

Developing a Grounded Framework for Implementing Ungrading in a Disciplinary Context

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Introduction

While grades are often considered an inherent, required part of higher education, many instructors and students have critiqued the ways grades de-emphasize learning as the main goal of coursework (Kohn 2011, Pulfrey 2013). Grades are a form of extrinsic motivation, which previous research has shown encourages students to pursue lower levels of subject mastery (Pulfrey 2011, Feldman 2018)). Though grades can function as an important form of feedback (Cameron 2001, Midgley 2001), grades may affect students differently in ways that contribute to inequality, and do not constitute the only possible form of feedback (Ferns 2021). In addition, grades can reduce trust and harm the relationships between students and teachers (Chamberlin 2018, Tannock 2015).

Grading can be a site of pedagogical innovation to promote equity and student learning (e.g., Feldman, 2018), and ungrading is an example of such an innovation (Kohn and Blum, 2020). According to the Lafayette Center for Teaching and Learning, ungrading can be understood as “an umbrella term for any assessment that decenters the action of an instructor assigning a summary grade to student work.” Ungrading has been successfully implemented in humanities courses (e.g., Stommel 2018), engineering writing courses (e.g., Sharp 1997), and more recently in engineering design courses (e.g., Dosmar & Williams 2022). Ungrading approaches shift the focus from grades to learning and metacognitive strategies.

Ungrading can take many forms depending on the disciplinary subject, course structure, and institutional context. Some common approaches include contract grading where students commit up front to do certain assignments for a specific grade, negotiated grading where students and instructors conference to decide on a final grade, and all feedback but no grades (Kohn & Blum 2020). For many institutions, the students must ultimately receive some sort of evaluation on a transcript to show successful completion of the course, though these could ultimately be pass/fail. Courses that focus on controversial material, subjective and personal reflection, or community-based design are particularly well served by non-traditional grading methods.

A full program of research around ungrading would include research on how students experience ungrading, the way ungrading operates in different disciplinary contexts, how ungrading can support diversity, equity and inclusion efforts, and the kinds of risks ungrading might involve. Because these questions all involve implementations of ungrading, and because implementing ungrading is non-negligible labor, we see an opportunity for research that can guide implementation of ungrading and thus enable other scholarship.

With the above context in mind, this *evidence-based practice paper* asks: 1) how do educators implement ungrading in engineering courses? 2) what do educators vary in order to adapt ungrading to their unique educational contexts? 3) how can we characterize the pedagogical design space of radical or non-traditional grading schemes? We ask these questions as we do in order to situate our work as a research through design effort, specifically the approach advocated by Gaver (2012) in which a set of design solutions are interrogated to determine their invariances

as well as the dimensions of variation. In framing our effort as research through design, we see educators as designers and their work of implementation as a form of design. We further highlight that our question about practicing educators and their unique educational contexts takes advantage of a problem solving orientation of educators to adapt their pedagogical choices when problems arise and the naturally occurring variation in their pedagogical contexts.

Approach

To address our research question, we leveraged a form of research that blends research through design (Gaver, 2012) and grounded theory (Charmaz, 2006). Specifically, the process involves identifying instances (or design solutions) to a problem, aggregating information about those instances (e.g., archival information such as syllabi and traces that contain notes about why decisions were made, expectations that existed, etc.), and then using a constant comparison logic to surface dimensions through which all of the instances can be characterized. The results of this analysis are the dimensions of variation and the explanation of how the dimensions vary across the design instances.

In this work, the focus is on the way in which ungrading was designed and implemented in four classes taught by two different instructors. Because the analysis focuses on only four instances, this work can be understood as a proof-of-concept and producing insights that can be extended later with additional instances.

Instances. Table 1 provides an overview of the four instances of ungrading used in this effort. Instance A1 took place during summer 2022 in a special topics class focused on ergonomics and biomechanics. This course offering had 9 students and students from bs, ms and phd programs. Instance A2 is a course offered by the same educator as A1. This was a course on inclusive and accessible design taught in winter of 2023 to 37 masters students. Instance E1 was taught by a second educator, was taught in autumn of 2022, and had a student enrollment of eight doctoral students. The course for this instance was a doctoral seminar for students just starting their degree. Instance E2 was taught by the second educator, was in a capstone design course for undergraduate students, and had 74 students enrolled. While these courses are quite different in terms of subject matter and scale, all of the courses were taught in the same department, and all four classes were required to eventually assign a grade on a 4.0 scale to the registrar.

