- Well, thank you for coming to the first Colloquium meeting for spring 2020. We have after this, actually, we have two open spots. So if you wanna give a Colloquium talk, you can send me an email. And, you know, actually, I meant to say, I would like to say, that these talks, they're organized by Julie Barber and myself and Kat Rocheford, Rocheford? Whose name I'm always getting wrong. And then put on by people like Ali Van Dorren, and Jody Schopp, and Marc Boucher. So, it's really helpful to have the library staff here, doing this great stuff. I learned this weekend, actually, how terrible I am at making flyers; it's more difficult than you would think. And so, the other part of like, you know, how Colloquium talks happen, is speakers. Right? So, we need speakers, or we won't have Colloquium talks. So, think about it, you know? It's not, it's not overly, It's not terrible. Give a talk! It'll be great. So Ray, Ray joined us this year in the fall. Ray is teaching the developmental math courses, and he's actually been charged with redesigning the developmental math courses, and he is basing his redesign on research. Ray comes to us from Harvard University, or, or University of Wyoming, I can't...

- They're the same.

- Yeah, they're close enough. And, , so he's gonna talk to us today about the relationship between cognition and the affective domain, especially self-confidence, in mathematics.

- Thank you. Wyoming will be happy to hear that they're now on the levels of Harvard. Because, we know Harvard didn't come down to Wyoming's level. The relationship between cognition and affective domain is what we're gonna talk about. So, I really wanna describe what the affective domain is. How is the affective domain developed? How do we form that, I mean. We all have it. Constructs with a critical method achievement, the relationship between affect and cognition, and then, my future research direction is goals. Believe it or not, I do have some ideas in the pipeline still. So, the affective domain, in its simplest terms, is the feelings and emotions you have about a particular subject. Now, you can--

- [Director] There's some instructions on the vault d--

- I can't get much louder than that, Marc.

- [Marc] Do you want me to stand in for you, sir?

- Okay, so is that better?

- [Marc] That's actually a separate sound recorder that we'll put on top of this, so, that will be fine. You do whatever you want, just, it's fine.

- So, now that I got distracted, thank you, Marc. I just need you to use the affective domain, to be able to move forward.

- Thank you, Marc. So, in its basic terms, it's the feelings and emotions we have about a particular topic. McLeod tried to do this, when Bloom, and his buddies here, they did the first version, which was all about cognition, they thought that was easy. Volume II, they worked on, and it was about the affective domain, they found it to be much more difficult. And McLeod tries to simplify it in '89 by saying it's typically our emotions, attitude, and belief. DeVellis and Golden come along, saying, "No, it has to have 'value' on there." And one would think in '97, it's all been answered. No; Chamberlain in 2016 says that the affective domain is still a hodgepodge of everything. And it can't be simplified. And so many of the constructs that we think about are inseparable when you try to analyze, and they're so close to one another that they're inseparable. Other researchers will say, that they're completely different. For example, self-efficacy and self-confidence, which is your belief and ability to do a task, some researchers will say those are completely different things, and others will say they're the same. I say they're the same. Okay, so, on McLeod's scale, here, emotions and feelings are things that you occur in a daily activity. So, you sit in my math classroom, you go through my math lecture, and you have feelings about that lecture. Walk up, you're like, "That was a trip." Okay? So, you develop some feeling from that lecture. You know how those work, right? So you have some feeling of that! Now, every time you are exposed to a math lesson, you get those feelings. It started when you were before kindergarten. When your mom was saying, "How many apples do I have? "One apple, two apple." You start to develop these feelings. Over the course of your high school career, junior high, and elementary, those feelings were all being developed, okay? So, emotions are single, attitude is kind of mid-range. And they change floor, but emotions can change every day. So, when you walk out of my class on Monday, you're like, "That was a great lesson." You walk out on Tuesday, you're like, "I'm so confused." Okay? Those are two unique situations, but they build upon each other. And that building-up gets over here to beliefs, which is where my interests are, and research is, those beliefs. And they don't change fast. And if I remember, I will talk about it when I get back to my research at the end. And now, all these constructs are not just individually sittin' out here, okay? So, my beliefs about math will change as emotional states change. I have a really good day about math, I will like math a little bit more, so kind of visualize that figure there as being able to move around. It's grow, its stretching, it's going one way, it's goin' another. You have a bad day, it's movin', so that's visualizing that movin' around. So, this individual activities, the local affect, has developed childhood, is the single activity that produces some emotion toward the activity, whether that's positive or negative. So, you know, I like to think of that as a leaf. Okay, and then you come to class the next day, you have another experience, you get another leaf. And as you keep goin' through the semester, you keep gettin' more leaves, right? And all of us kind of can visualize this if we're thinkin' about our semesters; we have good days, we have bad days, most of those bad days correlate to test days. Right?

