

Analyzing the Appearance and Wording of Assessments: Understanding their Impact on Students' Perception and Understanding, and Instructors' Processes

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Abstract

In the context of a design studio, the study presented in this paper investigates the effects that appearance and wording of assessment forms have on design students' perception and learning. The project is motivated by hypotheses formed by a prior study, which revealed visual and textual components of assessment forms as possible influences on students' perception and learning. Thus, the goal of this project is to investigate their impact on students and offer the study findings to educators to help them better understand and construct effective assessment tools.

This paper argues that the appearance and wording of assessments convey meaning and must align with the activities and discussions that are common in design courses. This argument is supported by research that emphasizes the seamless integration of all steps of the learning process (Biggs, 2003) and the importance of students' learning preferences in developing lesson plans (Gardner, 1993). The paper explains the construction of four assessment forms. It also describes the post-evaluation self-reflections that students wrote and the questionnaire they completed at the end of the course. These project components were conducted to learn what students retained and how they perceived the assessment forms. In addition, the instructors provided their perceptions and time allocated to using each tool.

The outcomes of the study revealed that the digital assessments were more efficient to complete than the handwritten form. Students noted little difference in their satisfaction between the digital and handwritten forms when the wording stayed consistent. However, they did prefer comments that were personal and related to each specific project. The students retained more information from assessments that included a clear visual hierarchy and eliminated ambiguous titles. These findings informed the proposal of visual and textual considerations that should be taken into account when creating assessment forms for use in design classrooms.

Keywords

Visual design, rubrics, assessment, evaluation, pedagogy, education, learning, feedback

Throughout the past decade a large segment of professional design practice has gone from focusing solely on the creation of artifacts to also emphasizing the importance of collaboration within and among disciplines, applying a range of design processes, and engaging in projects actively throughout their duration (Poggenpohl, 2004). At the same time, government agencies are requiring the documentation of measureable outcomes (Middle States Commission on Higher Education, 2003). These changes require educators to not only rethink the ways they teach but also the ways they assess students' performance. Many educators are adjusting project plans and course activities to align with professional practice. (Heller, 1998). In contrast, based on the review of assessment tools used by design educators over the past several years, little has changed in the ways instructors evaluate students' performance. As a result, there is a misalignment between how design courses are taught and how students' performance is assessed, which in turn, negatively impacts the learning process. (Biggs, 2003). Assessments in design courses often focus on a review of an artifact instead of the learning process, which encourages students to work passively with the intent to please their instructors instead of striving to solve complex problems independently (Davies & Reid, 2000; Long, 2004). Research indicates that students devote much time and attention to the assessments that they receive and that these tools significantly impact students' learning (Brew, 1999). Hence, improving assessment processes to align with course activities is crucial to enhancing design students' learning.

Based on the survey of assessment tools conducted for this study, many design educators who have altered their evaluation process now utilize rubrics. In their book, *Introduction to Rubrics*, Stevens and Levi (2005) define the term. They state,

At its most basic, a rubric is a scoring tool that lays out specific expectations for an assignment. Rubrics divide an assignment into its component parts and provide a detailed description of what constitutes acceptable or unacceptable levels of performance for each of those parts. Rubrics can also be used for grading a large variety of assignments and tasks: research papers, book critiques, discussion participation, laboratory reports, portfolios, group work, oral presentations, and more. (p. 3)

In addition to including a matrix of evaluative criteria and performance attributes, the structure of rubrics also stress the importance of aligning assessments to project objectives, and methods for translating performance ratings into grades (Stevens & Levi, 2005). It is logical for educators to explore the use of rubrics in the context of design courses based on learning science research that proves their success in assessing students' performance and applying them across disciplines (Goodrich, 2000). Although rubrics provide methods that are intended to help instructors develop and use assessments, discussions with design educators and students reveal a reluctance to adopt the suggested evaluation changes. A study that researched the actual and perceived effectiveness of rubrics in a design studio showed that students appreciate the clarity provided in rubrics but prefer less-informative feedback that poses questions and is personal, which matches the activity in design classrooms (Rohrbach, 2008). The outcomes of this study lead to the hypothesis that the form of assessments should draw on the teaching characteristics of design courses.

In his book, *Frames of Mind*, Howard Gardner explains that people learn best when information is communicated to them in ways that match their learning preferences (Gardner, 1993). Based on several years of teaching experience, information that is communicated to design students through one-to-one conversations and visualizations, such as sketches, appears to resonate with them more than densely written text and quantitative tests, which confirms Gardner's notion. Research that describes the use of rubrics explains the importance of clear wording in communicating evaluative criteria and performance attributes to students (Goodrich, 1996). Unfortunately, although this is informative, such efforts often lead to a document that is text-heavy and impersonal in its structure, which misaligns with the learning preferences of many design students. Hence, it is logical for them to prefer to receive feedback as handwritten comments as opposed to pre-formatted text because it appears more personal, matching their expectations, despite the fact that it often provides them with less information regarding their performance and ways to improve in the future. Thus, studies, which focus on improving design students' perceptions of assessments while maintaining the clarity and robustness of information provided via rubrics, must be investigated.