Positionality. The instances labeled A1 and E1 represented the first use of ungrading for each of the two instructors. The instances labeled A2 and E2 represent a second use of ungrading for each of the two instructors, and thus involved an opportunity for each instructor to refine how they had designed and implemented ungrading. Thus, from a research design perspective, this paper features instances that are sequential (because each educator is offering a first and a second instance) and concurrent (because the instances happen across two different educators). The educators are similar in that they are both highly experienced and different in that they occupy different positions in the system of power within higher education (assistant teaching professor and full professor).

Table 1. The instances of ungrading analyzed for this paper.

Instance	Title	Instructor	Number of students	Level	Amount ungraded

A1	Ergonomics and Biomechanics	First author	9	BS, MS, PhD	100%
A2	Inclusive Design	First author	37	MS	100%
E1	Empirical Traditions in [redacted]	Second author	8	PhD	100%
E2	Capstone Design Planning	Second author	74	BS	30%

Data. This work leverages two kinds of data. The first form of data is a collection of artifacts that show how ungrading was presented to students (i.e., the syllabi, the slides, etc.). The second form of data was created through a process of mutual debriefing. The two authors co-constructed a debriefing protocol that created many opportunities to surface information that could be relevant to the analysis. The two authors then interviewed each other, created notes about the answers, and then used the notes for the analysis.

Figure 1. The protocol used by to collect information about each instance of ungrading

<p>Part 1. Anchoring on the materials</p> <ol style="list-style-type: none"> 1. Walk me through what you have here. 2. What led up to these materials? How did they come about? 3. What are you proud of? 4. What are some of the choices you had to make? <p>Part 2. It comes to life</p> <ol style="list-style-type: none"> 1. What were you satisfied with? 2. What were you dissatisfied with? 3. What surprised you? 4. How did students respond? <p>Part 3. Taking stock</p> <ol style="list-style-type: none"> 1. Is there anything this has you wanting to think more about? 2. What did you, or might you, change if you were going to do this again? 3. Where would you like to see ungrading tried? Is there anywhere you think it should not be tried? 4. What should I have asked you but have not yet?
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Analysis. Early in the debriefing, it became apparent that a temporal framework would be a promising way to organize the rest of the analysis, and thus we chose to organize the analysis through four phases: deciding to use ungrading, introducing ungrading to students, supporting ungrading, and determining grades. To generate dimensions of variation within this temporal framework, we analyzed the data sources for the first educator, paying attention to what stayed the same and what changed. When we identified sites of change, we used the data to see if a change was exogenous (a feature of the setting) or a locus of refinement (an endogenous change). We then brought the two instances of the second educator into the analysis to expand

and refine the set of dimensions. A final phase of the analysis involved revisiting each instance in relation to the dimensions of variation that had been identified and describing the instance in relation to the dimensions. These granular descriptions were then processed to create the narrative for each dimension that is included in the results.

Epistemological and trustworthiness considerations. The research approach we have described produces knowledge in the form of dimensions that can be used to characterize a design space. Because the process being followed shares much in common with grounded theory and qualitative research more generally, the trustworthiness considerations are similar. For example, the results are more trustworthy to the extent they are clearly grounded in the data and the results are more trustworthy to the extent that the chain of reasoning that led to the results can be followed.

Results

In this section, we present eleven dimensions of variation that we surfaced via our analysis of four instances of ungrading. As discussed above, we organize these dimensions in four chronological phases: deciding, introducing, supporting and determining grades. These results are summarized in Table 1. In reading the results, it can be noted that dimensions of variation in what happened in the past can be also seen as choices that an educator can make going forward.

Table 1. Summarizing the results of the analysis.

