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One of the latest reforms in Sweden in order to increase equity and quality in education is making national assessment compulsory in preschool-class (age 6). The claimed political volition is all students' best possible mathematical development. In this paper, we examine the preparatory work, the assignment to the National Agency of Education, and the assessment material itself, searching for what meaning is inscribed regarding the student, mathematics and assessment. The results imply that the politics of the assessment might exaggerate a search for flaws and control instead of promoting all students learning and in addition contributing to the schoolification of preschool-class.

Keywords: Early assessment, preschool-class, development in mathematics, national assessment.

National assessment in mathematics

National and standardised assessment has been vastly criticised and described as driven by a neo-liberal logic and securing market values (Dreher, 2012; Luke 2011; Lundahl, 2016). Equality and values of social justice, diversity and democracy are shown to be threatened by these kinds of tests (Hudson, 2011; Lundahl, 2016; Peters & Olivers, 2009; Rustique-Forrester, 2005). In Sweden there are currently three national tests in compulsory school that all students have to take: in grade 3 (age 9), grade 6 (age 12), and grade 9 (age 15). National assessment in mathematics, in the form of a support material, is also compulsory in grade 1, and voluntary in grade 2. The national assessment system has recently been evaluated (Regeringen, 2016). Since autumn 2019, this has led to a supplementation with compulsory national assessment also in preschool-class (age 6), which is a separate school form within the Swedish school system. The everyday assessment discourses in the classroom of the preschool-class are characterized by an activity-specific educational culture, which is meant to stand between the pre-school's and the school's norm systems (Vennberg, 2015). Important reasons claimed for developing the system are to direct teachers' attention, use of mathematical concepts, and efforts in certain directions, and through that striving towards equity and quality. These are in other words areas that are understood as important to govern. A core issue in assessment of preschool-class students' knowledge is also to early identify students in need of support. This is considered as a prerequisite for affording equal opportunities to learn, regardless of background factors. Another argument is to diminish the decrease of measured knowledge in grade 9, and the identified differences in the quality of support given to various students and in different schools (Regeringen, 2017a).

According to Boistrup (2017), a lack of equality can be found in the context of assessment at different levels within the school as a system. Assessment in mathematics can be said to hold a gatekeeping dispositive regarding the access to success. This dispositive may play out in the

immediate situation of assessment if students belonging to disadvantaged groups face obstacles in displaying knowledge. An example is when the teacher feels that securing multi-lingual students' equity could threaten the tests validity (Bagger, 2017). These findings from earlier research indicate that it is urgent to continue to investigate how the assessment and the teacher are governed. In this paper, assessment in mathematics education is understood as an element of governing (Foucault, 1994), where purpose and how it is carried out have impact on aspects related to quality and equity. Newton (2007) stresses that if several purposes of assessment – to evaluate education, to make grounds for decisions of recourses, and assessment of knowledge – are active simultaneously, conflicts of interests are built into the assessment, and a test will work poorly for all or mainly for some of the purposes. Further, how the teacher understands the student and the teaching content will have impact on the mathematical support (Scherer, Beswick, DeBlois, Healey & Opitz, 2016). Related to this, a study by Bagger (2017) indicates that the educational segregation in the teaching and learning of mathematics might occur earlier with earlier testing. Simultaneously, there are indications that if the preschool-class teachers get skilled in assessing mathematical knowledge, students at risk in preschool-class reach similar achievements as their peers in the national test in grade 3 (Vennberg & Norqvist, 2018). Our assumption is that assessment in the preschool-class constitutes a risk for but also an opportunity to levelling disadvantage.

The purpose of this study is to increase our knowledge of how policy documents govern the implementation of national assessment in preschool-class in mathematics. This is achieved through a systematic exploration of how some central aspects are discursively constructed: the student, mathematics, and assessment.

