Teaching with Youtube:
Quality Assessment of English and
Hungarian Videos on Physical Education

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List of topics

Effects of Web 2.0 solutions on current learning theories

Current e-learning paradigms focus on the digital empowerment of the individual. *Connectivism,* often called the learning theory for the digital age, invites teachers to utilise collective knowledge rather than developing the capacities of single individuals and *distributed cognition* that designs learning experiences based on knowledge existing within systems which are accessed through learners participating in activities using social computing tools as catalysts for collective creation and sharing. Within these new, virtual learning situations, the value of individual creations – be it expressive utterances or learning objects – are rarely questioned. "For working for nothing and beating the pros at their own game, TIME's person of the year for 2006 is you!" (Grossman, 2006, 2) The famous Time Magazine cover article for the person of the Year 2008 suggests that all "WeTube" (Jenkins, 2008) is highly valuable and important to recognise.

New Web 2.0 technologies and websites, such as a blog, wiki or YouTube, make new demands on learning, while they provide new and extremely motivating supports to it. Educators, however, are still reluctant to make use of the wide repository of social computing sites and use them as flexibly customisable educational resources. Doubts about quality and relevance are among the most important reasons for this reluctance – a feeling not shared by their students. Described as "Gen-X, Millennials, the Nintendo and Net Generation" (Tapscott, 1997; Tapscott and Williams, 2006, Oblinger, 2003; Olsen, 2005), these students have grown up within a world of pervasive technology including mobile phones, digital cameras and the internet. While students regularly utilise Delicio links, Podcasts, Blogosperes, Wikis, RSS feeds, Flickr images or YouTube videos for their school work, educators seem to need orientation and assessment tools as facilitators for making regular and satisfying use of products of the Social Web. The moving image is especially important in areas like Physical education where an integrated cognitive and psychomotor development is needed for successful learning. This paper summarises the initial phase of a research project aimed at producing a system for quality assurance, content identification and evaluation for YouTube video entries to be used as resources in Physical Education (PE). For this discipline, a shift from classic vehicles used for learning today (lecture notes, printed material, PowerPoint, websites, animation) towards ubiquitous user-centric, user-content generated content seems to be inevitable.

The video clip is probably the most popular multimedia product that may also serve as a powerful motivational tool if used as not an end in itself but a means toward achieving learning objectives. An effective instructional video is far more than a television program; it is a teacher-to student instruction with the video film as a vehicle for discovery. YouTube is used as a resource mainly by language teachers who retrieve "slice-of-life" videos to create the context for acquiring communication patterns of a foreign culture. YouTube, however, is also a "student medium", that assures a two way delivery of content. Thus, a new "Learning Ecology" is created where Web 2.0 technologies can be explored in collaborative and (co)creative teaching and learning situations. Collaborative content creation coupled with peer assessment may result in deeper learning both in the discipline targeted and in innovative media use. For PE, YouTube

offers authentic documentation of sports events as well as detailed instructions in techniques presented by sportsmen of a variety of ages and cultures. It contextualises and thus enhances the learning experience. However in order for a new learning tool to be adopted, educators must be aware of the possibilities of its use within a concrete framework. John Seely Brown (2002) uses *ecology* as a metaphor to describe an environment for learning: "An ecology is basically an open, complex adaptive system comprising elements that are dynamic and interdependent. One of the things that make an ecology so powerful and adaptable to new contexts is its diversity." Brown further describes a learning ecology as, "a collection of overlapping communities of interest (virtual), cross-pollinating with each other, constantly evolving, and largely self-organizing." (Brown, 2002)

This paper outlines some possible strategies for educators to search for relevant content, create meaning (tag), and incorporate them into the student learning experience.

Educationally relevant characteristics of YouTube

YouTube is a website for user-generated content (UGC), just like Flickr, FaceBook and Wikipedia. It was officially launched in December 2005 and from 2006, it is part of the "Google empire". It attracts far more users than any other online video sharing service (e.g., *vimeo*, *eyespot*, *jumpcut* or *ourmedia*, cf. Brouwers et al., 2008) but it offers a far better user experience (Online Video Site Survey, 2009). Each month, 200 million unique visitors browse the site worldwide, a third of them come from the United States (YouTube Survey, 2008). YouTube's best educational feature is its interface which enables users to have quick access to videos and to switch from one clip to a new one. Educators may embed YouTube videos in their websites, weblogs, or social network pages as the professional media does (e.g., BBC News and CNN constantly encourage and regularly utilise such content).