Phase	Dimensions of variation identified in the four instances of ungrading (which can be seen as decisions educators can make going forward).
Deciding	Motivation Mechanism for committing Emphasis
Introducing	Introducing ungrading as part of the class Initial activity
Supporting	Explicitness of planned support Scope of explicit support Use of opportunistic support
Determining grades	Mechanism for students to suggest their grade Student conference Resolving disagreements

Deciding

A clear first step in the use of ungrading is to make the decision to pursue ungrading. To understand the decision to pursue ungrading, the analysis relied primarily on the mutual debriefing the two authors conducted. The analysis suggested three dimensions related to deciding: the motivation for exploring ungrading as an option, the mechanism for committing to

ungrading as the process to be used in the class, and the emphasis on ungrading as part of the overall grading of the course.

Dimension: Motivation. Analysis revealed a range of motivations for pursuing ungrading. Appropriateness to the teaching situation was one motivation. In A1, a key motivation was choosing an overall grading approach that would be commensurate with the teaching situation in which radically varied students (BS, MS, and PhD) were participating in a common learning experience that involved advanced math and physics concepts. A similar sentiment motivated interest in ungrading for E1, a gateway doctoral course for incoming students with radically divergent backgrounds. In both cases, the emphasis on ungrading permitted a focus on the student learning trajectory over a commitment to everyone achieving specific goals.

A second motivation was a sense that ungrading might be particularly appropriate to the subject matter of the course. In instance A2, the focus was on inclusive design and in instance E1, the focus was on different paradigms for doing research. An emphasis on ungrading meant that students could engage in healthy debate should the occasion arise, without having to worry about the effect of debating an unpopular position on their grade.

A third motivation was simply phrased as "getting out of the way of learning" and relatedly "having students be more responsible for and accountable to their learning." This motivation was mentioned by the instructor for A1 and A2, and was also mentioned in the context of E2 (the BS capstone course). As has been hinted at, the motivation for ungrading in the four instances was multi-faceted.

Dimension: Mechanism for committing. Analysis of the traces of the debriefing interviews revealed different mechanisms for ultimately committing to ungrading. Specifically, in A1 and E1, the instructor was the sole instructor and both courses were non-traditional (a summer special topics offering and a gateway doctoral course). In these situations, the sole instructor was able to unilaterally make the decision to pursue ungrading for the course. In the other two instances (A2 and E2), there were other educators involved. In both cases, the educator reported having to explain ungrading and negotiate the use of ungrading in order to arrive at the ultimate decision. Further, in the case of E2 (the capstone course), there was a department expectation that a significant portion of the grade would be based on student performance.

Dimension: Emphasis. Across the instances of ungrading, there were three instances in which ungrading mediated the entire grade (A1, A2, and E1). In the remaining instance (E2), students were told that the ungrading effort would account for 30% of the grade (and the rest of the grade would be based on the capstone project effort).

The notion of tradeoffs may not be relevant to motivations, but is definitely relevant to the mechanism for committing and the emphasis. In terms of the mechanism for committing, it is possible for a lead instructor to unilaterally commit to ungrading without consultation of other instructors, but this would likely create difficulties downstream. At the same time, a negotiation takes time and could still end in a standoff. In terms of the emphasis on ungrading, a commitment to 100% ungrading communicates a strong message and can offer potential to simplify grading. At the same time, this may be an unrealistic approach in classes (such as capstone, E2) where there are other stakeholders vested in the grading (such as accreditation agencies).

Introducing

After the decision to use ungrading is made, a next set of choices has to do with how to introduce ungrading to the students. As we looked across our data sources, we noticed that all four instances of ungrading featured the introduction of ungrading on the syllabus as well as an initial activity to support and ground the ungrading effort. We also noticed variation within these dimensions.

