

ASSESSMENT STRATEGY

IO / IDE

Dutch version approved by the Examination Board, 21-5-2013

Enschede, September 2013

authors: drs. E.M. Gommer and ir. I.F. Lutters-Weustink

BOZ-IO/ex/12.0135/ENG

Securing quality of assessments within IO/IDE¹

Introduction – view on assessments

This assessment strategy describes the view on assessments, that the education IO/IDE has formulated.

The goal of the education IO/IDE is to train students to become engineers that “can change the world” and can manage it. With an academic view they will solve problems by integrating different disciplines in a useful design. The educational programme fits to this by implementing a project led education concept as a didactical concept.

As project led education is strongly embedded within the programme special attention is paid to the system of examination. In projects, students combine knowledge and skills to achieve results in a certain context. In project examination, group work together with the integrative aspects are judged, as well as the individual accomplishment of every student to the project, because each individual member of a project group has to meet the final qualifications of the programme. Furthermore, the final qualifications include aspects of teamwork. This latter is crucial in the professional field of Industrial Design Engineering.

In addition to the assessment of projects, a mix of assessment methods matching the different types of educational methods related to the different learning objectives is used. This ensures that the basic knowledge, skills, attitude and more complex competences all are assessed, both separately and in combination. The assessment methods can be found in the test plans of the different courses. Tests, which only focus on reproducing knowledge (for instance multiple choice examinations), occur hardly within the education.

From the first year on, testing aims on applying knowledge and skills to solve problems. In the years following (and especially in the master phase) the level will increase towards analysis, design and critical evaluation.

This view lays the foundation for the way of testing inside the educational programme. This document describes the way quality of testing in the bachelor and master programme of Industrial Design Engineering is guaranteed.

The Deming cycle is used to describe the quality assurance of assessments. Via the different phases of the Deming cycle (Plan – Do – Check – Act) we will describe the system of assessments of the education.

The assurance system for the bachelor end assignment and master assignment will be described separately.



Figure 1. Deming cycle.

¹ This document is formulated by the Examination Board IO/IDE in cooperation with the Director of Education and is by all parties involved accepted as assessment strategy for the bachelor Industrial Design and the master Industrial Design Engineering.

Conditions

1.1 Professionalization of lecturers with regard to assessments

All staff members involved in teaching have to obtain the University Teaching Qualification (UTQ) within three years. Testing and assessments are important aspects in here.

For the educations IO and IDE applies that this qualification has been obtained (or have started) by approximately 90% of staff members involved in teaching. For staff members with more than 5 years teaching experience a special procedure has been set up where testing and assessment has special attention.

In addition to this, the existing knowledge about formulating course aims and assessment quality has been refreshed in organised instruction sessions for the benefit of test plans of courses.

The website of the Examination Board² contains a special part for lecturers where information and rules about testing and assessments can be found easily.

1.2 Professionalization of Examination Board members with regard to new legislations and quality of tests

Members of the Examination Board are themselves lecturers in bachelor and/or master courses and meet the requirements described in section 1.1. Expertise on the domain of testing and assessments can be obtained by the educationalist of the faculty.

In addition to this, the Examination Board has attended a course where changes in the Dutch law of higher education³ and the new responsibilities of the Examination Board have been considered.

1.3 Allocating examiners

The Examination Board is responsible for allocating examiners for the IO / IDE education and composes a list with examiners. In general, the person responsible for the course is also responsible for the assessment of the course. In this, a few criteria will be applied that can be found in the rules and regulations of the Examination Board (master/bachelor, rule 2 – authorisation for interim examinations).

1. PLAN (preparation and development of the test)

2.1 Test plans of courses

For every course, in the bachelor and master programme, a test plan is formulated. In this test plan the following aspects are described: course aims, assessment plan, grading plan and cutting score. All test plans are checked by the educationalist of the faculty and when necessary, they have been adapted or completed. The final versions of the test plans are established on the authority of the Examination Board.

The test plan is the basis for the development of the examinations and has to be submitted again when:

- a. another responsible lecturer is appointed to the course;
- b. a redesign of the course or the assessment takes place;

² <http://www.utwente.nl/io/organisatie/onderwijsorganisatie/examencommissie/>

³ Higher Education and Research Act (in Dutch Wet op het Hoger onderwijs en Wetenschappelijk onderzoek, abbreviated WHW)

- c. the course aims have (or will be) changed;
- d. the Examination Board inquires this (e.g. as a result of complaints about tests, remarkable test results or a bad evaluation report).

