

Towards the Integration of Face-to-Face and Distance Teaching in Sport Science by Use of a Learning Platform

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Abstract

The integration of face-to-face and distance teaching has a significant importance for supporting and improving the effectiveness of educational and further educational offers. This article outlines the didactic considerations and organisational conditions of a scientific project in Sports. It will examine how teaching-learning material is implemented, how it is brought together on a learning platform, and the use of this platform as a supplement to seminars in face-to-face teaching.

1 Introduction

“SOLUTION” (learn sport science – multi-media and online)²³, an interdisciplinary project of the departments of Psychology and Sport science at the Hamburg University, is about developing and evaluating an E-learning-environment on selected topics of Sport science which is supposed to be build upon the learning platform “WebCT”.

We believe the integration of the learning environment in university teaching to be a part of the face-to-face teaching rather than only a “mere” supplement. Accordingly, the elements “communication” and “collaboration” represent the central aspects apart from the individual preparation and revision of topics worked on during the individual modules.

When creating the teaching and learning material which is integrated into the learning environment, we assume a constructivism understanding of acquiring knowledge and skills, so that the desired self-activity of those who are learning is taken into account by interactive dealings in the sense of “manipulation and learning dealing with the learning

²³ Supported by the Multimedia Kontor Hamburg within the framework of the special programme “E-learning und Multimedia in der Hochschullehre” (E-learning and multi-media within university teaching)

objects within the virtual space” (Schulmeister 2003, 156). We would like to realise discovering learning and problem-orientated working on the technical side by using Java-Script, Java-Applets and Flash-Applications.

It is a special quality of the project that it focuses on Sport science in the connection between know-that and know-how: E-learning not only as a learning support (conceptual) for theoretical knowledge but also as a measure to improve the performance on the level of skills.

2 Didactic considerations

Within the framework of the “SOLUTION”-project we would initially like to create a multi-media depiction of selected topics of the Science of Motions and Sports. By creating the learning material we strive, whenever possible, for the integration of interactive elements, which should enable the students to explore independently the current topic.

The use of the learning platform should not only serve us as a “cover” for the content, which is to be created. We would rather like to develop and evaluate didactic scenarios in which working within the virtual space becomes a coherent learning network together with the face-to-face teaching. Within this the students should acquire new knowledge, work together on exercises and create presentations; supported by the teaching staff, who are able to work together themselves on common projects and on modifying learning material through the learning environment.

There is another project within the Sport science, which is comparable in terms of content. It has, however, a far larger dimension since it is one of the “eBut”-projects supported by the German Ministry for Education and Research (Igel 2003). These projects are supposed to create and evaluate E-learning modules for the field of Science of motion and training, which should work as a link between face-to-face and distance teaching.

While the “eBut” project focuses on the development of content, our project also puts an emphasis on the didactic dimension. This results from the integration of content into a complex learning environment (learning platform), which should be connected with the offers of the face-to-face teaching.

Schulmeister (1998) starts out from the fact that “with the support of well-designed learning programmes...the learning could adopt the following qualities: it ...

- is self-determined in place, time and scale,
- supports the individual learning pace,
- could be extremely interactive,
- is enlarged by new learning forms, and
- supports constructivistic learning “ (Schulmeister 1998, 45).

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In this sense we tackle the realisation of an E-learning environment for motions and sport, which should enable active learning, experimenting and independent examination of one's own performance. There is not only the documentation of sport-scientific topics and digital archives of data in the form of different media types. There are also several supporting offers such as hyperlink-collections, simulations, and video sequences of movements.

These should not take over the role of the teacher. "The technology should be a supporting tool for both, teacher and student" (Dörr & Strittmatter 2002, 36). Together, the various elements of the learning environment should fulfil the following functions. They serve

- as "a tool for independent learning,
- as a production tool and
- as a communication tool" (Dörr & Strittmatter 2002, 36).

Schulmeister describes the functions of the learning process which are connected with these tools in a "didactic triangle of virtual learning" (Schulmeister 2003, 156): apart from the cognition which is focussing on the learning individual, the elements communication and collaboration are central aspects in the examination of the learning object.

Communication and collaboration are of great importance. They support the education of complex structures of knowledge and the construction of various references by articulation and reflection.

The reflection of one's own learning process is advantageous for the assessment of the (re)constructed structures of knowledge. "Reflection processes are really important for learning processes: they accelerate them (quantitative aspect: faster than learning by trial and error) and alter them (qualitative aspect: concentration on comprehension rather than only on performance)" (Reimann & Zumbach 2001, 142).

