Assessment Discourse in Mathematics Curriculum: a hindrance for Critical Thinking and Democracy?

Christian H. Andersson
Malmö University

This presentation discusses a find in a discourse analysis of the revised mathematics curriculum for upper secondary school in Sweden. The analysis is related to critical thinking, democracy, and the new digital technology of using mathematics on large quantities of data, such as our digital traces, that may challenge democracy, e.g. by generating discriminatory algorithms. Based on how the curriculum addresses society and how the teaching and learning goals are described, a discourse labelled ***society as an aim, but not to be assessed,*** *was construed. The discourse portrays a tension between what is described as valuable knowledge on one hand, and what is assessed on the other. A question posed, how can this find be related to a wider discussion on assessment and any hindrance for educational aims such as critical thinking and democracy?*

Background

Mathematics is in the centre of the technological revolution that use large quantities of data including personal digital traces. Challenges for democracy that may emerge from this, e.g. discriminatory algorithms, must therefore be understood in the light of mathematics. Sweden revised the mathematics curriculum for upper secondary school 2021. This presentation address one finding in a discourse analysis of the new curriculum (Andersson, accepted). The analysis focused on critical thinking for democracy in relation to use of new digital technology in society. Discourse was defined according to Foucault (e.g. 2002) and Skovmose's (2005) concept mathemacy was used to operationalize critical thinking as reflective knowledge on topics concerning society. Due to the brevity of this paper, the full analysis is not described. The aim of the presentation is rather to reach out to the research community and discuss one of the construed discourses, *society as an aim, but not to be assessed.*

A discourse on assessment

There is an overarching aim in Swedish education to convey and anchor democratic values (Sveriges Riksdag 2021). The new mathematics curriculum address not only mathematics per see, but also mathematics in society, including that the digitalization of society change how mathematics is used (The National Agency for Education, 2021). However, there is nothing explicit in the mathematics curriculum on if/how mathematics education should engage in the overarching democratic aim of education, regardless of how mathematics is used in society. Furthermore, the curriculum mainly address society when it describes mathematics education in general terms, for instance in the preamble

and the section about the aim of the subject. There are fewer connections to society when the text describes what is to be taught. When the text describe student knowledge requirements for different grades, there is no explicit mention of society at all. Teaching and knowledge requirements in the mathematics curriculum can rather be characterized as something that concern separate individuals and their ability to perform tasks. Beside tasks, general knowledge of mathematical concepts is also stipulated in the curriculum, but there is little reflective knowledge described. In relation to society, there is no reflective knowledge described at all.

An interpretation of this is a discourse that accepts *society as an aim, but not to be assessed.* The discourse does not dispute any need for mathematics education to engage in critical thinking or democracy in relation to new technology, but the space for this is reserved outside what the students are obliged to show knowledge of.

Discussion

The construed discourse is just *one* interpretation of the diminishing societal aims when it comes to concrete learning goals. Other interpretations are of course possible, e.g. that knowledge of mathematics task have intrinsic properties that support deliberative democracy, and thus would the societal aims still be assessed.

An interesting feature of this construed discourse however, worthwhile to discuss further, is the apparent tension between learning knowledge considered valuable on the one hand, and learning what is valued in assessment on the other. A discussion on how educational aims can be hindered by assessment is not new (e.g., Boistrup. L. B., 2017). The question I would like to raise in this short presentation is whether societal aims such as teaching for democracy (e.g. mathematics guided critical thinking on topics on a societal level), likewise can be said to be hindered by contemporary official discourses on assessment. Or more specifically, how to relate these particular findings in the revised mathematics curriculum to a discussion if/how or to what extent, assessment create an obstacle for teaching and learning content that are relevant knowledge for students in an out of school context in their future life as citizens.

References

Andersson, C., H., (Accepted for presentation) *Mathematics curriculum discourses on democracy: critical thinking in the age of digital traces.* CERME12

Boistrup. L. B. (2017). *Assessment in mathematics education: A gatekeeping dispositive.* In H. Straehler-Pohl, N. Bohlmann, & A. Pais (Eds.), The disorder of mathematics education. Challenging the sociopolitical dimensions of research (pp. 209-230). Springer.

Foucault, M. (2002). *Vetandets arkeologi* [Archeology of knowledge]. Arkiv förlag.

Skovsmose, O. (2005). Travelling through education: Uncertainty, mathematics, responsibility. Sense.

Sveriges Riksdag (2021). *Skollag (2010:800)*. https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/skollag-2010800_sfs-2010-800

The National Agency for Education (2021). *SKOLFS 2010:261*. https://skolfs-service.skolverket.se/api/v1/download/senaste-lydelse/2010:261