- Yeah. And this keeps goin' on! Now, as you collect all these, so you've gone through elementary school, junior high school, high school, now you're into college, all those leaves put together make this gorgeous tree. And how that tree looks depends on all of those experiences that you've had. If you had all positive experiences, it may look one way, but if you had all negative experiences it might look a completely different way, if we were able to just look at that tree for you. Or, even, look like this. I tried to find one with more multi-colors, but my eyes can't see it. Does that make sense, on how these are formed, and how it's kind of visualized? Okay. So, there's not always these trucks. There's not two. I say the constructs that are critical to math achievement are self-confidence or self-efficacy, which is a person's belief in their ability to perform a behavior required to meet your goal. Notice it talks about your behavior to do that. It means that you're gonna do your homework, you're gonna ask questions, you're going to do whatever it takes to be successful. Motivation is the measure of interest, in this case in mathematics the desire to pursue studies in mathematics. Those are the definitions that Tapia gives in her instrument, "The Attitude Towards Math Inventory," which is the inventory ... So, I picked out this picture of all these different trees, because we have all these affective feelings about different things. Math, and science, and reading, and cars, and trucks, and LSSU, and, everything! So, we can't just go in there and say, "Pluck, here's my motivation in mathematics," and see it that clearly. They're so mixed together. Okay? I like to also think of this as a bowl of colored noodles. If you mix a whole bunch of noodles together that are different colors, and if you cook like I do, some of those noodles are stuck together, right? So then, you reach in there, and you try to grab out one yellow noodle, and you're gonna get a red one with it! That's kinda the same way! So, think about it that way, that those two constructs are so similar that they're inseparable. So, that's kinda how I think about this. Self-confidence, and motivation. Two things they are highly correlated to success in mathematics achievement. Why do I care about this? I mean, it's great. You know, I had a friend, I was working on my doctorate studies, and I was talking about all this correlation between affective domain and achievement in mathematics, and she says, "So?" You know, and that was an enlightening moment to me. Why do I care? We do all this research, we do stuff, and who cares? How can I use this to better whatever it is I'm looking at? And that's what we have to think about, is, How can I use what I'm finding to better our fields, our knowledge base, or whatever. So, why should we care? Well, as an educator, that teaches developmental math, and my students that I've had before can probably answer this, they typically feel like they can't do math. And I know one particular one in here right now came into my math class absolutely hating math, and was scared to death of mathematics. Okay? And I'm not gonna point them out, I promise I'm not gonna identify them. Okay? They came in my class absolutely hating mathematics, but they left it, liking mathematics. Appreciating the skill of mathematics. Did I have anything to do with that? I would like to think so, because I worked with them so much to express your ideas, to ask questions, that you can do this, and on, and on, and on. That's an active part that I do in my classroom. Try to tell students they can be successful. I try really hard not to say anything negative about their abilities in the classroom. Now, I will give 'em a hard time about other stuff. Do I ever joke around in the classroom?

- Yeah.

- Never, right?

- No, never.

- Never. But I won't say anything negative about your ability to do mathematics, because how many of you, as, well most you probably not, but parents say this one thing to kids. And the younger ones in here, who don't have kids yet, please take this to heart. When your kid comes home, and they're struggling with math, please, please, please, please, please, never say, "I can't do math either, it's okay." Please don't say that. Because students need to know that if they work at it, they can be successful. Could I play basketball? I realize I'm in the finest condition of all time. Could I play basketball? Right now, it would be difficult, but with a lot of practice, I could! Why is it that we're opposed to doing practice in mathematics, but we're okay with practicing basketball? The same thing should apply. Now, if you don't really like mathematics, you have to get through my math class to get out of this college, right? Okay, so, put it into your goals. "I have to pass the math class, "I want to be, an engineer, "and I need the math class, but I hate math." I don't know why you're goin' into engineering, but I'm just . Okay? And how can this help in education? How can we use this as a greater education environment? So, I did a study this last fall. And I gave it to all, all of our professors in the math department graciously gave the survey to all the students. And all the students took it, with a few exceptions, I had some 17-year-olds who could not take it, 'cause they were excluded from the process. But everybody took the process, and this is what we found. This is level 1 students. Ooh, I can write on there. Level 1, that's my math-you-can-eat. Beginning algebra. 102, that's level 2. College algebra is level 3, level 4 is trig, level 5 is calculus. This one is limiting some things out of there. Business calc, for instance, has its own weird thing goin' on. So they're not in this group, but that's the lineup as the classes went up. As you look at that, do you see that there's a slow growth, to the date? Even though if you ignore those lines, which I will talk about, do you see that generally, that data's headin' upward?