2.2 Peer review by colleagues

Rule 4 from the Rules and Regulations of the Examination Board states that before a written interim examination, at least one qualified staff member assesses the following:

- a. The exam is representative with regard to what was taught in the course.
- b. The questions are unambiguous.
- c. The degree of difficulty matches the education received by the students.
- d. The length of the exam is appropriate in relation to the examination time.

No formal check on this peer review takes place. A formal check will lead to a considerable amount of administration, and does not give the assurance that the peer review on tests and assessments has happened. The culture within the educational environment is such that lecturers will review their assessments to increase the quality of education. In case of problems with a certain examination, the Examination Board will check the peer review and examination.

2. DO (execution of the test)

3.1 Information facilities regarding test methods and assessments (transparency)

The information systems Osiris and BlackBoard provide information about course aims, test method(s) used in a course, assessments and the determination of the final mark.

Both systems are linked which ensures that the same information is provided to the students.

For a written interim examination, the students must have insight regarding the degree of difficulty and accents to be expected of the interim examination well before the interim examination takes place. The responsible lecturer has to provide test examples (including answers and corresponding scoring).

After all, the written exam is provided with instructions in which the time available and the scoring per question is given (Rules and Regulations of the Examination Board, rule 5).

3.2 Information regarding project assessments (Bachelor)

The examination and assessments of a project are described in more detail in the project manual, because projects consist of different aspects and components, like for instance a presentation, oral examination, report and final product. In this project manual the assessment criteria for the different parts are described, and also is clearly indicated for what aspects the students will gain an individual or a group assessment (mark).

In the bachelor part of the Rules and Regulations of the Examination Board is described how the final mark of a project is constructed from the marks of the different aspects (rule 6B). Also the rules for pass, fail and/or addition assignment are described here.

3.3 Holding examinations

Rules for holding examinations are described in the Rules and Regulations of the Examination Board (rules 5 and 6).

3.4 Assessment of student's work

Assessment of written exams takes place on the basis of an answering and scoring model that is added to the test plan (see section 2.1) and that has been checked by a colleague in advance (see section 2.2).

In case of other test methods a scoring model is formulated and used. This scoring model is based on the assessment criteria conducted from the course aims.

The determination of the final mark is also described in the test plan. The cutting score (pass/fail ruling) occurs in accordance with the Rules and Regulations of the Examination Board.

3.5 Assessment of projects

The assessment of a project consists of (at least) the following aspects:

- a. Project report (written report)
- b. Project examination (oral examination)

The project report (a) is often a group product for which the students receive a group mark⁴. The project examination is (depending on the type of project) often a presentation and an oral examination. This oral examination can take place with the whole group but the student receives an individual mark for his/her contribution to the project and knowledge of the learning objectives. In the test plan of the project (section 2.1) is indicated how the project aims recur in the different types of test methods and how the project aims are weighed within these test methods.

In a project assessment form the assessment of different aspects are clarified to the students and also the establishment of the final mark is given.

Assessment of a project report takes place on the basis of assessment criteria derived from the project aims.

During a project examination the assessment criteria form the basis for the scoring of the individual contributions (presentation, answers and/or questions) of the students. Afterwards, the examiners consult about the scoring and added remarks and will come in consultation to marks for the different aspects and these marks are entered on the project assessment form.

2.6 Examiners at a project exam

At least two examiners will attend at a project exam: the tutor who supervised the group during the process and an examiner who was not involved in the process but just judges the final results.

The reason for this is that the tutor has more insight in the group process and the contributions of the individual students to this process. The "external examiner" judges the result with a more objective view.

Other basic principles for project examinations are:

- Both examiners have, as much as possible, a different background.
- The composition of the examiners will change (if possible) at every project examination.
- Before a project examination, the project coordinator(s) and the examiners will go through the project examination procedure.
- New examiners attend at least a project examination once before he/she is allowed to assess a project examination.
- An inexperienced examiner is always paired to an experienced examiner.

⁴ This depends on the project and is clearly described in the project manual.

3. CHECK (evaluation and analysis of the test)

4.1 Analysis of test results

After a test, the lecturer analyses the test results in a simple way⁵. This means the lecturer examines the results with respect to:

- a. Are the test results remarkable good or bad? (target value for passing the exam is between 60% and 80%)
- b. Is there a remarkable distribution of marks? (global approximation: normal distribution)
- c. Are some parts or questions from the test made remarkable good or bad?
- d. Are there any other remarkable things about the results?
- e. Do the results above give cause for adjustment of the assessment of the test?