Teachers can start their new multimedia educational resource by creating a "*channel*" – a user account page – and organise relevant, self-created or downloaded content into learning units. They may customize these private "educational channels" by providing personal information, presenting their own videos, linking to other websites and showing lists of favourites and subscribers. Students, in turn, may be encouraged to also develop thematic channels and / or comment on teacher-selected content. They may (or must) subscribe to the teacher's channel and receive a message when a new video is posted. Furthermore, the channel owner may invite users – fellow teachers of the same discipline, for example – to contribute or comment.

Thus, *a learning community* evolves and (inter)national networks are created. According to the company's data (YouTube 2008) for the United States, 47 % of the users are registered users who in principle interact. Lange (2007) however, observes a "participating gap" resulting from the lack of skills, insufficient hardware or bad first experiences. Also, inefficient tagging of videos will result in negative user attitudes and decide whether participation will take place, and what the quality of that participation will be. Halvey and Keane (2007) examined the use of community building tools that have been designed for interacting and sharing on YouTube and found that only a minority of the registered users employs these tools often. Users do not exploit the community facilities available on the website: they do not invite friends, do not comment on videos watched and do not tag uploaded entries. These data clearly indicate that a training program is needed if we intend to make YouTube an accessible tool for PE teachers.

But is it worth the effort? Do we find valuable educational input on this site? Clark and Mayer (2002) considering the appropriate use of any media to improve learning suggest that media must be aligned with expected learning or performance outcome; reduce cognitive load; exclude superficial text or graphics; be appropriate for target learner's learning literacy. Further rules apply for video learning (Xu Cheng et al., 2000): it shouldn't be passive, it should promote active viewing and maximize learning. YouTube seems to be an appropriate learning platform as it allows your students to watch the video in short segments – and teachers to target content towards learning goals; they allow ample opportunities for online and offline note taking and tagging, and thus develop observation and summarizing skills; they can be paused and restarted for a prediction of the evolution of the action sequence; the separate shutdown of audio and video features supports the reading of vocal and iconic clues; through the integration of the video in a learning material, the visualisation level of the content is enhanced far beyond ordinary, static illustrations. During the PE lesson, the video can serve as an introduction or motivator for the hands-on activity to come. Video segments help focus on relevant details of a game or a movement. "By charging students with specific viewing responsibilities, teachers can keep students "on task" and direct the learning experience to the lesson's objectives. Be sure and follow-up during and after viewing the tape. When students have viewed the video consider: what interested them? What didn't they understand? How can they relate the program to their experiences and feelings?" (Duffy, 2008, 23)

Students can use several other social media platforms to enrich their YouTube experience. They may add comments / blog on the video, evaluate content on site (using the scoring device provided) or on a separate blogging environment the teacher develops. Therefore, video is an effective catalyst and facilitator for in- and off-classroom discourse and analysis. YouTube allows the learner to experiment in new media to convey information and knowledge. "Coupled with hands-on learning, a new media, video-enhanced curriculum can be invaluable for expanding the learning experience and by incorporating a medium that is as popular, forceful and familiar educators can tap into the existing enthusiasm towards this form of new

media. Allow your students to create a short video as part of an assessment item instead of the traditional essay. Becoming involved in the creation of a video heightens a student's visual literacy, an important skill in today's electronic culture. The act of creating content, in virtually any form, is a valuable learning exercise" (Educause Learning Initiative, 2006, 37). Within higher education, Jenkins, (2007) introduces the 'YouNiversity' metaphor and suggests an intellectual network where students interact not only with professors, but with industry and community representatives. YouTube can also be used as a virtual library to support classroom lectures by providing students with access to video clips. (Conway, 2006)

Encouraged by case studies of successful educational use of YouTube and our own successful efforts with the introduction of Web 2.0 technologies in higher education, (Kárpáti, 2009), we decided to set up a community of practice for PE teachers and engage in the use of YouTube for the improvement of the quality of Physical Education. As a first step, we performed an assessment of relevant YouTube videos.