- I have a quick question. Did you say what's at the Y-axis?

- No, why would I say that? This is the overall ATMI score. It's scored, there's 40 questions on it, of a score zero to five, or one to five, and they're scored on four subcategories: self-confidence, motivation, value, and enjoyment. This is the overall score. I don't have all of 'em there, if you wanna read all of 'em, there'll be an article or two coming out about that. I don't wanna ruin it for ya. Thank you. Okay? So, it generally heads up, but that's not too helpful. I mean, are you convinced that there's a correlation between the level of mathematics and your overall ATMI score? You're not. Well, how 'bout if I take the average? So, I'm gonna take the average here. So, of all the ones on this screen, took all the values and averaged 'em together, and we get this screen. Does it look more like there's a correlation there? As a student gets higher in mathematics, their ATMI score goes up. Now, you will recognize here, there's some students, and I'm gonna get back to this, this is the line of best fit. If we were to analyze that, that's the line that gives us the best. And it's not very good, because of all this data that falls into the class one, two, three, and four. That's already averaged, okay? 'Cause they come in at one level, out at a certain high end, we average them all together, and put 'em into that class. So there's some problem

there. And this is a 70% prediction interval. 70% of the data is between those two lines. Okay? And those things are important for me, as I continue to record. This one doesn't have a prediction interval, 'cause we only have one data point. I mean, so, if I put 70%, it's gonna be the same as the 100%. But do you see, are you more convinced, now, Morgan, that that is a more positive relationship? Okay? It looks better there, right? But when students come to the university, we don't have an average of all of our students, right? So, what am I doing as I move forward? Besides growin' trees. What if I had data that looked like this? This is simulated data, and I'll explain what is on this chart as well. Remember I simulated this? It's based on the same coefficients as the other data that we have. This group in here is our beginning algebra students, intermediate algebra, college algebra, and above. Again, calculus in this case. These are the cut scores that we currently have for ALEKS. Does everybody understand that chart? Again, this is the average scores, and the longer the class is down here, because now we don't have a single number represent for each class, we have that range of numbers that a student can get in that class. Okay? This is the line of best fit for the data that we have here, and the same prediction intervals. Any questions about that data? 'Cause I got some stuff to talk about.

- [Audience Member] I apologize, 'cause I came in late, and I may have missed this little piece, but when has the ATMI been given?

- In the study that I did the fall, it was given in the first few days of class.

- Okay.

- In the future project that's headed here, it will be given during orientations.

- [Audience Member] Okay, would it be, would you sensitize people too much if you did it twice?

- I gave it at the end of the semester, and there was very little change. There was no significant increase in scores.

- Okay, so--

- Which is actually good, in some aspects, because it says that leaf doesn't change rapidly.

- Okay.

- Those are good questions. So, any other questions? Okay. So, what am I going to do? Well, we're gonna give the ATMI to all students who come in the fall, and they come for orientation, they're gonna have an ATMI in their packet. I think there's details still to be worked out there, but I think that'll all happen here very soon. They're gonna take the ATMI, they're gonna give me the out score, and I'm gonna get all those numbers, all those sheets, layin' on my desk. Morgan, will I lose any of those, based on my desk?

- No.

