Universität
Basel

Vizerektorat
Lehre

E-Assessment at the University of Basel
Examinations with EvaExam

Educational Technologies, 1 October 2017, Version 3

With the decision of the IT Steering Committee dated 14 October 2015, the University of Basel is introducing a university-wide e-examination environment. This is intended to pursue three objectives:

— **Increase of quality**
(a) Greater didactic diversity of the diagnostic, formative and summative examination options, (b) stronger emphasis on competence, by increasingly being able to take practical examinations on a computer or simulate them using a computer and (c) better quality management as exam questions can be assessed, classified, exchanged and administered in shared question pools.

— **Efficiency enhancement**
Better handling of the increase in summative examinations as a result of Bologna through (a) time saving when evaluating the examinations, (b) easier organisation and administration of examinations and (c) transparent, traceable and well-documented processes.

— **"Keeping with the times"**
Nowadays, the use of computers as a tool for learning, teaching and research is standard. Therefore at a modern university, in addition to traditional methods of examination, electronic methods should also be standard.

In order to achieve the objectives mentioned, the respective infrastructures are to be established for two didactic scenarios, each with a different focus:

— **"Mastering the Masses"** with EvaExam, a web-based examination software that, thanks to the automated optical mark recognition of examination sheets, is suitable for examinations with large cohorts, where under the given framework examinations on computers are not possible (already implemented since 01/01/2016).

— **"Enabling Variety"** with the ADAM Learning Management System, which supports a variety of different methods of examination. For summative examinations, the students are intended to use their own, private laptops (Bring Your Own Device/BYOD), which will be turned into safe examination environments by means of a secure browser (eg Safe Exam Browser) (still in the planning phase).

This document outlines the procedure for the introduction of EvaExam at the University of Basel (1), describes the subsequent operation (2), sets out the associated costs (3) and depicts the respective financing model (4).

1 Implementation

If a subject area, department or faculty (in the following "subject") wishes to use EvaExam for conducting examinations, the introduction consists of two steps: (1) The implementation of the examination environment and (2) the initial run through the complete examination process. The examination process itself is divided into three phases: Preparing the exam, conducting the exam and evaluating the exam (see Figure 1). Below is a description of the processes and responsibilities along the steps/phases depicted in the figure.
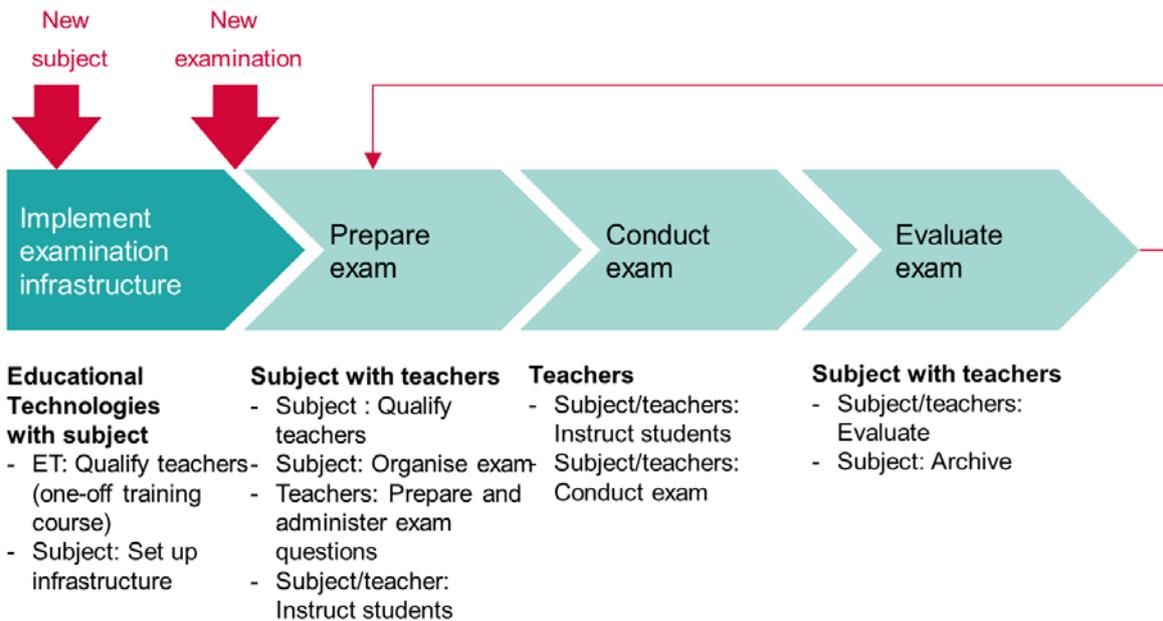