Case study: YouTube videos for Physical Education – evaluation of content and quality

Constructing the sample

When selecting our sample, we used a random sampling method employed by a recent large scale study on usage patterns of YouTube. (Xu Cheng et al., 2000) A search word structure was developed and discussed with an expert panel, and relevant for PE search words were used to retrieve 9754 YouTube video items. These were in turn analysed by genre, topic and student population to establish the setup of the sample. Out of this large collection, a sub-sample of 50 films was constructed. This sub-sample reflected the structure of the big collection as it included different film genres, production types and student protagonists in the same proportion.

If a teacher decides to look for some content related to Physical Education, the most obvious thing to do is using 'physical education' or 'sports' as key words to activate the search engine. In this case, we can easily get several million hits. With such an open search, we find that sports events dominate, PE content is scarce. However, this first impression may be misleading, because inappropriate tagging makes educationally relevant content hard to find. The research literature on YouTube has observed this lack of sharing intent with uploaders (Brouwers et al., 2008) and indicates that users have to be educated in making their content recognisable if YouTube was going to be employed for a specific purpose, for example, community building or teaching. If we use a combination of key words, the number of hits is reduced drastically, see Table 1.

Table 1   Search phrases and hits about Physical Education

Search phrase	Number of English language videos	Number of Hungarian language videos
Physical education	more than 5 million	64
Physical education + lessons	877	23 (+299 hits for the student slang version of the term)
Physical education + teacher	1270	18 (+25 hits for the student slang version of the term)
Physical education + games	678	0
Physical education + activities	1180	7
Physical education + in school	3210	
Physical education + class	1040	
Physical education + dance	622	
Physical education + teaching	877	

The Hungarian sample included all types of contents from advertisements to highly sophisticated methodological sequences and student experiences. In the Hungarian search, we found that a considerable number of student videos about PE activities can be found if we use the student version of the name of the discipline. These videos may equally be used for teacher training as they document interesting and pedagogically relevant classroom events. Also, student interest in making and uploading films about PE classes shows the motivational value of this resource for teaching adolescents – and being taught by them, while watching their keen observations about our methods and style.

After several filtering turns, we found the following content types that may be relevant for pre- and in-service education in PE:

- Notable moments of a game (e.g. a tennis match or the most beautiful goals at a football match, the demonstration of the playing style of a well-known sportsmen etc.)
- Games recorded in full (uploaded mostly in several parts)
- 'Funny moments' of sports activities
- Interviews with professional sportsmen or coaches
- 'Fan videos' about a team or a player
- Educational videos, e. g. 'How to play soccer?'
- Demonstrations of PE lessons; e.g. teaching different skills, how to teach different types of fitness movements

A peculiar thematic difference was observed at the first glance among the English and Hungarian language samples: the latter did not include items about sports activities for people with physical handicaps. A search with combined key words (PE and handicaps), however, resulted in an equal proportion of such films for the Hungarian sample.

Developing the assessment framework

We used expert rating as an evaluation method to assess a set of the video content relevant for educators' qualities: the *technical quality* of the film that is decisive for its usability in an educational setting, *professional content* that makes it a valuable learning resource, *methodological aspects*, that influence the way the film can be introduced before, during or after a PE lesson, and *aesthetic qualities* that contribute to the motivational effects and general appeal of the film. Scoring was conducted by three jurors with different professional backgrounds: a PE specialist, a teacher trainer and an educational researcher with no teaching experience. Scores given ranked from 1: low quality, to 5: excellent quality.

The selection of assessment criteria was influenced by our final objective of constructing a learning resource repository. The content of videos most useful for us always includes movement, so our first evaluation criterion was *technical quality:* Good PE resources have to capture the characteristics of movement in a sharp and clearly visible way. Our second criterion was *professional quality.* Images and narration have to convey a clear explanation of the sports event filmed, including both technical and tactical elements of the sports or games documented. To qualify as professionally relevant, methodology had to match the age group and a relation to the PE curriculum in the country where the video will be used (in our case, Hungary) was also an important point. Therefore, we introduced a third criterion, *educational usability.* As with digital learning resources, intercultural relevance (potentials for understanding the film in another country or culture, Blamire and Karpati, 2008) was an important factor in deciding over the use of the film strip for education. Finally, every communication act has to include an element of aesthetics to be appealing and motivating, so we also assessed the *aesthetic quality* of the films.

