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Diverse meanings ascribed to equity in early mathematics assessment

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ABSTRACT
This article presents a discourse analysis of early mathematics teachers’ talk about mandatory national assessment material with a particular focus on communication about equity. With this assessment material, teachers do not decide what and how to assess; however, they are the ones who carry out the work before, during, and after assessment. Thus, teachers’ views of equity in assessment may influence how assessment is prepared, conducted, and followed up in teaching. In this study, discourse analysis is used as both a theory and an analytical tool. The study included four focus groups with 12 teachers from eight schools. In their communication, teachers ascribe different meanings to equity. In the results, four discourses with diverse meanings ascribed to equity are construed by the researcher: doing the same discourse, different needs discourse, unclear conditions discourse, and different resources discourse. The meaning of equity, as well as its goal and intention, differs in these discourses, which may have implications for educational practice in terms of tensions between different goals and intentions and thus implications for the degree to which assessment may contribute to equity in early mathematics education.

Introduction

The focus of this article is on mandatory national assessment for six-year-old students, which was introduced into the Swedish preschool class in 2019 to assess mathematics at the start of compulsory school (National Agency for Education [NAE], 2019). The expressed purpose of the assessment material is to contribute to the school’s compensatory mission and to improve equity by identifying students at risk of not attaining the knowledge requirements and students in need of extra challenges. Because this national assessment has become mandatory, teachers working with six-year-olds have started to focus more on assessment (Ackesjö, 2021). The study presented in this article is based on focus groups with teachers who, carried out the new national assessment material for the first time. The focus groups aimed to investigate their experiences from the assessment. In their communication about the assessment material, equity showed itself to be an issue that the teachers both...
elaborated on and ascribed different meanings to. Similarly, in the field of mathematics education, there has been an ongoing discussion among researchers about equity issues in assessment (Bagger, 2016, 2022; Björklund Boistrup, 2017; Slee, 2018). According to Bagger (2016), assessment may even function as a gatekeeper when it comes to equity and quality, and Björklund Boistrup (2017) argues that assessment in mathematics sorts and labels students through comparison. Thus, the focus of this article is of importance for both preschool class teachers and researchers in mathematics education.

According to Espinoza (2007), when research in the field of education addresses issues of equity, two different notions are often used – equity and equality. While the notion of equity most often focuses on educational justice and fairness, the notion of equality most often focuses on the idea of same treatment (Espinoza, 2007). However, the meanings of these notions are neither fixed nor transparent within the mathematics education community, which is why the meaning of equity can be described as evolving (Nasir & Cobb, 2006). As the meaning of the concepts continues to change, so does the mathematics educators’ understanding of how these concepts relate to mathematics learning (Pateman & Lim, 2013). In this study, teachers used the term likvärighet to describe school-related issues related to both equity and equality, which makes it impossible to distinguish between these terms. Therefore, the term equity will be used to refer to both equity and equality when presenting the results.

Educational assessment can be regarded as a bridge between teaching and learning, where Wiliam (2007) distinguishes between two types of assessment: classroom assessment and external assessment. Classroom assessment and external assessment differ in terms of where they take place, who organises them, and who grades them (Black & Wiliam, 2004). Even if used in the classroom, the assessment material of interest in this study is an external assessment because it is mandatory and initiated by the National Agency for Education (2019). In 2018, this material was optional, but in 2019 it became mandatory for all six-year-olds. The National Agency for Education states that it is up to teachers themselves to decide how to carry out the assessment, but at some schools, local guidelines may exist.

Black and Wiliam (2004) point out that intersubjectivity is important in assessment and state that it is “reliant on the shared understanding of a community of teachers – so that the judgments are objective in the sense that they are free from individual subjectivity” (p. 185). In relation to the mandatory assessment material focused on in this study, there may not yet be a shared understanding regarding equity issues, as the assessment material became mandatory the same semester this study was carried out. Regardless, the teachers’ views on equity may influence how the assessment is prepared, conducted, and followed up. Since teachers’ views on equity can be described as a developing view (Nasir & Cobb, 2006) that may continue to evolve (Pateman & Lim, 2013), this study uses discourse analysis to provide a here-and-now picture of teachers’ shared meanings of equity. Based on this, the study aims to develop knowledge about meanings ascribed to equity in relation to early mathematics assessment. The following research question is addressed:

- What meanings are ascribed to equity when preschool class teachers talk about early mathematics assessment?
Even though the results of this study are of international interest, local issues need to be raised to provide context. The Swedish preschool class was introduced in 1998 to create continuity in early education by relating preschool to compulsory school (Prop, 1995/96:206, 1997/98:6). In 2018, the Swedish preschool class became compulsory as a means to strengthen the compensatory mission of schooling and to improve equity (NAE, 2019). Before 2019, there were no mandatory national assessments during the preschool class year of schooling. According to Ackesjö and Persson (2019), the implementation of the national assessment material can be linked both to a political effort to promote equity as well as to the decline in Swedish students’ results in international evaluations such as TIMMS, PIRLS, and PISA. Also, the assessment is part of the so-called action guarantee (åtgärdsgarantin), a national guarantee that students in need of support in reading, writing, or counting will get the support they need at an early stage in their schooling (Prop, 2017/18:18). The assessment takes place at the beginning of the school year and consists of four activities that are carried out orally by a teacher with a small group of students. The expressed purposes of the assessment are to identify three groups of students: “students in need of extra support”, “students in need of extra adaptations”, and “students in need of extra challenges” (NAE, 2019, p. 3). Besides identifying these three groups of students, the assessment is intended to function as a support for teachers in their teaching: this is stated in the teacher’s guide (NAE, 2019).

The next section of this article presents a literature review, which is followed by theoretical framing that explains how discourse analysis in the study is used as both a theory and an analytical tool. After that, the method section presents the selection of teachers, the focus groups, and ethical considerations. Finally, in the results section, four construed discourses with different meanings ascribed to equity are presented, followed by a discussion of these meanings in relation to previous research as well as their relevance for the practice.

**Literature review**

This section presents previous research on equity in mathematics education; educational assessment; and the significance of teachers’ views on assessment.

**Equity versus equality**

Since this article focuses on diverse meanings ascribed to equity in assessment, the following section presents a review of previous research on the notions of equity and equality. In the field of mathematics education, there is no consistency in terms of how the notion of equity is used, and the notions of equity and equality are often confused (Gutiérrez, 2012). Yet how equity is defined has implications for how to approach students in efforts towards equal mathematics education (Llewellyn & Mendick, 2011). For example, notions on equity may differ depending on whether or not issues related to equity are linked to justice at the group or individual level (Secada, 1989). According to Espinoza (2007), the arguments for equity most often focus on educational justice and fairness, where individual circumstances and requirements are considered. In contrast, arguments of equality most often focus on the notion of same treatment for individuals in a group. The Nordic model of education is based on the concept “Education for All”,

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where educational measures are expressed that aim to strengthen equity (Frones, Pettersen, Radišić, & Buchholtz, 2020), and equity, equal opportunities, and inclusion are expressed as the goals of schooling (Blossing, Imsen, & Moos, 2013). However, when it comes to the Nordic model, it is unclear how inequities within the national system are dealt with (Frones, Pettersen, Radišić, & Buchholtz, 2020) and if the issues addressed by educational measures are inequality or inequity issues (Espinoza, 2007). Even if the Nordic model has been considered to provide equal learning opportunities for all students (Frones, Pettersen, Radišić, & Buchholtz, 2020), there are also studies that question whether this is still the case (Antikainen, 2006; Lundahl, 2016).

Educational assessment

When it comes to assessment, there are differences in terms of, for example, who determines what is to be assessed, who conducts the assessment, where the assessment takes place, how students’ results are scored and interpreted, and what happens after the assessment (Black & Wiliam, 2004). As mentioned, Wiliam (2007) distinguishes between classroom assessment and external assessment, where the assessment in this study is an external assessment carried out in the classroom. Both external assessments and classroom assessments can serve three purposes: “supporting learning (formative), certifying the achievements of individuals (summative) and evaluating the quality of educational institutions (evaluative)” (Wiliam, 2007, p. 1056). Since classroom instruction is inseparably intertwined with classroom assessment, formative assessment provides teachers with information about students so that they can adapt their teaching to their students’ specific learning needs (Wiliam, 2007). However, at the classroom level, assessment serves different purposes that often exist in parallel rather than being part of a dualistic system (Tolgfors & Öhman, 2016). There is often a tension between using assessments to support learning and confirming the achievements of individuals, as these two purposes are so fundamentally different (Torrance, 1993).

