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Online video examination
Video exams from the student’s point of view.
Results from a questionnaire.

Paper presented at Diverse Conference 2008 Haarlem, INHOLLAND University, The Netherlands,
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Keywords: Streamed video, Video exam, PBL, Aalborg Model, Assessment, Evaluation, Video,

ABSTRACT

The Master programme in Problem-Based Learning in Engineering and Science, MPBL (www.mpbl.aau.dk), at Aalborg University, is an international programme offering formalized staff development. The programme is also offered in smaller parts as single subject courses (SSC). Passed single subject courses are accredited to the master programme.

The programme is online, worldwide and on demand. It recruits students from all over the world. The programme is organized exemplary in accordance the principles in the problem-based and project-based learning method used at Aalborg University where students have large influence on their own teaching, learning and curriculum.

The programme offers streamed videos in combination with other learning resources. It is a concept which offers video as pure presentation – video lectures - but also as an instructional tool which gives the students the possibility to construct their knowledge, collaboration and communication.

In its first years the programme has used Skype video communication for collaboration and communication within and between groups, group members and their facilitators.

Also exams have been mediated with the help of Skype and have for all students, examiners and external examiners been a challenge and opportunity and has brought new knowledge and experience. This paper brings results from a questionnaire focusing on how the students experience the video examination.
INTRODUCTION

The Master programme in Problem-Based Learning in Engineering and Science, MPBL (www.mpbl.aau.dk), at Aalborg University, is an international e-learning programme offering formalized staff development. The programme is also offered in smaller parts as single subject courses (SSC).

The programme is online, worldwide and on demand. It recruits students from all over the world. The programme is organized exemplary in accordance the principles in the problem-based and project-based learning method used at Aalborg University where students have large influence on their own teaching, learning and curriculum. It is project based which means that the students each semester write a project report alone or in small groups.

The program offers streamed videos in combination with other learning resources. It is a concept which offers video as pure presentation – video lectures - but also as an instructional tool and gives the students the possibility to construct their knowledge, collaboration and communication (Kolmos et al., 2006; Du et al., 2007).

In its first years the programme has used Skype video communication for collaboration and communication within and between groups, group members and their facilitators.

Also exams have been mediated with the help of Skype and have for all the students, examiners and external examiners been a challenge and opportunity and has brought new knowledge and experience.

Examination in Denmark is regulated by Ministerial Order. Up to 2001 video examination was not allowed. A change in The Order opened up for this kind of examination under strict circumstances. The change was not motivated by the new technological possibilities or globalisation of education and the new marked for international education (L 145; LOV nr 247).

In higher education the new possibility was implemented in 2002. In addition to the Ministerial Order about exams it was said that exams can be arranged as video conference. But it was only for exams where the student was located in a foreign country and a precondition was that a reason was specified. If practical or economic reasons prevented the student for participating in exams in Denmark then it was allowed. It was also a condition that the exam was held at Danish premises. If the exam should be held in another place it should be accepted by The Ministry of Education.

It was decided in the Ministerial Order that the student should be overviewed by a guard or inspector appointed or accepted by the institution.

Besides that the rules were the same as for on campus examinations (BEK nr 537).

A change of the Ministerial Order in 2004 allowed institutions to arrange exams as videoconferences on or off campus within Denmark. The students should be watched during the exam by a person appointed or accepted by the institution and no further preconditions were given. In 2006 it was added that the institution should assure that the security arrangements was the same as if the exam was ordinary - on campus. For countries outside Denmark it was added that students
could be situated elsewhere than at Danish premises. The Ministry could approve that an institution held exams at other places if the conditions were the same as in Denmark. The university could appoint a person to assist with practical activities in relation to the exam. Besides that it was possible to get exemption from the order (BEK nr 867; BEK nr 231).

As a consequence Aalborg University applied on behalf of the master program in Problem Based Learning in Engineering and Science for exemption so that it was possible to arrange video examinations [1].

Before the exam the student – as student in a group or a single student - had submitted a project or mini project report. The report contains the project work’s problem and results, and an exposition of the application of theory and methods. The report is read by the facilitator who is the examiner during the examination and by the external examiner. The exam is based on a combined evaluation of the report and a oral performance although an independent grade is not given for the project report, as described in the rules in the Examination Policies and Procedures for examinations at The Faculties of Engineering, Science and Medicine Aalborg University 2007 (Examination Policies). What is graded is “whether, and to what extent, the students’ qualifications comply with the objectives, competences and academic requirements stipulated for the programme” (BEK nr 867 p. 1)

The exams are oral and performed via Skype with a video camera which allows one to one communication. The examinee is situated in one location and the facilitator and the external examiner in another. The camera used is with ultra-wide-angle lens capturing both examiner and the external examiner. All are wearing headsets and all participants can hear and see each other. No instance of cheating has been reported.