- No, okay, good. So, why do I care? What about this student right here, okay? That student right there. They're one point short of the cut score to get into intermediate algebra. They feel pretty confident about themselves, they're a little higher than the 70% mark; do you think they could be successful in intermediate algebra? Well, other research is showing that there is a gray band there of students who could be successful in the next class. And, I hate to tell you this, but those cut scores that we set here are not universal. They may be different at LSSU, than they are at Harvard. Okay, Harvard doesn't have developmental math. Okay, so it's a slight problem there, but ... And University of Wyoming does not either, in case that matters to you. But those cut scores are not uniform across the nation! So, if a student in Nebraska could be successful with a cut score of 23, why can't our student with a 24, one point short of the cut score, be successful? Really gives you a difficult question there, right? But you have to set cut scores! But how do I determine which student could be placed up here? 'Cause I don't want to say, "Well, everybody could," 'cause, this student right here? May not have a chance. I don't know who these students are, at this point, nor do I know who they were on the previous slides. I will, from this study. I will have everybody's name, and everybody's ALEKS numbers, and everybody's ATMI scores. Which'll be interesting; there's a lot more that can be done with it. But I want to give this student a chance to go into the next class. And of course, I'm gonna follow 'em very carefully, makin' sure that they're bein' successful, which would give us further research. Does that mean that I want to base your placement just on how good you feel about yourself? No, you have to have other stuff involved, okay? So, please don't think that I'm just lookin' at, "Well, we're tryin' to make you feel good," 'cause, you know that's not my job, right, Kurt?

- [Kurt] That's right.

- Okay! Now, what impact does this have for our students? What impact does this have for you? For students. If you're really close to that line, and I don't know, my former students, how many of you were close to that line or not, but if you come in here with, this student right here, right next to the 102 cut score, and you're going into 88, and we're talkin' about collecting like terms, are you bored? Okay, you're bored, right? Then what happens? Kurt? I think this happened to you a few days. You get bored, right?

- Mm-hmm.

- Then you, what?

- Don't pay attention.

- Don't pay attention, and worse, you don't come to class. Right? Then you come back to class, 'cause you been gone a week, you're like, "I know DeWitt's now finally "gotten to something that's more important for me, "more challenging for me." You come back to class, then what happens?

- [Kurt] And then you're behind.

- DeWitt has moved so far ahead that you're clueless about what's going on. Right?

- Yeah.

- You probably saw students in our class that did that. Not you, 'cause you were never absent.

- Never.

- Okay, but, so, this student, who was very close, is now at risk of dropping, because they're not being challenged. Is it beneficial for them to be moved up? Are they losing anything anywhere by being moved up? I don't think so. Now, we did get rid of 87, MATH 087, which was our pre-algebra class. And let's just for a second assume, and most students, by the way, who took our MATH 087 were at the top end of the cut scores. Very few were at the bottom, okay? So, I'd say 90% of them were within two or three points of the cut score. So, let's say you're that student, and you know how to simplify like terms, and you can solve most equations; you struggle when they get to fractions. I mean, everybody loves fractions, right? But first day, you're in the classroom, and we're going to add five and eight. "Barb? "Five and eight? "Barb, are you payin' attention? "You're on your cell phone again." You know that's how it is in the classroom, right? 'Cause they get so bored, they're like, "I know this stuff." You know this, right, Eric?

- Absolutely!

- Okay, you get bored! I know this. If we put students into a class that's just a little bit challenging for 'em, are we gonna keep 'em? I hope. Martin, Scott Martin, says that students who are put into a class that's beneath them become bored, and they withdraw. And we lose 'em. 'Kay? And the students that are put in there, at the other end of this spectrum, and are put into a class that's too difficult, what happens? They get frustrated, and we lose 'em. So placement is absolutely critical. And that's a big thing that we need to work on, okay? And I'm not saying that we should make major changes to these cut scores, I think they're pretty good, but those students who are on that border, I think some attention needs to be spent to them. What about this student that's right here? Right here, just into the class, and his attitude, his confidence about mathematics, is low. This is why it's gonna be nice to know names, and be able to look back on anything that I want to. What about them? Do they come into the classroom thinkin', "I can't do this," and they've already tuned me out? Probably, okay? "This is too hard, I can't do it." Would they be better served into a class that's a little lower, where they can excel in that class, build up their confidence, and do really well? Now. that seems like it's contradictory to what I just said, because, I wanna move 'em up! But if it helps them overall, why not let 'em take an extra semester? Now, why do I care if students move up? Has a lot of things. What happens if you come to LSSU, and you have to take MATH 088? Morgan? You weren't in 88, though. What happens if you come in at the lowest level of math? You take more semesters, right? 'Cause you have to go from 88, to 102, to 111, to, let me add a year to your college career. You can't get into classes like chemistry if you're in 88, but if you get into the 102, 111, you may be able to get into chemistry. I think you have to be in 111. Okay, so by allowing students to move up here and be able to bump, we'll be able to get 'em out of here faster. Now, if students feel like they're makin' progress towards their degree, are they gonna stick around? 'Kay? So, these are the type of things that I'm wantin' to look at. How can we address these students who are in that middle? 'Kay? And, you may be interested to know that students who are more disadvantaged, this'll be your low-income students, students who are placed in developmental math, students of minority, low economic status, any of those, are more susceptible to the affective domain than a "traditional, standard student." 60% of our students come in Pell-eligible. I don't know if you know that statistic. If you go to the meetings with Dr. Gillette, I know you do. Okay? So, 60% of our students, 72% of our students since last fall were in developmental math. 72%, that's a big chunk of students. And if you're losin' students because they're misplaced, how's that helpin' us as an institution? How is that helping you as students? Right? How would you like to be in a class, in an 88 class, students, and you have somebody that's at the very top, and in fact, they probably should be in the 102. Maybe even college algebra. And they're the know-it-all student that sits here in front. We've all had 'em. "Divide by four! "X equals one! "Subtract three! "Take the square root!" Have you ever had those students, and you're like, "I must be so stupid. "They know everything." Right? You've never had that. But students in her class, knew that student. You caught that, right? Yeah. 'Kay, so if we get that student who's at the top, and put them into a class that they're more appropriate for, it's helpin' the students that are left behind in that class who need that attention. 'Kay? So, my future of things is to look at how can we get these students better placed, using the affective domain? Now, what do you think the relationship is between self-confidence and anxiety? 'Cause all of you have heard of anxiety. And I hear it all the time. "I'm very anxious, I just get so nervous when I do math." What's the relationship?