Dimension: Introducing ungrading as part of the class. In all four instances in this study, ungrading was introduced in the syllabus. Introducing the grading scheme in the syllabus is not uncommon, is quite likely best practice, and may even be mandatory in some contexts. Since ungrading is not a common practice, it may be particularly important to signal in the syllabus. There were variations in how this grading approach was introduced. For example, in instance E1, the grading approach was referred to as experimental: "...we will be experimenting with ungrading this term in order to address the question: how might we equitably grade a class like ours." In instance E2, ungrading was defined in the syllabus and a rationale was offered, but it was not called out as experimental: "a component of the final grade will be determined by a technique called 'ungrading.' Ungrading is a pedagogical practice that employs a meta cognitive approach and replaces instructor assigned grades with students' own reflection on their learning and students' self assessment of their learning. We will use this idea in capstone to de-emphasize grades as a measure of what you learn." In instance A1, references to ungrading were in a policy section of the syllabus and the introduction involved naming ungrading as the approach, offering a rationale ("the goal of ungrading is to remove grades from getting in the way of learning"), referring to the initial activity, and introducing the idea of a final conference. In instance A2, similar framing was used and also connected to a citation about ungrading.

Dimension: Initial activity. In all four instances of ungrading, students engaged in some form of an initial activity to help situate and ground the ungrading approach. Variations included whether the activity was an individual or group and the relationship of the activity to the subsequent trajectory for ungrading. In instances A1 and A2, the initial activity was individual and took the form of an initial assignment where students were asked to benchmark their starting point by answering questions about their personal learning goals, their prior knowledge on specific subjects, their personal definitions for success, and any sources of nervousness. In instances E1 and E2, the initial activities were class wide. In E1, students were invited to think about equity and inclusion as it relates to the class and were specifically invited to brainstorm (on stickies) what would contribute to inclusion and exclusion during the term. Ungrading was then introduced as a way to support inclusion and create conditions of equity. In E2, students were given a chance to contribute to iterating the learning objectives so that the objectives could more effectively be leveraged as a reference in ungrading. On the first day of class, students are invited to think about what they might learn through capstone. They were then shown a current draft of the learning objectives and asked to identify and share places where something they had identified as a learning outcome was missing. Finally, the outcome possibilities were integrated into the learning objectives by the instructional team, and the result was shared with the students with their contributions highlighted.

Trade offs: The choices laid out above make it possible to engage in trade-off thinking. For example, in the case of introducing to the students, one trade off has to do with whether to draw attention to the novelty which can naturalize feelings of discomfort but could also create foment

and a platform for students to argue about or debate the choice. It is interesting to note that if there is no debate, then the power present in other forms of grading may not exist but the educator still has power in making decisions about how to grade. Acknowledging this power may be an interesting part of introducing a commitment to ungrading even if the decision to leverage ungrading is treated as non-negotiable. In the case of introductory activities, one trade off clearly has to do with time. Each of the ungrading instances in this analysis leveraged a different approach to getting students started with ungrading (initial goals document, negotiating the learning objectives). Perhaps a combination of the approaches could represent an additional choice, but at some point the time involved in these activities starts to compete with time allocated to other activities. It is interesting to note that all four of the instances in this study were carried out in a quarter system, where introductory activities frame ten weeks (rather than a semester system where introductory activities frame 15 weeks). In a semester system, perhaps more time could be allocated to upfront activities because such time would be balanced out with the length of time spent together.

Supporting

After designing the way in which ungrading will be introduced, a designer-educator will need to make choices about how to support the ungrading goal over the duration of the class. As we looked across our data sources, we noticed that all four instances of ungrading featured intermediate support for the ungrading but these supports differed in explicitness of planned support, the scope of highly explicit support, and the use of opportunistic support.

Dimension: Explicitness of planned support. A key dimension was the explicitness of the planned support. For E1 and E2, the final culminating ungrading artifact was in a group of assignments that also contained intermediate reflections. The number and support for these intermediate reflections varied. In E1, there were four intermediate reflections prior to the final ungrading artifact, all were “required” and all were submitted in a shared space visible to other students. In E2, there were three intermediate reflections prior to the final ungrading artifact, the second was marked as optional and all were submitted through the course management system (so only the instructors, not other students, were able to read the submissions). In contrast, in A1 and A2, there were no assigned intermediate reflections. Rather, students submitted reading responses in a journal that had been anchored by the initial reflective benchmarking assignment. This structure would have made it possible for students to be nudged to reflect periodically through the course.

Dimension: Scope of explicit support. As noted above, E1 and E2 featured intermediate reflection assignments designs to support the ungrading effort, but they differed on the scope. Again, as noted above, E1 featured four intermediate assignments and E2 featured three.