Another critical component of assessing the performance of design students is the appearance of evaluations. Visual perception and cognition are critical learning components for people who often have a heightened sense of visual acuity, such as design students (Kosslyn & Koenig, 1992). They spend a great deal of time analyzing design artifacts and constructing compositions. Hence, it is logical for design students to read the appearance of their assessments and gather meaning from them. Unfortunately, research that focuses on the impact of visuals on perception and understanding in the context of assessments has not been found. Thus, studying the effects of visual form on students' perception and learning is warranted.

This paper argues the need for assessment tools to reflect design students' learning preferences and expectations, and align with course activities not just in their content but also their form and delivery. This premise is based on research that stresses the importance of weaving together all the stages of learning (Biggs, 2003), from the onset of a project to the receipt of assessments (Wiggins & McTighe, 1998), and the value of visual perception to learning and understanding (Kosslyn & Koenig, 1992), especially for design students, who often prefer to learn visually. The study uses rubrics, which have been proven to provide design students with informative feedback (Rohrbach, 2008), as a basis for exploration, with each assessment form including slight modifications in wording and appearance. The outcomes generated in this project illuminate the impact that the visual tendencies of design students and the unique structure of design courses can have on the effectiveness of assessment tools.

The construction of four assessments forms that are based on rubrics but vary in wording and visual appearance is illustrated and described in this paper. The use of each form in relation to specific projects is explained and the findings gleaned from a questionnaire, a series of self-reflections, and documentation by instructors are also included in this paper. Study limitations and principles that inform the wording and appearance of assessments forms that are derived from the study outcomes conclude the paper along with projected next steps in the study of evaluation methods in the context of design education.

Background and Context

I received a fellowship in the summer of 2007 that enabled me to work with teaching experts and four professors positioned in other disciplines to investigate the development, delivery, and assessment of projects in the seminar courses that I teach. Although the assessment portion of the fellowship focused on evaluating students' writing by using rubrics, I began to question the application of rubrics in assessing design projects and the perception of rubrics by design educators and students. Therefore, I conducted a study that investigated these issues within the context of a design studio with 48 first-year design students and the two educators of the course. The results of the study showed that students perceived attributes of rubrics more positively than other forms of assessment but still preferred handwritten comments. Thus, there appeared a disconnection between assessments that aided learning and those that students preferred, which warranted further investigation.

Research Goals

The initial investigation I conducted shed light on the perceived successes and failures of a range of assessment tools. However, perhaps the most significant finding from this study was the difference between assessments that students preferred and those that they believed were most effective. Through an analysis of these results I hypothesized that the disparity might be attributed to differences in wording and appearance, which inspired a second course of inquiry. Educators can assess the outcomes of design courses fairly and consistently using assessment tools, such as rubrics, that are proven successful in other disciplines (Ehmann, 2005). However, the individual attention that students receive in studio courses and their tendency to grasp information visually may warrant the delivery of evaluations in alternate forms to improve their learning, value, and understanding of assessments. Therefore, I developed a study that investigates the visual and textual forms of assessments.

The goal of the study presented in this paper was to gain insight into how the appearance and wording of rubric-based assessment forms affect design students' perception of the tools and support or negate learning in the context of a first-year studio course. Although studies exist that argue the success of rubrics across a range of disciplines based on systematic measuring of student learning (Fuchs and Fuchs, 1986), research that supports the notion that the appearance and wording of assessments affect students' learning and perception has not been discovered. Therefore, this project uses variations in assessment forms throughout a course, student self-reflection writings, a questionnaire completed by students in the class, and documentation provided by the course instructors, as research content. This paper then uses the analysis of the project outcomes to argue the importance of visual and textual attributes of assessment forms to students learning, understanding, and value of evaluations. The results of the project also inform the proposal of design considerations that educators may find beneficial when creating assessment forms for design students, and call attention to issues of assessing the outcomes of design courses that require further study. In pursuit of these goals, this project seeks to answer the following research questions:

- How does the appearance of information affect students' learning, understanding, and perceived value of assessments?
- How does the wording of assessments affect students' learning, understanding, and perceived value of assessments?
- How does the form of assessments affect the amount of time instructors allocate to the task and how they perceive the accuracy and consistency of their reviews?

