

A Mathematics Teacher's Storylines About CME-Teachings, Mathemacy and Newly Arrived Students' Mathematical Competence

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Abstract

This article highlights storylines that have emerged during interviews with a teacher who is trying out Critical Mathematics Education in his multicultural and multilingual class of 10th grade students. The aims for the sessions were to create learning environments that promote the interdisciplinary topics Democracy and citizenship education [Demokrati og medborgerskap] and Public Health and Life Mastery [Folkehelse og Livsmestring] in the new mathematics curriculum in Norway, Kunnskapsløftet 2020. We believe that the storylines presented in this article are significant for developing mathematics education and future curricula to better correspond with the democratic society that students encounter outside of school.

Keywords: Critical Mathematics Education, Critical Research, Storylines, Social Rights, Democracy

Introduction

For our master's theses, I, Kaja (a Norwegian math teacher and first author), and Hasse (Høyer-Hansen, 2021) used action research to try out sequences of action research in Hasse's multicultural and multilingual 10th grade classroom. While Hasse is concerned with the students' perspective, this article comprises four storylines drawn from the data material and addresses the teacher's perspective (Burt-Davies, 2021). We worked closely with our supervisor, Annica, who is a coauthor of this article.

This article is located at the intersections of mathematics education, cultural responsiveness and a particular focus on the new interdisciplinary topics Democracy and citizenship education [Demokrati og medborgerskap] and Public Health and Life Mastery [Folkehelse og Livsmestring] in the new national curriculum in Norway, Kunnskapsløftet 2020 (Ministry of Education and Research, 2019). Within mathematics, the emphasis in these two topics is placed on the development of competence in exploring, analyzing, and assessing

real data sets related to nature, society, working life and everyday life, competencies that are considered important to defining arguments and participating in public debate. Furthermore, the subject of mathematics shall make students aware of assumptions and premises for mathematical models related to their own lives and society.

According to the Norwegian white paper on education, Meld St. 22 (2010-2011), many students have a difficult relationship to and with mathematics. This can, in part, be explained by the current teaching methods putting too much emphasis on techniques and procedures, contributing to students experiencing mathematics as something you are obligated to do, not something you envision, imagine, nor discuss (Seah et al., 2016). This may be related to the fact that what we traditionally know as (school) mathematical activities do not relate to real life experiences typical of our communication-driven society (Sfard, 2013). This results in education distanced from students' reality – making it challenging for students to participate in mathematics activities (D'Ambrosio, 2001).

Skovsmose (1998) illustrates that mathematics has a two-sided role. Mathematical competence is a tool for understanding and changing society. To describe and develop technology, and to limit and avert crises, mathematical competence is needed. Since mathematics is often "invisible" in social structures (Criado-Perez, 2019; O'Neil, 2016), good analytical tools are needed to capture and understand the mathematics that is "encapsulated" in, for example, political arguments or technology. Skovsmose terms this analytical process *mathematical archeology*, requiring mathematical competence, the ability to analyze critically, and understand. Developing such a mindset requires contextual exploration, understanding, and learning. In addition, it places mathematics in a sociopolitical context.

Biesta's (2017) goals for education may be used as a starting point for the competence we believe is important to achieve the goals in the interdisciplinary topics. Biesta describes the school's goals as three-dimensional; qualification, socialization and subjectification. The

qualification dimension is about equipping students with knowledge, skills, and abilities, and can be linked to the school's educational mission. The second dimension is the socialization dimension, focusing the school's responsibility to form or initiate students into existing social, cultural and political practices and traditions. It is about how we are incorporate into existing orders and contribute to building identities that are connected to society. Biesta calls the third dimension the subjectification dimension. This dimension is about human freedom, and about possessing the competence to create change for oneself in society, hence becoming.

As part of our investigation of how mathematics can enhance students' awareness of assumptions and premises for mathematical models related to their own lives and society, the rights of minority groups, and the development of democracy, we asked:

What storylines emerge in conversations with a mathematics teacher in a multicultural classroom, where the teacher aims to prepare students for participation in a democratic society with teaching inspiration from Critical Mathematics Education?

