Progressing: Implementing Proficiency Grading During a Pandemic

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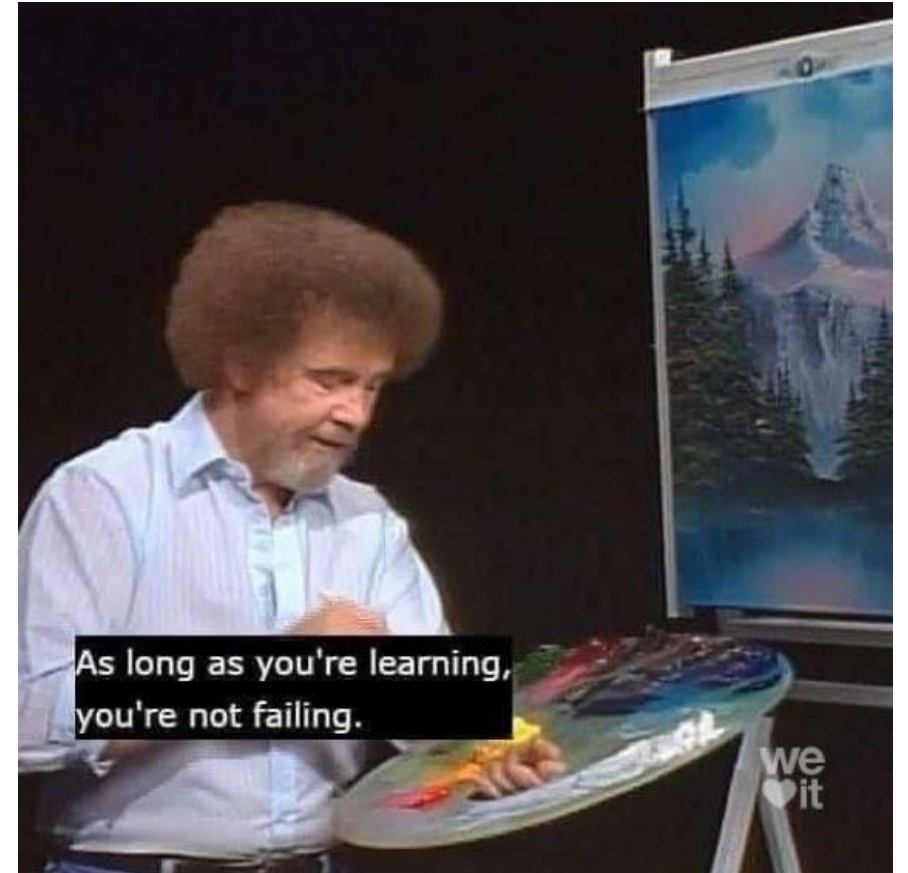# What was I looking for?

- Motivate learning, not grades
- Feedback [1], not partial credit
- Growth, not fixed mindset

As long as you're learning, you're not failing.

[1] Butler, R. 1988. *Enhancing and Undermining Intrinsic Motivation: The Effects of Task-Involving and Ego-Involving Evaluation on Interest and Performance*. British Journal of Educational Psychology 58(1): 1-14.

What is Specifications Grading?

- Many different approaches; generally speaking ([2], p.128)
  - Students graded pass/fail on individual assignments
  - Instructors provide clear specs for what constitutes passing
  - Specs reflect B-level or better
  - Students allowed opportunity to revise unacceptable work
  - Higher course grades require students to demonstrate proficiency on more skills/content
  - Modules are tied to learning outcomes and course grade reflects which outcomes students have not achieved
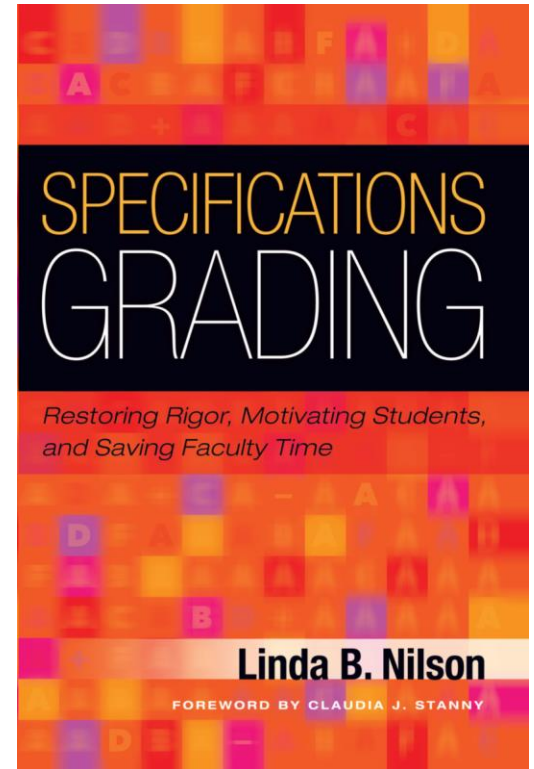
[2] Nilson, L. B. 2015. *Specifications Grading: Restoring Rigor, Motivating Students, and Saving Faculty Time*. Stylus.