The student examined has to be ready at the computer 5 minutes before the announced time.

At the given time the facilitator calls the student via Skype. The responsibility for the performance of the exam lies with the facilitator (the examiner) who opens the exam and acts as chairman.

The examiner says hello and inform about procedures etc. for instance that the examinee is not allowed to receive any help from others and if so – even on suspicion – the examination will be stopped and the examinee has failed. The examinee is also informed about what to do if technical break down happens. He or she shall wait at the computer up till 30 minutes. In the meantime the examiner will call again. A new exam will be held if it is not possible to get contact within 30 minutes. Information about the procedures can take 1-2 minutes.

Thereafter the examinee presents the project report. Up to 10 minutes is allowed for the presentation. After the presentation the examiner asks questions. The starting point for the examination is the project report handed in. Questions are posed based on the objectives of the module; the project groups report and the process analysis (both reflect the objectives of the module) or the mini-project (reflecting the objectives) and answers are discussed. The external examiner can contribute during the examination, for example, by participating in any discussion, putting forward comments and pose questions. The examination including the discussion lasts approx. 25 minutes.
The Skype connection to the student is interrupted. The facilitator and the external examiner grade the student and skype back the examinee with the result then the examination is closed.

The procedure for the exam is communicated to the student in advance. It is stressed that the examinee is not allowed to receive any help from others during the examination. The facilitator will at any time interrupt the exam if it is judged that the student receives help from others.

During the examination it is possible to see the examinee and hear if somebody communicates with him or her in an unintentional way. It is not possible to see if any tries to communicate with the examinee from outside the area covered by the camera e.g. receiving help from somebody writing on a blackboard. But it is possible to see if the attention of the examinee is elsewhere – e.g. trying to read a message on a blackboard - out of the area covered by the camera. It is obvious that all the attention, focus and concentration of the student examined is directed at the question posed and the academic discussion focusing the camera, the facilitator and external examiner at the other end of the Skype connection.

Video mediated exams are according to the Ministerial Order on university examinations (the Examination Order) a complicated arrangement and do not relieve video exams although it is possible to get exemptions. Focus is very much on security. The purpose is obvious to avoid cheating.

Cheating is an act of academic dishonesty [2]. When it comes to oral exams on campus facilitator, external examiner and students are sitting in the same room. It is the duty of both the facilitator and the external examiner to overview that the rules are not broken. When it comes to written exams it is typical arranged in a hall or big class room at the university. Administrative staff and a special corps of guards overview the students and keep eyes and ears open being aware of cheating and preventing it. Cheating is under both circumstances not easy.

Exams are summative assessments. They shall document the knowledge and competences of each individual student. If the student gets help from others the assessment will not document the knowledge and competences of the student.

The institution shall secure that the exams are completed under conditions which exclude the student from unintentional communication [3]. Cheating is treated very seriously although sanctions are not mentioned in the Ministerial Order about exams at higher education. Instead it is decided that the institutions themselves establish rules to deal with cheating. (BEK nr 867) At Aalborg University it means expelling from the exam – under serious circumstances expelling from the university (Regler) [4].

There is more than one purpose with exams (Bourdieu & Passeron, 1970; Shuman, 2001; Ewell, 2005; Terenzini, 1989). But one is to measure or value and perhaps transform into a grade the competences of the student or the contribution from courses or projects given to the student in relation to outcomes, skills, knowledge and understanding. The valuing or grading must be trustworthy. It must reflect how well or bad the student demonstrates to have reached the outcomes - the skills, knowledge and understanding (Jakobsen & Lauvås, 2001). Allowing students to get help from other sides will not reflect the skills, knowledge or understanding of the student examined.
In theory it is easy to imagine that a video mediated examination with the student examined sitting e.g. thousand of miles or kilometres away from the facilitator and the external examiner [5] could tempt the student to cheat (as well as an on campus student at a written examination sitting in a hall at the university could be). It is also easy to imagine that it could be easy to cheat because the facilitator and the external examiner cannot see what else is happening in the room where the student is placed. The grading will not be valid and reflect the outcomes of the student, and the exam would loose its value. The grade given will not be trusted.

There could be other reasons for not believing in the grading of students even at video exams. At conventional Danish oral examinations the student and the examiner(s) are in the same room sitting around a table. They can almost feel and smell each other and have close eye contact with each other. If a question is misunderstood the body language will often reveal it. And the facilitator has the possibility to pose a new question.

