Communications

Caring in the teaching and learning of mathematics

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A comment on 'A model of mathematical learning and caring relations', Hackenberg, **25***(1)*: In this commentary on Hackenberg's article, I suggest that her notion of mathematical caring cannot only be integrated into the larger framework of an ethic of care, but also helps to understand what it can mean to (generally) care *in the teaching and learning of mathematics*. This suggestion assumes a relationship between the two notions of general caring and mathematical caring that is different from that of Hackenberg.

Hackenberg's starting point is her view that social interaction can lead to the feelings of depletion and stimulation (p. 45). Based on these aspects of social interaction, she explicates the notion of mathematical caring as

> work toward balancing the ongoing depletion and stimulation involved in student-teacher mathematical interaction. (p. 45)

Later, she adds, as the second aspect of mathematical caring, that mathematically caring teachers

> harmonize with students … [attempt] to take on the students' mathematical realities … [set] their own mathematical ways of operating temporarily to the side in order to focus on students' ways of operating (p. 47),

which I like to call *empathetic understanding of how individual students see and do mathematics*.

I want to make a more general comment about Hackenberg's term 'mathematical caring'. Although an argument can be made that the feeling of depletion is more prominent in a mathematics class than in a class of any other subject matter, there does not seem to be anything specific to mathematics about Hackenberg's notion of mathematical caring, except that it is applied to the teaching and learning of mathematics rather than social studies or home economics, for example. It seems to me that 'mathematical caring' rather conceptualizes caring (of a certain type) in (any) subject matter content teaching.

So, what is the larger framework of an ethic of care into which I suggest Hackenberg's notion of mathematical caring can be integrated? I like to use Noddings's work on caring, to which Hackenberg is referring, for the notion of general caring in teaching and learning.

At the centre of Noddings's conceptualization of caring is the concern for the *needs* of the cared-for. Her (1984, 2001) phenomenological starting point for her ethic of care is the concept of caring in a dyadic caring encounter: the carer cares for the cared-for if and only if

a. the carer's state of consciousness is characterized by:
   i. engrossment (open, non-selective attention to the cared-for's needs)
   ii. motivational displacement (motivation to do something to address those needs)
b. the cared-for receives the carer's state of consciousness (acknowledges the carer's caring state of consciousness).

What could such (general) caring encounters between a teacher and her students look like in the teaching and learning of mathematics? The teacher's social interaction with her students has an impact on the feelings of depletion and stimulation in students with respect to their learning of mathematics. Adopting the theoretical assumptions on learning made by Hackenberg (pp. 45-46), teacher-student interaction that aims for balancing feelings of depletion and stimulation and is characterized by empathetic understanding of students' ways of seeing and doing mathematics is conducive to students' learning of mathematics. (General) caring for the students *includes* being concerned for their (inferred) need to learn school mathematics, and, thus, mathematical caring in Hackenberg's sense is a way of enacting (general) caring in the teaching and learning of mathematics, with empathetic understanding of how individual students see and do mathematics as an instantiation of practicing non-selective attention to the cared-for's needs.

Students, however, have different needs. A teacher's mathematical caring addresses one (type of) need for students with respect to their schooling in general and even their learning of mathematics in particular. There are larger issues in teaching and learning, such as a student's momentary need to be comforted in her emotional state coming into the classroom from lunch break. There are, as well, larger issues in the teaching and learning *of mathematics* that are directly linked to students' needs: Does the learning of this particular mathematical content address the needs of this particular student with respect to her current situation and her future aspirations and possibilities? The (inferred) need of students to become mathematically literate or to have their ways of seeing and doing mathematics validated is here seen within the larger picture of the needs-network for each particular student.

Hackenberg proposes a certain level of independence between what she calls "a more general notion of caring" (pp. 46-47) in teaching and schooling and her notion of mathematical caring. While Noddings gives priority to the development of caring people over the learning in a subject area, Hackenberg conceptualizes "*mathematical* caring relations as inseparable from learning" (p. 47). Rather than contrasting 'general' and 'mathematical' caring, balancing students' feelings of depletion and stimulation in the learning of mathematics and the empathetic understanding of students' ways of seeing and doing mathematics can be seen as a way of a teacher's caring in her teaching and her students' learning of mathematics. The teaching and learning of mathematics, then, frames a particular context for the caring and the concern for the needs of students. The issues captured in Hackenberg's notion of mathematical caring are integrated as issues of (general) caring in the teaching and learning of

mathematics. Addressing these issues are here seen as one aspect of addressing *the needs* of the student as a holistic being. Embedding Hackenberg's concept of mathematical caring into the larger framework of an ethic of care will allow the keeping together of caring and learning mathematics. However, this connection is qualified by a more comprehensive consideration of the students' needs, with priority given to a larger purpose of teaching and schooling:

> If the school has one main goal that guides the establishment and priority of all others, it should be to promote the growth of students as healthy, competent, moral people. (Noddings, 1992, p. 10)

It seems to me that an integration of Hackenberg's notion of mathematical caring into a larger framework of an ethic of care as suggested here does share some of the benefits Hackenberg lists for her model of mathematical learning and caring relations in the conclusion of her article. For her model, she suggests that

> holding learning and caring together disrupts the traditional and harmful separation […] of intellectual activity from emotional, embodied states. (p. 49)

If mathematical caring is seen within a care-ethical framework, which has a holistic view of the human need structure, the intellectual and emotional aspects of being human will also find their joint consideration in the teacher's caring.

Hackenberg writes that

> [her] model explicates how student-teacher interaction can affect engagement with mathematical activity that is essential for acts of learning to occur. (p. 49)

In an ethic of care, social interaction is principal to being human, since humans are conceptualized as relational beings (Noddings, 2002, chapter 5). An ethic of care explicates the effect of human interaction on human functioning in general and students' and teachers' engagement in mathematical activities in particular. Placing mathematical caring within a care-ethical framework gives social interaction a central role in the teaching and learning of mathematics.

Finally, Hackenberg argues that her

> model points toward the necessary involvement of ethical issues in considering the role of social interaction in learning. (p. 50)

Viewing mathematical caring within an ethic of care will also have this benefit, since ethical issues are at the very centre of an ethic of care.

References

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