What was my approach?

1. Develop list of learning goals ("I can …" statements)
2. Organize learning goals into modules
3. Create projects that span across modules
4. Create activities for modules
5. Plan readings/videos for activities

What was my approach?

- 12 learning modules

- Approx. 20 learning goals directly assessed on Learning Goal Checks

- Most items marked as "Satisfactory" or "Not yet"
  - Projects had "Excellent", "Satisfactory", or "Not yet"

- Most items can be revised/resubmitted or attempted again at a later date

Learning Goals: Intro Stats

Data Collection (DC): I can design and assess data collection plans.

- **DC.1** - I can identify if a variable is categorical or quantitative
- **DC.2** - I can identify and state the population, parameter, and statistic for a scenario
- **DC.3** - I can identify aspects of a study's design and assess potential strengths and weaknesses of these aspects
- **DC.4** - I can identify possible confounding variables and what can be done to correct for them
- **DC.5** - I can explain the importance of random sampling and random assignment in a data collection plan

Modules: Intro Stats

- Module 1: Data and Data collection
  - Learning Question 1.1: What is and how do we obtain data?
  - Learning Question 1.2: What do we need to be concerned with when collecting data?

- Module 2: Categorical Variable Data
  - Learning Question 2.1: How do we describe patterns in and between categorical variables?
  - Learning Question 2.2: How accurate is a sample?
  - Learning Question 2.3: How do we estimate a population proportion?

- Module 3: One Quantitative Variable Data
  - Learning Question 3.1: How do we describe patterns in a quantitative variable?
  - Learning Question 3.2: How do we estimate a population mean?

Final Grade Determination: Intro Stats

Traditional Activity	Specification Activity	D	C	B	A
Exams (3)	**Core Learning Goals (10)**	5 with one or more "Satisfactory"	5 with one or more and 5 with two "S."	3 with one or more and 7 with two "S."	10 with two "S."
	Supplemental Learning Goals (10)	5 with one or more "S."	3 with one or more and 3 with two "S."	5 with one or more and 3 with two "S."	3 with one or more and 5 with two "S."
Reading Quiz	**Preparation (26)**	14	19	21	23
Online HW (weekly)	**Exercise Questions (146)**	60	99	114	130
Computer Lab	**Projects (7)**	2 with "S." or "Excellent"	4 with "S." or "E."	2 with "S." or "E." and 2 with "E."	1 with "S." or "E." and 4 with "E."

Plus/minus had additional specifications based on completing of Activities above/below grade-level

What worked?

- Feedback, feedback, feedback
- Responses on Projects and Learning Goal Checks are more insightful than old Homework and Exams
- Questions during office hours/email
- Revisions

What have I changed?

- "What was sticky?" submissions as part of Preparation
- Focus on Learning Goal Checks and Projects
- Provide room for more creativity in Projects
- Clarify difference between Satisfactory and Excellent
- Google Sheets grade tracker
- Continual re-working of learning goals
- Discussions with students about relationships to grades
- Still working on: Time spent reviewing assignments
  - Opportunity for peer-review?

Course Syllabi

- Intro Stat: https://sta215.github.io
  - Gen Ed service course
  - Haven't taught since Fall 2020
- R programming: https://sta518.github.io
  - Elective for major/minors undergrads and biostats/applied stats masters
  - Required for data science masters
  - Revised Winter 2021, Spring/Summer 2021 (current)
- Email: dykesb@gvsu.edu

How can you learn more?

- Specifications Grading by Linda B. Nilson (2014): https://www.goodreads.com/book/show/22224776-specifications-grading

- Dr. Robert Talbert's (GVSU) Building Calculus series (2020): https://rtalbert.org/

- PRIMUS Volume 30, Issues 8-10 (2020): https://www.tandfonline.com/toc/upri20/30/8-10

- Mastery Grading Conferences: https://www.thegradingconference.com/

- Dr. Eric Reyes' (Rose-Hulman IT) contributions to StatTLC: https://stattlc.com/