

A Peer Tutor with a Partial Growth Mindset

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An undergraduate mathematics peer tutor gave various reasons why not all students were successful in mathematics. I consider his reasons in light of the growth mindset framework and common misconceptions about what it means, reflection on the fact that the beliefs of mathematics educators have been shown to alter student outcomes (Dweck, 2015; Rattan et al., 2012). The undergraduate mathematics peer tutor, Jake (gender-preserving pseudonym), was a case-study participant that participated in an ethnographic study of a mathematics learning center as a figured world (Bjorkman, 2019). The study consisted of ethnographic field notes, video-recording of tutoring interactions used in stimulated recall, and semi-structured interviews of peer tutors which were analyzed using grounded theory methodology (Corbin & Strauss, 1990; Dempsey, 2010; Emerson et al., 1995; Lyle, 2010; Muir, 2010; Strauss & Corbin, 1994).

Jake expressed belief that everyone can learn mathematics, but only if they were willing to “put in the effort.” He made statements like “I believe that everyone can do math” and “I think it's important to get things wrong and then you understand.” However, Jake also said that “weeding out” through failing a mathematics class, rather than changing learning behavior, is good – then clarified that he didn’t think that weeding out was for those who were intellectually unable to do math since, “I believe that everyone can do math... but there’s some people who just don’t put in the effort.” Jake talked elsewhere about this group of unmotivated students as “[W]hen they say they don't go to lecture or don't take notes I almost don't want to help.” Jake’s model for student success and failure, while on the surface aligned with a growth mindset, is, in fact a limited growth mindset model that does not see self-regulation skills as areas where students can learn and grow and does not consider other factors that may lead students to perform poorly (Dweck, 2015; Granberg et al., 2021; Michaelson, 2017). It is likely that he implicitly communicated his belief about those students’ identities as “bad students” to them through his interactions (Holland et al., 1998; Rattan et al., 2012). If Jake as a peer tutor isn’t the one to help students who don’t yet know “how to college” where should they turn?

The idea of a “growth mindset” has become quite popular in educational circles since the framework was put forward in the 1980’s, and more recent research has indicated it can be a useful construct for helping students learn (Denworth, 2019). Yet, in my personal reflection, and experience with other professors, this fixed mindset in terms of student effort and self-regulation seems to exist in more educators than Jake, perhaps even more saliently now as students and educators struggle with the new normal after the pandemic (Bozkurt, 2022). We have long had evidence that teacher beliefs about students are influential in student outcomes (Rosenthal et al., 1966; Timmermans et al., 2021). Explicitly extending a growth mindset to students’ self-regulation and motivation and designing courses toward fostering self-motivation and self-regulation as skills may help these “bad students” succeed in mathematics courses, rather than giving up or expending effort on ineffective learning strategies (Granberg et al., 2021).

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What is the Context?

The undergraduate mathematics peer tutor, Jake (gender-preserving pseudonym), was a case-study participant in an ethnographic study of a mathematics learning center as a figured world (Bjorkman, 2019).

Data Corpus:

- Ethnographic field notes (Emerson et al., 1995)
 - Online survey of tutors
 - Video-recording of tutoring interactions used in
 - Stimulated recall (Dempsey, 2010; Lyle, 2010; Muir, 2010)
 - Semi-structured interviews of peer tutors
- which were analyzed using grounded theory methodology (Corbin & Strauss, 1990; Strauss & Corbin, 1994).

[The MLC] gives you a place to socialize with people ... First semester, I wasn't a tutor I found it pretty hard to make friends in engineering... I kind of felt isolated and alone. But once I started working here, and coming here a lot... then you make good friends through that.

Jake, Mathematics Peer Tutor

Who is Jake?

Jake (pseudonym) is a male, white/Caucasian sophomore engineering major who had worked as a tutor in the mathematics learning center (MLC) for less than a year at the time of the study. He expressed strong identification with the MLC and the other peer tutors.

Jake's view of others in the MLC related to their perceived mathematical maturity. The transcripts of Jake's interviews reveal that the likelihood of him using "us/we" pronouns instead of only "I/them" pronouns used to describe tutoring interactions increased as the course level of the student increased. For example, Jake was more likely to say "we worked on a problem" for an interaction with a student in Transition to Higher Mathematics (intro to proofs, 300 level) and more likely to say "I showed them how to do a problem" for a student in Calculus I (100 level).

A common theme for Jake was the role of struggle in attaining mathematical maturity and ability, that is, those 'below' his level could reach it through hard work if they were willing to so.

[The MLC is a place] with a lot of nerds who are struggling just as much as you are... You meet good people. It's a great work environment, a lot of intelligent people which helps you want to be smarter I know that's a big thing I like being here.

Jake, Mathematics Peer Tutor

The failure of educators to consider motivation and academic skills as areas of possible growth creates a partial growth mindset that can further disadvantage struggling students.

I believe that everyone can do math... but there's some people who just don't put in the effort.

Jake, Mathematics Peer Tutor

Must it always come back to finding a reason why some children just can't learn, as opposed to finding a way to help them learn?

(Dweck, 2015, p. 2)

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Paper
(including
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[W]hen they say they don't go to lecture or don't take notes I almost don't want to help... It's when I see students who haven't even tried the problem yet, that I usually get pretty frustrated.... I just kind of interpret that they're here to get the answers to get the grade and leave.

Jake, Mathematics Peer Tutor

Who 'Deserves' Jake's Help?

Jake expressed his beliefs throughout the study of what his role was – and wasn't – as a tutor as well as the ways he felt "really learning" math took place. Students that Jake wanted to help were characterized by having good academic habits like:

- Attending class
- Taking good notes
- Attempting problems before asking for help
- Looking back over their work after checking final answers
- Seeking help from their TA and professors

Jake saw value in mathematics courses "weeding out" students, not on the basis of ability, but of effort they put into learning. This effort was measured in good academic habits and Jake did not express a belief that students could grow to improve these habits/increase their effort or that he had a role in that growth and improvement.

I don't think that [students] should be babied because I think they're - I think some sort of weeding out is good, in mathematics especially.... So weeding out I know is a bad term, because it means fail, but, there's some people who just don't put in the effort

Jake, Mathematics Peer Tutor

Discussion

Jake's model for student success and failure, while on the surface aligned with a growth mindset, is, in fact a limited growth mindset model that does not see self-regulation skills as areas where students can learn and grow and does not consider other factors that may lead students to perform poorly (Dweck, 2015; Granberg et al., 2021; Michaelson, 2017). It is likely that he implicitly communicated his belief about those students' identities as "bad students" to them through his interactions (Holland et al., 1998; Rattan et al., 2012). If Jake as a peer tutor isn't the one to help students who don't yet know "how to college" where should they turn?

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