

CSU ITL Webcast Series on Alternative Approaches to Assessment in QR Courses
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An Introduction to Mastery Grading in a Remote Instruction Environment

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>> Claudia: Good afternoon and welcome to the first webcast on our series of alternative forms of assessment. I'm Claudia Pinter Lucke and I'm currently a consultant with the chancellor's office. I have a couple of quick pieces of business. If you would like weekly reminders, the link to the registration is in the chat and I will keep posting it in the chat periodically. Don't worry if you need to leave early, we are recording. As we begin to teach in a online forum, how do we continue giving due consideration to equity and privacy issues. How do we let go of proctoring and not worry about cheating. These are the kind of questions that presenters will be exploring. Sharona Krinsky will offer an introduction to mastery grading. Sharona is an adjunct faculty member in the department of mathematics at Cal State L.A. She is in her sixth year there where she is currently the course coordinator for G.E. statistics. She has been teaching for several years and is on the advisory board for the mastery grading conference. I pass it on to you.

>> Sharona: Thank you so much, Claudia. Welcome and thank you so much for coming. I'm excited to see a lot of names that I recognize and a lot of names that I don't. Thanks so much. As Claudia said, I am Sharona Krinsky and I am the coordinator for G.E. statistics and I also instruct calculus and linear algebra. Why would we be look at our grading policies? I apologize for the busyness of this slide. In traditional grading, which is points based grading, students quite often don't know how they're doing. We spend a lot of time trying to explain the mathematics of it. Sometimes giving meaningful advice can be difficult. How many times have you tried to write on a paper and students don't look at it. And there's a lot of lost information. I would say, why did I give seven points instead of six. Being consistent can be difficult. Students can get partial credit, but not master the course. On top of that where it's 20% of your grade or 30% on an exam provide for too much to want to cheat. We also have the potential to distort the grade because we have these things that don't show that they have mastered the content. We can't walk them away from their notes, books, and technology. That leads us to the question, what are we assessing, math or Google skills. Kate Owens of the College of Charleston says grades should reflect demonstrated mastery of course content and have a positive effect on student learning. My own take is what they assess is what they learn. The question we get is, is this going to be on the test? Why mastery grading. What I assess is what I want them to learn. What is mastery grading? It's an approach to grading that involves three things. The first thing is

it has to have a clear list of learning targets, objectives, or standards. By the way, I'm using the term mastery grading as a term that includes lots of different things. I happen to be standards based. The idea is you have a clear list of learning objectives and students have to have that list. They have to know what skills are necessary in order to meet the target. When we assess, we want to know, have they mastered that target or not or are they close. We don't give any points or partial credit. You can use a few different scales, but at the end of the day, is it mastery or not. Eventual mastery is what matters. It's not that they have to get mastery on the first time or two, but they're given multiple attempts. When you don't have any penalty for failing, failing becomes the strategy for learning and they're given opportunities to revise, resubmit or retry their work. This set of three comes from an article called introduction to mastery grading, which is being published. What does this do for us when we move online? Because students have the opportunity to fail forward, then the assessments incentivize learning. This is not a permanent damage to their grade, but an opportunity to learn and it incentivizes the learning and disincentivizes copying. If I put in the effort to make the material, why am I going to give this to you because you need to learn it yourself. It is an investment in the student's autonomy. It teaches them to devalue other people's work and devalue representing other people's work as their own. This is my experience using mastery grading for the last four years. It allows us to use flexible ways of demonstrating mastery, whether an asynchronous quiz, a portfolio assignment, it could be a paper. Lots of ways in the context of mathematics and engineering and other disciplines that we can say, have you mastered this target. It encourages a growth mindset. Again, when you fail, it's another opportunity to learn. Research has shown that increasing autonomy increases motivation and engagement. Also, when you have transparent detailed learning objectives, usually answers obtained from outside sources are not aligned with those objectives. A student can say, I got the right answer. Yeah, you did, but the answer doesn't know me that you've mastered the standard. It disincentivizes the use of outside sources, except to inform the learning. It removes the instructor as the gatekeeper of the points. In the past I felt like I had a big pot of points and I'm giving them out. Now I'm not in the conversation when it comes to the student learning. We're going to look at this in an explicit sense. I'm going to ask you all I don't know how many of you have done math. I recognize some of you as mathematicians. We're going to do a quick poll. The standard is to find the terms of a sequence defined implicitly or explicitly. The problem which I give on an exam is describe the first four term of a sequence. We give you the formula to calculate the sequence and then we give the first term a sub 1. The correct work is that a sub 1 is 6wa sub 2 is 11 and on. Let me tell you this is correct. I have two students here, A and B. Initially we're going to look at student A and I'm going to ask you to answer a poll. Pretend that you're giving 10 points for this problem. The question is going to be how many points out of 10 would you give student A? First of all, because a sub 1 is given, let's assume they both got that. We're just grading the work. This is the work from student A. Take a moment. Look at how many points you're

>> Claudia: It may be how big they've made their screen.