Implementation

The study was performed during the 2008 fall semester in a required studio course for 45 first-year design students, which I taught with a colleague. Similarly to the first study, my colleague and I established a set of preferred outcomes for the course that would prepare students for their next stage in the curriculum. Our intention was to help students better understand the meaning of design, what designers do, and why they are needed. We sought to help them identify design opportunities, learn and employ strong design processes, evaluate work, and propose ideas for improvements. I constructed a course rubric that articulated these goals in written form for the students' repeated reference and guidance. The learning objectives were broken into four categories—process work, resolution, participation, and attitude—and four sets of performance attributes aligned to each criteria. We also explained the objectives to the students the first day of class and emphasized that through the design of two- and three-dimensional individual and group projects, they would strive to:

- develop appropriate ideas in response to project assignments
- build a process for working that enables consistent, incremental growth
- articulate their ideas well, both verbally and visually
- translate and communicate ideas into effective, well-crafted visual forms
- collaborate with their peers: share ideas and information
- understand and integrate feedback into their creative working process
- illustrate an understanding for how context shapes, and is shaped by design

Assessment Forms

In this study, the form that was proven the most effective learning tool in the prior assessment investigation—a rubric—was used consistently throughout the semester to evaluate project outcomes. The visual appearance of the information, the wording used to provide feedback, and the ways the forms were completed, varied. To limit the interference of the various project parameters on the study, students were divided into four groups, which would indicate the type of assessment form they received for each project (table 1). The first two assessments differed in visual appearance but did not vary in content or language structure. The assessments for the third and fourth projects functioned similarly. However, the division of groups changed to minimize the impact of the assessment instruments on the outcomes. It is important to note that the content and language structure of the first two assessment tools varied from those used for projects three and four.

	Assessment A	Assessment B	Assessment C	Assessment D
Student Group 1	Project 1	Project 2	Project 3	Project 4
Student Group 2	Project 1	Project 2	Project 4	Project 3
Student Group 3	Project 2	Project 1	Project 3	Project 4
Student Group 4	Project 2	Project 1	Project 4	Project 3

Table 1

The assessment form that I created for the first two projects consisted of the general rubric that was used as an overview for the entire course. It included the four sets of learning objectives—design process, resolution/final work, participation, and attitude—and four sets of performance attributes aligned to each objective. The text was written in paragraph form and cited general practices that applied to the course as a whole, as opposed to the individual project. As a part of our evaluation, my colleague and I checked a box next to a paragraph in each row that best described each student's performance. Each row included a space beneath it where project-specific comments could be listed. The feedback consisted of observations made during the corresponding project and suggestions geared toward helping students improve their performance in the future. Prior to our evaluating sessions, my colleague and I established a list of common comments that we would provide students. These aligned with the learning objectives that students received in the project briefs and were based on the work that we saw in development and our experiences with the students. I constructed digital versions of the assessment forms that enabled

us to select several of the comments via drop-down menus (Fig. 1). The students received printed versions of these assessments where the comments appeared as typed sentences without the drop-down menu present. For the other project, students received a similar form. However, instead of typed comments, the same sentences were handwritten (Fig. 2). This enabled the comparison of handwritten to typed comments in a situation where the wording structure was identical.

The last two assessment forms that I developed consisted of a rubric that included performance attributes that were specific to the third and fourth projects. The content of each rubric matched the learning objectives listed in the briefs that the students received at the beginning of each project. The content structure of these forms differed from the first two in that their performance attributes weren't written as all-inclusive paragraphs. Instead, each comment was separated with a check box next to it but still resided in the columns and rows of the rubric. This enabled us to check one component of their process work, for example, as "excellent" and another as "good". The visual appearance of the assessments used in projects three and four differed, while the content structure and wording stayed consistent and students received printed versions of each assessment. One of the forms showed all of the text in black with comments relevant to the individual student checked (Fig. 3). On the other form, all of the text appeared as a 50% gray with the relevant comments shown in black and checked (Fig. 4). The goal of this part of the study was to investigate the effects of visual hierarchy on students' perception and understanding of the feedback they received.

This set of figures shows portions of each of the assessment tools that were used in the freshmen design studio throughout the duration of the course. Note that to enable the comparing of assessment tools, the segments shown here relate to the "design process" attribute in each project. However, students were also assessed based on their resolution/final work, participation, and attitude.

Process	<input type="checkbox"/> excellent	<input checked="" type="checkbox"/> good	<input type="checkbox"/> needs improvement	<input type="checkbox"/> unacceptable
	breadth and depth of ideas generated and explored is extensive; evidence of steady progress shown through sketches, models, notes, etc. is clear and consistent; ideas are thoroughly evaluated and clearly used to inform steps taken in development and refinement stages	the required amount of ideas are generated and are moderately varied, some sporadic evidence of progress is shown through sketches, models, notes, etc.; ideas are evaluated and connected loosely to the development and refinement stages of projects	a few ideas are often generated; little evidence of progress is shown through sketches, models, notes, etc., ideas appear to be occasionally evaluated; loose connections of process work to the development and refinement of ideas is seldom visible	a single idea is typically generated; evidence of any progress is difficult to find; few sketches, models, notes, etc. have been made; evaluation of ideas isn't evident; connection of process work to the development and refinement of ideas is unclear
<i>Photo composition</i>	You generated a good quantity of quality sketches and notes.			
<i>Type composition</i>	You need to improve your use of sketches and notes as tools that aid your understanding and inform your next steps. You explored a good range of ideas. Keep it up.			