Dimension: Use of opportunistic support. In the debriefing discussions, it was revealed that all instances of ungrading featured moments of opportunistic support. In A1 and A2, this opportunistic support took the form of ungrading being mentioned in class. In E1 and E2, the opportunistic support took the form of periodic “breadcrumb” activities—opportunities for students to make note of small bits of experience (enjoyments, surprises, ahas, challenges) to seed later reflection efforts.

Trade Offs. Time may again be a feature that motivates choices related to the dimensions. It is important to realize here that this set of dimensions likely does not capture some important dimensions because of the way we collected data. If we had access to over time traces of how the class was run, we might have been able to more fully develop dimensions related to this part of the ungrading journey.

Determining grades

In this section, we discuss dimensions of variation related to the final phase of ungrading, determining grades. This is where the ungrading comes to closure, with the student sharing the responsibility for determining the final grade. This is potentially the most visible part of the instantiations of ungrading explored for this paper. This is where the issue of power sharing and distributed responsibility is the most salient.

As we looked across our data sources, we noticed that all four instances of ungrading featured a final artifact prepared by the student with each artifact requiring the student to identify a grade they believe is appropriate, a conference period with the student to go over the artifact and the grade, and attention to how to address possible disagreements during the negotiation. We also noticed variation within these areas.

Dimension: Mechanism for students to suggest their grade. Each of the four instances of ungrading featured a final assignment in which individual students were required to identify a grade they thought would be appropriate and to offer information to support the grade. The nature of the requested materials indicate two key choices. In instances A1 and A2, students were instructed to create a portfolio of the work that they completed in class. In instances E1 and E2, students were instructed to prepare a “nicely formatted pdf” of around 1000 words. The additional instructions for instances E1 and E2 suggested that students review their work in order to prepare the essay, but there was no requirement to showcase the work in the essay, in contrast to the portfolio approach.

Dimension: Student conference. Each of the four instances of ungrading featured a conference with each student at the end of the term. The purpose of the conferences was to discuss the grade identified by the student and to negotiate that grade in relation to the grade the instructor considered to be appropriate. While all instances shared this property of having such a conference, the conferences differed in the length (10, 15, or 30 minutes per student) and who participated in the conferences. In the smaller class configurations of A1 and E1, the conferences were between the sole instructor and the student. With the larger class sizes of A2 (37 students) and E2 (74 students), there became a question of whether to have some students meet with the teaching assistant in order to manage the amount of time involved in having individual conferences, and, in particular, to keep the conferences at least 15 minutes long if not more. The instances did not have specific policies for situations in which students did not attend their conference. Our data sources did not shed light on additional dimensions and variations in these conferences such as their flow and strategies used to put students at ease, but these topics came up in our analysis conversations and likely should be addressed going ahead.

Dimension: Resolving disagreements. Our debriefing data surfaced the issue of how disagreements between the student identified grade and the instructor identified grade were to be handled. We did note that this definitely lurking issue was handled differently in the syllabi that

we used as a primary data source. Specifically, we noted that the issue of disagreements was handled explicitly in one instance, implicitly in a second instance, and was not addressed in the other two instances. In instance A2, the syllabus had explicit text asserting that disagreements will be handled by the instructional team. For instance E1, the syllabus implicitly suggested that disagreements were not expected when the syllabus asserted that “everyone is expected to get a 4.0.” In the other two instances, the syllabi do not explain how disagreements would be addressed.

Trade offs: The choices laid out above make it possible to engage in trade offs thinking. For example, in the case of resolving disagreements, perhaps the trade off between specifying and not specifying is to keep options open. If a key goal for ungrading is to be mindful of power, maybe the way disagreements are handled would be a subject for discussion before asserting how. At the same time, in larger classes, it might be valuable to make the rules clear. In the case of the form of the submitted artifact, the question is about trade offs between a portfolio format and a modest essay format. The portfolio format would take students longer and create more material for educators to review; it might also create a mechanism that scaffolds students in discovering their basis for their argument about their final grade. It is possible that some students would approach the modest essay artifact using a portfolio process but students who are pressed for time or are in other situations might not go through a systematic portfolio process unless required.