When the assessment is adjusted the lecturer has to inform the Examination Board. Suggestions for improvement are formulated by the lecturer.

4.2 Evaluation of tests and assessments

The quality of tests and assessments is evaluated by students via standard course evaluations, performed by the evaluation committee.

The evaluation consists of questions regarding:

- a. Clearness of the requirements of the test.
- b. The degree of difficulty matches the education received by the students (validity).
- c. The questions are unambiguous.
- d. Sufficient representative test examples.

Every course is evaluated every two years (or when a course/project is new/renewed, or has retrieved a mark below 6) by a standard questionnaire which is handed out to the students during the exam.

In case of a bad evaluation, this will be discussed first with the director of education and afterwards the lecturer is informed who gets the opportunity to react to the evaluation.

All results and suggestions for improvement are discussed once per semester with the educational committee. All results are also placed on a website (BlackBoard) that is only accessible for students and staff members. When there is a reason, the director of education will in consultation with the lecturer perform improvements. In the subsequent evaluation the effect will be checked.

Results and actions regarding testing and assessments will be submitted to the Examination Board.

4.3 Remaining quality control

Alongside the quality control by the lecturer (4.1) and course evaluations (4.2), the student has the possibility to turn to the lecturer when he/she has the feeling that something is wrong with the examination. Because the IO/IDE education is small-scaled and has a personal approach, the barrier to do this is relatively low.

When the student does not dare to turn to the lecturer or when they do not agree, the student has the possibility to complain via the Examination Board. The Examination Board will give a judgement according to the Rules and Regulation of the Examination Board.

⁵ A lecturer is a professional with his/her intrinsic and educational expertise (UTQ) who is capable of making a good analysis of the student's results.

The website of the Examination Board consists of clear information about the possibilities and rights of a student.

4. ACT (possible improvements or adjustments of the test)

5.1 Formulating and feedback of improvements

As a result of the outcomes from section 4 (Check) and own perceptions, the lecturer decides how he/she the necessary improvements with regards to assessments wants to implement.

The improvements planned by the lecturer will be submitted to the Educational Committee.

In case of bigger changes, for instance in course aims, test methods or assessment of the course, the test plan has to be adjusted and submitted to the Examination Board.

5.2 Advice and support

When a lecturer needs advice and support with improvement or optimisation of the assessment of his/her education, an expert on exams is available. Furthermore, the lecturer can approach the director of education for advice.

The culture within the education is such that the barrier to do this is relatively low.

When a lecturer wants to attend a formal training or course in the field of testing and assessments, possibilities are available at the Educational Services. The faculty of Engineering Technology has a strong educational culture where professionalization of lecturers is stimulated.

5. Quality assurance of assessments of bachelor assignments

In preparation to the bachelor assignment, assignments -aimed at making a Plan of Approach- are performed in groups with a maximum of four students.

The assignments will be peer reviewed by students and lecturers and provide with feedback. At the end of this preparation phase the student makes a Plan of Approach of his own bachelor assignment.

The preparation of the bachelor assignment ends with an approved Plan of Approach for this bachelor assignment. After approval the student can start with the bachelor assignment.

The major goal of the bachelor assignment is to, individually, demonstrate adequate proficiency in the field of Industrial Design Engineering at bachelor's level. The assignment will preferably be performed at a company or organisation at the end of the bachelor phase. It is also possible to perform a bachelor assignment abroad. Students can suggest and organise an assignment themselves; such an assignment has to be approved by the coordinator of the bachelor assignment.

The assessment of the bachelor assignment consists of four components:

- Report;
- Presentation (closed, 10-15 min.);
- Defence (closed, 30-45 min., exam with candidate and bachelor assessment committee);
- Content and working process (quality and organisation of research or design).

The assessment will be performed by the bachelor assessment committee. This committee consists of the following persons:

- Chairperson (a professor or assistant professor (UHD)), the mentor (lecturer) and in case of an external assignment: the mentor from the company (status is adviser).

According to the Regulations of the Examination Board, the Examination Board compiles a list of examiners for the bachelor and master assessment committee.

For the determination of the final mark (not the average of the components) a “Bachelor Assessment Form” (‘Afrondings- en beoordelingsformulier Bacheloropdracht’) is used. This form has to be signed by the chairperson. Every examiner determines marks per component. The marks are discussed and a final mark is defined. After determination of the marks, the candidate will be informed about all the marks (components and final mark).