Fig. 1: Shown here is a portion of an assessment sheet that students received after conducting the first or second project in the course. It includes a general rubric that pertains to the entire course, which students received in the syllabus. It also provides students with project-specific feedback in the form of typed comments.

Process	<input type="checkbox"/> excellent	<input checked="" type="checkbox"/> good	<input type="checkbox"/> needs improvement	<input type="checkbox"/> unacceptable
	breadth and depth of ideas generated and explored is extensive; evidence of steady progress shown through sketches, models, notes, etc. is clear and consistent; ideas are thoroughly evaluated and clearly used to inform steps taken in development and refinement stages	the required amount of ideas are generated and are moderately varied, some sporadic evidence of progress is shown through sketches, models, notes, etc.; ideas are evaluated and connected loosely to the development and refinement stages of projects	a few ideas are often generated; little evidence of progress is shown through sketches, models, notes, etc., ideas appear to be occasionally evaluated; loose connections of process work to the development and refinement of ideas is seldom visible	a single idea is typically generated; evidence of any progress is difficult to find; few sketches, models, notes, etc. have been made; evaluation of ideas isn't evident; connection of process work to the development and refinement of ideas is unclear
Photo composition	You generated a good quantity of quality sketches + notes.			
Type composition	You need to improve your use of sketches + notes as tools that aid your understanding + inform your next steps. You explored a good range of ideas. Keep it up.			

Fig. 2: Shown here is a portion of an assessment sheet that students received after conducting the first or second project in the course. Similarly to Fig. 1, it includes a general rubric that pertains to the entire course, which students received in the syllabus. It also provides students with project-specific feedback in the form of handwritten comments.

Process	<input checked="" type="checkbox"/> the quantity of quality sketches and models generated is extensive	<input type="checkbox"/> the quantity of quality sketches and models generated meets requirements	<input type="checkbox"/> the quantity of quality sketches and models generated is small	<input type="checkbox"/> the quantity of quality sketches and models generated is limited to one or two
	<input type="checkbox"/> an extensive range of ideas is explored	<input checked="" type="checkbox"/> a moderate range of ideas is explored	<input type="checkbox"/> a small range of ideas is explored	<input type="checkbox"/> one or two ideas are explored
	<input type="checkbox"/> ideas are thoroughly evaluated and clearly used to inform steps taken in development and refinement stages	<input checked="" type="checkbox"/> ideas are evaluated and connected loosely to the development and refinement stages of projects	<input type="checkbox"/> ideas appear to be occasionally evaluated and loose connections of process work to the development and refinement of ideas is seldom visible	<input type="checkbox"/> evaluation of ideas isn't evident and the connection of process work to the development and refinement of ideas is unclear
	<input type="checkbox"/> a working process that matches project specs is clearly evident	<input type="checkbox"/> a working process that matches project specs is somewhat evident	<input checked="" type="checkbox"/> a working process that matches project specs is difficult to find	<input type="checkbox"/> a working process that matches project specs is not evident

Fig. 3: Shown here is a portion of an assessment sheet that students received after conducting the third or fourth project in the course. It consists of a project-specific rubric in which each comment is separated from the others but remains in the same column. Feedback that pertains to the individual student is noted by a black checkbox. All text is shown in black.

Process	<input checked="" type="checkbox"/> the quantity of quality sketches and models generated is extensive	<input type="checkbox"/> the quantity of quality sketches and models generated meets requirements	<input type="checkbox"/> the quantity of quality sketches and models generated is small	<input type="checkbox"/> the quantity of quality sketches and models generated is limited to one or two
	<input type="checkbox"/> an extensive range of ideas is explored	<input checked="" type="checkbox"/> a moderate range of ideas is explored	<input type="checkbox"/> a small range of ideas is explored	<input type="checkbox"/> one or two ideas are explored
	<input type="checkbox"/> ideas are thoroughly evaluated and clearly used to inform steps taken in development and refinement stages	<input checked="" type="checkbox"/> ideas are evaluated and connected loosely to the development and refinement stages of projects	<input type="checkbox"/> ideas appear to be occasionally evaluated and loose connections of process work to the development and refinement of ideas is seldom visible	<input type="checkbox"/> evaluation of ideas isn't evident and the connection of process work to the development and refinement of ideas is unclear
	<input type="checkbox"/> a working process that matches project specs is clearly evident	<input type="checkbox"/> a working process that matches project specs is somewhat evident	<input checked="" type="checkbox"/> a working process that matches project specs is difficult to find	<input type="checkbox"/> a working process that matches project specs is not evident

Fig. 4: Shown here is a portion of an assessment sheet that students received after conducting the third or fourth project in the course. Similarly to Fig. 3, it consists of a project-specific rubric in which each comment is separated from the others but remains in the same column. Feedback that pertains to the individual student is noted by a black checkbox and black text. Comments that don't pertain to the individual remain gray.