Video exams are different. They are virtually; there is a media and distance between the student and the examiner(s).

It could also be questioned if it is possible to run a video exam in the same way as an on campus exam. Could the rules mentioned in the Ministerial Order about exams in higher education be kept? Could the guidelines of the university be kept? (See BEK 867 and Addendum). The purpose with the exam is to assess to which degree the scientific or academic qualifications correspond to the learning outcomes. Is this possible when there is a media in between the student examined and the examiner? One could fear that video exams do not give the examiner the possibility to test the learning outcomes thorough and do not give the student a satisfactory frame to demonstrated knowledge and skills. Could the oral exam be arranged as a dialogue between the student and the examiner? The exam form should also meet the outcomes. Is that possible on video? The external examiner or assessor shall see to that the exam demands are in accordance with the outcomes defined, that the exam is completed in accordance with the rules defined, and that he or she has the possibility to participate in the examination or dialogue. But is it possible on video and distance? What is the opinion and answers to these question between those students which have experienced video examination. (It is also relevant to investigate the opinion between the facilitator and the external examiners. This will be done in a later questionnaire)

To investigate this a on line questionnaire were distributed to the student in the full master program as well as to the students on the single subject courses.

**METHOD**
The questions formulated were both closed-ended (answerable by checking one of several predetermined answers) and open-ended (requiring respondents to answer in their own words). They were related to the degree in which the respondent though it possible to keep the rules outlines in the Order and guidelines for exams and the extend in which the responders thought the rules and guidelines for examination was keep in the video exams the responders had participated in. There were also questions related to cheating, nervousness, possibilities for discussions, feedback and technical breakdown etc. This paper brings only some of the data collected.
30 responders received the questionnaire. 22 responded of whom 20 completed the questionnaire. It equalizes 67%-73%. Of those responders 11 was students in the Master Program and 11 had participated in single subject courses. A little more than a third of the responders had participated once, a little less than a third had participated 2-5 times and the rest – also a little less than a third - had participated 5 times or more.

RESULTS

The exam form used at project examinations in the master programme of Problem Based Learning are equal to the form practised in on campus examinations at Aalborg University (Addendum; qp.elsa.aau.dk/mpbl) The only difference is that they are mediated by video. Although the forms are equal approximately one third of the responders think that the form do not meet the outcomes in a high or satisfaction degree; see Diagram 1.

<table>
<thead>
<tr>
<th>Diagram 1. The exam form should meet the outcomes (N=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate to which degree you think it was possible in the video exam you participated in</td>
</tr>
<tr>
<td>In a high degree</td>
</tr>
<tr>
<td>In a satisfaction degree</td>
</tr>
<tr>
<td>In some degree</td>
</tr>
<tr>
<td>Not at all</td>
</tr>
<tr>
<td>Do not know</td>
</tr>
</tbody>
</table>

Responders (N=6) with the most experience with video exams (5 times or more) all of them think that the form of video exam met the outcomes in a high or a satisfaction degree (Qvist, 2008).

Not all responders think that video exams give the possibility to assess the scientific or academic qualifications correspondence to the learning outcomes. 3 out of 4 respondents think that it was possible in a high or satisfaction degree to assess the correspondence between the scientific or academic qualifications and the learning outcomes; see Diagram 2.

<table>
<thead>
<tr>
<th>Diagram 2. The purpose of the exam is to assess in which degree the scientific/academic qualifications corresponds to the learning outcomes (N=20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicate to which degree you think it was possible to do so in the video exam you participated in</td>
</tr>
<tr>
<td>In a high degree</td>
</tr>
<tr>
<td>In a satisfaction degree</td>
</tr>
<tr>
<td>In some degree</td>
</tr>
<tr>
<td>Not at all</td>
</tr>
<tr>
<td>Do not know</td>
</tr>
</tbody>
</table>

(20)
Among the responders with most experience with video exams 2 out of 3 think that it is possible in a satisfactory degree at video exams to assess in which degree the scientific or academic qualifications correspond to the learning outcomes. One third think it is possible in a high degree (Qvist, 2008).

Asking the same question in another way – the video exams give the examiner the possibility to test the learning outcomes thorough – the result is almost the same. One of the responders (5%) answers blank no. Half of the responders answer yes and almost another half respond that video exams give the examiner the possibility to some degree to test the learning outcomes thorough.

Experienced students respond different to this question. Almost all respond that video exams give the examiner the possibility to test the learning outcomes thorough (5 out of 6 responders. 1 responded that it is so to some degree)

In the Aalborg PBL Model there is a strong tradition for testing the outcomes through scientific or academic dialogue and discussions. Asked to which degree the responders think that this was possible at video exams all responders answered that it was possible in some degree, in a satisfaction degree and in a high degree. None respond that it was not possible; see Diagram 4.

