Review of JOURN-X-XX-XXXXXX
Representations of a concept in abstract algebra and ████████████
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I must point out two related problems with the author's writing that run throughout the manuscript. First, he[1] confounds the idea of an inscription with the idea of a representation. Second, he writes in the passive voice. The two together create a fatal flaw: The manuscript is ostensibly about the effectiveness of a particular sequence of inscriptions for students' understanding of the idea of equivalence class, but the author never speaks about for whom an inscription means something. Put another way, the author never says for whom a "symbol" is a symbol. Indeed, one way to interpret the manuscript's results is that the professor's symbols rarely became symbols for the students.

Here is an example from page 2.

"We situate the classification scheme in the particular context of equivalence classes: each representation studied included symbols that referred to a set and an equivalence relation on that set. Base on this, we identify the degree to which the set and equivalence relation are specific or general, and the degree to which symbols represent concrete or abstract set elements."

In this passage the author speaks of symbols referring to something, as if the symbol is an agent doing the referring. As Glasersfeld would have pointed out, the author omits a central matter – that it is a person looking at something written (an inscription) who interprets it as having a meaning (the referent part). When a person links his or her image of an inscription to something else in his or her knowledge, the person has turned the inscription into a symbol. It is crucial to note that it is a person who creates this link. The "symbol" does not provide a link between inscription and meaning for the person.

Why is it problematic that the author wrote in the passive voice and that he confounded inscription and representation? Because by doing so he avoided addressing the central issue of the study—the differences between the ways that Dr. K understood the inscriptions he used, the way the author understood the inscriptions that Dr. K used, and the ways the students understood the inscriptions that Dr. K used. The author muddled them all together by writing in the passive voice.

I suspect that the author will find many lacunae in his thinking about what happened in this lecture when he forces himself to distinguish between inscriptions and symbols and when he forces himself to write in the active voice. The author will find many occasions when he must sort out for whom something written or said means what. For example, the author said that when Dr. K wrote "$(Z, |x|)$" he represented an equivalence relation. In whose eyes was this a representation? I suspect that we can say that it was a

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[1] When referring to the author in the second person, I will use "he" instead of "s/he", "his" instead of "his/her", etc.

representation in Dr. K's eyes and in the author's eyes, but we must ask what it represented, if anything, in the students' eyes.

The author will also find that he will be forced to modify his underlying theory when making these distinctions. The idea of chains of signification is meaningful only when we include a person who does the chaining. Thus, when the author brings people into the picture he will be unable to speak so simply about symbols referring to other symbols, as if that is all there is to say.

The author will also find that he cannot write the results section he wrote. At a minimum, the author can speak about how he understood what Dr. K did in terms of chains of signification that the author created. There is no interview evidence to support that the author's interpretation is the same as Dr. K's intention.

I find it remarkable that we do not learn about what students understood until page 24, and even then the author devotes only a few paragraphs to address it. I find it even more remarkable that the interviews did not try to determine what students understood by the inscriptions that Dr. K used. What good did the theory of chains of signification, levels of abstractness, etc. do for understanding the impacts that particular inscriptional usages have on students' understandings?

I recommend that the author revise the manuscript significantly and resubmit it for further review. But I also caution the author to consider whether he has the data to address my last comment about determining what students understood of Dr. K's inscriptional usages. If the author does not have this data, then he should not submit a revision.