Self-Reflections

At the start of the class following the receipt of each assessment form, students were asked to take ten minutes to jot down all of the feedback they could remember receiving on the sheet and to explain their understanding of the information and how they planned to use it in the future. This step of the study was intended to ascertain students' retention and understanding of the assessments.

Questionnaires

On the last day of the course, students completed a survey that asked them questions about their perception of each assessment form. The task, which took approximately ten minutes, was conducted via the internet and the students' responses were logged anonymously. The questionnaire was divided into four parts—each corresponded to a different assessment form but asked the same questions in a consistent manner. Most of the questions were followed by a set of pre-written responses and an area for students to enter their own comments, all of which were accompanied by checkboxes that students either ranked in terms of importance or selected all that applied.

In the questionnaire, students were asked how thoroughly they thought they read each assessment, how well they believe they understood the content, and what attributes of the assessment they thought infringed on their understanding of the information. Students were asked to consider the importance of individual assessment attributes to them and then rank each component, such as grade listings, and individual comments, on a five-point scale. The students performed a similar task when asked what they gained from the feedback, such as direction on how to improve in the future, and an understanding of what they performed well in the corresponding project. Disregarding their actual project grades, students were asked how satisfied they were with each of the assessments they received. If they weren't completely satisfied, they were asked to identify reasons that attributed to their dissatisfaction. Lastly, at the end of each section of the questionnaire, which related to a particular assessment form, students noted the grade they received for the corresponding project. This process enabled the examination of students' perceptions of visual and textual information and how the forms of the assessments impacted their preferences.

Study outcomes

The results of the questionnaire verified some hypotheses, revealed a few surprises, and fuelled a subsequent study. For purposes of clarity, I will identify each of the assessments throughout this section as:

- A: the assessment that includes a general rubric and typed comments selected from dropdown menus;
- B: the assessment that included a general rubric and handwritten comments that were identical to those selected from dropdown menus;
- C: the assessment that included a project-specific rubric that was separated into individual points shown in black text; and
- D: the assessment that included a project-specific rubric that was separated into individual points shown in gray and black text.

In each set, the first few questions referenced students' reading and understanding of the assessments. The vast majority of students noted that they read each assessment thoroughly (Fig.5) and that they understood all of the information (Fig.6). It is important to point out that although the distinctions are slight, students read assessments A and C, which contained a full page of black printed text, less thoroughly than B and D, which included handwritten or gray and black text. Students also indicated a slightly higher understanding of C and D—the detailed rubrics—than A and B—the general rubric. The students' lack of knowledge of design terminology may have attributed to their high rankings of ambiguous and unfamiliar language as causes of their misunderstanding (Fig.7). It's important to note that students found the amount of text on A and C more problematic than B and D.

The next set of questions in each section related to students' value and use of the assessments (Figs. 8, 9). Here, slight differences among the assessments became apparent. Students valued their grades on C and D, which didn't include column labels such as "excellent" and "good", more than on A and B. The placement of checkboxes was less important in C, which lacked visual hierarchy. In addition, individual comments were valued more on A and B, which didn't reference project-specific criteria in the rubrics. When asked which assessment provided specific information well, students noted B, which included handwritten comments, as best supplying suggestions for improvements and D, which utilized gray and black text, as best indicating their performance on the relevant project. Students pointed out that C and D, which included project-specific rubrics, listed important attributes of the corresponding project better than A and B, which used a general rubric, and that the translation of feedback to a grade was most clear in D, which used visual hierarchy to delineate content. Interestingly, students' consistent use of the assessments did not appear to be affected by the differences in the types of feedback they received—A and B pointing out project performance and offering suggestions for improvements, and C and D simply noting project performance.

The last section of each set in the questionnaire dealt with students' satisfaction of the assessments. Although differences among the four forms were evident, the discrepancy between printed and handwritten feedback was slight in comparison to a similar study that was conducted in the fall of 2007 (Rohrbach, 2008). In the study described in this paper students noted that they were most satisfied with C and D consistently, followed by B then A (Fig. 10). Their preference may be attributed to the detail, clarity, and specificity of the project-based rubrics used in C and D. Students who claimed that they were not completely satisfied with the results of the assessments, largely attributed their dissatisfaction to a lack of information (Fig.11). Many of them expanded on their notation, stating that they wanted more time to discuss their work with their instructors. Lastly, there was no noticeable correlation between students' grades and their responses to the assessment questionnaire.