Critical Mathematics Education

Thoughts from Critical Mathematics Education (CME) provide the theoretical framework for this project. CME is “driven by urgent, complex questions; is interdisciplinary; is politically active and engaged; is democratic; involves critique; and is reflexive and self-aware” (Andersson & Barwell, 2021). The principles of CME are derived from traditions of Freire (2011; Freire & Macedo, 1987) and Foucault (1972; 1984). Common for these traditions is focus on the ability to use mathematics as a tool for comprehending and influencing social concerns and discourses. Additionally, Skovsmose (1994; 1998; 2001) and Mellin- Olsen's (1987) research has provided insights on mathematics education and learning activities for the advancement of critical thinking.

Mathemacy and Biesta's Three Dimensions

As mentioned, the qualification dimension is about equipping students with knowledge, skills and abilities (Biesta, 2017). Within CME, the complex concept of mathemacy is being used concerning mathematical skills combined with competence to interpret and act in social and political situations structured by mathematics (Skovsmose, 2001). The first sub-competence, *mathematical knowing*, is linked to formal mathematical skills and encompasses mathematical thinking and algorithmic calculation. The second sub-competence is *technological knowledge*, which entails comprehending and using mathematical skills to construct and use mathematical models. The last sub-competence is *reflective knowing*, a critical activity that is about understanding processes related to social development and being able to reconsider what's going on (Skovsmose, 1998). If mathematics education is to achieve a critical dimension, the development of reflective competence is required (Skovsmose, 1994).

Biesta's (2017) second dimension, the socialization dimension, concerns introducing students to existing practices and traditions, and to build identities that connect to society. Students access social discourses when they connect to society. The intersection between the interdisciplinary topics Democracy and citizenship education and Public Health and Life Mastery (Ministry of Education and Research, 2019), the socialization dimension, and CME help this process.

Discourses, according to Foucault (1972), are a way of thinking within a group that has been assigned as function or a rule. Discourses can only be understood by analyzing sets of relationships (Fairclough, 2013). This means that to understand and define a discourse, one must understand factors that contribute to shaping the discourse. Recognition is the key to discourse; if you combine language, interaction, attitudes, ideas, symbols, objects, and tools in such a manner that others recognize you as a specific sort of person engaged in a specific

action, you are a member of the discourse and bring it forward. We represent discourses, we exercise them, and we carry them (Gee, 2014). Foucault (1984) analyzed the connection between power and knowledge in society, as well as the unwritten rules that affect this relationship. Foucault called these rules “the regimes of truth”. The regimes of truth manage what is acknowledged as true or dismissed as false, as well as who is authorized to make such distinctions (Jurdak et al., 2016, s. 11). What we take for granted, and have seen as true ideas, shape our relationships with others and have a significant impact on people's degree of social power and social influence.

Given Biesta's third dimension, the subjective perspective; education shall ensure that people can free themselves from existing orders, it is critical that education provide students with opportunities to participate in discourses. This can be accomplished through students developing a sense of awareness, understanding, and ability to act. To meet Biesta's three-dimensional goals in mathematics education, we must facilitate students to develop competence that allows students to participate, change, and free themselves from discourses.

A Mathematics Classroom That Encourages Democratic Participation

CME promotes that the mathematics classroom should be a micro-society that encourages the development of democratic principles (Skovsmose, 2001) and agency, as well as the contextual opportunities that various individuals take or get in various circumstances (Herheim & Eskeland, 2016). Lack of agency may have a negative influence on society since it restricts the possibilities for the development of democracy (Sfard, 2013). Learning processes are created by the discourses that are formed in or invited into the classroom and demonstrate desired attitudes and ways of thinking. Furthermore, because agency and identity are shaped dialectically within the context of culture and relationships through everyday activities and events, classroom discourses have an impact on students' identity and agency (Holland et al., 1998). CME promotes student activity in a dialogue- and problem-based

environment that allows students to express themselves and to act on their knowledge, giving students opportunities to act as citizens (Gutiérrez, 2013). Mellin-Olsen (1987) promotes communication as an inseparable part of learning activities, because communication is a tool for sharing ideas and developing strategies, thus also a tool for carrying out projects. The language can be described as the link between who we are, what we do and what we say (Gee, 2014).