For each criterion, we defined levels of excellence from 1 to 5 and assigned points accordingly. For example, 1 score was given for *technical quality* of the film if both sound and image were barely intelligible, 2 if either sound or image were useful, 3 if both could be comprehended and the action followed with only some disturbances in between, 4 if the image was good and the sound mediocre or vice versa, and 5 if both were excellent. When judging *professional content*, we identified genres and content types that we found relevant for pre- and in-service PE education:

I. Simple tasks developing basic skills
II. Complex tasks developing special skills
III. Tasks to develop basic techniques of a sport
IV. Complex technical tasks
V. Tasks involving tactics
VI. Irrelevant content

Educational usability was defined according to the dominant methodological models characterising Physical Education today. One model focuses on working with small groups and devoting attention to individual skills development while presenting a sport or game in full, with all its rules and moves ("*global*" *methods*), and another that works both with small and large groups and teaches the sport or game in segments first and in full only if all elements have been sufficiently acquired ("*partial methods*"). Use of these methodological models depends on the phase in the learning process and the ability and previous

experiences of students. We developed an evaluation system that integrates both approaches and makes it possible to reveal positive and negative aspects of films for both models. We gave 5 scores for the best documentation, 1 for an insufficient or misleading representation and 0 if we did not find the methods represented in the film appropriate for educational use.

Aesthetic quality was also considered in our assessment. Here, we evaluated the communicative power and the appealing, expressive execution of the films. 1 or 2 scores were given for random, amateur shots with no or very little postproduction, 3 for partially edited and 5 for fully edited, narrated short films or accompanied by music. To our surprise, YouTube has a wide selection of even the highest level!

Assessing YouTube videos

Our reduced sample that reflected the content types of the large selection included 50 English and Hungarian films. Table 2 shows the assessment of English films.

Table 2   Assessment of English language videos

	Film title	Technical quality	Professional content (PE)	Educational usability	Aesthetic quality
1	Volleyball Serves	2	III.	2	3
2	Teaching Balls Skills, and Fitness	5	III.	5	5
3	Baseball: Crow Hop Technique	5	III.	5	4
4	School Events – Physical Education: Swimming Lessons	1	VI.	3	4
5	Physical Education Weights Training Lesson	3	IV.	3	4
6	Math+PE=Fun	5	I.; II.	3	4
7	SAQ® SCHOOLS Physical Education Solutions	3	I.; II.	4	3
8	PE O Level 100m Sprint Lesson	1	I.	0	3
9	Quality Physical Education Lesson – Effective Teaching Strategies	3	III.	3	4
10	Ultimate Instructional Video – Backhand	5	III.	3	3

Most films in the selection are about basic techniques (cf. film No. 1; 2; 3; 9; 10, see details of access in the Appendix). This shows the efforts of uploaders to provide content that most PE teachers need. In the English language sample, we found several examples for interdisciplinary films that featured the relevance of physical education for other disciplines. An example: film No. 6 shows how mathematics education can be supported by PE activities. The English sample shows excellent examples of work with an integrated class where children with physical handicaps work together with healthy children, often using the same tools (cf. Film No. 7). In Hungary, – and perhaps in many other countries in the world – integration is a difficult issue in PE, so YouTube videos may serve as a unique learning resource for this area. Several films are clearly student uploads that document funny or exciting moments of a PE class. These films may also be employed in the training of PE teachers in other countries as they offer cross-cultural comparisons in the organisation of lessons, discipline, motivation and student assessment. (Cf. Film 4 and 6).

Table 3 shows the evaluation results of the Hungarian language sample. (Not all films originate from Hungary as this language is spoken in the Diaspora of the neighbouring countries as well.)