All experienced responders answer that dialogue between the student and the facilitator was possible at the video exam in which the respondent participated – to a high degree – 2 out of 3 – or to a satisfaction degree – 1 out of 3 responders (Qvist, 2008).
The role of the external examiner is defined by order (BEK nr 867). It is among other to control that the rules defined are kept and that the examiner acts as described in the orders about exams and grading at higher education. The ideal is that the students are examined fair and equal. 40% of the respondents – 8 students - think that it is possible in some degree at video exams. The same number – 8 students - answer that it is possible to a high degree; see Diagram 5

Diagram 5. The external examiner should see to that the exam demands are in accordance with the outcomes defined (N=20)

<table>
<thead>
<tr>
<th>Degree</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>In a high degree</td>
<td>40</td>
</tr>
<tr>
<td>In a satisfaction degree</td>
<td>20</td>
</tr>
<tr>
<td>In some degree</td>
<td></td>
</tr>
<tr>
<td>Net at all</td>
<td></td>
</tr>
<tr>
<td>Do not know</td>
<td></td>
</tr>
</tbody>
</table>

6 experienced respondents all indicate that it is possible to a high degree for the external examiner to see that the demands are in accordance with the outcomes defined (Qvist, 2008)

The responders are asked to indicate to which degree they think it was possible for the external examiner to control that the rules were kept. Almost half the students think that it was possible to a high degree while 1 out of 4 respond that it was possible in some degree.

Diagram 6. The external examiner should see to that the exam are completed in accordance with the rules defined (N=20)

<table>
<thead>
<tr>
<th>Degree</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>In a high degree</td>
<td>40</td>
</tr>
<tr>
<td>In a satisfaction degree</td>
<td>20</td>
</tr>
<tr>
<td>In some degree</td>
<td></td>
</tr>
<tr>
<td>Net at all</td>
<td></td>
</tr>
<tr>
<td>Do not know</td>
<td></td>
</tr>
</tbody>
</table>

5 experienced respondents answer that it was possible for the external examiner in a high degree to see that the exam are completed in accordance with the rules defined. And one responds that it was possible in a satisfaction degree.

Cheating at exams is an academic crime. At video mediated examinations the examinee and the examiner are physically separated. It might temp the examinee to cheat as e.g. at written examinations where the students is sitting together (but separated from each other and watched by
One respondent admits that he or she had considered – in some degree - to receive help from somebody. But did not do it; see Diagram 7.

![Diagram 7. The video exam was virtual and you were physical separated from the examiner during the assessment you may have considered receiving help from somebody (N=20)](image)

The opinion about fairness at video exams compared to conventional oral exams varies. The majority of the responders think that the two forms are equal when it comes to fairness. 12 responder’s answers yes to the question – video exam is as fair as conventional oral exam. Half the numbers – 6 responder’s answers that it is so – to some degree – while 2 students’ answers a blank no; see Diagram 8.

![Diagram 8. Video exam is as fair as conventional oral exam (N=20)](image)

Compared to the answers from experienced respondents this is lower. 5 of the 6 experienced respondents answer yes to the question - video exams are as fair as conventional oral examinations - while 1 respond that it is fair to some degree (Qvist, 2008).

The opinion of most respondents in the Master in Problem Based Learning in Engineering and Science programme is that video exams give a satisfactory frame to demonstrate knowledge and skills. More than half the respondents answer yes to the question, while 1/3 responds to some degree. One out of 10 is of the opinion that video exams do not give the students a satisfactory frame to demonstrate knowledge and skills; see Diagram 9.
Diagram 9. Video exam give the participant a satisfactory frame to demonstrate knowledge and skills \((N=20)\)

<table>
<thead>
<tr>
<th>Option</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>0</td>
</tr>
<tr>
<td>To some degree</td>
<td>20</td>
</tr>
<tr>
<td>Yes</td>
<td>40</td>
</tr>
<tr>
<td>Do not know</td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>

The answers from the experienced respondents are more in favor of video exams. One answer - to some degree. 5 answer - yes, video exam gives the students a satisfactory frame to demonstrate knowledge and skills.

Answering the open question – describe what you find bad by video exam – the responders mention sound problems in Skype, the lack of opportunity to use a blackboard, slides and show pictures as supplement to the spoken dialogue, the lack of body language. One respondent formulate it: “Using Skype I had no way of doing what I do best. Take a piece of chalk and start drawing and talking standing by a blackboard. I miss the feeling of being ‘present’ in the room. The number of technical breakdowns using Skype is just too much to be useful.”

