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Good Practice Methods in Physical Education – Cooperative Learning

Bernd Gröben[1], *Robert Prohl*[2]

[1] Universität Bielefeld, Abt. Sportwissenschaft
(Bielefeld University, Department of Sport Science, Germany)

[2] Goethe-Universität Frankfurt am Main
(Frankfurt University, Institute of Sports Sciences, Germany)

Abstract

During the winter semester 2008/09, the Institute of Sports Science at the Goethe University in Frankfurt (Germany), conducted and evaluated a seminar for sports students called „Good Practice in Physical Education". This novel teaching format was designed to link didactical skill-acquisition, in terms of situated learning, to the acquisition of theoretical knowledge, which should enhance the professional core competences of future PE teachers. In addition, this pilot seminar was designed to evaluate the usefulness of a blended learning teaching approach, i.e. online learning combined with face-to-face learning, compared to a conventional attendance format. In both the seminar formats students worked together in constant small groups (3-4 persons). The learning results and related variables were assessed using a variety of tests, questionnaires and interviews. The blended-learning-groups (a total of 70 students) had 4 attendance and 9 online sessions, whereas the attendance groups (60 students) had 14 attendance sessions only. In order to make the learning progress between the groups comparable, at the beginning of the seminar the students were allocated as to the results of a baseline test assessing their knowledge about PE. The same test was conducted afterwards to measure the gain in knowledge with regard to the content of the lectures. The ability to transfer the acquired content-knowledge into PE practice (learning transfer) was assessed by means of a poster presentation, which had to be prepared by each student group during the final phase of the seminar. In addition to the performance tests, data concerning the following variables were collected: learning environment, learning style, learning motivation, team competences. Furthermore, group interviews were carried out and videotaped, in order to analyze the effects of team work on learning performance.

At present, the following results were obtained:

- *The students of the blended-learning-seminar gained significantly more content-knowledge than the students of the attendance seminar ($p < .01$).*
- *This finding is consistent with a significantly higher appreciation of the learning environment by the blended-learning-groups ($p < .01$).*
- *However, no significant difference in the learning transfer could be found.*

Key words: physical education, sport

Introduction

The current syllabus reform interprets the subject of "Sports" in the sense of "physical education" from various perspectives in terms of pedagogical viewpoints, and structures its content based on fields of exercise. This has bequeathed a "mediation gap" that endangers the implementation of the syllabus draft into concrete forms of mediation and organisation in physical education (cf. Prohl, 2004). The objective of the project contributed by the Institute of Sports Science at Goethe University, Frankfurt, was to counter this "performance gap" in this first reformed syllabus generation concerning sports as a school subject right from the first stage of teacher training at university level with e-learning-based course offerings, in order to ensure development in competencies specific to the profession.

Educational mandate

Sports, games and exercise have become increasingly important in our society – in view of the demographic developments and the challenges laid down by alarming national and international findings concerning the state of health of children and youths (e.g. WIAD studies 1 and 2: Klaes et al., 2000, 2003; EU study: Brettschneider & Naul, 2004; Brettschneider et al., 2006). Lack of exercise, poor nutrition, smoking and alcohol abuse are the major risk factors for human health.

A life-long motivation for practising sports is an important prerequisite in coping with these challenges and maintaining a healthy lifestyle for people of all ages. A key role in the foundational work for creating this motivation is ascribed – alongside other factors such as family, friends, etc. – to school sports or physical education at school. Despite the urgency and virulence of the challenges delineated above, physical education cannot be restricted to considerations of health alone (cf. Prohl, 2006, S. 147ff.). It is much more a matter of an "all-round development of capabilities, proficiencies and skills in sports" (e.g. Hessian Ministry of Cultural Affairs o.J.a, p. 18). Physical education must be able to transmit the diverse meanings of sports which, besides health, also include accomplishment, daring, bodily experience, creative organisation and cooperation (see Figure 1 ; from: Hessian Ministry of Cultural Affairs, HKM, 2005, p. 5).