Although students' self-reflections that were collected as part of this study were written in prose, similarities arose among the set. Students' retention of information from assessments A and B were consistent, indicating that the form, whether it was printed or handwritten, had little impact on the content that students remembered and how they planned to use it. Students were consistently focused on the performance headings shown on assessments A and B, such as "excellent" and "good", and seldom connected the titles to concrete information about their performance. Hence, the headings were dropped from assessments C and D, which marked an increase in students' descriptions of their performance in their self-reflections. Students also appeared to remember more information from assessment D, which utilized visual hierarchy, than assessment C, which lacked visual hierarchy.

The instructors documented the amount of time spent completing the various assessment forms throughout the duration of the course. Instructors spent approximately seven hours completing the handwritten assessments and four hours completing the digital assessments. In review of the first two assessments my co-teacher and I noted that the forms diminished our time on the task and reduced our tendency to scrutinize specific attributes of students' projects that often cause inconsistencies among our assessments. However, the necessity to check one paragraph that cited several performance attributes prevented us from commending specific successes or noting particular areas for improvement. In contrast, the last two assessments, which separate each individual performance attribute, required us to examine details more than we had in the past. This characteristic is not necessarily problematic but forced us to assess students' performance in an unfamiliar manner.

This set of figures illustrates students' perceptions of the four assessment forms used in the freshmen design studio. The data was collected via a questionnaire that the students completed anonymously at the end of the course. Moving from left to right, each column correlates to a specific assessment form—A,B,C,D, as listed at the start of the study outcomes.

