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How Differing Interpretations of Making Mathematics Fun Influence Teaching Practice

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I investigated an experienced teacher and a beginning teacher who held similar beliefs about making mathematics learning fun yet held different interpretations of implementation. I found when a teacher equated fun with problem solving, her classroom practice included activities with higher-level thinking skills. In contrast, a teacher who defined fun as students' enjoyment layered manipulatives and group work on top of procedures. Therefore, teachers need opportunities to reflect on the nature of student understanding as a precursor to shaping their views of fun.

Negative phrases and attitudes toward mathematics have become commonplace in popular culture. Perhaps in response to this view, teachers often profess a desire to make mathematics fun for their students. But what do they mean by this phrase, and what classroom practices do they employ in the pursuit of this goal? In this paper, I report on two elementary mathematics teachers' interpretations of making mathematics fun and how it influenced their classroom practices, and I speculate how teacher educators can influence these interpretations.

Literature Review and Theoretical Framework

This study focused on two teachers with a specific belief or "psychologically held understandings" about students' mathematical learning (Philipp, 2007, p. 259). Understanding these beliefs is important to mathematics educators because as Ernest (1998) suggested, beliefs are the primary indicator for mathematics teachers' behaviors in the classroom. Therefore if we determined individuals' beliefs about fun, we possibly determine how these beliefs relate to their mathematical teaching behavior in their classrooms (Pajares, 1992).

Chapman (2002) identified a research participant, Elise, who believed in making mathematics fun. Because of this belief, Chapman found that Elise's mathematics teaching focused on procedural strategies. Chapman had Elise reflect on her beliefs about mathematics to change how she viewed play and games, but Chapman did not determine what Elise meant by fun (Chapman, 2002). Thus, I chose to investigate what teachers mean when they say, "I want to make math fun" to help interpret what kind of teaching practices are implemented in these classrooms.

For the purpose of this investigation, I viewed teachers' beliefs as a sensible system (Leatham, 2006). In this sensible system, beliefs are viewed as influences on teachers' actions. However, it must be noted that just because teachers espouse or claim to believe a certain idea does not necessarily mean it will be enacted in their classroom practices. Individuals often are not aware of their beliefs, so researchers must interpret participants' understanding using multiple strategies to ensure an accurate representation of their views. Even if we have accurately interpreted teachers' beliefs, they may have beliefs about other demands that overshadow their views of mathematics teaching practices (Leatham, 2006).

Methods

In this investigation, I identified two participants who expressed a belief in making mathematics fun for their students from two different research projects studying teachers' beliefs about mathematics. Mary was selected because she was a current first grade teacher with at least ten years of experience implementing reform-based practices in her classroom. Mary's principal identified her as exhibiting many of these reformed teaching practices. Mary was identified as having strong beliefs in making mathematics fun by saying things such as, "It is important to make math fun for first graders." Jennifer was selected because she was a beginning second grade teacher who was identified as having an instrumentalist view of mathematics (Ernest, 1998). In her interviews, Jennifer also expressed her desire to make mathematics fun, saying such things as, "It is math, and it's fun too."

Mary was interviewed 3 times and observed teaching 3 times over the course of a semester, and she completed a Mathematical Belief Survey (Shiver, 2010), a 50-question paper and pencil Likert scale survey. Jennifer was interviewed 6 times and observed teaching 15 times across 4 years, spanning 2 years of her teacher education program and her first 2 years of teaching. Jennifer completed the Integrating Mathematics and Pedagogy (IMAP) belief survey (Philipp et al., 2007).

I coded the resulting data by identifying the participants' beliefs about making mathematics fun, their teaching practices, and their interpretations of "fun." Then I looked for similarities and differences in the participants' beliefs and views of fun.

Findings

Both Mary and Jennifer wanted to be fun teachers and believed that having that quality made them effective. Mary explained that an effective teacher was "someone who is patient, someone who is creative, someone who is fun, well-versed and knowledgeable but understanding, especially in different situations." Mary explained, "When I do fun things, I rarely have toys. I like for kids to enjoy what they are doing by being engaged." Fun in her interpretation was an engaging process of learning. Mary believed that when she created engaging activities the students would be able to investigate the mathematics in an active manner, which created lasting learning. This belief was reflected in her classroom practice. She implemented engaging problem-solving tasks to help students build mathematical concepts.

Jennifer also believed fun was an important attribute and explained that an “amazing” math teacher made “math fun, interesting, and beneficial for everyone in the class” and was “compassionate, intelligent, honest, fair, fun-loving, energetic, and caring.” However, Jennifer had a different interpretation of the word fun. Jennifer did not equate fun with learning, but she placed a high value on learning being fun, saying “I think that if learning is fun it’s more meaningful...I mean you might be learning things. But it’s not going to stick with you, and you’re not going to enjoy it.” She equated fun with the attitude you have while constructing knowledge. Jennifer did not, however, equate fun with conceptual understanding. For example, in commenting on a lesson she observed in her mentor teacher’s classroom she stated, “I mean they were thrilled. It was so cool they could multiply in, like, a day because she taught them all those really neat tricks like, you know, with multiply eleven, you just double the number.” The fact that the students were excited made the act of learning the “trick” of multiplication a fun lesson in her view. Jennifer’s classroom practice projected this belief. She implemented tasks using manipulates for “enjoyment,” but she had her students repeat her own actions with the tools rather than having the students make their own mathematical connections.

Relevance

Although Mary and Jennifer made similar statements about fun, they had different interpretations of how this worked in their classrooms. Thus, we must first determine teachers’ interpretations of fun to know how to help influence their teaching practices. As in Mary’s case, when a teacher equates fun with problem solving, the teacher could be influenced to implement inquiry-based problem solving lessons in her class. In contrast, teachers like Jennifer who define fun as layering manipulatives and group work on top of procedures need opportunities to reflect on the nature of student understanding as a precursor to shaping their views of fun.

Because different interpretations of fun could imply different teaching styles, then different interpretations of fun could also imply different lessons learned in methods courses. Grant, Hiebert, and Wearne (1998) found that preservice teachers filter what they learn through what they believe. Thus, if they believe mathematics needs to be about student attitudes, they could take away from a methods course only activities that help produce this positive attitude. Therefore, these results imply that certain activities in methods courses could perhaps inadvertently convey the wrong message about fun, so teacher educators need to be cautious how they present activities in methods courses to ensure a problem-solving view of fun mathematics. In conclusion, when an elementary teacher states that she wants to make mathematics fun, mathematics educators should take notice and determine the teacher’s interpretation of the phrase.

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