FROM GUT FEELING TO A STRUCTURED, SUMMATIVE ASSESSMENT OF DESIGN COMPETENCIES

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ABSTRACT
In the current work, we introduce a summative method for assessing the whole set of students’ design competencies demonstrated in their final design project when graduating an interactive media design course, and reflect on the use of this assessment method. Both qualitative and quantitative analysis methods are used; the deployment of the instruments is analyzed in a qualitative manner using a custom-made visualization tool. Evaluations show that during the deliberation phase, the supervisory team concentrated on the discussion and assessment of the competencies rather than agreeing on a final grade. The visualization of the scores enables us to discern major patterns in the grading of our assessment, which in turn fed into adjustments of the assessment procedures as well as the curriculum in general.

Keywords: Design education, assessment, instruments, design competencies

1 INTRODUCTION
A final design project is often used to give students the opportunity to demonstrate whether they have obtained the right level of expertise to graduate. The level of expertise that should be acquired by the student is often formulated as a competency, a combination of specific professional capacities, attitudes, skills, and knowledge [1]. Consequently, the assessment of final graduation projects should be able to assess whether the students’ work constitutes, as Horvath defines it, a “complete whole by forming a complementary combination of professional capacities” [2]. Although, these competencies are not generally used in the course competency profile, a holistic assessment of competencies is expected for students’ professional competencies to be met at a higher level than other disciplines. For instance, one student focuses on the discipline of interaction design, whereas another student focuses on the development of his design project. The former focuses on the design of user interfaces and the latter on the design of user interactions. The latter one has stated that her project is a good example of a complete whole and that the committee arrived at a final grade of 7.

In competence-based education not only the product is being evaluated, but also the process and the assessment of students’ competencies is a critical part of the assessment. The committee’s decision on the development of students’ competencies is based on the results of the competencies assessment form in which the committee arrives at a final grade. This set of four instruments: a manual, a question list, an assessment form, and a visualization tool, that resulted in the final grade are analyzed in a quantitative manner.

The aim of this work is to evaluate the instruments and to gain insight in the use of structured assessment instruments, by applying these in the context of the assessment of final graduation projects of an interactive media design course. The deployment of the instruments is analyzed in a qualitative manner, and the scores that resulted in the final grade are analyzed in a quantitative manner.

2 METHOD
2.1 Instrument
The assessment tool consists of four instruments: a manual, a question list, an assessment form, and a visualization tool. These instruments are used to assess the competencies demonstrated in the final design project. The committee evaluated each project on a scale of 1 to 10, where a 6 or higher qualifies as a passing grade.

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1.1 Course Context
The context of the assessment is the graduation project of the bachelor course Communication & Multimedia Design (CMD) of Rotterdam University of Applied Sciences. The CMD bachelor course is a four-year course, which educates students to become designers of interactive media. CMD students design, develop and design websites, mobile applications, interactive environments and many other interactive artifacts. During the last semester of the course, CMD students work individually on their final project, at a design company. The final projects should enable students to demonstrate their competencies; that they have acquired sufficient skills, knowledge, and a professional (design) attitude that qualifies them to start as a junior practitioner.

1.2 Final Design Project
The final design project consists of two elements: the thesis (which investigates state of the art theory and knowledge) and a design project (a real life situation in which students have to demonstrate their competencies). The thesis and design project are closely related as the thesis forms the foundation and rationale for the design project. The decisions students made, should on one hand be grounded in the research, and on the other hand, these all need to be reported and reflected upon in the thesis. The duration of a final project is five months and holds several ‘checkpoints’, like a poster presentation (presenting the scope and aims of the project), a ‘green light’ presentation (a formative assessment to determine if the student is ‘on track’), and finally a summative assessment presentation in which a student presents the outcomes of their research, and the design project.

Students are assessed on a set of criteria, which are based on competencies. These competencies are based on a national profile of CMD courses [4] and adapted to the course profile with the input of practitioners from the interactive media industry.

1.3 Final grading protocol
The final assessment is a one-hour session that consists of four stages: presentation, interview, deliberation, and feedback. Students present the outcomes of their research and their design project, after which the course- and company supervisors, together with an external representative of the design industry, conduct a criteria-oriented interview [5] with the student. Once the student has answered a number of questions (depending on time available) to the satisfaction of the committee, the student is asked to enter the room, after which the committee deliberates on the grading of the criteria set forth in the assessment form. Once the committee has arrived at a consensus regarding the student’s performance, he/she is asked to reappear before the committee to receive the result, grade and final feedback regarding the graduation project.

As previously mentioned, having a holistic assessment of the students’ competencies and professional capacities means that students are graded on eleven criteria on which they can score at four levels (unsatisfactory, satisfactory, good and excellent). The latter three of these levels lead to a passing result, however due to the multidisciplinary nature of the interactive media design field, students tend to develop in different disciplines to a higher level than other disciplines. For instance, one student focuses on the discipline of interaction design, whereas another student focuses on the development of his design project. Both of these disciplines form an equal part of the interactive media design field. We feel that this individual development is key to becoming a proficient (interactive media) designer, however as assessors we should not emphasize one area of development over any of the eleven other criteria. The final grade is a single digit grade on a scale of 1 to 10, where a 6 or higher qualifies as a passing grade.

