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## Exams taken at the student's home

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### Abstract

During the last two years, we have conducted an experiment of proctored exams taken at the student's home. The proctoring is carried out by the webcam and an application allowing the supervisor to interact in the student's screen. This experiment has been realised thanks to a project of the french higher education ministry and in partnership with FIED within a European project. The first important result is to note that there is no significant difference in success rates between the online proctored exam and the traditional exam taken at university sites. Others results are interesting on the quality of the experience lived by the students, on questions as different as the stress during the test, the impression of intrusion in the private life, the possibility of cheating, the absence of the teacher during the examination, the contact with the remote supervisor...

Last October, we launched a public market offer to find a proctoring provider enabling us to increase number of students registered at our institution. Then, we work with a French company, Managexam. Last February, 45 students took 191 exams at home around the world. The quality of the work with Managexam, its adaptation to our constraints and the positive feedback from students encourage us to further develop online exams proctoring.

More widely than distance learning students, online proctoring could also provide interesting solutions to all the students who have troubles to access to classical exams for several reasons (long life learning, disability, sickness, ...).

**Keywords:** online proctoring, remote examination

## **1. Introduction**

Our article deals with the modification of examination conditions for students enrolled in a full distance learning higher education course. Evaluation of distance learning on learning platforms (LMS) can allow individual and group activities, but these activities are not monitored. For examinations, the conditions and identity verifications must be as robust as if the examination took place in the institution.

Today, in most cases, students enrolled in a distance learning course must travel to the university to take their examinations, which are held synchronously with the students studying on campus and with the same exam subject. In some cases, universities have foreign partners who can arrange examinations near the student's place of residence. This solution may be, on the one hand, costly in terms of administrative organisation, or even impossible for large numbers of students on the other. It is also financially expensive for students and becomes impossible when time differences are too great. Students currently have difficulty understanding that training activities and support from online platforms at home are possible, but that they must continue to travel purely to take the exams at the institution. We found that many distance students choose to take their exams only at the end of the second semester during the "catch-up" exam session which, therefore, ends up being their only exam period, violating the rules of fairness for students. It is easy to understand that for students who live far from the university and especially for students abroad, or students who work, going to university can be expensive (asking your employer for leave, transport, hotel costs, accommodation and so on). For some students, this constraint may even be the reason they decide not to enrol in programmes when they are offered online. This problem makes distance learning unattractive for potential students. Different solutions are now available for remote examinations and can solve this problem. These methods must be tested and evaluated according to their cost, security, resistance to fraud, stress on students and conditions of implementation.

This paper describes how we are using examinations supervised by a webcam at the student's home (and screen-sharing with the proctor). Our students are Master degree students in the field of health management enrolled in the e-learning modality.

## **2. Online proctoring**

We describe here the work that began with an experiment which has been carried out since December 2015 at the University of Caen Normandie. This involves testing in real conditions (i.e. with students during training and assessment) alternative examination methods to face-to-face onsite examinations as part of distance learning. In the first part, we explain the context of the experiment. In the second part, we report on the progress of the experimental sessions. Then we provide some results from the sessions from the administrative point of view and the candidate point of view.

### **1.1 Context**

During the past two years, we have conducted an experiment to remotely monitor exams taken at the student's home (Beust & al. 2016, 2017); this remote monitoring being carried out through a webcam and an application which allows the invigilator to control the student's computer. This experiment was carried out as part of a DGESIP/MESRI (Ministry of Higher Education, Research and Innovation) AMI MiPNES 2016-2018 project, in partnership with FIED (french association of higher education distance learning), and as part of the European Erasmus+ OP4RE project. The results have been very encouraging, and an extension of the experiment is underway.

Notably, the first important finding to emphasise is that there is no significant difference in success rates between the online remotely monitored examinations and the examinations taken traditionally at university

sites. Next, several results are interesting regarding the quality of the student's experience on issues as different as stress during the exam, perceived intrusion into private life, the possibility of cheating, lecturer absence during the exam, contact with the remote invigilator and so on.

In October 2017, we launched a public call for tenders (MAPA) to find a service provider who would enable us to offer remote examination monitoring to an increasing number of students registered at our institution. We have since been working with a French company, ManagExam.

The remote monitoring of examinations in e-learning courses is interesting for two reasons:

- It provides the flexibility students demand
- It raises the question of examination methods in a genuine re-consideration of pedagogical engineering, in particular by responding to a need for alignment between learning and teaching and evaluation methods. Constructive alignment (cf. Biggs, 1996) is used in the field of educational sciences to describe a quality feature of a learning program. There is constructive alignment when learning objectives and activities are linked to the kind of evaluations used in this learning program. It's clearly not the case when exams are not taken online in e-learning programs.

## 2.1 Protocol adopted

At the beginning of the academic year, registered e-learning candidates volunteer to have their examinations conducted using remote monitoring at home. Before volunteering, they must check on a test platform that their technical equipment and conditions (microphone, camera, bandwidth) are adequate to allow remote monitoring. Depending on their personal situation, and, in particular, their geographical remoteness, we are selecting a number of students who will benefit from the service. This is what allows us to manage our costs for the benefit of those whose need is greatest. Students who are not selected for remote monitoring will be invited to the University of Caen Normandie in the usual way. The selected students sign an online form declaring that they accept responsibility for the technical requirements of the examinations.