>> Sharona: They got it. Look at student A, and, Claudia, if you can give about 30 seconds to launch the poll, that would be great. One of the distinctions with polls sometimes is they may block the slide, which is its own issue. Go ahead when you feel like you're ready. How many points out of 10 would you give to student A? Claudia, I can't see the progress on the poll so you decide when to close it because I'm not a co host.

>> Claudia: So we'll give people about 15 more seconds.

>> Sharona: Once it's closed, if you could share the results.

>> Claudia: Absolutely. We have about half the people who have participated. Here are the results.

>> Sharona: Okay. So as you can see, we have everything from 0 or 1 point up through 8 points. We gave it everything from the lowest of the lowest Fs up through a B in one problem. Okay. So that's expected. That's typically what we see. We're going to close this one and look at B. What score would you give student B from 0 to 10.

>> Claudia: People are responding a little more quickly this time. Or maybe they're more confident in how they would grade it.

>> Sharona: That may be. I want to point out this is real student work because this is a real question I give in a calculus class.

>> Claudia: Five more seconds for people to get their responses in. And there are the results.

>> Sharona: Okay. Now we're going from 0 to 9. So we have a widespread result. Let's go ahead and close those results. What's going on here. Let me give you a quick run down of the grading. Find the terms to find it implicitly or explicitly. The first thing to understand about the sequence is there's only one term in the spot, a first term or second term. With student A, they threw everything at the wall. Fundamentally, this student does not understand what a sequence is. In student B, they made two mistakes. They made a transcription error in a sub3. And they did the arithmetic wrong. When they got 33, they correctly chose the right part of the formula to plug in. We're going to ask you one more time on each student. Claudia, if we could get the mastery poll up for student A. Three levels. For student A, would you give them that it's mastered, that it needs revision, meaning they need a small correction to get mastery, or that they need to try again and reassess the problem. Which of those three would you do for student A?

>> Claudia: We'll give people five more seconds and there are the results.

>> Sharona: 86% of people said it needs reassessment and 14% said it needs revision. This is a clear distinction. At the end of the day, it's mastery or not. The lower two are not mastery. It's a little bit different feedback. Let's run it run more time with student B.

>> Claudia: Five more seconds. There are your results.

>> Sharona: Okay. We still have a little bit more of a spread, but very consistent. Needs revision. A few people said needs reassessment. The mistakes were arithmetic. They weren't about the sequence itself. I would be okay either way. The point is we have much more consistency among us than we did beforehand. If we could close those results. So how does this play out for giving a grade? This is my flavor. There are other people who do it different ways. I have 24 linear algebra standards and four mathematical practice standards. Are you doing math well, with precision, are you able to model the real world, are you able to communicate a viable explanation. I have one standard that I call P cubed is the preparation, participation, and practice standard. That's where all of the points based activities go that don't show mastery. One of the things I want you to mastery is to learn how to do work that will enable you to master mathematics. That is whether participating in class. For that standard, if you accumulate enough, I say you've mastered math. If you want an A, you have to master 27, B, 24, and C, 21. That comes down close to our final grade. How do you do that? For me, you have to get a check mark or a mastery mark on two assessments. For linear algebra their first assignment is a portfolio style of homework and then a quiz. And then if they don't do it there, they have two

re quizzes they can take and the final exam. They have five chances, but they have to show it twice. To master the P cubed standard, they need to get 620 points out of 800. How has this worked in practice? In this world, I'm known as the crazy person who took the coordinated course direction. We do this every semester in statistics. This semester we have over 1,500 students. We have over 20 instructors and we're all doing the same grading system, mastery grading. It's been in use since fall of 2018. I think that number is out of date, I think it's over 5,000 students. In spring 2020 we had over 400 students taking the course. In that time when we did the pivot, only four instances of cheating were identified on Chegg. In calculus I do this in 13 courses. My pass rate is over 80%. In statistics and calculus, most students get B, D, or F. By the way, I'm not an easy grader. My students record they have never worked harder and pushed through their learning longer than in other classes. Typically they would give up earlier. Robert Talbert says that if you can revise and resubmit just about any significant piece of work multiple times, for example, journal articles that get published, and get helpful feedback each time until you're happy with your grade, then the value proposition of cheating becomes empty. We have a question in the chat. That's a great question. We're writing a grant proposal to do a longitudinal study. That is one of my biggest questions. I don't have the research in front of me. If growth mindset has the kind of impact that we know it does, them having learned this about themselves would create future success. We just completed, by the way, a mastery grading conference in June. We had over 500 math and STEM faculty from around the country. This is a two day set of recordings, 16 hours of recordings of how to do this at masterygrading.com. There is a mastery Slack channel. There is Twitter and I see we have some of the Twitter folks on the chat. Shout out for those on the call. I have eight minutes for question. Question time.

