentwicklung.nrw.de/lehrplaene/upload/klp_SI/HS/sp/Rahmenvorgaben_Schulsport_Endfassung.pdf). Access 14.04.2019.
- Ministerium für Schule und Weiterbildung des Landes Nordrhein-Westfalen, MfSuW NRW (2019). Entwurf zum Kernlehrplan Sport für die Sekundarstufe I Gymnasium in Nordrhein-Westfalen. [https://www.schulentwicklung.nrw.de/lehrplaene/upload/klp\\_SI/G9/sp/KLP\\_Gym\\_SI\\_Sport\\_2019-02-25.pdf](https://www.schulentwicklung.nrw.de/lehrplaene/upload/klp_SI/G9/sp/KLP_Gym_SI_Sport_2019-02-25.pdf). Access 24.04.2019.
- Ministerium für Schule und Bildung des Landes Nordrhein-Westfalen, MSB NRW (2019). Statistikelegramm. *Statistische Übersicht*, 403(1), pp 1-112.
- Nightingale, C.M., Rudnicka, A.R., Donin, A.S., Sattar, N., Cook, D.G., Whincup, P.H. & Owen, C.G. (2017). *Archives of Disease in Childhood*, 102(7), pp. 612-616.
- Opperman, H. (2018). Vom Classroom Management zum Gym Management: Sport in der inklusiven Grundschule im Sinne einer effektiven Klassenführung. In Ruin, S., Becker, F., Klein, D., Leineweber, H., Meier, S., & Uhler-Derigs, H.G.: *Im Sport zusammenkommen – Inklusiver Schulsport aus vielfältigen Perspektiven*. Hofmann: Beiträge zur Lehre und Forschung im Sport.
- Serwe-Pandrick, E. (2013). Learning by doing and thinking? Zum Unterrichtsprinzip der “reflektierten Praxis”. *Sportunterricht*, 62(4), 100-106.
- Veit, J. (2015). Tablet- und Smartphoneinsatz im Sportunterricht. <https://wimasu.de/tableteinsatz-im-sportunterricht>. Access 14.04.2019.