Equity in relation to educational assessment

According to Björklund Bostrup (2017), assessment in mathematics sorts and labels students at both an individual and a group level through comparison. Lubienški and Gutiérrez (2008) go even further when they argue that research on measuring and comparing the performances of different groups of students often tells us what we already know. It is questionable whether such an approach is productive or not, since using achievement gaps as an analytical lens may ignore successful contexts that serve marginalised students during assessment (Gutiérrez, 2012). This is in line with Bagger (2016), who argues that assessment may function as a gatekeeper when it comes to equity and quality if the focus of assessment shifts from learning to control. The use of achievement gaps to compare students might lead to a shift in focus from affording a fair and equal education to making it the individual’s responsibility to attain. Related to this dilemma, according to Ydesen et al. (2018), a discussion is needed about the role of the teacher and other professionals who work together with student assessment, learning, and development.
One view of “fair assessment” is that it is only achievable when all students are assessed on the same basis (Black & Wiliam, 2004, p. 185). However, Slee (2018) argues that students with special educational needs are often excluded in both mathematics assessment and mathematics education. Based on a study of students with special educational needs, Bagger (2022) argues that these students are “hindered in their participation in test-taking and, as a result, are also excluded from participating in high-quality learning” (p. 104). To attain higher levels of participation in assessment situations among these students, the communication and relationship between student and teacher seem to be very important (Bagger, 2022). Instead of focusing on how to assist students in mathematical learning difficulties, Scherer, Beswick, DeBlois, Healy, and Opitz (2016) wish to develop a mathematics education system that enables rather than disables students in mathematics education. Similarly, Askew (2015) suggests thinking about the curriculum in another way in order to embrace diversity so that it can support inclusiveness in mathematics classrooms and improve equity.

Taken together, previous research on fair assessment shows there to be a risk that assessment reinforces inequities. Indeed, instead of contributing to equity, there is a risk that assessment results in further differences between groups of students (Bagger, 2016, 2022; Slee, 2018).

**Teachers’ views on assessment**

Even though this study is not a study of beliefs, the connection between teachers’ shared understanding and their approach to mathematics teaching can often be found in studies of beliefs. Based on a summary of studies focused on mathematics teachers’ beliefs, Ernest (1989) stressed that teachers’ approaches to mathematics teaching depend fundamentally on their beliefs. This is because their beliefs on mathematics teaching and learning seem to affect their teaching. Other research on mathematics education strengthens this argument: teachers’ beliefs about, attitudes towards, and views of mathematics and their teaching play a significant role in shaping their instructional behaviour (Ernest, 1989; Philipp, 2007).

According to Wiliam (2007), when teachers’ reflections on assessment get to influence what it means to learn or what is to be learnt, there is a risk that educators move from making what is important accessible to making what is accessible important. Since the assessment material of interest in this study is used by teachers, there are, according to the above, reasons to believe that an understanding that is shared by a community of teachers (Black & Wiliam, 2004) will affect not only their teaching after the assessment but also the way teachers assess their students.

**Early assessment in the Swedish context**

Previous research on the assessment material that is the focus of this study shows that its purposes might make it unclear how assessment results are to be used, since these purposes can end up conflicting with each other (Walla, 2022). The ambiguity that comes with unclear purposes raises new questions related to how this assessment may affect the students, the teachers’ teaching, and the mathematical knowledge that is to be the focus (Bagger, Vennberg, & Björklund Boistrup, 2019; Walla, 2022). Also, since the assessment covers
only parts of the mathematical content in the curriculum (Walla, 2022), the assessment material may limit possibilities for development and knowledge in mathematics – and thus, result in the opposite of increased equity (Bagger, Vennberg, & Björklund Boistrup, 2019).

There are indications that early testing in Sweden may result in educational segregation for students in need of support (Bagger, 2017). However, other research indicates that students in need of support in preschool class may reach the same achievements as other students on the national test in grade 3 if preschool class teachers become skilled in assessing mathematical knowledge (Vennberg & Norqvist, 2018). Therefore, there seem to be both risks and opportunities with early assessment when it comes to whether early assessment contributes to equity for students in need of support (Bagger, Vennberg, & Björklund Boistrup, 2019).