>> Claudia: On your courses with multiple instructors, do you find that there's more consistency of grading?

>> Sharona: There is more consistency, but we take a step further. We do normed grading. We get together as a group for about an hour, pull some sample work and grade it as a group so we know where that mastery and no mastery break is. Everyone then goes off and does their own. So what my grading looks like is I use Canvas and they have a learning mastery book. They get a mastered, which is a check, or a needs revision or needs assessment or you didn't give me enough to tell. They only get that score on each standard. If I have a quiz with eight problems, it might only be three standards. I'm going to give feedback on the problems, but I'm going to score the overall quiz based on those standards. So the feedback will be directly related. Again, the Canvas grade book, once you map it twice, it will show up a green mastered badge for that standard. Faculty work

>> Difference between needs revision and needs reassessment.

>> Sharona: Great question. Needs revision I use if there are minor mistakes that are not related to the standard. In the case of student B where it was an arithmetic error, I would say, go fix it and come back. Whereas reassessment is that you don't know what you're doing. My experience is it takes more effort initially to redesign the course, but the actual grading is way faster because I'm not trying to see myself internally consistent, oh gosh, what did I say before. I get to know what mastered and not mastered looks like and I'm able to provide the feedback really quick.

>> Could I ask a follow up on that. I can see how the initial grading would be faster, but I'm kind of wondering about the organization of keeping track of which students need to do what. That seems like the most daunting part.

>> Sharona: It's not my responsibility to keep track of what they need to do, it's theirs. Canvas makes it easy. I want to know, have they done it twice. That's the only thing I'm tracking. The only other thing I'm tracking is are they eligible to reassess. I give them a tracking worksheet so they can track for themselves and Canvas provides tracking as well. That's their autonomy there. I've got some more in the chat. Let's see. Do the students pick up on the grading scheme quickly? No. It takes about halfway through the semester for them to figure out what the thing is. You have to say it over and over again. There are one or two that are not getting it. Do I use any other platform than Canvas. I do not. On the mastery grading Slack channel people are using different things. The grading and the feedback is on the standard or the problem or both? It's on both. I give feedback on the problems. The grading is based on the standard. I will tell them if they got something wrong, how they got it wrong, and what I'm looking for and the actual grade comes on the standard. If I chose to do this today, about how long would it take to transform the content? It depends on the course. We have a repository materials in math and physics that are already done. If you're trying to reform a course from scratch, it depends on how clear your learning objectives are. That's probably the hardest part is figuring out your learning objectives because that's what it takes to really get this right. Definitely go join the Slack channel. I see a couple of our slack channel people. Have I made any changes for the assessment now that we are online? Not really, except that I build them all in Canvas. I used to use some paper based assessments. They're the same assessments, just online. In calculus if the work can be done, it's not about the work, it's are you showing the evidence that you understand certain things. Sometimes just doing the math is not enough evidence and you need to write something. I am also doing a lot more of what I call choose your own problems. Instead of take the derivative of this function, I will say create a function that has these characteristics and take its derivative and explain something to me. Those choose your own functions are a lot harder to Google. I used to give unlimited revisions. I almost died. No, I do not give unlimited revisions. My experience is for the bulk of students for the bulk of the standards, if they don't have at least one mastery by the fourth attempt, they're not going to get it at all. So I give four attempts plus the final. The other piece is I have to finish my new content introduction by week 12, because weeks 13, 14, and 15 they need time to master the content and assess it. I tend to front load my content and back load the assessments.

>> Claudia: I'm going to take the last minute away from you. Sharona, thanks for getting this series off to an excellent resource. This will be posted online for viewing as well as the resources that Sharona mentioned. I hope you join us next week when we will talk about Zoom proctored exams. If you want to receive weekly reminders for this series and get a heads up on the topic, sign up for the mailing list and the link is in the chat. I thank you so much for joining us this afternoon and I look forward to seeing you next week. Have a great day, great week, and stay cool.