Table 3   Assessment of English language videos

	Film title	Technical	Professional	Educational	Aesthetic

		quality	content (PE)	usability	quality
1	PE lesson in Lajosmizse town	5	I; III; IV	4	5
2	An irregular PE lesson	5	I	5	5
3	Lab school PE lesson for 2. graders (ages 7-8 years)	3	I; II	4	3
4	P.E. Hungary	3	I.	3	3
5	„have a look at our PE class!"	4	I; III	5	4
6	Adventure Park – an advertisement	5	I	3	5
7	Picking carrots at the Waldorf School of Szolnok town	3	I	3	3
8	Judo	1	IV	0	1
9	Matt jumps the bench	1	III	0	1
10	Physical education	5	-	3	5

As we compare the two samples, we may realise that there are no big differences either in technical or in professional quality, or in aesthetic appeal among the video uploads in the two languages and two (three, four, – with English language videos, it is hard to tell!) different educational cultures. In terms of content, more information about how to work efficiently and in an enjoyable manner with students suffering from handicaps may be found in the English collection. Otherwise, videos in both languages may be used in any country to improve the teaching of PE through the introduction of this openly accessible and immensely rich visualisation tool.

Further research: tagging the collection, facilitating the use of YouTube videos in education

With considerable effort, we found enough valuable content on YouTube to start our learning resource collection for Physical education. However, this effort could be considerably reduced if social knowledge construction on YouTube would include a *more sophisticated tagging operation*. Most films we encountered needed re-tagging to clearly indicate its content and scope. The importance of appropriate tags for YouTube has been emphasized in research efforts that try to identify ways of further development of this exemplary Web 2.0 site. YouTube's popularity lies in its creative opportunities to share, respond to and author content. When compared with another genre of social knowledge creation, we find YouTube more flexible and playful. Wikis emphasise task-oriented collaborative editing of content and development of "collective" interlinked knowledge. Blogs, in turn, are language based and may not readily be understood by non-native speakers. The power of the image overcomes linguistic difficulties as most YouTube videos we assessed could be easily interpreted even if the sound was only partly comprehensible. Blogs, YouTube and wikis provide a means for the social construction of knowledge – but only if their use is easy enough for teachers and learners to use them regularly.

The introduction of the Hungarian Core Curriculum in 1995 that replaced a detailed syllabus, the character of Physical education has also been altered. Before, techniques of different sports were taught one after the other, now it is the development of skills and competences and not the acquisition of a set of rules in the centre of attention. During the last 15 years, however, very few learning materials have been developed to assist this shift of focus. Existing resources still focus on teaching traditional sports, and offer little guidance for skills development for new fitness sports and free time activities that parents demand. YouTube resources and an (inter)national community to collect, select and evaluate them would be extremely helpful for the modernisation of the discipline.

YouTube seems to have great potentials as a social site – in many respects, it belongs to web 3.0, the fully social web. "We have found that YouTube videos have noticeably different statistics compared to traditional streaming videos, ranging from length and access pattern, to their growth trend and active life span. We investigate the social networking in YouTube videos, as this is a key driving force toward its success. In particular, we find that the links to related videos generated by uploaders' choices have clear small-world

characteristics. This indicates that the videos have strong correlations with each other, and create opportunities for developing novel techniques to enhance the service quality. (Xu Cheng et al., 2000, 1)" Research reported here intends to monitor and use this potential. Not just for teaching and learning, but also for motivating people to do sports "in the real world". An interesting research question is, if YouTube videos are used to present sports techniques, the mood of a game and a sporting lifestyle, will students be more willing to go out to the fields and courts and actually engage in sports? Does watching peer-produced videos develop a desire to be part of the action? Can YouTube content be an active protagonist of sportsmanship? These questions will be answered when the YouTube PE community is formed and video learning resources find their way into many Hungarian classrooms.

The problem of retrieval: inappropriate tagging

The variety of videos found in YouTube is really impressing, though the uploaders of films do not pay enough attention for tagging their content correctly. *Tagging is crucially important* for making any kind of content retrievable on the World Wide Web. If it is not done the right way, the 'audience' may never find the video even if they seek for the exact content type. There are several possible solutions for this problem. The first is that YouTube should provide a description or a help function for those who would like to upload something on YouTube. The description should contain guidelines about how to tag the videos effectively and should also motivate the uploaders to think for a moment with the users' mind when they are to seek for some content. Some examples should be found also such as videos that the uploaders can watch and after it some recommendations or guidelines with some extra discussion forum about tagging. This would provide the basis for creating the YouTube community the same way as the well-functioning Wikipedia community.