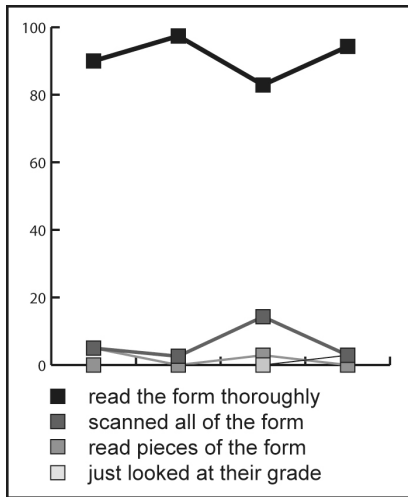


Fig. 5: Students' reading of forms

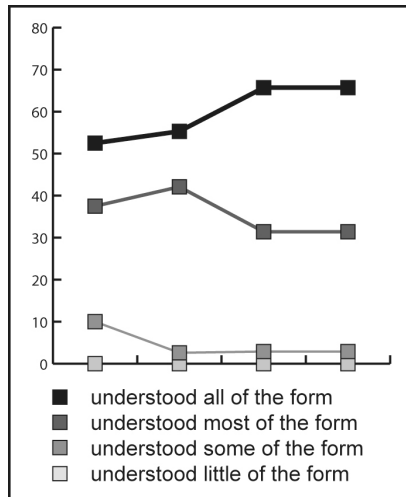


Fig. 6: Perceived understanding of the forms

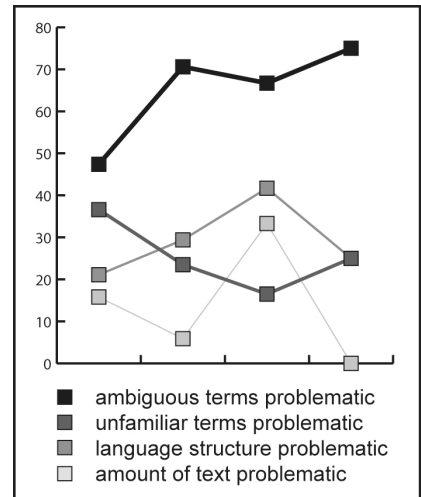


Fig. 7: Perceived causes for misunderstanding of the forms

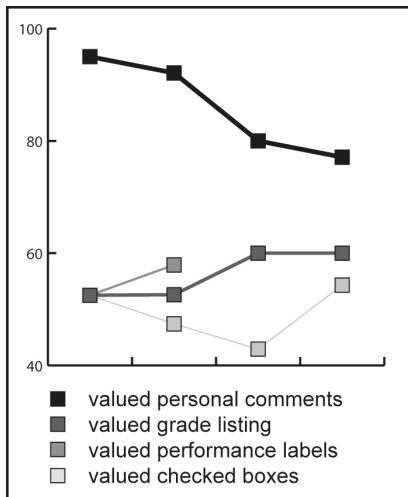


Fig. 8: Perceived value of the forms' components

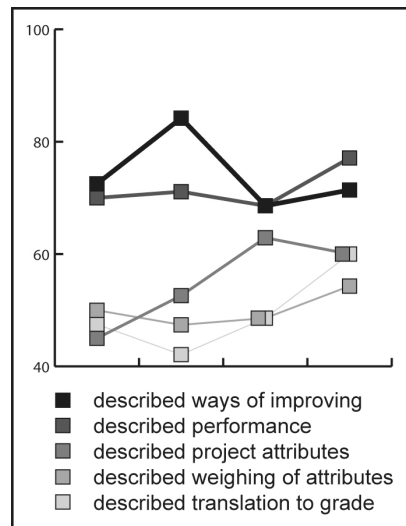


Fig. 9: Perceived value/use of the forms' content

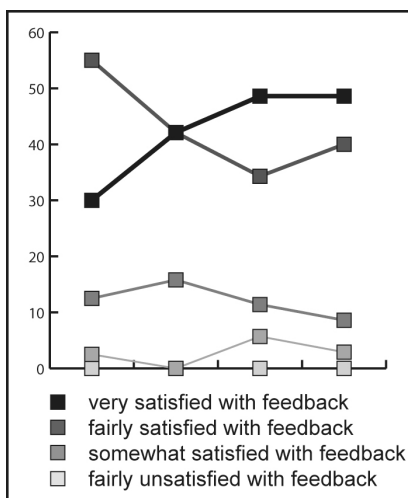


Fig. 10: Perceived satisfaction of the forms

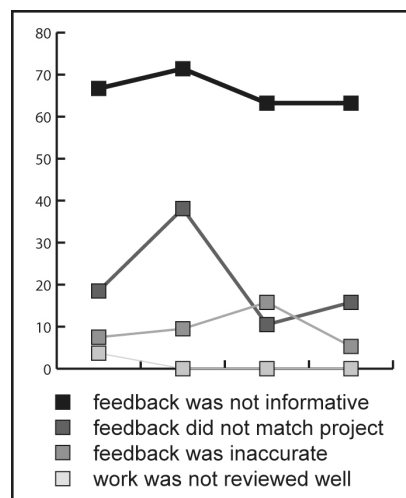


Fig. 11: Perceived causes for dissatisfaction of the forms

Study Limitations

Although the structure of this investigation, which is illustrated in Table 1, limits the interference of the project parameters throughout the course of a semester on the study, it is important to reiterate that the investigation was isolated to the context of a design studio that included first-year students. The narrow pool of participants enabled the in-depth study of assessment tools without having to account for vast differences in students' design skills, knowledge, and experiences. Nonetheless, this is an inherent limitation of the study because students' placement within a curriculum may have a bearing on their assessment needs and desires. Their diverse levels of maturity and learning experiences may warrant different approaches to assessment. Hence, the outcomes of this study are intended to serve as a basis for further investigation.

Conclusion

This study and its outcomes are intended to serve design educators by providing them with clear and substantiated information that facilitates their rethinking of the assessment process and guides their decision-making when conducting evaluations. It proposes methods for studying the visual appearance and wording of assessments and informs subsequent investigations in this area of research. As a result of this inquiry, I believe the design education community will gain a better understanding of the critical components of assessments and how they can use visual appearance, wording, and form structure to improve students' understanding of feedback and inform their subsequent learning.

Supply feedback aligned to students' educational experiences.

The outcomes of this study show that the majority of students understood all of the feedback that they received. However, students who noted a lack of understanding cited their unfamiliarity with the terminology, ambiguity of the feedback, and structure of the comments as causes. Thus, to improve all students' understanding of the assessments they receive, it's important for educators to consider the words they use when providing feedback, verifying that new terms are clearly defined and matched to each student's level in the curriculum. In addition, students noted that they believed the handwritten comments provided them with more direction on how they could improve their performance, despite the fact that the handwritten and typed comments were identical. Therefore, it is important for instructors to consider the wording and form of assessments to which students are accustomed, and introduce new instruments slowly, clearly explaining any changes in the evaluation metrics.

Provide comments that address a specific project and student.

Students' responses to the questionnaire and the information culled from their self-reflections indicate that they most preferred and understood project-specific feedback that was geared toward the individual. For example, more students noted that the detailed descriptions of their performance were highly important on assessments A and B, which presented them with a rubric that related to the entire course, than in assessments C and D, which used a project-specific rubric. This indicates that students sought personal and project-specific information that wasn't readily available in the rubrics. Students also noted that assessments C and D gave them a better understanding of the evaluative criteria and listed important attributes of the corresponding projects more effectively than assessments A and B, attributing the majority of their dissatisfaction with the assessments to a lack of information and stating that they wanted more direct feedback. Thus, educators must consider how broad, course-based statements negatively impact students' perception and understanding of the feedback they receive.

Remove vague titles of performance.