Figure 1: Implementation of EvaExam by individual subjects

1.1 Implementation of the EvaExam examination environment

If a subject wishes to use EvaExam, it contacts the Educational Technologies division. This must be done **at least two months** prior to the first scheduled examination to be conducted. Please also note that no new subjects can be accepted during the summer months (July/August) and over the turn of the year. If, following a consultation with the Educational Technologies division, there is continued interest in using EvaExam, the Educational Technologies division will set up the respective section in EvaExam (at department or faculty level, see list page 6).

Subsequently, first the infrastructure required for the examination is set up:

From a technical point of view, a desktop computer or a laptop is required on which the Scanstation software can be installed, as well as a powerful scanner. The hardware costs will be borne by the subject. For each subject, a Scanstation licence will be provided free of charge (at department or faculty level, see list on page 6).

From a personnel point of view, one Superuser and one substitute will be appointed. As subarea administrators they manage the subarea set up by the Educational Technologies division (creating and deleting accounts, granting of rights etc), are the first contacts for examinations with EvaExam within the subject, are entitled to request technical support directly from the software provider Electric Paper, and are in direct contact with the Educational Technologies division.

In order to optimally qualify all parties involved in the examinations (Superusers, teachers, academic assistants and others) for conducting examinations with EvaExam, the Educational Technologies division will offer a one-off introductory training course in cooperation with Electric Paper. The date of the training course will be organised to suit the participants ("à la carte" training). The costs for the training course will be borne by the Educational Technologies division.

The initial preparation, conducting and evaluation of an examination, as described in more detail below, will be supported by the Educational Technologies division. To this end, a range of information material will be made available (see page 6). Each further/repeat examination will subsequently be conducted autonomously by the subject.

1.2 Preparing the exam

On the part of the teachers/academic assistants, preparing the exam is comprised of preparing the exam questions and the examination sheet on EvaExam, linking the created sheet with an examination, recording a grading key on EvaExam, if required creating and administering a question pool, as well giving the students detailed instructions with regard to examinations with EvaExam (guidelines for completing them). The remaining organisational tasks for the examination (booking a room, announcement, appointing invigilators, printing out the examination sheets etc) are performed analogous to traditional paper and pencil examinations and are taken on by the usual people responsible within the subject.

1.3 Conducting the exam

Prior to handing out the printed off examination sheets, the invigilators must once again point out the specific requirements when completing the examination sheets to the students. Apart from that, conducting this examination does not differ from a traditional examination.

1.4 Evaluating the exam

After the examination has finished, the completed sheets are scanned in (Examinations Office/academic assistants) and verified, ie any crosses in the tick boxes, which have not been clearly detected, must be checked manually online (teachers/academic assistants). Finally, the examination results are evaluated automatically by EvaExam (teachers/academic assistants), in consideration of the previously entered grading key. EvaExam provides a range of different result reports, which can be exported as pdf and/or csv files for further use.

The subject is responsible for archiving all examination data following the complete evaluation of an exam. Following prior consultation with the den Educational Technologies division, at the end of October Electric Paper will on an annual basis delete all examination data recorded until the end of August of the previous year.