If the videos are tagged in the right way, users can find the related contents more easily and they can even detect connecting videos as well. At tagging the contents, we should use the name of the sport documented, the character of the video (e.g. PE lesson, match, notable moments etc.) and the main topic. Further tagging words are up to the uploaders' professional experiences. It would be also a good way to build educational repositories using YouTube videos if different channels were created dedicated to the different type of sports, the aim of the content and the target audience. Tagging and commenting on thematic collections shared as a YouTube "channel" may be an authentic way to consult colleagues who may have more experience in a given sport type or activity. Thus, young PE teachers, novices to the profession but not to internet use, might collaborate in a Social Web environment similar to those they frequent in their free time. Legal issues, however, also should be considered. In Hungary, copyright law regulates the use of internet based content, and similar international regulations should also be considered when developing a thematic channel and sharing it with trainee teachers and in-service colleagues.

A solution for making tagging more functional is the use of *professional 'You Tube taggers'*. Their job is to provide the already uploaded contents with the proper or recommendable tags in order to give more chance for the users to find the desired video in reality as well. The taggers could be hired by YouTube or they could be voluntaries who invest work in making the film collection a more accessible resource. Such a tagging enterprise may be the first step in the creation of a knowledge building community of teachers intending to make use of this free, vast and expanding learning content repository.

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Acknowledgements

Appendix: List of YouTube videos in the sample analysis

English language films:

1. Teaching Physical Education UL, Lafayette KNES 350 Volleyball Serves 7:32 video.wm http://www.youtube.com/watch?v=R2DNFZKTpR0
2. Physical Education, Teaching Balls Skills, and Fitness   3:42 http://www.youtube.com /watch?v=We2p5sdrV9M
3. Teaching Physical Education UL, Lafayette KNES 215 Baseball: Crow Hop Technique http://www.youtube.com/watch?v=6Ejp2dim_ng
4. School Events - Physical Education: Swimming Lessons 9:02 http://www.youtube.com /watch?v=in-EF_tdXdM
5. Physical Education Weights Training Lesson 3 Mar 09 http://www.youtube.com /watch?v=W68l8fQnxDE
6. Math+PE=Fun http://www.youtube.com/watch?v=pZ1lWQMaS1Q
7. SAQ® SCHOOLS Physical Education Solutions http://www.youtube.com/watch?v=h_r2ZglCNB0 (This video has been removed by the user.)
8. PE O Level 100m Sprint Lesson http://www.youtube.com/watch?v=rs6gxX6hbps
9. Quality Physical Education Lesson – Effective Teaching Strategies http://www.youtube.com /watch?v=kO2E9Fm9rVc
10. Ultimate Instructional Video – Backhand http://www.youtube.com/watch?v=lBRQyBHGWLs

Hungarian language films:

1. A testnevelés. http://www.youtube.com/watch?v=Pwpio_W0sXU
2. Máté szekrényt ugrik (tesi óra) http://www.youtube.com/watch?v=15y2zh4h6D8
3. P.E. Hungary tesi óra http://www.youtube.com/watch?v=ifbZ3Z-Noz4
4. Nézz be hozzánk 2. http://www.youtube.com/watch?v=BFh5RFJPjDo
5. Osztály testnevelés óra http://www.youtube.com/watch?v=S6hFuDhEx3I
6. Testnevelés óra, Lajosmizse http://www.youtube.com/watch?v=pzMaKhGW_7A
7. Rendhagyó testnevelés óra, Dienes Valéria Ált. Iskola. http://www.youtube.com /watch?v=YIqwIQAyjY8
8. Hirdetés: Bemutató: Kalandpálya http://www.youtube.com/watch?v=lT9RtUuqRpU
9. TF III/1 csoport judo óra http://www.youtube.com/watch?v=he3geSR1P_M
10. Répaszedés. Szolnoki Waldorf Iskola. http://www.youtube.com/watch?v=-Mor7c9LUL4