The students selected must take a short practice exam before the first examination session where there is no paper to submit, purely to have experience of the examination protocol:

- The students connect to the provider's site;
- They install an applet which replicates their screen for the invigilator;
- They are connected with an invigilator;
- The invigilator asks each student to show the webcam an identity document proving that they are the person expected for the examination;
- The invigilator asks the student to turn their webcam through 360° to obtain a complete view of their work environment;
- He/she asks them, with a mirror or a smartphone in selfie mode, to show the screen of their machine, their keyboard, their desk etc.
- The invigilator gives each student access to their exam;
- The invigilator remains online throughout the test, monitoring the webcam, the student's activity on the screen and any sounds in the room where the student is working;
- At the conclusion of the examination, the student submits the paper and disconnects.

The submissions are sent to the University, and reports on the progress of the tests can be consulted by the University's distance learning managers, with the option of consulting the videos taken. If a student deviates

from the examination rules stipulated by the University, the invigilator will inform the student and prepare an incident report. The examination proceeds to its conclusion, and the University decides on possible disciplinary action based on the reports and videos.

### **3. Results**

In total, for the year 2018 (over two sessions: February and May), 45 students took 191 exams at home in the four corners of the world. Before these 191 exams, we organised, at least once with each of the students, a remotely monitored practice examination, i.e. a subject without questions requiring the submission of a blank paper. In total, 63 practice exams were carried out during the year (a total of 254 remote monitorings). The purpose of these practice exams was two-fold:

- To check, for each student, the feasibility of remote monitoring in relation to their technical circumstances (already tested under normal conditions by the student using the online verification tool set up on the provider's site)
- To show to the students, through experience, how their exams would actually take place without them discovering the conditions on the very day of the first examination.

Here are some results:

- Success rate: overall, similar to classroom exams. If the subject was adequately designed to be completed in two formats, "paper" and "electronic" copies, the success rates are very similar. We found some differences when the subject required the production of tables and diagrams requiring a little more time to produce with a word processor than in writing;
- Less than 5% of technical problems, primarily identified during practice exams and requiring students to organise themselves differently;
- One case of cheating detected;
- Was the teacher's absence during the exam an inconvenience for the students: no, it was not a problem for 92%, on the contrary, apparently it was likely to reduce their stress levels;
- Students' feedback on the ability to cheat, the feeling that it would be easy to cheat: 70% felt as closely monitored as in an examination room or even more so!
- Only 2% of students felt it was an invasion of their private lives;
- 80% would do it again and would advise a friend to do the same;
- 90% are satisfied and prefer to accept the technical requirements of the examination to having to travel.

### **4. Discussion**

Our experience with remote monitoring naturally encourages us to extend the service to all students registered remotely at our institution who need it. At the University of Caen Normandie, 1331 students are enrolled this year in a 100% e-learning course. A good number are not geographically remote and can free themselves to take their exams on university premises. It can be estimated that about one-quarter of these, about 350 students, is the real target audience for remote monitoring. At an average of five exams per student, this would represent a volume of 1750 remotely monitored exams per year.

We note above all that the success of the remote monitoring of examinations outside traditional university premises requires significant human support for the students, even if the monitoring itself is entrusted to a quality provider. Prior management of the students, providing them with information on the procedures, following up their examinations, communication with administrative and teaching staff, and frequent contacts

with the service provider were estimated this year at the equivalent of half-time for a learning technology staff member within our distance education department. In addition to the human cost of student support, the university's IT and data protection services (Direction des Systèmes d'Information, Correspondant Informatique et Liberté IT) were called upon for CNIL advice and approval of the service within the framework of the GDPR.

The personnel costs involved, and the price charged by the provider (€10 exc. VAT per student and hour of monitored exams) encourage us to work on an economic model for the extension of the service. So far, we have made a choice not to pass on these costs to students because we were financially supported within the framework of a Ministère de l'Enseignement Supérieur, de la Recherche et de l'Innovation (Ministry of Higher Education, Research and Innovation) project. This question will arise in the future.

The quality of the work with the service provider, its adaptation to the constraints of the university environment, but above all the very positive feedback from students on the service provided and the attractiveness of distance learning encourage us to further develop remote monitoring, both within our institution and nationally with FIED.

## **5. Conclusions**

In the context of the development of lifelong learning in public higher education, flexibility in learning and teaching methods is a necessity. The offer of education to all, while respecting increasingly complex and heterogeneous constraints and lifestyles, is guaranteed to be attractive. Although digital technology has already significantly changed distance learning (by moving from the correspondence learning and teaching model to e-learning), certification and examination procedures still need to evolve in the same way. Indeed, one of the current barriers to the attractiveness of online distance learning is still having to travel to take exams. Our work is helping to make methods of remote monitoring of examinations in the student's home proven and reliable. Through the FIED network, we seek to share our experiences with the distance learning centres of French universities. To this end, we are in the process of finalising a framework agreement between FIED and the company ManagExam (the service provider used by the University of Caen Normandie). Through this framework contract, universities will have easy access to a-quality service and shared expertises.

Looking more widely than the general public in distance learning, remote monitoring could also provide interesting solutions to the development of hybrid presence-distance learning and to the problems of disabled students enrolled in face-to-face sessions who do not necessarily have easy access to examination rooms and who often benefit from part-time attendance.

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