2 Operation

Following the implementation of the examination environment and conducting the initial examination within a subject, the use of EvaExam will be incorporated in regular operation. The following rules apply:

2.1 Tasks and responsibilities

Maintenance/hosting	— ensure the operation and availability of the server — maintain the EvaExam server — back up and monitor the data — develop the software	Electric Paper (EP)
Product owner/ administration	— is primarily responsible and the first point of contact for EP at the University of Basel — if required, requests additional volume/ Scanstation licences from EP — is entitled to receive support from EP — is responsible for the university-wide coordination and financial settlement — maintains the structure of the subareas on EvaExam — assigns subarea administrator rights — notifies the EvaExam users of any maintenance work and associated interrupts in the availability of the server — collects feature requests and passes them on to EP	Educational Technologies one main person responsible (+ substitute)
Superusers/ subarea administration	— are primarily responsible and the first point of contact within the subject as soon as EvaExam has been introduced — provide first level support for the subject (see section 2.2.1) — are entitled to receive support from EP (may raise requests directly) — communicate technical problems to the other users of the subject — set up and, if required, delete accounts in the subarea — assign rights for the individual accounts — collect feature requests and pass them on to the Educational Technologies division	Subject one main person responsible (+ substitute) per department/faculty
Responsibility for and organisation of exams	— preparing, conducting and evaluating the examinations, including local archiving of the examination data (see sections 1.2 to 1.4) — announcement and organisation of the framework	Subject:Teachers, academic assistants, examinations offices and other parties involved in the examinations
Didactic support	— offers initial consultation — provides support with the introduction (see section 1) — provides advice when preparing the exam questions — prepares information material for the subjects — organises training together with EP	Educational Technologies

Technical support	— provides second level support for software problems (see section 2.2.2) — processes EvaExam error messages	Electric Paper (EP)
Infrastructure support	— hardware problems (Scanstation PC and scanner) — hardware maintenance	ITS ServiceDesk/ITSC

2.2 Support

2.2.1 First level support

The first level support is provided by the subject, ie all requests from teachers, academic assistants and other parties involved in the examinations are addressed to the Superusers. Questions of a technical nature, which cannot be answered by the Superusers, will be escalated to the second level support (Electric Paper). Incidents that occur for the first time within the subject are notified to the product owner (Educational Technologies division), which records them in the incident list and/or the FAQ, if required. Questions concerning the hardware (Scanstation PC, scanner) are addressed to the Service Desk of the ITS. Questions concerning the organisation of the examinations are passed on to the Examinations Office.

2.2.2 Second level support for technical questions

Electric Paper Lüneburg provides the second level support for all technical questions. **Only** the Superusers of the subjects and the product owner (Educational Technologies division) are entitled to support. A list of the persons entitled to receive support will be provided to Electric Paper and updated continuously by the Educational Technologies division.

Support requests to Electric Paper can be raised by e-mail to support@evasys.de. This contact data is intended only for the Superusers and must not be communicated to the teachers and the people responsible for the examinations. During office hours from Monday to Thursday between 09:00 and 18:00, and Friday between 09:00 and 16:00, the response time for questions is generally three hours (public holidays in Lower Saxony are exempt from this regulation. A list of these public holidays for the respective calendar year can be found in the information area of the EvaExam platform.).

2.3 Infrastructure

2.3.1 Hardware

In order to be able to conduct examinations with EvaExam, a Scanstation PC and a powerful document scanner are required by each subject. It is imperative that computers with an interface to the SAP Campus Management must not be used as a Scanstation scanner. If possible, the EvaSys scanner of the subject will be used. If this is not possible, a separate scanner must be procured. The additional hardware will be financed by the subject.

Each department/faculty will be provided with a licence for the Scanstation software free of charge. This will be requested from Electric Paper by the Educational Technologies division. The installation will be performed by the respective subject's own IT supporter, who will be provided with the licence by the Educational Technologies division.

The Superusers will specify who is entitled to use the Scanstation computer and the scanner.

2.3.2 Software: EvaExam

For each department (for faculties consisting of several departments) or faculty, a subarea will be set up on EvaExam. One Superuser/subarea administrator entitled to receive support (and one substitute) will be responsible for each subarea (see section 2.1).