The articulation of aspects of the learning topic requires abstraction in the following meaning: complex facts should be immanently reduced to basic structures. The necessity "of structuring one's thoughts clearly and coherently when articulating them furthers the discovery of gaps in one's knowledge and of comprehension problems" (Reimann & Zumbach 2001, 138).

The necessity to reflect and articulate determines the cooperative learning arrangements. Apart from the development of higher skills (team spirit, openness to dialogue etc.) as a basis for life in our society, they are particularly suitable for the (re)construction of knowledge.

In the framework of an interactive approach (Schulmeister 2003, 182), we will try to link the learning environment with the face-to-face teaching. On the one hand communication processes which have started within the face-to-face teaching should be continued in the learning environment – together with a joint work on teaching and/or learning processes as well as the recourse to multimedia knowledge foundations. On the other hand the results from the work with the learning environment should influence the face-to-face teaching by taking a new state of discussion into account or by talking about newly developed questions etc.

Such a course of action is highly demanding for everybody involved, teaching staff as well as students. For the teachers it means to not only helping the students to cope with the learning environment but to be flexible in the planning of the face-to-face teaching as well.

Apart from the production of contents and the implementation of the learning environment into the education of theory and practice of various disciplines the iterative development of a didactic concept is central.

It is neither advisable nor possible to replace traditional teaching methods by virtual learning environments. We should rather, where it seems to be appropriate, try to use the potentials of electronic media as learning (and teaching) assistance. In comparison to other media there are two characteristic features of multi- (or hyper-) media teaching and learning applications. First, the students are able to choose individually content and intensity of information depending on their demands and former experiences. Second, there could be opportunities to test different learning aspects.

In this sense we hope that the use of the outlined learning environment results in “stimulating and supporting: stimulating by presenting the learning demands, supporting by presenting learning assistance either automatically or on request” (Friedrich et al. 1997, 9). This should lead to an improvement of the learning process, in particular regarding the following aspects:

- “structuring in terms of content,
- learning control,
- support in individual learning problems,
- motivation and
- assessment of the learning outcome” (Friedrich et al. 1997, 27f.)
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We would like to approach the desired stimulation and support by combining different media formats to a coherent learning network. At the same time we hope that an improved “availability of information creates the opportunity to illustrate sequences of events and connections” (BLK 2000,1).

Furthermore, the use of the learning platform creates new working forms, including the at least partly independent organisation of learning, independent analysis and preparation of learning topics, and an easier communication with fellow students by using the common virtual platform in addition to face-to-face teaching. These working forms are an approach to the “paradigm of the society of knowledge” (BLK 2000, 4),

defined by the Bund-Länder-Kommision: “learning in the present world means ‘lifelong learning’, self-controlled, problem-orientated, cooperative and on-demand. The ability to self-controlled and lifelong learning is precondition for creativeness, innovative capability and self-fulfilment”.

3 Description Of The Project

For the moment the development of content within the “SOLUTION” project is limited to modules concerning theory and practice of the following water sport disciplines which are bound to equipment: rowing, canoe, sailing and surfing.

The theoretical part of these modules covers the different sport-scientific areas (biomechanics, theory of sport education, psychology of sports, physiology, etc.) applied to the specific disciplines whereas the practical part sets an emphasis on self-realisation, i.e. acquisition or rather modification of discipline specific skills. The modules on the learning platform are to be orientated to this structure. For the moment we are realizing 3 modules:

- 1 module about biomechanics of the rowing and canoe stroke
- 1 module about sailing-physics/aerodynamics
- 1 module about relevant aspects of meteorology.

These modules should not only contain ‘classical’, i.e. literature based, teaching material replenished by multimedia contents (animation, video, audio). There should primarily be interactive simulations supporting the students in constructing new knowledge.

These simulations should be similar to the web application “e-törn”, constructed by us (Hebbel-Seeger 2003). The conception of e-törn is orientated on the model of constructivism, which understands learning as a process of active construction of knowledge and not as passive absorption and reproduction of contents. This enables the user to examine and modify, based on his individual state of knowledge, their subjective theories of the influence of the separate control elements on the steering sail as well as their complex interaction.

The learning situation in the so-called “situative” disciplines, which include the water disciplines, is, particularly in the beginning, highly complex and there is an immanent over taxation since it is not possible to reduce the situation parameters. Due to this there is only a limited reflection of one’s own performance during the course of movements possible. Using virtual learning aids, particularly simulations, in addition to the practice should result in a reflection about what is done, an improvement of the development of skills and, in total, a more successful acquisition of the sailing techniques.