**Theoretical framing – discourse analysis**

Discourse analysis can be used as a theory, as an analytical tool, or as both (Trappes-Lomax, 2004; Winther Jørgensen & Phillips, 2000) In this study, discourse analysis is in line with Gee (2014a, 2014b) because it is used as both a theory and an analytical tool. In discourse analysis, the study of language in use and of patterns of language beyond its use is central (Trappes-Lomax, 2004). According to Gee (2014b), language creates meaning in social practices at the same time as language derives its meaning from social practices. Discourses are viewed as part of ongoing processes that continually create and reshape the shared understanding in a community of teachers. Since the teachers’ understanding of equity can be described as a view (Nasir & Cobb, 2006) that will continue to evolve (Pateman & Lim, 2013), discourse analysis is used as a theory to provide a here-and-now image of teachers’ shared meanings of equity. Gee makes a distinction between small discourses and big Discourses, that is to say, discourses with a small “d” and Discourses with a big “D”. Through small discourses, so-called stretches of language, the relationship between words and sentences is described, while big Discourses can be seen as ways of using language that are influenced by social positions and power relations. Thus, big Discourses provide the analysis a wider context (Gee, 2014a, 2014b). Small discourses and big Discourses should not be seen as separate but rather as overlapping in a dialectal relation because they both relate to and influence each other (Gee, 2014b). Small discourses were construed in this discourse analysis.

**Method**

The empirical material for this article is based on four focus groups with teachers communicating about assessment. The following section provides a description of the procedures of the focus groups, process of analysis, and ethics.

**Focus groups**

To capture the shared understanding of a community of teachers, four focus groups were conducted with 12 teachers. In line with discourse analysis, it was important to give teachers the freedom to express themselves in their own words (Winther Jørgensen & Phillips, 2000). To this end, a guide with questions phrased to promote discussion and to
seek broad perspectives was used (Hennink, 2014). The questions were posed by the researcher and designed to ask the teachers about assessment in general and the mandatory assessment material specifically. The general questions focused on the teachers’ views on assessment. The more specific questions focused both on teachers’ preparation ahead of using the assessment material of interest in this study and on their views on opportunities and challenges linked to this assessment. The teachers were not explicitly asked about equity, and the term likvärdighet (equity/equality) was not used in any question.

The researcher recorded the focus groups on a Dictaphone. The focus groups were held at one of the schools of the teachers and lasted approximately one hour. Both focus group data as well as discourse analysis must be understood in relation to a larger social context, since meaning always develops within a context (Carey & Asbury, 2012; Gee, 2014b). As such, the study does not claim to be generalisable in a quantitative sense; instead, it can provide a deeper understanding as to how equity can be understood in relation to assessment.

Teachers in the Swedish preschool class can be qualified as either preschool teachers or primary school teachers. In this study, a total of 12 teachers from eight schools in three municipalities participated. Of these, ten were qualified preschool teachers and two were qualified primary school teachers (Table 1). The teachers were contacted through their head teacher, who passed on information about the research. The teachers were asked if they would be interested in being part of a focus group together with teachers from other schools. That said, one focus group consisted of three teachers from the same school as they asked to be in the same group for practical reasons (Table 1).

**Table 1. Description of focus groups.**

<table>
<thead>
<tr>
<th>Group</th>
<th>Profession</th>
<th>Years in profession</th>
<th>School*</th>
<th>Municipality**</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Preschool teachers (3) ***</td>
<td>21, 28, 29</td>
<td>A (2), B (1)</td>
<td>J (3)</td>
</tr>
<tr>
<td>2</td>
<td>Preschool teachers (3)</td>
<td>32, 33, 37</td>
<td>C (3)</td>
<td>J (3)</td>
</tr>
<tr>
<td>3</td>
<td>Preschool teachers (2)</td>
<td>15, 25, 12</td>
<td>D (1), E (1), F (1)</td>
<td>K (3)</td>
</tr>
<tr>
<td></td>
<td>Primary school teacher (1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Preschool teachers (2)</td>
<td>24, 34, 7</td>
<td>G (2), H (1)</td>
<td>J (2), L (1)</td>
</tr>
<tr>
<td></td>
<td>Primary school teacher (1)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*The schools are lettered A - H.
**The three municipalities are lettered J - L.
***Numbers in brackets indicate the number of teachers.