Discussion

In the previous section, we demonstrated how we could summarize four instances of ungrading using eleven inductively identified dimensions organized into four phrases (deciding, introducing, supporting, and determining grades). In this discussion, we draw out lurking issues that we think are of potential significance.

Ungrading as power sharing. Our work has been framed thus far with ungrading as a designerly response of educators to the challenge of grading. Our analysis also highlights how ungrading is deeply about power. Ungrading draws attention to power, such as who has the power to decide to determine grades in this way, how the decision about the grading approach is made, who participates in the ungrading negotiation, and how a disagreement about the final grade gets resolved. In cases where students assigned themselves a lower grade than expected, should the instructor use their power to raise the grade? In addition, the decision to provide feedback on student reflections is a decision about whether or not to insert the power voice of the instructor. Future research on ungrading could really drill into this issue of power.

Ungrading as disruption. Ungrading is not just a choice; it is a very different choice. In our analysis, this showed up in the need to negotiate this form of grading with others on an educational team, the need to introduce students to ungrading, and the need to prepare for a task (handling disagreements) that is not even a task in other forms of grading. These differences point to how ungrading functions as a disruption from the norm as well as a choice. Thinking about ungrading as disruption is generative for imagining what other work is being done when ungrading is used (besides simply getting to grades). Future studies of ungrading could focus on this aspect of ungrading by exploring if and how ungrading supports critical reflection (as questioning assumptions), the range of assumptions ungrading surfaces, and which parties in the

ungrading context do the questioning. Could ungrading play a role in the transformation in engineering education?

Ungrading as tradeoff. The dimensions of variation involved in our ungrading instances surfaced many of the implicit tradeoffs in grading, especially with respect to instructor labor. The significant time spent doing student conferences at the end of the term is a tradeoff with more intensive assignment grading throughout the term. Ungrading also allowed for more experimentation with assignments in larger classes because there was no requirement for grading. These tradeoffs will likely vary across different institutions and schedules. For example, in our quarter system we are often grading the previous term and planning the next term in the 2-3 weeks between terms, which makes 30+ student conferences non-negligible time and labor.

Ungrading as part of a larger pedagogy of care (Ferns 2021, Curie & Hubrig 2022). The Covid 19 pandemic in addition to ongoing societal crises and demographic shifts has necessitated examining and adjusting our approaches to engineering education. We made the decision to ungrade in each of these four instances in the midst of other pedagogical choices such as hybrid/remote learning (Ghosh 2022), universal design for learning and accommodations for students with disabilities, and participation and extension policies for illness/emergency. Future research should consider ungrading holistically within its pedagogical context and pay particular attention to equity for all students.

Implications for practice

In this work, we have inductively surfaced dimensions of variation in past instances of ungrading in order to showcase choices that educators interested in choosing ungrading may find valuable to think through (see Table 1). Having this set of variations/choices laid out may be helpful for practitioners who like to experiment, practitioners who need to configure ungrading to work in their context, and practitioners who are not sure where to start. The articulation of the dimensions could also be useful for an educator who wants to summarize their use of ungrading by providing a framework for describing. Moreover, faculty developers interested in supporting educators with ungrading could use the dimensions of variation/choices to guide conversations. Finally, we think our work could be leveraged to provide additional guidance. For example, going forward, it is possible to assemble particular sets of choices into configurations such as lightweight ungrading (a small percentage of the grade, little intermediate support, and a modest activity at the end) or full investment ungrading (the entire grade comes from the negotiation with the student, there is weekly intermediate support, and the final artifact takes a portfolio form).

Conclusion

This paper has focused on an analysis of four instances of ungrading in order to inductively identify the kinds of choices inherent in the different instances. These choices have been organized by phase (deciding, introducing, supporting and determining grades) and then named dimensions of variation within each phase. Future work could expand the space of choices by collecting data on yet other instances. In addition, future work could also generate data on the impacts, outcomes, and trajectories of ungrading for those involved. We believe our contribution here can guide selecting and describing new instances (to add precision to the research) and can

support the identification of hypotheses. In the meantime, the information contained herein can help practitioners interested in trying ungrading.

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