Theory and methods

In this paper, discourse is taken as representations of power, truth and knowledge that govern individuals and society. Truth and knowledge are further understood as social constructs and as such they evoke power relations (Foucalt, 1994). Popkewitz (2004) draws on Foucault's thinking and uses the concept of *fabrication* as a governing technology. Categories, for example central notions adopted in assessment practices, are conceptual constructs through which reality can be understood and is simultaneously fabricated. These fabrications communicate versions of truth, knowledge and power, and coincide with processes of exclusion and inclusion. Governing texts are regarded as *inscription devices* that attribute terms, possibilities, and characteristics (Popkewitz, 2012). In this case, the governing texts are the testing material, political preparatory work, and decisions, through which the student as a mathematician, the teaching content, and the assessment are understood as attributed with terms, possibilities and characteristics. In other words, the texts fabricate the student, the assessment and the subject, and also inscribe meaning into them. This might by extension affect how the student, subject and assessment are handled and understood in the practice and governing of national assessment in preschool-class. The governing may then concern what is considered as 'true', what counts as 'knowledge', how students' knowledge is valued, and how results should be used.

The texts selected to explore the fabrications of mathematics, the student and the assessment are preparatory work and political decisions regarding the assessment in preschool-class and the

material for assessment (see Table 1). Initially, in the analytical process, statements concerning preschool-class were selected from the texts into a scheme in which each text was in its own column. After that, all utterances depicting the student, the mathematics, or the assessment were coded in different colours. The next step was to 'translate' such utterances into explanatory paraphrases. The fabrications were thereafter narratively construed with regards to how terms, possibilities, characteristics, and demarcations were attributed. An example of the analysis is displayed in Table 2.

Text	Responsible author and short description
Skolverket (2016)	Comments to curriculum. Swedish National Agency of Education (SNAE). The purpose and content of mathematics in preschool-class.
Skolverket (2018)	National support for assessment in mathematics in preschool-class
Regeringen 2017a	Swedish Government (SG). The assignment to the SNAE to develop the national system for assessment including the material for assessment in preschool-class.
Regeringen (2017c)	SG. A bill guarantying support in reading, writing and counting.
Utredningen om nationella prov (2016).	SG. A bill in which the need for assessment in preschool-class is put into the context of national assessment and the quality and equity of education.

Table 1: Overview of the five documents analysed in this paper

Selected text	Explanatory paraphrases	Construed fabrication
"To observe the students' mathematical abilities in different areas of importance for development of mathematical thinking"	The purpose of the assessment is to identify student's mathematical thinking	Lack of mathematical thinking is fabricated as the supposed obstacle for goal achievement in grade 3. Assessment will level inequalities in teaching and grant high quality and equal support earlier. Another threat against equity is the teacher who draws wrong conclusions regarding support or the displayed knowledge. So, they also need support.
"... early identify students who show indications of not achieving the goals in learning that are set for grade 3"	This is needed in order to identify students in need / at risk of not reaching goals three years later.	
"the assessment will help teachers to know what support to possibly put in"	Teachers need help to know how to support.	
"National material might increase the equity of the quality in the support given"	There is a lack of equity in the support now – another aim with assessment.	
"… solutions should be evaluated by someone else than the teaching teacher"	The teacher should not evaluate the solutions of her/his own students.	

Table 2: Example of the analytic procedure and construction of the narrative

Findings

A narrative was constructed by depicting how mathematics, the assessment and the student were fabricated. All texts are in Swedish and quotes have been translated by the authors.

The fabrication of mathematics

One aim of mathematics, as construed from the analysed texts, is to be a caretaker of curiosity and understanding: "The teaching shall take care of students curiosity and afford them the opportunity to develop their interest in mathematics and understanding for the possible use of mathematics in different situations" (Skolverket, 2016, p. 13). Also: "students shall be challenged and stimulated to use mathematical concepts and reasoning to communicate and solve problems in different ways through different representations and to explore and describe their surroundings" (p. 13). The areas of mathematics that preschool-class is supposed to pay attention to in order to reach the aim is: "Mathematical reasoning and different ways of solving problems" (p. 20) together with

"Mathematical concepts and representations" (p. 21). Mathematical reasoning is defined as a "logical mathematical argument that is used for motivating an answer or a choice" (p. 20), and mathematical problems are defined as "situations or tasks in which the students do not know beforehand how to solve the problem" (p. 20). The mathematical contents that the students are supposed to be offered to meet are:

> the characteristics of natural numbers and how they can be used to designate cardinality and ordinality…. mathematical concepts and representations in order to explore and describe space, location, shape, direction, pattern, time and change. (Skolverket, 2016, p. 21)

Mathematics is, through the above-mentioned statements, fabricated in the curriculum for preschool-class as a nurturing and caretaking assignment that will grant the student an opportunity to further develop an already existing curiosity, interest and understanding. The mathematical content is fabricated as a kind of founding building blocks needed in order to explore and investigate various problems and arguments. Problems and reasoning that could impose interest and curiosity are additionally fabricated as deriving from visuospatial elements of the student's surroundings. We interpret the intentions of mathematics education, as described in the curricula, as a way of supporting the students in experiencing themselves in the world, appreciating diversity in ideas and recognising their own competence to deal with problems.