- Inverse.

- They're inverse. More self-confidence you have, the lower anxiety you have. Now, research also shows that you have to have some level of anxiety to be successful. Weird, right? 'Cause you would think that somebody comes in, that's really self-confident, would do fine. What do you think happens with them? "I know it all. "I know more than the teacher knows. "They can't teach me anything." You've had those students, haven't ya?

- Maybe. 'Kay? They're not in this room.

- No, no, no.

- No, okay. They know everything, they don't need you, what do they do? They check out. Right? The professors that are in this room, they know exactly what I'm talkin' about. Those students check out. So again, it benefits us to get 'em in the right spot. So, students who have complete 100% on this self-confidence scale, I don't want to put 'em up. They might need a reality check. 'Cause they're not gonna work with Zarriel. So, where are these magic numbers? Between this range. I said this is at 70%, are the magic, what's down here, 50's and up, and 80, that has to be determined. That's what next year is gonna be all about. Questions? I know I threw a lot of stuff at you, what am I doing now, where am I going, but I want to answer questions. Yes!

- [Audience Member] Is there really data to suggest that a student will get bored in class, or stop coming for a week, because he thinks he knows, or she thinks she knows--

- Yeah, there's a lot of it-- There is lots, that students get bored.

- [Audience Member] That's what they were doing, when--

- They get bored, they quit coming, quit paying attention, they quit doing homework, et cetera, et cetera, it's a bigger risk for them to stay at home. Yeah, it's not just me.

- Yeah, I wasn't suggesting--

- I don't know anything, you can say whatever you can research. It's a good question, though, I just don't speculate; I wish I could. I can speculate a lot, with, later, we can talk about Kurt. That's all speculation. Other questions? Yes!

- [Man in White] Could you say the sub-scales again, and the dimensions again, of that particular instrument?

- Self-confidence, motivation, enjoyment of mathematics, and value of mathematics.

- [Man In White] Okay, now, when you talk about self-confidence, are the specific items related to mathematic performance?

- Yes.

- [Man In White] They're all mathematics-specific.

- Yeah, it's an Attitude Towards Math Inventory, so they're all math, across the spectrum.

- [Man In White] Forgive me, 'cause I'm a psychologist, and always like to try to find some inner magic. Is your opinion, I mean, I really appreciate you doing this, it's very, very interesting. And I've never, with all due respect, I've not heard a mathematician take this one on, so I appreciate it. Now, is there any way other than, from what you've said, the best way to improve somebody's self-confidence is to optimally match them to the course. Is there any other strategies that you're aware of that people have used to reduce anxiety, and increase self-confidence?

- Some of the stuff I read, okay, Markman, I think he's named, please don't yell at me if I quote him wrong, Markman says that we should give authentic praise to students. And by that he doesn't say, "You did a fantastic job, Rob. "Good job." Instead say, "Rob, see what good, hard work does." Because what happens is students do good, do good, do good, they do a bad test, and, "Now, I'm a failure." So instead of saying, "Good job, "you can do all this," or "you did all this," 'cause then they hit that wall, and now we're struggling; we have a problem. Give them encouragement, "See what hard work will do?" "Come in and see me, and get some help." Try not to do anything negative. Just like when a cop pulls you over. You drive for 20 years, and never have a speeding ticket, you get one speeding ticket, and all of a sudden, same type of thing.