This assumption is based on the value that is attached to the reflection of one's actions during the learning process. "Reflection processes are really important for learning processes: they accelerate them (quantitative aspect: faster than learning by trial and error) and alter them (qualitative aspect: concentration on comprehension rather than only on performance)" (Reimann & Zumbach 2001, 142).

This could also be applied to the learning of motion skills assuming the process of learning to be a transition from declarative into procedural knowledge; a process in which the active person first behaves considered and controlled on the basis of declarative knowledge which defines how to carry out the activity. Just "after a certain period of exercise his actions become more automatic and his considered attentiveness is relieved by the control of single steps of the action. A new procedure to control the actions in question has been formed" (Oswald & Gadenne 1984, 181).

More than only the preparation and revision of the motion practice in the outlined form we strive to integrate virtual learning in the face-to-face teaching. Discussions of the plenum in the modules should be continued in a virtual forum and, vice versa, the results of the forum discussion should have an impact on the next face-to-face meeting. This, however, requires that the teaching material of presentations for the plenum is immediately virtually available if possible.

Regarding to theoretical thoughts, we discussed in chapter 2, we build up a special kind of content pool (Flash based XML-application), integrated on the learning platform. Within this application teachers are enabled to define an individual learning-track through the content, with itself comprises of several cores, with are consisting different kinds of learning items (thatch as improvements, illustrations and assessments) and communicate it to students (see figure 1).

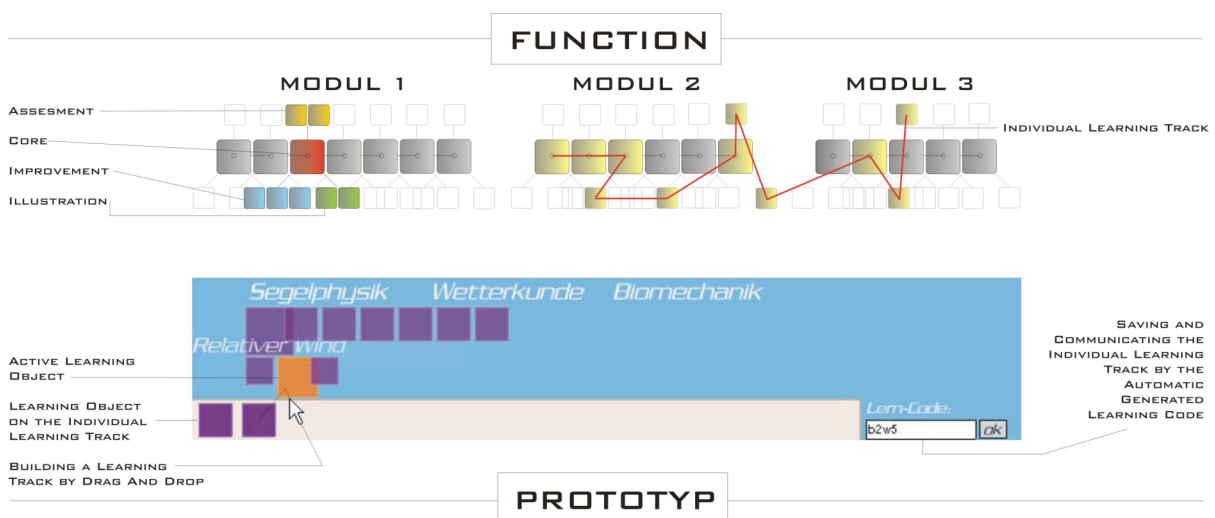


Figure 1: Conception and prototype of the organisation of learning objects

4 Organizational Constraints

In the field of sport disciplines which are bound to equipment (rowing, canoe, sailing and surfing) there are 19 modules (summing up to 48 hours per semester) offered each year at the department of Sport science of the Hamburg University. These are differentiated into basic and advanced modules as well as courses and exercise times and the participating students are both, diploma and teacher studies students.

These types of modules are offered for each discipline separately although the aspects and connections concerning all of them are mentioned. Due to limited capacity it is impossible to separate diploma and teacher studies students even for a short period of time although this would be very helpful for fulfilling the different expectations and emphasises.

As a result of the departmental structure, temporary lecturers - in the field of theory and practice of water sports currently almost 60% - conduct more than half of the modules.

Under these circumstances the integration of virtual teaching as a supplement to face-to-face teaching offers two opportunities in particular. On the one hand it enables the differentiation between diploma and teacher studies students, which is desirable, but in face-to-face teaching not feasible. On the other hand the connection between virtual and face-to-face learning contributes to a better comparability between different modules of the same type.