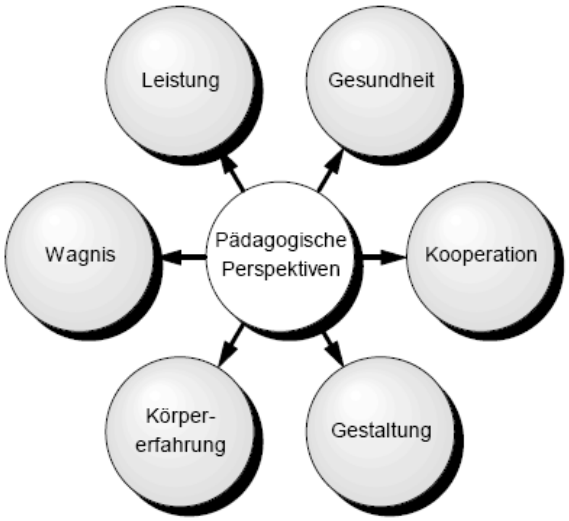


Figure 1. Pedagogical perspectives in school sports (Hessian Ministry of Cultural Affairs, 2005, p. 5).

Leistung	=	Accomplishment
Gesundheit	=	Health
Wagnis	=	Daring
Pädagogische Perspektiven	=	Pedagogical perspectives
Cooperation	=	Co-operation
Körpererfahrung	=	Bodily experience
Gestaltung	=	Creative organisation

This pedagogical interpretation of sports with its multiple perspectives in the reformed syllabuses goes hand in hand with an opening up of content. Besides classic types of sports, topics involving multifaceted cultural exercise activities are categorised into varying fields of exercise (cf. fig. 2). This means that physical education provides specific opportunities for updating educational potential that transcend pure proficiency mediation and are particularly to be found in a didactic interpretation of educational content as well as in a methodical shaping of the mediation process (in extenso cf. Prohl, 2006, p. 177ff.).

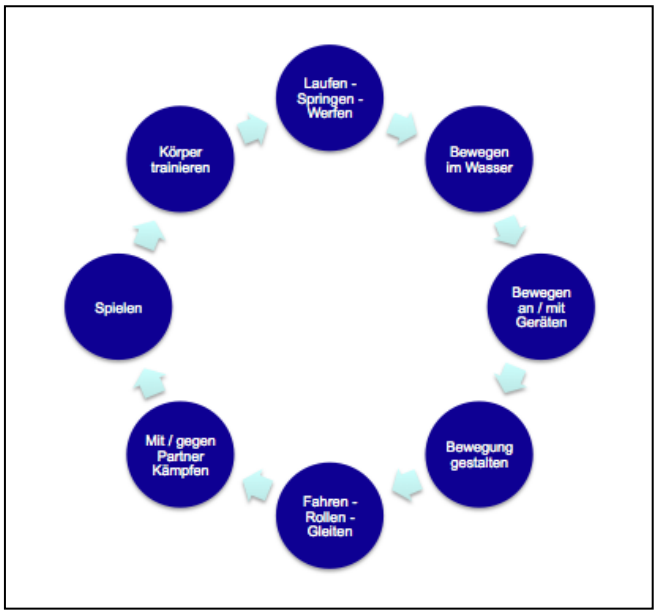


Fig. 2: Fields of exercise in physical education (according to Hessian Ministry of Cultural Affairs, 2005)

Laufen – Springen – Werfen	=	Running – Jumping –Throwing
Körper trainieren	=	Body training
Bewegen im Wasser	=	Exercising in water
Spielen	=	Playing
Bewegen an / mit Geräten	=	Exercising on / with apparatus
Mit / gegen Partner Kämpfen	=	Fighting with / against partner
Bewegung gestalten	=	Creative movement
Fahren – Rollen – Gleiten	=	Travelling – Rolling – Sliding

As has been shown by the results of the syllabus analysis carried out in the course of a national SPRINT survey (cf. Prohl & Krick 2005), this reformed syllabus generation represents a clear horizon where consensus can be achieved in terms of values and objectives for sports pedagogics that are characterised by the idea of "physical education". However, in the current didactical discussion about sports, it is increasingly pointed out that the implementation of the syllabus drafting into concrete forms of mediation and organisation in physical education is to a great extent unexplained (cf. Beckers, 2003; Prohl, 2004). Dietrich Kurz, the driving force behind the syllabus reform, declared in a current overview report that the perception of the new syllabus in pedagogical practice of physical education is particularly ambivalent for the reason that:

"Specialised conferences and teaching staff may be able to welcome the new liberty and the greater pedagogical leeway that the syllabuses offer. However, they can also feel abandoned and overwhelmed by them if advice and help are not forthcoming from another source. Advanced training and good materials related to the challenges faced are more in demand than ever before but have been rather the exception up to now – a pertinent criticism" (Kurz 2008, p. 212).