**Analysis**

The analysis began with a transcription of the recorded focus groups. In the transcriptions, focus was on teachers’ wording only; that is to say, pronunciation, body language, interaction, and small sounds were excluded from the transcriptions. The transcribed material was analysed according to Gee (2014a). Gee offers 28 tools for discourse analysis that address a range from a big picture view to a detailed linguistic level. According to Gee (2014a), the researcher should choose tools that they then adapt according to what is to be studied. In a previous study, based on the same focus groups as this study, big Discourses about early mathematics education were construed (Walla & Palmér, in press). One of these Discourses, Assessment contributes to equity, initiated the discourse analysis on small equity discourses presented in this study.
In line with Gee, eight tools were chosen based on the specific context and purpose of the study, and questions were formulated for each tool. First, three tools were used to analyse the transcribed material, focusing on a big picture view:

- **Figured World Tool (#26):** What typical stories or figured worlds are assumed in the teachers’ communication?
- **The Situated Meaning Tool (#23):** What situated meanings, related to the context, do words and phrases in the teachers’ communication have?
- **The Significance Building Tool (#14):** What words are used to build up or lessen significance for certain things and not others in the teachers’ communication?

The use of these three tools allowed for the identification of typical stories (#26) about status, adaptations, identification, experiences, and equity. In this part of the analysis, the story about equity in assessment stood out since the teachers themselves chose to talk about equity even though no question explicitly addressed this. Thus, the story of equity was a typical story (#26) that contained different meanings ascribed to equity (#23) with a language that supported the significance of some parts of this story (#14).

When taking a closer look at the story of equity, four small discourses, through stretches of language, were construed using five tools. These tools were used to analyse the teachers’ intentions with talking about equity and to focus on a more detailed linguistic level:

- **The Why This Way and Not That Way Tool (#9):** Whose voice becomes apparent? What are the teachers’ intentions when they talk the way they do?
- **The Doing and Not Just Saying Tool (#7):** What are the teachers’ intentions when they say what they say?
- **The Subject Tool (#4):** Why do the teachers choose to talk about a specific subject? Could the teachers have chosen to talk about other subjects?
- **The Fill-In Tool (#2):** What is not said? What knowledge and what assumptions are required for communication to be clear?
- **The Deixis Tool (#1):** What is talked about as given, based on the context?

Table 2 should be understood to be circular not linear since the tools from Gee are used more iteratively in the discourse analysis than can be illustrated in a table. In the results section, quotations from the teachers’ talk are used to illustrate the four different discourses.

**Table 2.** An illustration of the process of analysis of small discourses. The examples in the table are of the iterative process and do not present the complete analysis that supports the construction of one discourse (doing the same).

<table>
<thead>
<tr>
<th>Tool #9</th>
<th>Tool #7</th>
<th>Tool #4</th>
<th>Tool #2</th>
<th>Tool #1</th>
</tr>
</thead>
<tbody>
<tr>
<td>The teachers’ intention is all students doing the same during the assessment.</td>
<td>Doing the same contributes to increased equity.</td>
<td>The teachers have chosen to talk about the importance of doing the same in order for the assessment to contribute to equity.</td>
<td>Doing the same expressed as counter-image to the lack of clarity that the teachers experience.</td>
<td>Expressed as positive if all six-year-olds in Sweden do the same during assessment.</td>
</tr>
</tbody>
</table>
**Ethical considerations**

This study follows the ethical guidelines of the Swedish Ethical Review Act (Swedish Research Council, 2017). Prior to the focus groups, all teachers were given detailed information both in writing and orally about the study and agreed to participate by providing their written consent. Additionally, the teachers were informed that they could withdraw from the study at any time without reason and that all aspects of their participation would be confidential.

**Results**

Based on the analysis of stretches of language, four small discourses relating to equity were construed by the researcher: *doing the same discourse; different needs discourse; unclear conditions discourse; and different resources discourse.*

**Doing the same discourse**

One discourse is equity expressed in terms of every student doing the same thing. Doing the same thing does not relate to teaching; rather, it relates to students being assessed using the same assessment material. The teachers describe how mandatory assessment can be understood as every student being assessed on an equal basis; as such, the assessment material improves equity because it is similar for all preschool class students in Sweden.