In the title of the material for assessment itself, mathematics is labelled as mathematical thinking: "Find the mathematics. Evaluation material in mathematical thinking in preschool-class" (Skolverket, 2018, p. 1). In other words, it is fabricated as something that resides within the student. The material encourages the teacher to promote different arguments, reasoning, examples, and not to stop or be content with just one solution from students. This approach towards exploring is in line with the curriculum's intentions. The areas through which the mathematical thinking is supposed to be explored and evaluated are patterns, maps, counting, sorting, and volume. The focus on experiencing the world and relations in it, in both the curriculum and the material, fabricates mathematics as something concrete and visible that constitutes reality. We wish to connect this to Straehler-Pohls (2015) writings of distributive rules in relation to school mathematics;

> The foundation of this distribution is a stratification of mundane and esoteric meanings. In this stratification, esoteric meanings inevitably take the dominant role, as it is these meanings that transcend the spatial and temporal materiality that bear the potentials to think yet unthinkable solutions that draw on (contextually) external frames of reference" (p. 3).

Mathematics as concrete and constituting is further interpreted as fabricating school mathematics in preschool-class as mundane, at the same time as the exchanged meaning making is supposed to take place in an esoteric form through an exchange of different understandings and reasoning. The promoted variation in reasoning and solutions connects to a fallibilist (Ernest, 2014) view on mathematics in which knowledge is considered fallible and open for revision. In the assessment material, there is an attached observation scheme in order to register the student's knowledge. A text on this is: "date when the observation point is reached/finished" (Skolverket, 2018, p.1 in compilation form). This assumes knowledge to be possible to observe, reach and check at a certain date, fabricating mathematical knowledge as situated in an absolutist perspective (Ernest, 2014) in

which knowledge is secure, fixed and objective. This is opposed to the fallibilist view, represented in the previously described encouragement in the material and curriculum; to explore and negotiate solutions and arguments. It also fabricates the mathematical thinking, or knowledge, as something that could and should be reached – *as if* there were goals to achieve in preschool-class.

The fabrication of assessment

The title of the assessment material is: "Find the mathematics: Evaluation of mathematical thinking" (Skolverket, 2018). Assessment is thereby fabricated as needed in order to capture the inner world of the student, the thinking, or the lack thereof. The thinking is further fabricated as promoting or threatening a development of knowledge towards the goals in grade 3: "… is carried out during autumn in preschool-class so that the teacher can early identify students who show indications of not achieving the goals in learning that are set for grade 3" (p. 3). This message is also repeated in the preparatory work and the assignment to the Swedish National Agency of Education to develop this material. In addition, assessment is in these preparatory texts fabricated as something that will level inequalities in teaching and grant high quality and equal support earlier: "Nationally produced material might also increase the equity of the quality in the support given and contribute to a common terminology regarding assessment, progression and knowledge requirements which will lead to higher quality of judgements" (Regeringen, 2017a, p. 5). Teachers are fabricated as being responsible for detecting where in the development the student is and to adapt teaching so that the student can achieve the goals in third grade. This is seen in several parts of the texts and in the instructions to the material. For example: "to give teachers a clearer basis for assessment of the student's knowledge development and more information on what support to introduce" (p. 2). Also, the material will evaluate the teaching and help teachers to correct it through "affording preschool-class teachers and teachers support in seeing how opportunities and obstacles in the teaching impacts on students learning." (pp. 1–2). The proposition further fabricates assessment as insecure and invalid due to the teacher and relations involved: "solutions should be evaluated by someone else than the students' teacher, and such solutions should be de-identified" (p. 1). Another statement fabricating the teachers as the ones in need of support is in the assignment to the national agency of education: "the material will be completed with a supportive material for analysing evaluations" (p. 2). The assessment is then fabricated as a tool to control and support teachers in the assessment process.