The review of self-reflections that took place after each assessment indicated that most students focused on the performance titles that had been marked by instructors on assessments A and B, such as "excellent" and "needs improvement". Students often cited their rating at the beginning of their self-reflections but failed to link them to concrete information that described their performance or offered suggestions for improvements. Thus, I think the vague performance titles provided

students little useful information and instead caused them to stop reading the supporting information and look for connections among the content. Therefore, I believe instructors should be wary of titling performance levels and instead focus on the clear definition and delineation of one from another. I think this process will help students grasp project and course objectives and outcomes, and how they relate to each other, more effectively.

Situate individual comments within a larger context.

The questionnaire outcomes indicate that students were most satisfied with assessments C and D. Students' reasons are illuminated by the written responses that they provided in the questionnaire and also by the review of their self-reflections. Students noted relationships between their performance and attributes of those levels that were above and below their position in the rubrics. They noted that this helped them articulate their advances and inform further improvements. As a result, I believe situating each student's performance attributes within the larger context of the class helps them understand grading metrics and provides guidance for improving their performance.

Deliver feedback in a form that is efficient.

Provided that a consistent language is used to assess students' performance throughout a course, the differences in students' perception of handwritten and typed forms appear slight. The questionnaire responses indicate that students were minimally more satisfied with the handwritten assessments. In addition, the self-reflections showed that students retained the same amount and type of information despite differences in the visual form of the assessments. In contrast, the amount of time educators needed to assess students using the digital forms was significantly less than the handwritten forms. Thus, I believe it is important for instructors to explore alternative assessment tools with the intent of making them more efficient without sacrificing the quality of information they provide students.

Use hierarchy to improve perception and retention of content.

Perhaps most interesting are the results of this study that deal with the visual appearance of the assessment forms. Students indicated that they read assessments A and C, which included little visual hierarchy, less thoroughly than B and D. They also noted that the amount of text of A and C, which was identical to B and D, prevented them from understanding all of the feedback they received. Lastly, a comparison of self-reflections showed that students retained a great deal more information from D than C. In all cases, assessment D yielded the most positive results, which I believe is due to the form's clear and prominent hierarchical structure that draws attention to an individual's performance among attributes that reflect the class as a whole. Hence, I think instructors can improve students' perception and retention of assessment information by using visual hierarchy to reduce the overwhelming appearance of a text-heavy document and highlighting content that is pertinent to the individual student.

Use placement of text as a form of communication.

Based on the results culled from the questionnaire, the placement of assessment content can also provide students with valuable feedback. Students indicated that assessment D provided them with the most information about their performance and that they best understood how the feedback they received translated into a grade via this form. I believe these outcomes can be attributed to the visual pattern that results from highlighting comments that pertain to an individual within the context of the greater rubric. Hence, students can see that their grade is likely to be in the B range if most of the second column is highlighted. They quickly gain an understanding of their overall project performance and individual components that may not be in line with the others just by glancing at the assessment sheet. I think educators can use this information to help students form an overall, accurate perception of their performance on a project and also invite them to explore the feedback more thoroughly, linking it back to the first impression they made.

Next steps

This research project uncovers the affects that appearance and wording of assessments forms have on students' learning, understanding, and perception of the feedback. The study premise, research structure, and outcomes function collectively as a base, on which additional research on assessment in design education can be conducted. Although this project presents visual and textual principles for design educators to consider when constructing evaluation tools, the outcomes also reveal specific areas of assessment that warrant additional investigation. For example, the alterations to conventional rubrics in this study are slight. Therefore, another project may seek to extract the essential components of rubrics that must be retained in assessing design students' performance and further alter the appearance and wording to best suit students' expectations and the design studio context. In addition, since this project consists of instructors evaluating students' performance, which does not match the peer-to-peer and peer-to-educator interaction that is often present in design courses, another investigation may study the roles of design students' in the assessment process. However, these are but two directions that this research can follow. The key point is that it is important for educators to understand the critical role that assessments play in students' learning and understanding and that further studies are necessary to improve the evaluation instruments used in design pedagogy, making educational experiences enjoyable and effective.

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Stacie Rohrbach is an Associate Professor in the School of Design at Carnegie Mellon University in the United States. She teaches studio- and seminar-based communication design courses at all levels of the undergraduate and graduate curriculum. Rohrbach's research investigates how combining design processes and learning theories improves the teaching of complex and abstract content—specifically visual communication. She explores the design of educational tools and methods for university students within and outside of design, in classroom and online contexts. Rohrbach also applies her new knowledge to areas outside of visual communication, such as the biological sciences. The nature of her work allows her to explore the relationships between print and digital media and the communicative value of sound, motion, and visuals as educational tools.

Prior to her current academic appointment, Rohrbach worked professionally in both print and digital media. As an art director, designer, and researcher she developed identity systems, corporate standards manuals, interactive websites, promotional materials, and product packaging. She also taught design courses at Lehigh University as an Adjunct Lecturer. Rohrbach earned a B.F.A. in Graphic Design from Carnegie Mellon University and a Master of Graphic Design degree from North Carolina State University.