**Example 1 (focus group 3)**

| Teacher 7 | Yes, everyone in the whole of Sweden focuses on the same thing, so it will be, somehow, it will be … |
| Teacher 9 | Equity |
| Teacher 7 | Yes, exactly. |
| Teacher 9 | It’s not some kind of blah blah here and some kind of blah blah there, but it’s the same thing. |
| Teacher 7 | It’s this, and that’s what we have, the same thing. Then we can always have different literature and books and textbooks. But this is the same thing. |
| Teacher 9 | All students have covered the same thing. |

As illustrated in Example 1 above, the teachers’ communication implies that before this assessment became mandatory, the preschool class varied greatly because teachers were free to choose their own approach to student assessment. The importance of teachers assessing their students more uniformly – i.e. adhering to a national standard – becomes apparent. When talking about students doing the same thing, the teachers are referring to the assessment material; however, they do not explicitly state what parts of the assessment material are the same. This focus group 2 illustrates this explicitly here:
Example 2 (focus group 2)

Teacher 4 To be honest, if we could be somewhat spontaneous and get these two days right away to prepare what we're going to do now, then we could talk. We could talk through things with each other and prepare. Do the same thing.

Teacher 5 Equity. Because now it's more like this: What have you done? So maybe I'll do what you did. And what was your reasoning? There are way too many loose ends. We must, you know, be given time to work together.

Teacher 4 And then everyone will do it well, but it's good if we can talk things through with each other. But that's another issue for equity.

Teacher 5 All three of us plan to work very hard individually, on our own, instead of collaborating and working together.

The doing the same discourse focuses on the students at a group level and on how they are assessed. For them to be able to do the same thing, the teachers talk about the need for more time to collaborate to be effective and make sure that they are all doing the same thing. Thus, equity can be linked to an idea of one correct way to assess students that is initiated and controlled by the National Agency of Education. To be able to assess in this one correct way, all teachers must use the assessment material in the same way – that being the way described in the teacher’s guide from the NAE (2019).

Different needs discourse

A second discourse is about the assessment material contributing to an increased awareness of the different needs that students have when it comes to mathematics. The teachers talk about being used to focusing on students who need support rather than identifying students who need extra challenges.

Example 3 (focus group 1)

Teacher 1 I think one advantage is that you notice quite early on those who need challenges in this part of the semester. Because they are a bit like that; they go with the flow. Often you notice those who need support early on, but you see that some, when you really sit and work with things like this, some have already come a long way and need a bit more. So that you notice them earlier in the term, sort of.

Teacher 3 Good that there is focus on both and on this. You need to find those who have difficulties and those who need challenges.

Teacher 2 That's the best part. Before, we focused very much on the students who need extra support. But this means that we have to find those who need extra challenges. And I for one think that's much harder.

As Example 3 illustrates, teachers imply that before assessment was mandatory, students who required extra challenges had to manage on their own. Given the assessment, the teachers expect a change where students in need of extra challenges will get more attention. However, teachers talk about the challenges that come with teaching students in a way that all students find interesting.
**Example 4 (focus group 4)**

Teacher 11: Yes, it’s challenging to find the right stimulation for each student, to make them enjoy mathematics. To get them interested /...

Teacher 10: I’m becoming much more aware of the enormous range in ability and background of my children when it comes to mathematics. For me, it will, of course, be challenging to continue working with mathematics with all the students in the way you said (teacher 11). It should be exciting and interesting in the future. Mathematics is fun. And so is doing it at different levels. Yes, now I get help knowing who is at what level, but I also get, if I hadn’t gotten this, then it would have been easier for me to provide them with material.

Example 4 illustrates how the task of adapting teaching to students was easier before this assessment was used. What the teachers say about adapting their teaching relates to both the selection of tasks and the teachers’ expectations of their students. The *different needs discourse* focuses on students at an individual level and on how they are taught mathematics.

**Unclear conditions discourse**

A third discourse is a threat to equity because of unclear conditions in assessment preparation. The teachers explicitly express their concern that unclear conditions may result in their being unable to ensure equal assessment. Thus, in this discourse, equity can be understood to be the right of every student to be assessed equally. The teachers’ communication implies that unclear conditions during assessment preparation jeopardise equity (see Example 2). According to the teachers, conditions in assessment preparation must be clear if student assessment is to be equal. Time is one issue that relates to this, something the teachers discuss in different ways: that is to say, time to talk about concerns with colleagues and time to prepare.