On the contrary another respondent answering the open question – describe what you find bad. He or she wrote: “Nothing at all”. The questionnaire also gave the responders the possibility to describe what they found god by video exams. Between god things are mentioned that the location could be everywhere and it was relaxing to sit at home in own environment. It could be everywhere as long as the internet connection was reliable; there were no need for travelling. “Video exams have come to stay”, a respondent writes, “but need further development to reach its potential” (Qvist, 2008).

CONCLUSION

At online video exams it is easy to image that cheating is easily practised because the examiner and the examined student is physical separated. Also the (Danish) order about exams has strict rules with the purpose to eliminate cheating at video exams.

At a video exam the student is watched (on video) and it is also possible to hear what is going on in the room where the student is. It is possible to control (to see) that the students has not the attentions somewhere else or is participating in any unintentional communication. The subject discussed during the examination requires all the attention of the examined student - it is high level academic discussions and defence of e.g. theories, methods or conclusions.

Students in the MPBL master programme all responded that they did not cheat or receive any help from outside although one in some degree had considered receiving help from outside. It corresponds with the fact that no incidents of cheating has been reported by any examiner or external examiner in the programme.
One respondent comment that video exams has come to stay, but some find that the form only fits the outcomes in some degree. The more experienced the respondents are the better they think that the form fits the outcomes.

The more experience the respondents have with video exams, the more satisfied they are with the exams and the more positive in their evaluation. Almost all of them think that video exams give the facilitator the possibility to test the outcomes and the external examiner the possibility to watch that the demands are in accordance with the outcomes defined and see to that the exams are completed in accordance with the rules. While all experienced responders found that dialogue between the examinee and the facilitator was possible to a high degree or a satisfaction degree there were responders which found that it was only to some degree.

When it comes to fairness and the question about how good video exams - as practised in the PBL Master program at Aalborg University – are to let students demonstrate knowledge and skills, 10 % of the responders evaluate video exams negative. None experienced responders does that.

Problems with the sound and technological breakdowns are mentioned as negative things, and among positive things are that the location could be everywhere – even at home in a relaxing environment.

This investigation has only given answers to questions related to the Ministerial Order of exams at higher education. But other questions could be raised, e.g. questions about lack of the communication technology and how technology makes the student nervous and incapable to demonstrate academic skills. Some students might be more concerned about technological crash down than others. Video exams might make the student nervous.

It could also be questioned if video exams give the facilitator the possibility to forward critical questions and the student to play the role as a perfect student examined and answer questions, quickly, demonstrate knowledge of concepts and definitions, demonstrate understanding of relations between concepts, argue for theoretical choices and demonstrate theoretical overview and show analytical skills. As well as give the student opportunity to discuss solutions to problems, compare knowledge and solutions and use knowledge in new situations, give the student possibility to answer and to present knowledge and skills during a presentation. But also to offer and receive satisfying opportunities to get feedback in relation to the project. Such question has been raised by Kolmos and Holgaard (Kolmos & Holgaard, 2007) in relation to group exams.

Answers to such questions will be described in a later article.

It should not be forgotten that both 20 responders and 30 students are a small population. Larger populations might give other results. The results in this article reflect the opinion of the responders and are not a documentation of what really happened or the opinion of other stakeholders in the exam. Examiners might e.g. be of the opinion that video exams give the examiner the possibility to test the learning outcomes thorough in a satisfaction degree, that discussion is possible in a high degree as well as the external examiners might think that it was possible in a high degree to see to that the exam were completed in accordance with the rules while one or more examinee was of a different or opposite opinions.
It should also be mentioned that the answers to the same questions related to conventional oral exams does not exist. As well as there are responders which have the opinion that video exams do not give the student a satisfactory frame to demonstrate knowledge and skills there might also be responders which have the opinion that convention oral exams do not give the examinee the possibility.

Notes:

[1] The permission was given under the conditions that the University would secure that the examination would be on the same conditions as if it had been in Denmark. (sagsnr. AAU, Tek-nat 2005-413/06-0011)

[2] See definition in Addendum

[3] The phrase is from BEK nr 766 covering professional bachelor education

[4] In the Ministerial Order on exams covering the primary and secondary educational level cheating results in being expelled from the exam (BEK nr 351 af 19/05/2005). Also at professional bachelor level cheating means that the student are expelled BEK nr 766 af 26/06/2007

[5] An external examiner is normally from other universities or the industry or from within the university – then called internal assessor or examiner. A certain amount of exams require external examiners from outside the university.

References:


