

Social Video Learning and Social Change in German Sports Trainer Education

International Journal of Excellence in Education

ISSN: 1993-8675

Vol. 6, Issue 2

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Abstract

The *Deutsche Tischtennis Bund e.V.* (DTTB) is one of the 60 professional sports associations with approximately 600,000 members and approximately 12,000 licensed coaches a “medium-sized” association. Up to now, 2014, more than 50 per cent of the 16 state associations have implemented Blended Learning offers. In the online phases of the new competence-oriented, web-based coach training and further training the focus is on “Social Video Learning”, i.e. teaching and learning with timestamp-based video annotations (edubreak®CAMPUS), which was also at the centre of the present case study. The case study will show how Social Video Learning can trigger social change and what measures have been successful in this context in combination with the use of video technologies. The article wants to give an overview about the “orchestration” of didactical, technical, cultural, organizational and financial aspects at different levels (micro-, meso- and macro-level) to tip the scales in favour of triggering and consolidating a social change. The DTTB is well on its way to implementing a “system change”, which turns it into the flagship of German (and international) sports as far as the implementation of digital media in coach training is concerned.

Keywords: video annotation, sports trainer education, blended learning, social change

Introduction

The *Deutscher Olympischer Sportbund e.V.* (DOSB)¹ is the umbrella organization for all 60 German professional sports associations, and with its approximately 27 million members in 91,000 sports clubs the *largest* association of individuals in Germany. In the sports clubs, people not only practice a huge variety of types of sports – both at the general and the top level –; the DOSB with its “Overall Guidelines for Qualification” also provides a binding orientation framework as to how the approximately 580,000 coaches (including youth leaders, association executives, and sports physiotherapists) can achieve and/or renew their coaching licences at the different licence levels every year.

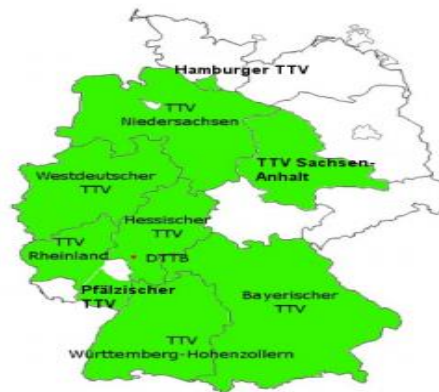
The *Deutscher Tischtennis Bund e.V.* (DTTB) is one of the 60 professional sports associations mentioned above and with approx. 600,000 members and approximately 12,000 licensed coaches a “medium-sized” association. Within this sports association, coach training and further training is organized by the federal association at the highest licence level (A), and by the 16 state associations for licences B and C. Since 2007 the DTTB has been gradually converting the “classical”, i.e. exclusively face-to-face-oriented, coach training and further training into a Blended Learning offer (Reinmann, Lames & Kamper, 2010).

Up to now, 2014, more than 50 per cent of the 16 state associations have implemented Blended Learning offers. In the online phases of the “new” competence-oriented, web-based coach training and

¹ <http://www.dosb.de/en/organisation/philosophie/dosb-profile/>

further training the focus is on “Social Video Learning”, i.e. teaching and learning with timestamp-based video annotations. The technical basis is an online campus (edubreak®CAMPUS) with the focus on video learning, which was developed, starting in 2007, for coach training and further training. In 2011 the overall concept won the eureleA – a European award for “best project impact”, first and foremost in recognition of having achieved some social change.

III. 1: Spread of Blended Learning within the DTTB



The following case of the Learning can trigger social been successful in this context in combination with the use of video technologies..

DTTB will show how Social Video change and what measures have

Problem statement

Until 2007 the DTTB executed its coach training and further training in the classical face-to-face format, i.e. training took place at its headquarters in Frankfurt or at the locations of the respective state associations all over federal territory. During a workshop at the state association of Lower Saxony (TTVN) some challenges were identified that are essential to state-of-the-art sports organizations from the point of view of those concerned: (a) *organizational* challenges, (b) *didactical* challenges, and (c) challenges in *implementation*.

Challenges in the organizational requirements

One of the big disadvantages in pure face-to-face teaching is the lack of flexibility for participants regarding time and space. The extra-occupational and honorary coach training and further training in sports in particular relies on participants being given room so that they can organize their own balance between the different family-, occupational- and leisure-time requirements. “Room” in this case means that attendance times are as short as possible and that there is the possibility to also study outside mandatory attendance times. In the sports system there is the additional challenge of opening the relatively isolated activities within the state associations, of facilitating an exchange of experiences among tutors also beyond their own locations, thus laying the foundations for coordination processes, quality-assurance measures and organizational coherence.

Challenges in the didactical embedding

Classical face-to-face teaching within the DTTB, at least in the field of “theory”, used to follow models of input control and knowledge transfer. As a consequence, chalk-and-talk teaching prevails, and learning phase and examination period are dissociated. The “idea” of output orientation (European Qualification Framework) however is all about basing the entire training structure on the participants’ carefully considered skills, dovetailing theory and practice qualitatively in a new way, and implementing a process-

linked way of examining, all of which, taken together, are supposed to lead to sustainable learning processes.

Challenges in the implementation within the sports context

The introduction of learning innovations with digital media meets with opposition from the “sports” system. The reasons for this are manifold: within the sports system there are a lot of interest groups (e.g. voluntary/full-time), which hampers fast decisions. First of all, sports are associated with “body movement”. Therefore, at first glance the benefits of electronically imparted knowledge (E-Learning) may be deemed questionable also in coach training. The public-interest-oriented and honorary sports system is not financially strong, which makes higher investments in novelties difficult. All this contributes to the generation of challenges as regards the implementation of “suitable” media-supported teaching/learning formats.

The implementation concept

The following implementation concept distinguishes between three levels: a) micro-level: technical-didactical measures that refer directly to the participants’ *interactions* with one another and with the teaching/learning content, (b) meso-level: technical-didactical measures that mainly refer to the *organization of learning* in terms of time and space and the organization of *educational support* provided by moderators, and (c) macro-level: measures of *participation*.

Micro-level

An analysis of topics and methods in coach training quickly shows one thing: an essential key medium in sports is video (Kretschmann, Hebbel-Seeger & Vohle, 2011; cf. Krammer & Reusser, 2005). Video as a medium can look back on a long-standing tradition, primarily because of the vividness of dynamic scenes for analytic, reflective and impartation purposes. The Internet has expanded these learning opportunities: on the one hand, nothing stands in the way of world-wide distribution, on the other hand “the web” facilitates a social and simultaneous exchange about video contents. Special learning opportunities for reflection and collaboration will arise in case of video comments in the form of *timestamp-based video annotations* (cf. Rich & Hannafin, 2009; Pea, Lindgren & Rosen 2008) and the possibility of sharing video annotations with other participants in a protected environment. By “timestamp-based video annotation” we mean that, at certain instants in the video that are marked exactly to the millisecond, learners can integrate comments in text form (or audio) and/or in the form of symbols (traffic light colours) or drawings (circles, indicator arrows, etc.) in the video (rich video annotation). Precisely this has been made possible on a special online campus for coach training (edubreak® CAMPUS). Moreover, learners can share their comments with one another and re-comment on other learners’ comments. That is what we call Social Video Learning, SVL for short (Vohle & Reinmann, 2012). Illustration no. 2 shows an example of a video annotation with related visual keywords on the timeline. Filter mechanisms enable targeted search for colours, authors and so-called “timeline neighbours” in order to promote social exchange.

III. 2: Video annotations (text, drawing, visual keywords)



Besides video annotation there are other learning tools from the Web 2.0 environment (blog and e-portfolio) that are not considered here in greater detail for lack of space (Vohle & Reinmann, 2011). Crucial to learning success in SVL is the use of tasks that contain observation- and annotation criteria, namely adapted to the possibility of *timestamp-based* video annotations. Without such observation tasks the use of SVL remains suboptimal (Vohle, 2013). If however participants complete special observation- and annotation tasks and create their own video annotations, they will also require individual feedback on these artefacts. Accordingly, a lot of space is devoted to educational support for participants within the DTTB context, the more so as sports take the question of personal “excellence” very seriously. To sum up, the following measures at micro-level will assure the quality of Social Video Learning: observation- and annotation tasks, individual video reflection by means of timestamp-based video annotations, collaborative video dialogue by means of re-comments as well as specialist feedback.

Meso-level

The customized technology “mix” for coach training (edubreak® CAMPUS) derives its coherence from being integrated in a Blended Learning concept (Vohle, 2011). Depending on the licence level (C, B, A) different varieties or combinations of online - and face-to-face phases are implemented within the DTTB: ranging from short training courses of three days (one face-to-face day and one online day each before and after) to a one-year programme (several workshop phases with assisted and self-organized online phases). In a typical Blended Learning settings in sports, video artefacts (e.g. scenes of the match or instructions to players) are produced in the face-to-face sessions, which will then be used for video annotations in the subsequent online phase. On the one hand there is the benefit that participants can use their actions from the face-to-face session for *self reflection*; on the other hand, the *combination of different learning phases* by “video work” will promote learning and motivation.

Besides the transition to a more flexible training through a Blended Learning structure, intensive educational support provided by moderators has proven its worth. This assistance is supported by a special *Feedback Cockpit* that helps tutors give their feedback in an efficient way. The restructuring of the training with, among other things, upstream and downstream online phases has made it possible to integrate participants in a *continuous* task completion process. Each participant is “forced” to perform tasks by making video annotations, contributing to blogs, etc., which will then be checked by the tutor in the spirit of an “assessment for learning”. In brief: together with E-Learning also in-process verification has found its way into training. There are no more final exams like multiple-choice tests and such in the DTTB. Classical closed-book examinations have given way to “minor” proofs of competence. The tutors aim to improve the performance level of all participants by giving individual feedback.

An increased coherence in coach training and further training is achieved by (a) connecting the learning phases in a content-coherent way through video work, (b) tutors providing intensive support, and (c) in-process verification. This means that participants experience the learning process within the (flexible) Blended Learning format as “coherent”, “intensive” and “continuous”, which will have a substantial effect on the output quality.

Macro-level

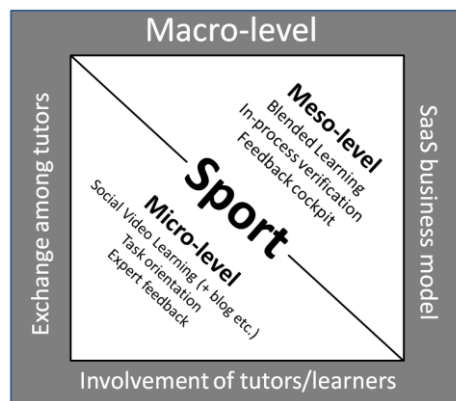
Besides sports-specific technology and didactics, the DTTB implementation concept also comprises participation measures. In this context, involving tutors and learners in the progressive development of technology and the formulation of the didactical concepts has proven beneficial. Between 2007 and 2014 the implementation concept has been optimized further and further and tailored to the requirements in coach training, going through hundreds of design-, test-, and redesign loops. This strategic evaluation process has been structured, reflected and documented in publications in cooperation with university specialists in learning research (Reinmann & Vohle, 2013). Another form of participation includes those concerned in the narrow sense: the decision-makers in association management. Together with them a “strategic concept” was created, so that also those not *directly* involved in the teaching/learning process are integrated in the change process and can communicate the reforms to the organization effectively. After several state associations had joined the new form of training, the need arose for an exchange among tutors across the different locations. They wanted to share their experiences with regard to the way of course supervision, task creation, feedback processes, sanctions, etc. In the time that followed, a virtual community of tutors developed, which is engaged to the present day in an exchange across locations about their Blended Learning courses. Since the middle of 2012 this exchange has been intensified and systemized through a project² funded by the Federal Ministry of Education and Research and European Union (total 1,73 Mio. €). They are looking for educational success patterns for Blended Learning scenarios at the different licence levels. In addition to these didactical-organizational implementation conditions, a financial concept has been developed together with the

² <http://www.salto-dosb.de/>

DTTB: For the day-to-day operation the association is using the edubreak®CAMPUS within the framework of a “Software as a Service” (SaaS) approach, i.e. the technology including service and technical support is made available by a third-party provider. This way, the association can concentrate fully on primarily didactical innovations and further developments.

To sum up, the following forms of participation at macro-level will contribute to a sustainable development: (a) participation of direct users in technical-didactical developments, (b) cooperation with decision-makers regarding strategy and finance, (c) promotion of the cooperation among different stakeholders in the practice of training and further training.

III. 3: Intervention level in the case of the DTTB



Discussion of alternative solutions

The problem in the case at hand, which includes organizational and didactical challenges as well as challenges with regard to implementation, is complex and naturally allows for more than one approach to solution. In the following, alternative approaches at micro-, meso- and macro-level are outlined as representative, which may also illustrate what advantages are inherent to the actual implementation concept chosen.

Micro-level: text-picture combination offline versus video online

Plenty of explanations in sports, especially in motion analysis, are presented in the form of text-picture combinations (Schnotz, Baadte, Johnson & Mengelkamp, 2012). Particularly continuous-advance motion images, in which the motion has been captured in a series of single images, play an important part here. Although this approach is still being used in textbooks as well as in digital learning resources, a number of reasons speak in favour of the use of video in combination with the possibility of commenting videos online (and timestamp-based) (Zhai, Fox, Pierce, Wu & Bulut, 2005): (a) In comparison to the text-picture combination, the medium of video has the advantage of picturing the motion in its dynamics and its context, which is beneficial not only under cognitive, but also under motivational-emotional aspects. By using slow-motion and single-frame advance modes one can also analyse details. (b) By means of online video annotations learners can analyse and reflect motion videos, and exchange their views on them too. Unlike summary video annotations or comments on text-picture combinations, the timestamp-based video annotation allows for an analysis precisely at those points in the video where the comment can be assigned to an instance (e.g. turning points or phase transitions, which is essential for learning motions). Finally, the verbalization in annotations is an important means for practising terminology and also for visualizing mistakes and being able to correct them subsequently.

Meso-level: pure online learning versus Blended Learning

In the course of first-generation Massive Open Online Courses (MOOC) (Yuan & Powell, 2013) pure online learning has again become popular: without any restrictions as regards time and space learners attend courses in huge numbers. Particularly in sports and coach training, however, face-to-face learning with practical application of what was learned is essential. How to promote learning new movements, how to give suitable instructions, how to use body language, etc.: all this requires experiencing it in a real situation, in a situational context. For this reason, also within the framework of state-of-the-art web-based coach training, a minimum of face-to-face teaching in the gymnasium, in the playing field or the sports complex is required, despite the associated loss in flexibility. A Blended Learning concept though can combine the various benefits: firstly, one can save on travelling and accommodation costs; secondly, valuable face-to-face sessions are released from the burden of mediating processes that are transferred to the online phases. Then face-to-face sessions will be used for the practical implementation of the athletic activities. These sessions are also important for producing video contents to be used in subsequent online phases. This facilitates self-reflection (of one's own way of doing things) (versus learning with taped videos), which particularly promotes individual excellence.

Macro-level: top-down versus participative

e-Learning projects often follow a strict implementation plan in order to introduce reforms in a fast and efficient way: a learning technology is selected, content and learning scenarios are developed, pilot projects are initiated, and finally the roll-out is done. If it is just about implementing a technical system or a tool that won't affect the actions of those concerned much, such a way of proceeding may be reasonable. Implementing new learning technologies though often requires changes in the routines of tutors and learners. In case of bigger reforms sometimes a change in the learning culture is striven for. This is the case in the context of sports. Moreover the organizational structure of sports itself makes a top-down approach difficult. Generally, new learning technologies have to be implemented in the associations using one's own funds. All this makes it necessary for the stakeholders to share and second the didactical conviction underlying the solution proposed, to independently take up the associated concept and to promote and operate it with small funds. This can only work if the people concerned become participants, from the consultants in charge of organizing the Blended Learning courses to the participants that attend those courses on a voluntary basis to the full-time and honorary executives responsible. Planning: the first phase of Extreme Programming life cycle, where 'user stories' or requirements are created – aspects of this stage are described in details in the next section (Analysis & Design).

Recommendations

The implementation concept has been adapted to the sports context, customized methodologically and institutionalized over a long period of time (2007 to 2014). On these grounds one can reasonably call this an educational innovation because the "new" has not only been accepted within the framework of a little pilot project. On the contrary, didactics, web technology and organizational networking have spread in the educational practice of the DTTB (cf. Fullan, 1996). "Going back is not an option", says an educational expert of the DTTB. Against the background of this success we would like to formulate some recommendations in the form of design principles and give some advice on scientific support under the heading of "Educational Design Research".

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late some recommendations in the form of design principles and give some advice on scientific support under the heading of “Educational Design Research”.

Recommendations in the form of design principles

Against the background of the implementation concept and the discussion of alternative approaches, the following recommendations can be given for the design of Blended Learning scenarios with a focus on Social Video Learning (SVL) in sports:

Recommendations at micro-level

- SVL should be combined with observation tasks. As a rule, these tasks will be completed successfully if they include information about the context, comprise concrete instructions and define the period allowed for completion as well as completion criteria.
- SVL should be combined with an exchange of views among the participants. As a rule, this will work if a special task is formulated in this context, and if the video player allows for re-comments and offers filter options.
- If learning success is to be verified, an e-portfolio for video annotations should be implemented in addition to SVL. Work on the e-portfolio has to be accompanied by instructions though and is only worthwhile if the training goes over several months and competence development shall be visualized.

Recommendations at meso-level

- SVL should be organized in such a way that learners receive feedback on their work results – if possible also specialist feedback as this has proven to be particularly motivating.
- Feedback processes in SVL should be supported technically in such a way that tutors are able to react to work results in a timely manner, thus getting an overview. The “Cockpit for Tutors and Moderators” provided by the online campus used has proven to be helpful.
- If also exams shall be altered using SVL, a new design of the examination process is required: away from summative and towards formative exams. The artefacts created in SVL can be used as indicators of competence for a new exam situation in which learners explain their work and receive qualitative feedback from experts.
- SVL can commence with an online phase if there is already video material available to activate and sensitize participants before they come to the face-to-face session.
- With downstream online phases SVL can above all promote self-reflection processes if video material of the participants “in action” has been produced in the course of the face-to-face phase.

Recommendations at macro-level

- In the implementation of SVL tutors should be involved from the beginning: participation is possible in the conceptualization and adaptation to one’s own context, in the creation of content, in the allocation of contents to online phases and face-to-face phases etc. It is recommended to continuously obtain feedback from the tutors during the implementation.
- In the implementation of SVL stakeholders should be involved: such involvement is particularly recommendable when the implementation of Blended Learning events is being communicated, and in the support of communication measures going into the organization.
- In the implementation of SVL also the learners should play an active part, especially by providing feedback: learners can give feedback regarding all technical-didactical measures and make suggestions for improvement – also in phases of failure.
- For the implementation of SVL a “Software as a Service” model can be applied: this has proven itself in the context of sports because of its good cost-benefit ratio and because the training provider is released from the burden of technological support.

Recommendations in the form of development- and evaluation principles

The constellation of the partners in the DTTB project displays a number of particular features: the project was initiated by a scientific edu-startup (Ghostthinker Company) and accompanied scientifically in close cooperation with a university partner. This constellation allowed for an intensive dialogue between science and practice, i.e. between the practice partner DTTB, the science-affine edu-startup and the university with a focus on media didactics. On the basis of this partner- and communication situation the project was developed following the principles of the Educational Design Research approach.