**Example 5 (focus group 1)**

Teacher 3: We thought we would get time during the prep days at the start of the semester, but that didn’t happen. Then it’s tough. So we haven’t met up very often. Now we may just work on our own and try. We started to draw up a short schedule, just in case, about how we would set it up to begin with and see how far we get.

In Example 5 above, one teacher explicitly describes wanting to collaborate and draw up a common plan for how to conduct the assessment. The *unclear conditions discourse* can connect to the *doing the same discourse* since both focus on equity related to assessment and students at a group level.

**Different resources discourse**

A fourth discourse is an expressed threat to equity because of different resources when conducting the assessment. There is a difference in how the teachers talk about the
resources available. Some describe themselves as alone and vulnerable, while others describe themselves as prepared and supported by a special needs teacher. This is illustrated by two examples from focus group 4:

**Example 6 (focus group 4)**

Teacher 12  Then you are away for a few days, someone is ill, so you have to get them to catch up. There is a lot of pressure on the individual. And then I’m left thinking that there won’t be equity if it is meant to be mandatory throughout Sweden. Here (referring to another school) you have a whole team. I am completely alone …

**Example 7 (focus group 4)**

Teacher 12  But I also think this. For me there is a difference between maths teaching and this, assessment material. And the disadvantage may be that it will only be assessment material. You may not even try to teach in a different way.

Example 7 illustrates how teachers see there to be a risk that student assessment is not equal because of a lack of resources, which then jeopardises equity. This implies a view of equity as something that can be achieved when every teacher is given adequate resources to conduct the assessment. The teachers’ remarks about the lack of resources describe a risk that the assessment will be nothing more than an assessment and thus an activity isolated from teaching.

**Example 8 (focus group 4)**

Teacher 12  Math, I teach, but this is assessment material. So one advantage will be to use it in teaching, in one way or another, so that it will not be just an isolated activity.

Teacher 10  For me, it’s come to be that we almost immediately have given inspiration and ideas about what we could do. We worked, we assessed patterns, and we continued to work more with patterns in both art and music … and we keep using those patterns in a way I would not have done otherwise.

As illustrated in Example 9 above, the teachers talk about wanting the assessment material to be a consideration in choices made by teachers. These different views demonstrate a contrasting picture within the different resources discourse. What is implied through this discourse is that external factors can prevent the achievement of equity. Similar to the unclear conditions discourse, the different resources discourse can be connected to the doing the same discourse since all three focus on equity related to assessment and students at a group level.

**Discussion**

In this section, the different meanings ascribed to equity will be discussed and elaborated on in relation to previous research.
A changing view of equity

The four equity discourses show how different meanings are ascribed to equity in relation to different perspectives: student or teacher perspective, group or individual perspective, and assessment or teaching perspective. The meaning ascribed to equity in the different needs discourse shows a contrasting image if it is compared to the meaning ascribed to equity in the other three discourses. The different needs discourse can relate to equity described as fairness, where differences related to individual needs are taken into consideration (Espinoza, 2007). When the teachers talk about students’ different needs at an individual level related to mathematics teaching – i.e. equity – they explicitly point out that this is new to them. Thus, it becomes clear that in the past, students who have needed challenges have had to manage on their own. When the teachers instead refer to equity at a group level related to assessment, equity is about doing the same thing – i.e. equality – they point out that they are used to this way of thinking. The idea of assessing students in the same way is about equality – or, as previous research puts in, same treatment (Buchholtz, Stuart, & Frones, 2020; Espinoza, 2007).

Depending on how equity issues are linked to justice – at a group or an individual level – it may give rise to different notions of equity (Secada, 1989). In this study, teachers link equity issues to justice at the levels of both group and individual. The new information that assessment provides about each student, as described in the different needs discourse, affects their awareness of students’ different needs. As a result of this, teachers can adapt their teaching accordingly. Thus, mandatory assessment broadens teachers’ views of what equity linked to justice can mean for early mathematics education. The meaning ascribed to equity in the different needs discourse may, in line with Llewellyn and Mendick (2011), have implications for how teachers approach students in practice when striving towards mathematics education that contributes to equity.

‘Assess in the right way’, a threat to equity?