The aim of this paper is to evaluate the instruments and to gain insight in the use of structured assessment instruments, by applying these in the context of the assessment of final graduation projects of an interactive media design course. The deployment of the instruments is analyzed in a qualitative manner, and the scores that resulted in the final grade are analyzed in a quantitative manner.
Instruments form an interconnected whole that guides procedures and the assessment of the final project. The manual is a formal description of the procedures that take place when the assessment of the final project is done. It outlines the specific parts of the assessment and describes the roles of the members of the final project review committee. The assessment reviews three specific parts of the final project: thesis, project and final presentation. These three parts are evaluated using eleven distinct criteria.

The assessment form describes the eleven criteria that a final project is graded on, on which the student can score on four levels (unsatisfactory, satisfactory, good and excellent). Three of these levels are evaluated using eleven distinct criteria. These criteria include grades and calculation aid. The assessment form collects feedback on the same set of specified criteria, and the (repeating) project.

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3.2 Outcome of quantitative analysis of the assessments

A small piece of visualization software was written to visualize the scores of the assessments for each student. This visualization was created for each of the 58 students. Figure 2 shows the resulting visualizations for two average students. Figure 3 shows the resulting visualizations for two excellent students. Both figures show a variety of scores regarding the criteria, but leading to a similar final grade. In other words, assessors seem to be able to discern the individual qualities of the students' work and assess the individual merits of the work in relation to the entire body of graduating students.

2.2 Setup

A team of assessors was formed for each graduation student: two graduation supervisors from the course, one graduation supervisor from the company where a student worked on his final project and an external representative from design industry. In total, 17 graduation supervisors from the school, 50 assessors from the companies, and 20 external representatives were involved in the assessment of 58 final projects.

At the start of the current study in February 2011, 75 students were registered to start their graduation project. After three months 64 students of this group did their 'green light' presentation and 58 students of this group eventually participated in the final assessment in either June and/or August 2010, one student failed. The scores of these 58 students have been analyzed.

3 RESULTS

In this section, we report on the results from the evaluation with the assessors and the observations during the assessment. First, we present the usage of the tool, and then we look into the outcome of the grading of the assessments.

3.1 Use of structured assessment instruments during the final assessment

Observations during the deliberation phase of the final assessment showed that assessors were less likely to rely on their general impression of the work and the presentation. Instead, they were actively discussing the students' results on the criteria set forth in the assessment form. Discussions between course supervisors, company supervisor, and external advisor stayed focused on discussing the competencies. This might be due to the fact that the calculation of the final grade is deferred to the committee. As a result of this, it appeared easier for the committee to collect feedback around the specific criteria, since each member of the committee already had to argue his/her assessment for that specific competency. When the assessors finished their discussion and asked the student to improve before the committee to receive the final result, the committee was better prepared to link their feedback to the criteria set forth in the assessment and seemed to be more confident motivating the resulting final grade.

Experienced assessors did not rely on the question list while examining, however, less experienced assessors based their interview questions closely on the questions set forth in the question list.

3.2 Outcome of the evaluation of the instruments with the graduation supervisors:

In general, the assessors mentioned that the discussion during the grading was about the criteria set forth in the assessment form and not about the final grade. Although the assessment instrument was helpful in assessing the design competencies, some assessors indicated that the final grade did not match with their 'gut feeling'.
DISCUSSION AND CONCLUSIONS

The usage of a structured calculation aid did not only lead to better discussions and a more structured assessment; it also enabled us to visualize the assessments. These visualizations in turn provide fertile ground for continuing discussion on assessment procedures, for individual students as well as for the curriculum in general. Being able to visually compare the outcomes of various assessments allows us to gain insight into the different assessments and to find patterns as well as points of interest, which inform further course development. Based on the current sample we were able to discern two major patterns in the grading of our graduation projects. On one hand, in keeping with the main goal of a university of applied sciences, we found that the majority of our students demonstrate that they are able to apply their work in the real life practice. On the other hand, the visualizations showed that students who demonstrated a better holistic understanding of the design practice, also outperformed on translating state-of-the-art knowledge into real-life context. The visualization, in combination with the final grade appeared to be a reliable benchmark of the quality of the students’ work in relation to their peers.

The current study demonstrated that structured assessment instruments have dual purposes; primarily holistically assessing the quality of the work of the students, and secondarily, improving the discussion amongst the members of the supervisory teams during the deliberation on the final grade. As mentioned before, some assessors felt confronted with their own subjectivity when valuing specific competencies in relation to the whole assessment. Our observations stressed the need to distinguish between ‘gut feeling’ and intuition. Experienced assessors who were used to grade students based on their intuition were positive about the instrument and did not see major differences between grading in the previous situation and the current one, however they appreciated the support in explicitly motivating the nuances of the specific design competencies. A side effect of revealing the tacit expertise of experienced assessors was that the junior assessors felt they improved their understanding of the competencies and associated criteria and proficiency level. This seems to be beneficial for the students as well. Usually students complained about perceived subjectivity of the final results; interestingly, the current cohort hardly discussed their final grades.

Some assessors, who were initially unhappy with the usage of a calculation aid to establish the final grade, found that the calculation aid was helpful in their assessment and made them aware of their own subjectivity when it comes to the proficiency of specific competencies. Furthermore, it allowed them to gain better understanding how specific competencies were weighted in relation to the whole assessment. As a consequence using a holistic assessment tool, every project is assessed on the same eleven criteria, with the same weighting factors, while also taking into account the fact that final projects vary greatly in subject matter (for example, visualization techniques for social networks or persuasive design for elderly). All in all, it can be concluded that structured assessment instruments, when properly designed, help assessors to distinguish between a ‘gut feeling’ and their intuition, as well show the relative merit of a specific competency and matching proficiency level.

REFERENCES