Furthermore, carrying out modules in the field of water sports is often attached to field trips due to the dependence on outside conditions (stretches of water with/without current etc.) as well as changing situative conditions (wind, waves, etc.). To reduce the resulting loss of time virtual learning offers as a supplement seem to be very helpful (Schulmeister, 2003, S. 160f.).

5 Discussion and Future Prospects

The collection of products of the supporting programme for universities in the latest course book E-learning of the German Ministry of Education and Research indicates that the majority of efforts for media based university teaching intend to use hybrid learning arrangements (BMBF 2004). The proportion of face-to-face and distance learning is variable. A systematic control, however, of the manner of editing topics, of the individual planned communication tools, of the manner and the scale of (tutorial) support, and of the design of assessments in respect of the intended ratio is not discernible.

According to this Schulmeister (2003, 152) criticizes: “There are various examples for authors who only uploaded their learning material into the platforms and set their students on it. A concept for the integration into the face-to-face learning is often missing. ... The function of the platform is therefore reduced to one of a textbook, a library, a treasure trove, or a box where one could find everything. It would be advisable, however, to consider the didactic and organizational consequences of the inclusion of an additional virtual component into the entire learning environment for the face-to-face component within the system.”

It might seem as if there were a lack of didactic foundation with regard to the design in terms of content, and, furthermore, a lack of adjustment on the entire learning situation. Substantial reasons for this, however, are the constraints and functionalities of the used learn management-systems or learning platforms. The system underlying the learning platform, which is necessarily designed for serving various fields of science with individual topics at the same time, is often both, a blessing and a curse. On the one hand the more or less inflexible defaults simplify the construction of class topics and the administration of learning units. On the other hand the same defaults lead the constructor to be satisfied with the suggested instead of searching for adequate individual solutions.

The best example seems to be particularly the assessment solutions, which are frequently offered as a fixed component within the learning platform: the outlined SOLUTION-project for instance builds upon the learning platform “WebCT”. Apart from extensive communication tools this platform includes assessments of the learning outcome within the system in the form of multiple choice or text exercises. The evaluation occurs based on a databank within the system including individual marking and comprehensive arrangement in the marking scheme. This solution is both, simple to use and comfortable to deal with. It cannot, however, meet the requirements of being an adequate assessment form adjusted to the individual learning goals (Schulmeister 2003, 158).

Moreover, the practical connection of knowledge is hardly assessable by the common forms such as multiple choice questions, gap texts, and assignments since “all of them are of behaviouristic origin and simply serve the examination of knowledge” (Schulmeister 2003, 154). According to this they cannot accomplish an examination of abilities which might lead to “a reduced horizon of expectations” as far as the students are concerned who, fears Schulmeister (2003, 154) “might be taken in by the misunderstanding that their abilities were tested”.

If we want to try to integrate appropriate assessment forms into the learning platform, we will have to rely on our own developments, which are realizable without particular technical obstacles because of the openness of the WebCT learning platform in regard of the media format, which is to include them. This solution, however, has a distinctly larger expenditure and is less elegant concerning evaluation and assignment of the user data since it is not system based.

Another consideration in this direction is the consequent succession of Blended-Learning in a Blended-Assessment. If the goal of the control of the learning outcome is not only a formal qualification (for which multiple choice questions are rather sufficient) but topic wise founded, it seems reasonable to suppose tasks within the face-to-face periods whose successful solution could be prepared during the virtual periods.

The didactic added value of such a media based face-to-face teaching will depend on whether it is possible to connect face-to-face and distance teaching properly. In the current discussion there is a significant importance attached to the support of the students during the virtual periods, for instance by tutors. I am representing the opinion that the editing and distribution of learning topics is important for success or failure. Only for increasing one's knowledge of certain topics individually or text based there is no need of a learning platform, although it is definitely one of the advantages of virtual learning environments that there is an extensive archive of learning material with elaborative searching functions. Neither is the focus on responsible preparation and revision of the face-to-face teaching a distinctive difference to traditional teaching forms, even if it is multimedia based. Real added value can only arise if there are possibilities created for the student to test the limits of their knowledge within the virtual space by applying their knowledge as well as to augment their knowledge by developing and verifying hypotheses with regard to the individual learning topic. This goal description intends an emphasis on the development of 'interactive' topics for the virtual learning.

Ideally the face-to-face teaching in such an arrangement has the purpose to discuss the learning object and to sketch out its dimensions by collecting the individual contributions and perspectives. The potential of the virtual phase in contrary lies in the illustration and availability of the learning object.

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