- [Man In White] Thank you.

- And I'd be happy to talk to you, and pick your brain, get some more information.

- I mean, this is not my expertise, but.

- To me, it's just absolutely, and where I got interested in this, just in case you've wondered, I taught high school for eight years. Sorry, I get excited and I start conspiring. I taught high school for eight years, and I'd have students walking into class, "I hate this class." They're already coming in, and I can't get to them, right? We've gotta get that wall down. And that's a tough wall to break down. Right, Kurt?

- Right.

- I mean, it takes a lot of effort to come in, and make students feel like they're achieving something. Right? You know, Rob and I, sorry Rob, I'm gonna use you as an example, Rob and I have talked quite often that developmental math may be more difficult to teach than the upper levels, because--

- [Rob] It's for sure more difficult to teach, yeah, there's no question.

- They come in with preconceived knowledge. Some of that is misinformation, so I'm teaching up there, and I'm like, "Okay, now you have to divide everything by three," and they're like, "No, you don't." "Well, what would you do?" I have to listen to what they want to say, and then try to steer them, and show them that the way that I'm gonna show them is the correct way. They have to realize that I'm not just, A, doing it my way, you know, because the students resent that. "If you don't do it the way I show you, "I'm not going to count it right." They resent that, I hate to tell you that. But if they can see that the way they're doing it is incorrect, then you open the door and they'll say, "You know maybe DeWitt is onto something. "I'll listen to 'im." Today, for example, we were solving equations with different denominators. And to solve that, the easiest to do is to find the common denominator and make it all integers. So, one student was determined they were going to leave it as fractions. 3/4 of pages later, they were still struggling with it, and they'd made several mistakes. Instead of sayin', "See the mistakes you made?" I said, "Let's try it this way, and see what happens." Three steps later, were finished. The student says, "You're right, that is much easier." Okay? I'm not here to make him use more chalk, I'm trying to show him the best way I know how to do it. So, that's where I'm gonna end, and the reason I don't want students coming to my class saying "I hate this class." Other questions? Oh.

- So, the attitudes, I think I heard you say that you didn't see much of a change in score from beginning of semester to the end of semester?

- Correct.

- Do you have an idea of how long, or if those attitudes will change? Like, after so many years, or can we bump 'em up?

- I do not, and I did not do it again this semester, and it'd be difficult because we can't, without names--

- You can't match it.

- It would be nice, and since I'm gonna have all the names with ATMIs next year, it would be nice, then, to give them the ATMI again two years later. I mean he was right about, you know, doing it too quickly. Maybe two years later we send an email out, saying, "I would like for you to retake this." Since I now know their name, I can match it up, without breaching confidentiality, and you know, I'm not gonna put it on the wall, that, "Kurt did this," but it would be good to see how long it takes for those scores to start to uptick.

- There was, regarding that, this was like ten years ago, but there was a study done by some community college in Texas, where they asked incoming students, "Tell me a story about a positive experience you've had." And many, like most, went back to like, the third grade. And so when you have, in the course of one semester, you want to change someone's experience, that has like nine years where they feel bad about what they're doing, that's a tall order. It will be challenging.

- Yes.

- You said that you were going to put those ATMI tests in the orientation packets?

- Yes.

- Is that something you're gonna require everyone to do? Or, what rate of feedback are you looking for?

- We are going to very very very strongly encourage them. We're gonna give them some time.

- Okay, time in orientation?

- And like I said, all those details haven't worked out, involved in that process is not good spot. It was just approved. I'm excited.

- So what will the experimental design look like? Test subjects that are on that threshold, and move up and down, or--

- Some of that I'm gonna keep to myself, just because I don't want students to try to manipulate themselves in, you know, if that information got out. But you're on the right track. Will be students I pick, and professors are not gonna know, sorry guys, you're not gonna know which ones got bumped up. because I don't want them to have it different. And I'm going to have a research assistant or two if everything goes well another grant proposal process called research assistants so I'm not interviewing so Morgan what do you think your professor and by the way I agreed you do this faster so keep going you know you don't want that even though I would never ever hold that against one of my students there is no way that it would make a student feel comfortable for me to be doing so I'm looking for a couple of research assistants that can have any of you there between years any other questions thank you very much