The doing the same discourse, unclear conditions discourse, and different resources discourse, when taken together, imply a view that equity can only be achieved if all teachers use the assessment material in the same way – that being, the way described in the teacher’s guide from the National Agency for Education. The expression “assess in the right way” indicates that teachers have the impression that there is only one correct way to conduct the assessment. The teachers talk about a risk of the assessment material not contributing to equity. Similar concerns have been raised by Bagger, Vennberg, and Björklund Boistrup (2019), who highlight how the assessment material may not affect equity as intended, because it only assesses part of the curriculum. In contrast, the teachers in this study also highlight how the assessment material may not affect equity as intended – based on a risk that teachers do not conduct the assessment in the same way due to a lack of clear conditions related to preparation and resources.

The view that “fair assessment” is something that can be achieved only if all students are assessed on the same basis can also be found in previous research (Black & Wiliam, 2004, p. 185). However, previous research makes clear that assessment that contributes to equity does not necessarily mean that students are assessed on the same basis (Bagger, 2022; Björklund Boistrup, 2017; Slee, 2018). Instead, assessing students on the same basis might
lead to the exclusion of students with special educational needs as these assessments sort and label all students, both at an individual level and at a group level (Björklund Boistrup, 2017). If these students are hindered in their participation in assessment situations, this may lead to their exclusion from participating in learning (Bagger, 2022).

In the different needs discourse, an increased awareness of students’ different needs is apparent. However, such awareness is clear only in what teachers say about teaching, not in what they say about assessment. Instead, their talk about assessment as contributing to equity implies that all students must be assessed in the same way. It does not seem necessary to adapt assessment to the individual needs of students during the assessment itself; however, after the assessment there appears to be a need to do so. In this regard, when the view of equality (Espinoza, 2007) includes talk about how to prepare and conduct assessment in mathematics, there is a risk that students with special educational needs are excluded during assessment situations, which in turn may affect these students’ participation in teaching (Bagger, 2022).

The teachers express a concern about there not being sufficient time to collaborate with colleagues so that there can be a common understanding of the assessment material. Instead of collaborating with colleagues, the teachers talk about being pressured into prioritising assessment of students in the right way following the teacher’s guide from the National Agency for Education (2019). Previous research on the assessment material presents a somewhat negative view of the material. Rather than serving to increase equity, the research suggests that the material may have the opposite effect. Indeed, it further suggests that it is unclear how assessment results are to be used and that only parts of the mathematical content in the curriculum are assessed (Bagger, Vennberg, & Björklund Boistrup, 2019; Walla, 2022). In contrast, the teachers indicate that they view the material positively as it has inspired them and given them new ideas. Thus, the teachers do not question the usefulness of this mandatory assessment material; however, they do question the unclear conditions related to preparation and different resources when it comes to conducting the assessment.

**Conclusion**

To conclude, this study shows that teachers ascribe different meanings to the Swedish term likvärdig. A question that then needs to be posed is, what consequences may these different meanings have for early mathematics teaching and learning? As discussed, this confusion between equity meaning fairness and equity meaning sameness is apparent in previous research (Gutiérrez, 2012). The findings of this study show that the mandatory assessment material raises questions as to the notion of equity among teachers. These issues have been discussed among researchers for several years, and the findings show that this is a relevant discussion for teachers as well. However, the teachers talk about the meaning of equity in different ways depending on the situation, which may have consequences for educational practice. This can be related to research on the Nordic model of schooling that highlights uncertainties about whether the issues addressed by educational measures are inequality or inequity issues (Espinoza, 2007; Frønes, Pettersen, Radišić, & Buchholtz, 2020). Equity in the sense that all students must be assessed in the same way does not consider the different needs of young students in assessment situations. Thus, diverse meanings ascribed to equity may have implications
for the degree to which assessment contributes to equity. This is especially the case when it comes to students with special educational needs, since hindering these students from participating in mathematics assessment may lead to their exclusion from participating in learning situations after the assessment (Bagger, 2022). Even if the education that students receive after assessment is in line with equity meaning fairness, the planning of this education is based on equality meaning sameness – an assessment where students’ differences are not taken into consideration.

In line with describing the teachers’ meaning of equity as a developing view (Nasir & Cobb, 2006), the discourse analysis of this study provides a here-and-now picture of these teachers’ shared meanings of equity. Thus, it is not possible to say anything about how the assessment will affect how teachers’ views of equity will change after several years of conducting this assessment.

**Limitations**

Since there are different ways to assess students’ knowledge, it is important to emphasise the connection between the type of assessment explained in this study and the four discourses construed in the results section.

**Disclosure statement**

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**Notes on contributor**

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