Project objectives

The objective of the planned project is to counter this designated "performance gap" in the reformed syllabus generation as regards to sports as a school subject right from the first stage of teacher training at university level with an e-learning-based educational concept. The purpose of this is to enable a development in competencies specific to the profession in the course of teacher training studies. Professionalism in the sense of this teaching expertise comprehends in the first place an aspect of constructive and multi-dimensional creative formation and monitoring. Against such

a background, the teaching profession can be defined as a "formative profession" (Schön, 1987). On the other hand, an "attitude of being involved" (Neuweg 2005, p. 211) is necessary that is expressed in a sensitive and adaptive engagement towards practical action. This type of competency can only be developed with close reference to concrete requirements in future professional areas. For this reason, forms of situational learning seem to be particularly profitable.

In terms of German (KMK – Kultusministerkonferenz, Conference of the Federal States' Ministers of Cultural Affairs) teacher training standards, the project contributed by the Institute of Sports Science at Goethe University, Frankfurt aims principally at encouraging professionalised competencies for the proper and expert planning, execution and evaluation of physical education, the furthering of school boys and girls to learn and work self-reliantly plus the mediation of values and standards, and the bolstering of self-determined judgement and action. In this, a didactical and teaching method basis for physical education training was divided into topics, discussed theoretically and illustrated medially. The e-courses designed for teacher training offer a multitude of video sequences from real-life co-operative learning situations in physical education that are focussed on teaching method issues.

Learning Content – Components and Structure

Good practice methods

Central to web-based courses are good-practice co-operative learning situations in the "exercising on / with apparatus" field of exercise. At the sports pedagogics department of the Institute of Sports Science at Goethe University, Frankfurt, these teaching methods have already been the subject of intensive investigation for some years now in the course of quasi-experimental field studies (cf. Gröben 2005; Bähr 2005; Bähr, Prohl & Gröben 2008). It has been shown that these methods offer advantages in the harmonised mediation of relevant diciplinary-motoric and transdisciplinary-social competencies and are superior to traditional teacher-centred physical education in terms of learning performance. The aims of this type of cooperative group education are:

- to enable a greater measure of participation by learners through a reduction in guidance by teachers.
- to attain more self-reliance in practising, once the means of solving a situation have been set free, and thereby achieving an overall intensive and sustainable learning process.
- to develop social competencies by means of resolving assignments communally.
- to promote proficiency in solidarity and co-determination through self-reliant work in a team and to contribute in this way to the development of the learners' maturity.

This means that co-operative learning provides didactic options in universities for presenting the proper and expert planning, execution and evaluation of physical education. It also substantiates possibilities of promoting self-reliant learning and working, as well as fulfilling the task of value and standard mediation within the context of physical education ("two-fold task").

Content module

The content that has been developed is composed of a set of SCORM courses, in which the theory-driven preparation of teaching method skills is clearly illustrated with "good-practice" examples. To help visualise the context setting, striking events are included in the module in the form of video clips that have been taken from real-life school physical education situations. Approximately 18 hours of physical education from eleven Hessian 5th year school classes have been recorded and digitalised (approximately 5TB of data). After examination and editing, approximately 50 flash-based video clips were placed in a resource centre to be used in the courses. The following modules are currently available online at ILIAS:

- M 1: Cooperative Learning – Introduction and state of research (45 min; 5 clips).
- M 2: Characteristics of co-operative learning in physical education (45 min; 10 clips).
- M 3: Actions of schoolchildren in co-operative learning (45 min; 10 clips).

– M 4: Actions of teachers in physical education set up in a co-operative way (45 min; 10 clips).
– M 5: Special problems in co-operative learning (45 min; 10 clips).

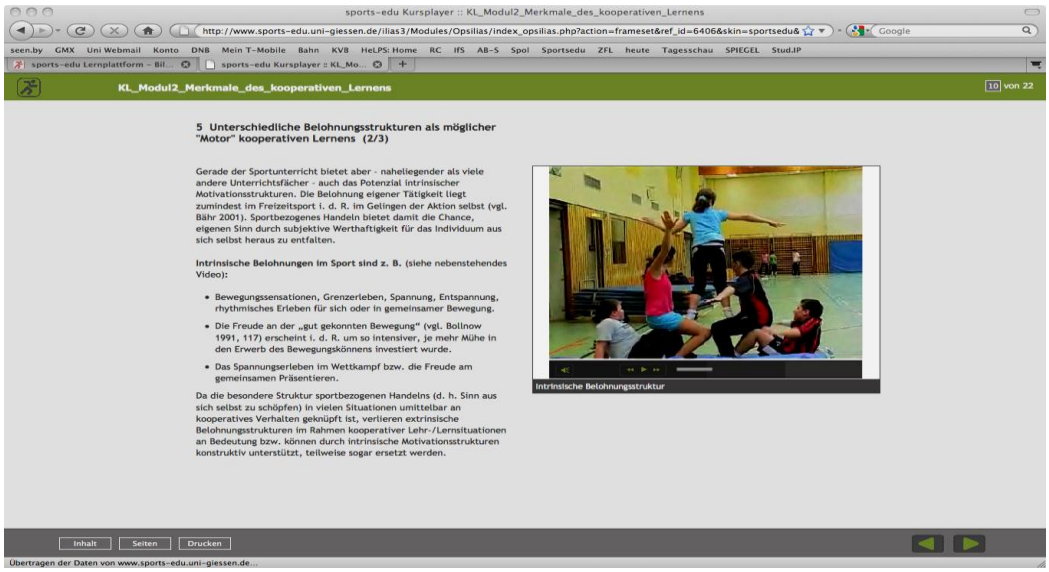


Figure 3. Course overview on the learning platform and example of an opened module in the course player

Didactic and Learning Theory Implementation

Seminar concept

As a supplement to the many various representations of educational concepts in print form, the content put forward here offers examples of good practice in school sports that are suitable both for studying in private and with an accompanying teacher in class. They can thus be employed within the context of university seminar work and also in other places of learning. This was carried out in the main study

period of a teacher training programme in the course of a pilot session.

The courses for the field of exercise "Exercising on and with apparatus" have been designed methodically according to a hybrid learning approach. Hybrid learning or integrated learning are designations for a form of learning that strives to link up traditional classroom sessions and modern forms of e-learning in a didactically meaningful way. This concept is intended to combine the effectiveness and flexibility of electronic forms of learning with the social aspects of face-to-face communication.

Some specific features of this seminar concept are as follows:

- work in constant small groups throughout the entire seminar.
- development of contents with the aid of self-teaching modules.
- regular work assignments during the online phases.
- situational learning by means of illustrative examples from authentic teaching.
- intensive supervision during the online phases.
- pinning down the (intermediate) results in classroom sessions.
- documentation and evaluation of learning performance by means of a poster presentation and knowledge test.

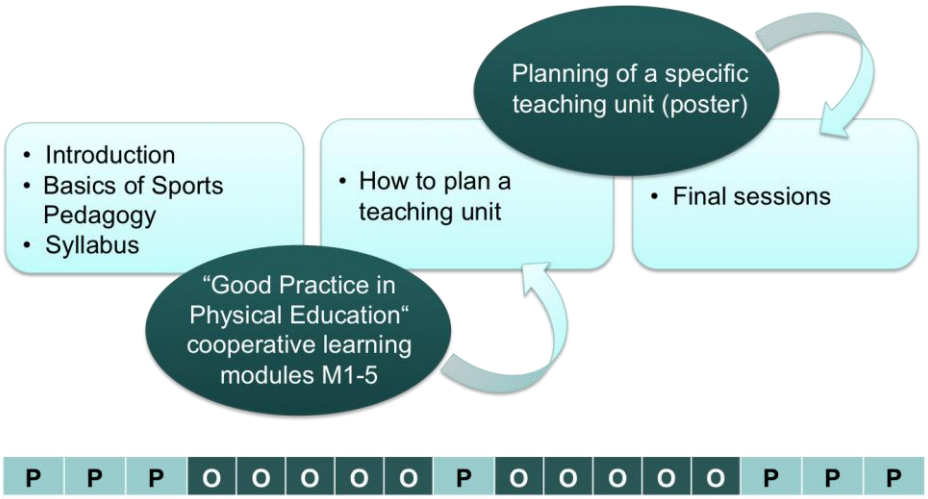


Figure 4. Structure and contents of the hybrid learning seminar (left) compared with a conventional text-based classroom seminar (right)

Präsenzseminar	= Classroom seminar
Woche	= Week
ET Klausur	= Initial test
Einführung Grundlagen ESU	= Introduction basics PE
Grundlagen ESU	= Basics PE
Lehrplan allg.	= General teaching plan
Präsenz	= Classroom
Grundlagen KL	= Basics cooperative learning (CL)
KL-Lehrerhandeln	= CL teacher actions
KL-content M1-5 (4-7)	= CL content Mods. 1-5 (4-7)
KL-Schülerhandeln	= CL school children actions
Diskussion	= Discussion
Präsenz	= Classroom
Kl-Spezielle Probleme	= CL special problems
Unterrichtsplanung allg. KL als Bsp	=Gen. teaching planning CL as example
Sachanalyse allg.	= Gen. practical analysis
Unterrichtsplanung (8-10)	= Teaching planning (8-10)
Lerngruppenanalyse	= Learning group analysis
Evaluation Gruppeninterviews	= Evaluation Group interviews
Konzeption des UV	= Teaching concept
Blended-Learning-Seminar	= Hybrid learning seminar
Abschlusssitzung	= Closing session

Learning platform

The technological basis of the above seminar concept is the distribution of e-learning content across a suitable learning platform to which both students and teachers have access in the online phases. This type of platform is a complex software system that serves to make learning content available and to organise learning processes whilst enabling communication to take place between those teaching and those learning independent of location. The project group at the Institute of Sports Science at Goethe University, Frankfurt utilised the HeLPS group learning platform for this purpose. The sports-edu learning platform is based on ILIAS and offers users the possibility of setting up and managing seminar groups, of posting content, forums, and chats and also provides a news system and file storage with a view to enabling and supporting collaborative work in groups.

Didactic Application Scenarios in Universities and Evaluation Results

Research focus and investigative approach

Since the winter term 2008/09, the content developed at the Institute of Sports Science at Goethe University, Frankfurt has been applied within the context of the physical education specialisation module of the teaching training programme.

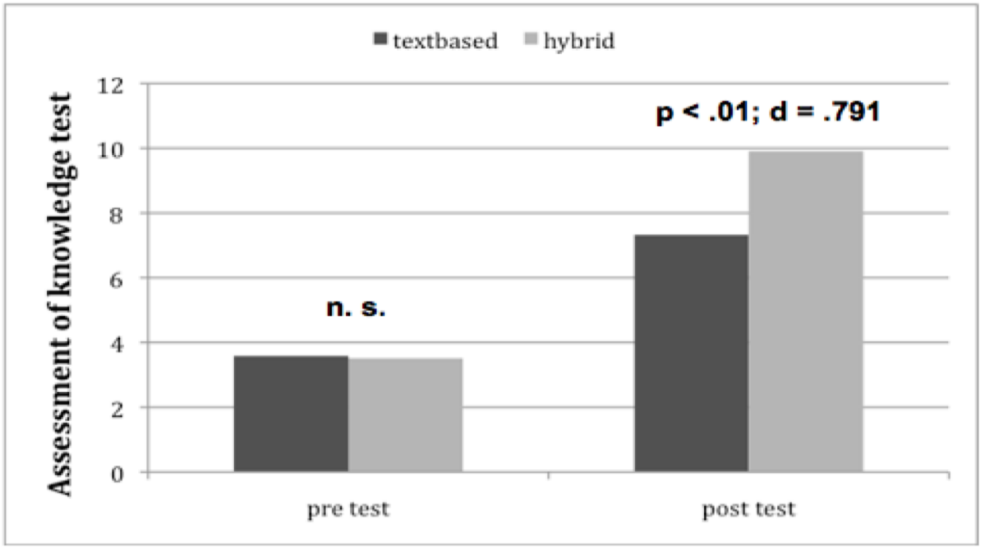
In the course of control group testing, the effects of the hybrid-learning seminar were investigated empirically in terms of receptive knowledge acquisition, the transferability of the knowledge acquired and the perception or assessment of the seminar work by the participants. In the “hybrid” groups (2 seminars; n = 75), 4 classroom and 9 online sessions were offered; in the classroom groups (2 seminars; n = 75) 14 classroom sessions were carried out (cf. Fig. 4).

In order to be able to estimate the effectiveness of the pilot seminar, a knowledge test was carried out at its beginning and conclusion, and supplemented by a poster presentation. As regards prior knowledge, equally strong test groups were formed, in which the parallelising criterion was performance in an initial test. The assessment of both tests and posters was made by “blind” ratings (r=.87). The knowledge test investigated receptive learning performance in the “exercising on and with apparatus” field of exercise; the posters investigated transfer capacity for the teaching method knowledge acquired to another field of exercise. In addition to this, data was recorded and evaluated using variance statistics for assessing seminar progress within the context of the standardised and mandatory teaching evaluation system (EvaSys) at Goethe University, Frankfurt.

Results

The following results have been obtained to date:

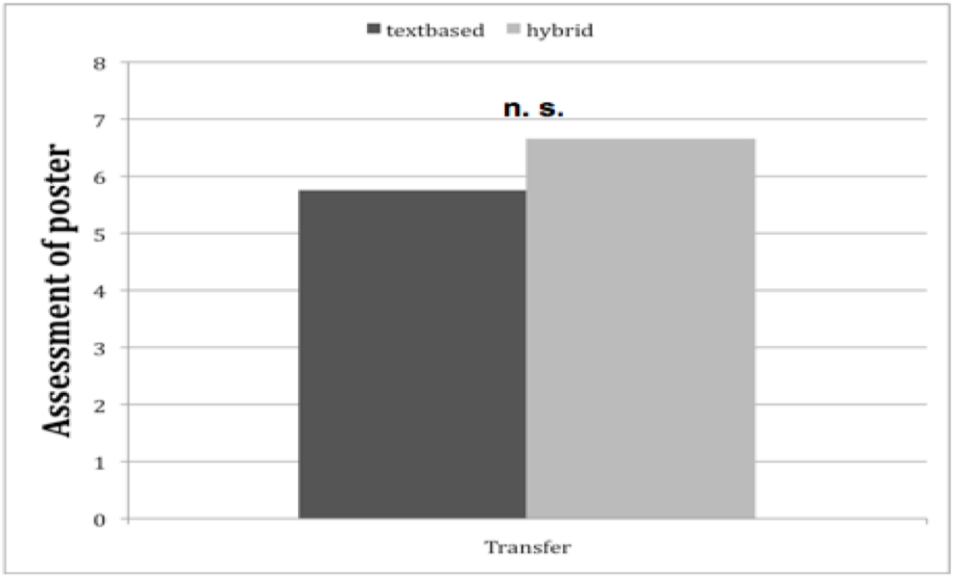
– With regards to receptive learning performance (initial and concluding knowledge test), an appreciable growth in knowledge could be determined in both groups (intra-group comparison). In post-testing, marked advantages were evident in the hybrid-learning group (inter-group comparison: $p < .01$, $d = .791$, cf. Fig. 6).



Bewertung des Bewertung des Wissenstests	= Assessment of knowledge test
ET	= Pre test
AT	= Post test

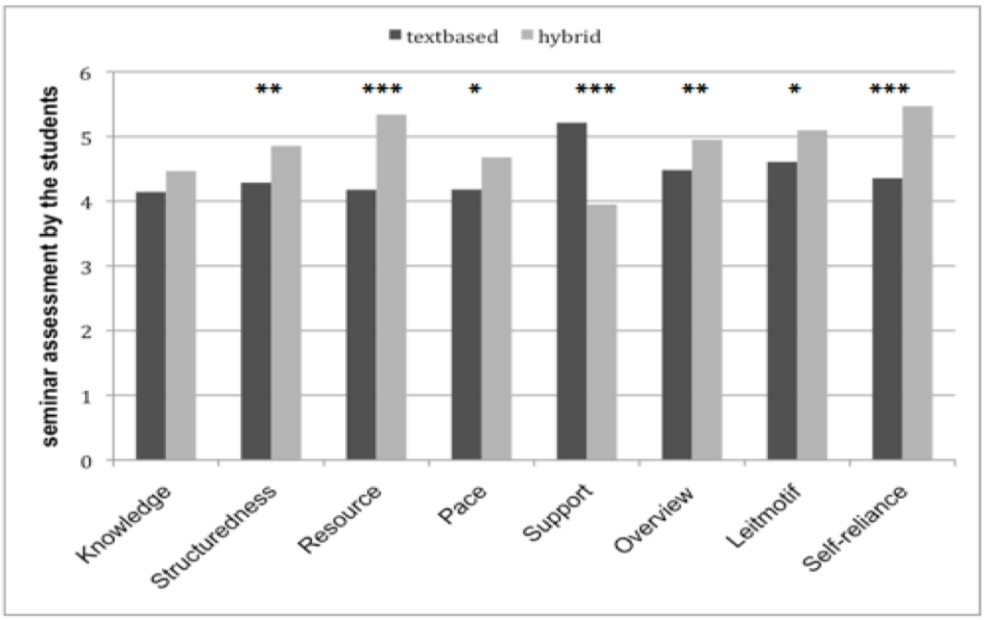
Figure 6: Assessment of test (receptive learning performance) in group comparison

By contrast, the transfer test results are considerably less conclusive, though a slight advantage in favour of the hybrid learning group could be measured. However, this was only significant in terms of trend ($p < .10$, cf. Fig. 7).



Bewertung des Posters	= Assessment of poster

Fig. 7: Poster quality (transfer learning performance) in group comparison



Wissen	=	Knowledge	Strukturiertheit	=	Structuredness
Hilfsmittel	=	Resource	Tempo	=	Pace
Unterstützung	=	Support	Überblick	=	Overview
Roter Faden	=	Leitmotif	Selbstständigkeit	=	Self-reliance

Fig. 8. Seminar assessment by students

The positive findings in terms of receptive learning performance (Fig.6) correspond to better self-assessment in the hybrid learning groups. This data was collected by means of the EVASYS questionnaire from Goethe University ($p < .01$ und .05, cf. Fig. 9).

To sum up, it has been demonstrated that the hybrid learning seminar performed significantly better in some of the effect areas tested and worse in almost none. Only the assessment of "support through session management" showed an appreciable difference in favour of the classroom session (cf. Fig. 9).

Resumé and Outlook

As described, initial technological and content related foundations were established with respect to hybrid teaching-learning scenarios relating to physical education in schools. Based on the evaluation results, it can be stated that, all in all, the content utilised represents an interesting, innovative and effective option for the subject of sports in a teacher training programme. However, the assessment of the hybrid learning group must be noted that obviously felt insufficiently (personally) supported by its lecturer. This finding probably reflects a general didactic problem with e-learning.

The content available so far, for reasons stated in the project proposal, forms only a limited part of the contents, topics and teaching methods in this area of academic education. However, the conclusion can be drawn from the hybrid learning group's poor transfer capabilities when compared with receptive learning performance that the visualisation of good practice examples is only effective in a similar field of exercise. It must therefore be assumed that available picture material is more effective in a specific context. It follows that the production of other content is absolutely necessary to achieve a high-class, sustainable and professional range of hybrid learning products.

For these reasons, the remaining six fields of exercise in the Hessian syllabus for the subject of sports should be addressed and illustrated in respect of each of the teaching method options given.

BIBLIOGRAPHY

1. Bähr I. (2005). *Kooperatives Lernen im Sportunterricht*. „Sportpädagogik“, 29, 4–9.
2. Bähr I., Prohl R., Gröben B. (2008). *Prozesse und Effekte kooperativen Lernens im Sportunterricht*. „Unterrichtswissenschaft“, 36, 4, 290–308.
3. Beckers E. (2003). *Das Unbehagen an den neuen Richtlinien und Lehrplänen – oder: Zur schleichenden Restauration des Alten*. In: E. Franke, E. Bannmüller (Eds.), *Ästhetische Bildung* (p. 154–168). Hamburg, Czwalina.
4. Brettschneider W.-D., Naul R. (2004). *Study on young people's lifestyles and sedentariness and the role of sport in the context of education and as a means of restoring the balance*. Paderborn, Institut für Sportwissenschaft.
5. Brettschneider W.-D., Naul R., Bünemann A., Hoffmann D. (2006). *Übergewicht und Adipositas bei Kinder und Jugendlichen. Ernährungsverhalten, Medienkonsum und körperliche (In-)Aktivität im europäischen Vergleich*. „Spectrum der Sportwissenschaften“, 18 (2), 25–45.
6. Gröben B. (2005). *Wirkungen des Kooperativen Lernens im Spiegel der Unterrichtsforschung*. „Sportpädagogik”, 29, 48–52.
7. HKM (2005). *Lehrplan Sport, Gymnasialer Bildungsgang*. Jahrgangsstufen 5G bis 12G. Wiesbaden.
8. Hessisches Kultusministerium [HKM] (o.J. a). *Lehrplan Sport für die Mittelstufe*. Wiesbaden.
9. Hessisches Kultusministerium [HKM] (o.J. b). *Lehrplan Sport, Gymnasialer Bildungsgang. Jahrgangsstufen 11 bis 13*. Wiesbaden.
10. Klaes L., Cosler D., Rommel A., Zens Y.C.K. (2003). *WIAD-AOK-DSB-Studie II. Bewegungsstatus von Kindern und Jugendlichen in Deutschland*. Frankfurt/M., DSB.
11. Klaes L., Rommel A., Cosler D., Zens Y.C.K. (2000). *Bewegungsstatus von Kindern und Jugendlichen in Deutschland. Forschungsbericht im Auftrag des Deutschen Sportbundes und des AOK Bundesverbandes*. Bonn, WIAD.
12. Kurz D. (2008). *Der Auftrag des Schulsports*. „Sportunterricht“ 57, 7, 211–218.
13. Neuweg G.H. (2005). *Emergenzbedingungen pädagogischer Könnerschaft*. In: H. Heid, C. Harteis (Eds.), *Verwertbarkeit. Ein Qualitätskriterium (erziehungs-)wissenschaftlichen Wissens?* (pp. 205–228). Wiesbaden.
14. Prohl R. (2004). *Vermittlungsmethoden – eine erziehungswissenschaftliche Lücke in der Bildungstheorie des Sportunterrichts*. In: M. Schierz, P. Frei (Eds.), *Sportpädagogisches Wissen* (pp. 117–126). Hamburg, Czwalina.
15. Prohl R. (2006). *Grundriss der Sportpädagogik* (2. Aufl.). Wiebelsheim, Limpert.
16. Prohl R., Krick F. (2005). *Lehrplan und Lehrplanentwicklung – Programmatische Grundlagen des Schulsports*. In: DSJ (Ed.), *DSB-SPRINT-Studie. Eine Untersuchung zur Situation des Schulsports in Deutschland* (pp. 11–44). Aachen, Meyer & Meyer.
17. Schön D.A. (1987). *Educating the reflective practitioner. How professionals think in action*. New York.

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Correspondence

Prof. Dr. Bernd Gröben
Universität Bielefeld
Abt. Sportwissenschaft
Universitätsstraße 25
D-33615 Bielefeld
email: bernd.groeben@uni-bielefeld.de
0049 (0)521-1062183