The Bachelor Assessment Form, together with digital versions of report and presentation material is archived by the Office of Education Affairs.

6. Quality assurance of assessments of master assignments

The assessment of the master thesis consists of five components:

- Report
- Presentation (public, 45 min, followed by answering questions from the audience)
- Defence (closed, 60 min, exam with candidate and Assessment Committee)
- Content (quality of research or design)
- Working process during master project (individuality, communication skills, etc.)

For the determination of the final mark (not the average of the five components) a ‘Thesis Project Assessment’ form is used. This form is signed by the chairperson of the assessment committee. The assessment committee consists of at least three⁶ persons, of whom one external member (from outside the chair of the candidate). Members of the assessment committee will be appointed by the Examination Board and are registered as examiner of master examinations.

Every examiner determines marks per component. The marks are discussed and a final mark is defined. After determination of the marks, the candidate will be informed about all the marks (marks of the five components, including the final mark) and motivation.

The written motivation of the components is registered on the backside of ‘Thesis Project Assessment’ form and is archived by the Office of Education Affairs.

To accentuate the assessment an assessment protocol is formulated for the assessment of master theses. This protocol lists criteria for each component on which the mark for this component is based (see appendix 1). This assessment protocol is prescribed by the Examination Board to all assessment committees.

⁶ Usually an assessment committee consists of four members.

Appendix 1 – Aspects for assessment

1. *With respect to content; quality of research / design*

- insight in subject matter
- depth (detailed elaborations, use of literature)
- insight in coherence between different parts of the research project
- reasoning / argumentation of conclusions (are research questions clearly stated and answered?)
- relevance (scientifically, but also applicability in practice) (being able to put research into its context)
- creativity / inventiveness: extent to which the student independently introduces new concepts
- extent to which the research is innovative (contribution to new knowledge / contribution to a concrete product, design or model)
- learning (quality and quantity)

2. *Report*

- composition, structure
- consistency
- clarity/sharpness of formulations
- readability
- editing, lay out
- images and tables (usefulness, added value)
- references to literature

3. *Working process during master thesis project*

- attitude
- independence
- commitment/enthusiasm
- cooperation
- communication skills
- incorporation of feedback
- functioning within the organisation where the project is carried out
- student's attitude during progress meetings (active / passive)
- the extent to which the original research proposal has been met and reasons for alterations (keeping up with a work planning, follow up on appointments made)
- time needed to finish master thesis

4. *Oral Presentation*

- content (what is included / not included in the presentation; is the message coming across?)
- structure / outline presentation
- care of details / neatness
- captivating way of presenting (verbal capabilities, posture)

5. *Defence*

- insight in subject matter
- answering questions / discussion
- ability to interpret/understand/analyse questions

Profiles for final grading

5: insufficient

The research and / or report are insufficient and the student was strongly directed by his or her supervisors. Weak points can clearly be pointed out. The student did not show an academic attitude. On average, the student scores 'insufficient' on all aspects for assessment.

6: sufficient

With respect to content, the research was conducted sufficiently. The report is mediocre. Weak points can clearly be pointed out, but are compensated by aspects on which the student performs better. The student has shown little input of his own and was strongly directed by his or her supervisors. On average, the student scores 'sufficient' on all aspects for assessment.

7: amply sufficient

With respect to content, a solid piece of research was delivered. The report is carefully edited. Either the research process or the mastery of subject matter leaves room for improvement. The supervisors clearly had a steering influence on the final product. The student scores at least 'sufficient' on all aspects for assessment and 'good' on some aspects.

8: good

With respect to content, the research was set up in a solid way and was carried out accurately. The report is carefully edited regarding language as well as lay out. The student has worked independently and was able to put forward his or her own initiatives. Guidance given by the supervisors was minimal. On average, the student scores 'good' on all aspects for assessment.

9: very good

The research is innovative and can be converted to an article for a renowned (scientific) magazine without putting in too much effort. With respect to content, the research is very solid with some points that can clearly be pointed out as strong. The report is carefully edited and shows that the student disposes of good writing skills. The student's own input and independence are large. The student clearly stands above subject matter and is able to defend his or her statements in discussions well. The student scores at least 'good' on all aspects for assessment and 'very good' on some aspects.

10: excellent

The student functions at the level of an expert in the field. With respect to content, the research is very good, with some points that can be clearly pointed out as excellent. The student is very capable of conducting research independently. The report and the presentation show that the student disposes of very good communication skills (written and oral). The student scores 'very good' on all aspects for assessment.