The Educational Technologies division will set up the following structure on EvaExam:

> Educational Technologies (for consultation and training purposes)
> Department of Ancient Civilizations
> Department Biomedical Engineering
> Department Biomedicine
> Department Biozentrum
> Department of Chemistry
> Department of History
> Department of Social Sciences
> Department Clinical Research
> Department of Mathematics and Computer Science
> Department of Pharmaceutical Sciences
> Department Arts, Media, Philosophy
> Department of Physics
> Department Public Health (DPH)
> Department of Sport, Exercise and Health
> Department of Languages and Literatures
> Department of Environmental Sciences
> Department of Dental Medicine
> Faculty of Psychology
> Faculty of Law
> Faculty of Theology
> Faculty of Business and Economics

It has not yet been decided to what extent a separate subarea is to be set up for institutes and associated organisations, and which scan infrastructure is to be used. If possible, examinations of these institutions should be conducted and administered by the department or faculty that provides the teaching (eg the academic programme of the Institute for European and Global Studies for the law study course by the Faculty of Law). All further cases will be reviewed as soon as required.

2.4 Ongoing training programme

The Educational Technologies division, in cooperation with Electric Paper, will organise ongoing training courses to further qualify the subjects. For each semester, one introductory and one advanced training course will be offered within the scope of the professional development programme of the University of Basel (https://fortbildung.unibas.ch/). The former is intended to address interested parties who want to gain an initial insight into conducting examinations with EvaExam and who want to familiarise themselves with the most important features. The latter is aimed at people who are conducting examinations with EvaExam for the first time (provided that the respective subject area has already introduced EvaExam) and who would like to gain a deeper knowledge of the software.

2.5 Information

The Educational Technologies division offers the following target group-specific information material:

— EvaExam handbooks: Administrator handbook (also for subarea administrators), examiner handbook, Scanstation handbook
— Simple instructions for users (teachers, academic assistants and other parties involved in the examinations)
— FAQ
— List of potential incidents with proposed solutions
— Factsheets/flyers with information for interested parties who are not yet using EvaExam

All information is provided in digital form via the website of the University of Basel and the information area of the EvaExam platform.

3 Costs

Table 1: Cost

Description	Costs (one-off) in CHF net	Costs (annual) in CHF net
Basic licence (2,500 sheets) Support and maintenance (20%)	10,370.00	2,074.00
Extension of the basic licence by a further 2,500 sheets Support and maintenance (20%)	4,395.00	879.00
Extension of the basic licence by a further 5,000 sheets Support and maintenance (20%)	8,425.00	1,685.00
Extension of the basic licence by a further 7,500 sheets Support and maintenance (20%)	12,095.00	2,419.00
Extension of the basic licence by a further 10,000 sheets Support and maintenance (20%)	15,395.00	3,079.00
Extension of the basic licence by a further 15,000 sheets Support and maintenance (20%)	22,545.00	4,509.00
Extension of the basic licence by a further 20,000 sheets Support and maintenance (20%)	29,255.00	5,851.00
Scanstation Software Support/maintenance (20%)	1,290.00	258.00
Hosting		5,500.00
Fee for one additional person entitled to receive support		267.50
Training (web training) for one person (for each further participant, an additional CHF 140.00)	740.00	

4 Financing

The external data hosting, the EvaExam basic licence, additional volume licences, one Scanstation software licence for each department/faculty, as well as the annual maintenance and support flat rates for all licences are financed centrally.

The subjects bear a share in the costs incurred. An annual basic contribution to the amount of CHF 500.00 will be charged to each participating department or faculty (see list on page 6). In addition, the following costs will be charged based on the number of processed examination sheets (ES) per calendar year:

Table 2: Cost sharing by the subjects

ES/year	Costs/ES (CHF)
1 - 1,000	0.80
1,001 - 2,000	0.70
2,001 – 3,000	0.60
3,001 – 4,000	0.50
4,001 – 5,000	0.40
5,001 – 6,000	0.30
6,001 – 7,000	0.20
7,001 – 8,000	0.10
8,001 – 9,000	0.01
>9,000	0.01

All invoices from the Electric Paper Company will initially be settled centrally. The cost allocation between the subjects and the central administration is done at the end of the calendar year by means of an internal transfer posting. The Educational Technologies division will prepare the annual final account for this and initiate the transfer posting in consultation with the subjects.