In the context of technology-enhanced teaching and learning, educational design (based) research is a new type of research and methodology that promises both practical benefits and scientific insights. Since 2000, the idea of organizing and describing the “act of development” from a scientific perspective has been promoted, mainly in the Anglo-American countries. In this process, initial and rather general structural characteristics have developed, e.g. the fact that development takes place in several cycles: theory-based design, testing under real-life conditions, evaluation using a variety of methods, and specific redesign (McKenney & Reeves, 2012; Reinmann, 2005). It is precisely this design- and methodology strategy that helped develop the Social Video Learning approach in sports and optimize its implementation continuously by means of evaluation und redesign (Reinmann & Vohle, 2013).

As regards the DTTB, between 2009 and 2013 approximately 30 official Blended Learning courses took place at all licence levels with a total of approx. 500 participants. Any one DTTB course is attended by 15 to 20 learners with one to three tutors. In a three-week Blended Learning course (2½ days face-to-face, upstream and downstream online phases) the participants produce approx. 1,500 artefacts, i.e. video annotations, contributions to blogs, and C-maps (Novak & Cañas, 2006). In such a course the moderators give approx. 200 short feedbacks.

The primary purpose of the evaluation in the case of the DTTB is to improve the different technical and didactical measures and to stabilize the innovation. As a rule, the evaluation is based on a written survey using short questionnaires (online). The questionnaire items deal with three question groups: *acceptance* of the new Blended Learning format, *use and usability* of the different learning tools, subjective *learning benefit* and *quality* of the whole package with *recommendation*. The survey results, which remained *constantly positive to very positive* over the entire survey period from 2009 to 2013, have been presented at conferences and also in scientific and practice-oriented journals in order to reach a wider public and to facilitate (critical) discussion (Vohle, 2009).

Conclusion

The project in the DTTB shows impressively what opportunities digital media can offer for educational innovations in sports. The overall picture emerging from looking at the potentials at micro-, meso- and macro-level is that:

At the *micro-level* of teaching and learning mostly learning tools from the Web 2.0 environment support *active* participation from the learners’ side. On the basis of construction-oriented tasks participants can above all analyse videos (SVL), but also verbalize experiences (weblog), visualize knowledge (C-Map) and collect and reflect their work results (e-portfolio). Particular potential in the field of coach training and further training in sports has to be attributed to SVL, which was also at the centre of the present case study. By means of timestamp-based video annotations, for instance sophisticated motion analyses can be carried out online – individually or collaboratively. Intensive support by means of expert feedback will not only secure participant motivation but also keep the promise of “excellence” and an *assessment for learning*.

At *meso-level* it is above all the new time/space structuration in the form of Blended Learning formats that gives coaches more flexibility. The German sports system in particular, with its primarily honorary (versus full-time) staffing structure, relies on a flexible and hence attractive structure that

leaves enough room for combining work- and family requirements. Another part of the reorganization of the training is the alteration of the exam in the direction of in-process verification. Every video annotation and a moderator's feedback is in principle a micro-cycle of learning and feedback (with exam character). Implementing this exam culture also at operational level requires special support measures from the tutors' side, such as a moderator cockpit: this will ensure favourable support economics without foregoing high support quality.

At *macro-level* above all participation measures make it possible for long-term development of Blended Learning courses to satisfy the essential needs and requirements of the sports association (which are also bound to change over the years). Besides the involvement of tutors and learners in concept development and concept adaptation, the exchange between tutors across locations by means of a virtual community has proven to be promising, in particular with increasing course numbers. After all, an educational innovation such as in the DTTB has to be financed. "Software as a Service" is the keyword for a business model that seems to work in sports and entails a good cost-benefit ratio for the associations.

In the end it will be the "orchestration" of didactical, technical, cultural, organizational and financial aspects at different levels (micro-, meso- and macro-level) to tip the scales in favour of triggering and consolidating a social change. This social change will alter two things: the *concrete* training practice of coaches and moderators, and the *structures* that stabilize and "protect" such new practices. The DTTB is well on its way to implementing a "system change", which turns it into the flagship of German (and international) sports as far as the implementation of digital media in coach training is concerned.

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