The common situation today in Norway is that classrooms consist of students who speak a variety of languages and belong to various cultural groups. This implies that dialogue and communication techniques are necessary. In order to create learning opportunities for both language and mathematics, it has been crucial for us to use language as an organizing element in our project. Planas (2016) refers to this as using language “as resource”. Like Halai and Clarkson (2016) and Lampert & Cobb (in Erath et al., 2018), we believe that norms and discourses that advocate language as a resource, allow language to become a path to learning, and learning to become a path to language.

Storylines

This article is based on a mathematics teacher's storylines about community-oriented mathematics teaching. A storyline is a culturally shared narrative, a life story created by life experiences and the culture that has shaped the individual, but it can also emerge or be invented when people interact (Herbel-Eisenmann et al., 2015; Wagner & Herbel-Eisenmann, 2009). Storylines serve as a starting point to the positions that exist in the individual's life, and shape what positions are made available to the individual (Herbel-Eisenmann et al., 2016). Positioning, as used by Davies and Harré (1990), is the discursive process whereby selves are located in conversations as participants in jointly produced storylines. The positioning of individuals can be done through participatory means, in which one individual position another. Additionally, one can position oneself reflexively. Thus, people are positioned or

position themselves in storylines based on assertions about relevant personal qualities and continuous discursive processes in terms of rights and obligations to act (Harré et al., 2009).

Methodology

Research Context

This article is the result of a nearly year-long participatory research (Morales, 2016) collaboration between Kaja (researcher) and the informant Hasse (teacher). Hasse was selected for this project due to his enthusiasm for society-oriented mathematics. His opinions most likely have a direct impact on the storylines that have emerged. However, given the interdisciplinary topics Democracy and citizenship and Public Health and Life Mastery, and the shift of focus in mathematics education with reference to the new national curriculum (Ministry of Education and Research, 2019), we think it's essential to promote Hasse's perspective on mathematics teaching.

Hasse and his 10th grade class were selected for this project due to Hasse's particular interest in society-oriented mathematics, and his employment at a multicultural, reception school (a school for newcomers) in the south of Norway. About half of the students in Hasse's class have different cultural backgrounds, including second- and third-generation immigrants. Different languages are represented, including Tigrinya, Swedish, Polish, Finnish and Lithuanian, and several of these students have less education than what is expected in the Norwegian educational system.

Critical Research

Four days of classroom observation and two interviews were extracted to compile the data for this article. The research was carried out using the critical research approach proposed by Skovsmose og Borba (2004). This model is built on a collaborative and participatory relationship between teacher and researcher with the goal of changing practice.

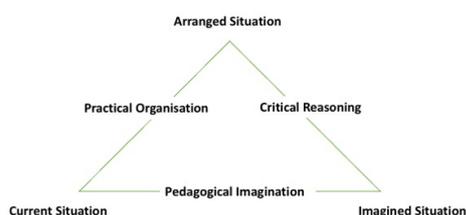


Figure 1 Model for Critical Classroom Research
(Skovsmose & Borba, 2004, p. 216)

Critical research is not just examining what is happening, but also assessing what may have happened and what might be imagined as possible alternatives to what is happening. It is all about figuring out what does not exist and what may have been.

The project's framework is depicted in Figure 1. The *current situation* was Hasse's classroom before the project started. The *ideal situation*, our vision for practice transformation, was created through collaboration between Hasse and Kaja considering CME, with the long-term aim of supporting students to gain a better level of mathemacy. During the phase in which we discussed the ideal situation, called educational imagination, we envisioned our goals. The *arranged situations* in this project are practical alternatives that have evolved because of our development work, carried out based on the *ideal situation*. The environment establishes frameworks for *pedagogical exploration*, which is a pragmatic and practical version of *pedagogical imagination*. Pedagogical experimentation can be thought of as a representation of *pedagogical imagination*. As a starting point for critical research, a

critical reflection, is required. It is about reflecting and drawing conclusions based on pedagogical practice in the arranged situation.