The fabrication of the student

In the curriculum, the student is fabricated as already mathematically able and interested: "Teaching shall take students curiosity into consideration and give them the opportunity to develop their interest in mathematics and their understanding of how mathematics might be used in different situations" (Skolverket, 2016, p. 13). This harmonises with statements in the instructions to the material in which the use is presented as an opportunity in itself to learn mathematics: "By allowing students to meet activities that differ in character, they can develop trust in the ability to solve problems in different situations and contexts" (Skolverket, 2018, Instruction to material, p. 4). The student is thereby fabricated as a learner, rather than a test-taker. This stands in contrast to other statements in which the students are depicted as needed to display their knowledge. Such statements

occur in the preparatory work and the material itself. The curiosity and interest that was fabricated as mathematical entities within the student and as something that the school should build on in the curriculum is instead fabricated in the material as a kind of mathematical knowledge that the student must display. "When the student shows curiosity and interest for the mathematical content, it reflects how the student participates in the activity" (p. 4). The participation is further fabricated as the notion that will inform the teacher about "where the student is in her/his development" (p. 5). In the preparatory work, the assignment, and the material, there is an overweight towards the student being fabricated as lacking or possibly missing knowledge, that those errors may grow and therefore need to be identified and corrected through adaptations of education.

Conclusions and discussion

A higher degree of goal achievement and increase of test-results have been central arguments in the evaluation of and revision of the national system for quality measuring (Regeringen, 2017b). This stands in contrast with the preschool-class's pedagogical assignment of being a bridge between preschool and school. National and compulsory assessment in preschool-class is a new phenomenon and it is crucial that it is implemented in a manner that is in line with this educational spirit of preschool-class. Otherwise, the assessment might not present an opportunity to nurture interest, curiosity and the identity of being a mathematical learner and explorer, but instead contribute to an approach in which it is the performed interest or competencies that counts. The preschool-class could risk being colonised by the prevalent neoliberal logics of governing that exists in compulsory school including *schoolification* of the assessment practice in mathematics.

A focus on mathematics as the observed and displayed activity, and the assessment of knowledge as making achievement visible, positions the 6-year-old preschool-class student as a test-taker and the teacher as the controller and corrector of knowledge. The mathematical thinking and development were fabricated in the data as having a certain order or being a destination. To identify where the student is positioned on this map or road, is claimed as a key for giving adequate support early. A question to raise is how the teacher is supposed to position the students' place in development through observing their displayed participation, as suggested (and we are reluctant to the idea of assigning students places in developmental 'paths', but that is not in focus in this text). It may be many factors that affect how and if a student participates, several of these have to do with the organisation of education and teaching. These are mentioned in the material with regard to the importance that students are allowed to express different ideas, which can also happen with other modes than spoken language. The stress laid on the freedom to communicate and try ideas indicates that it should be an explorative and playful situation. Also, knowledge can be displayed outside these situations or with other alternative and adaptive settings. These fabrications stand against the one of control and goal achievement. An adapted and creative mathematical teaching is supposed to be the possible outcome from the analysis of the material. We question how this can this happen, in a practice deriving from an assessment that is only assessing a few mathematical items. This is significant, not least since the risk of 'teaching to the test' is obvious. Another aspect is how the mathematical processes, selected and tested in the material, are promoted as *the* mathematics, which is limiting in itself. There is a risk that the material may contribute to the narrowing of implemented curricula, teaching to the test, and seeing students as their levels of achievement, as reported in

previous research (Wrigley, 2010). Thereby, the material may unintentionally limit possibilities for development and knowledge in mathematics, which is opposed to the purpose of increasing equity and quality.

The described use of the assessment material is easy to interpret as being about a search for problems, rather than promoting education for all. The strive towards high quality and quality in equity is then becoming an issue of everyone doing the same thing, having the same focus and the same demarcation in regard to the support given and the mathematics taught. A final question is: Is this assessment material a material for teaching or a material for controlling, and if so, what is being controlled and thereby restricted, locked in, or included? What is excluded when it comes to kinds of students, kinds of mathematical knowledge and kinds of teachers' ways of teaching? Our hope is that the discursive fabrications, presented in this paper, of assessment, mathematics and who the student is, may contribute to revealing some of the underpinnings in the so-hard-to-grasp patterns or structures of disadvantage in mathematics education.

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