Current Situation, Hasse's Description (December 2020)

Problem solving, assignments, and class discussion occupy the majority of students' time in the classroom. The class discusses mathematical topics a lot, and a common topic of discussion is how to approach and solve problems, as well as how to determine the "right" strategy for getting to the answer. Academically, the class is divided. A group of boys with a strong work ethic and competitive nature push each other; several of them aspire to work in finance, while others aspire to become engineers. Most of the boys are focused on getting good grades. The girls in the group lack self-confidence. Many girls lack drive and will not pursue careers needing mathematics. They do not see the value of mathematics and claim that they do not discuss it outside of school.

The Imagined Situation (January 2021)

We (Kaja and Hasse) aimed to increase the students' mathemacy (Skovsmose, 1994) and awareness of the function of mathematics in society by combining subjects from the interdisciplinary topics "Democracy and citizenship" and "Public Health and Life Mastery" with competency goals from the mathematics curriculum. The overall goal for the research and for Hasse's teaching this semester hence was to provide students with experiences of CME. As a starting point for this work, we tried to see the classroom as a micro-society that supported development of democratic values (Skovsmose, 2001). To assist the students' development of agency, a strong emphasis was placed on exploratory learning through dialogue and collaboration.

Arranged Situations and Observations

The purpose of the observation was to look at how the teacher fosters democratic formation in mathematics classes. Kaja kept brief, straightforward field notes during the

observations (Bryman, 2015) and was passive in her function as an observer. The findings of the observations were then used to create semi-structured interviews.

Arranged Situations 1 and 2; Salary and Gender Equality

The first two days of the arranged situations were focused on salary and gender equality. The students had previously studied economics and had a basic introduction to budgeting and Excel. Exponential growth was the focus of the lessons. Hasse showed how to calculate the growth factor for Housing Saving for Youth (BSU, Store norske leksikon, 2022). Following that, each student was given a post-it note with a monthly amount based on an average salary. The boys received the average monthly salary for men (NOK 51 630), and the girls received average wages for women (NOK 45 190.) (CORE – Senter for likestillingsforskning, 2021). The students were given the responsibility of calculating their own income in ten years, with an average salary increase of 2.2 percent (Statistisk sentralbyrå, 2021). During the lesson, one student referred to Hasse as a racist, as he discovered that some students were paid less than others. Through discussion the students eventually realized that their pay had to do with gender, not skin color. The girls objected, calling this obscene, and questioned whether it was true. Hasse presented the CORE website and showed that women generally make 89 percent of an average man. Following that, the students were given the task of modelling salary growth for men and women in the future, considering how much and how rapidly women's salaries should rise to close the wage gap. Realistic proposals were required. Hasse believes that this topic contributed to a greater understanding of actual distinctions in today's society.

Arranged Situations 3 and 4; Social Equality and Global Economy

The students worked for two days engaging in a statistics assignment about social equality and global economy. Initially, the class was divided into continents, and using Excel calculations, the students were assigned to their respective continents' inhabitants. Chocolate was used to represent the wealth of the world. When Hasse asked how the chocolate pieces

should be distributed, the students concluded that it was fair that each person received one piece. Hasse explained that the chocolate should be distributed across the continents similar to how wealth is dispersed throughout the world and encouraged the students to determine how much chocolate each continent should receive. Following that, the chocolate should be distributed to the citizens (students). Students who received a minimal amount thought the distribution was unfair, while those who received a large amount found it difficult. Following that, the students worked on assignments about global wealth distribution and the amount of people living in poverty. They used GeoGebra to develop a regression model to predict when the UN Sustainable Development Goals to end extreme poverty and hunger will be met. The session ended by looking at how Covid-19 pandemic has affected the timeline for eradicating extreme poverty.

Interview

Two Zoom interviews with audio recordings were used as additional data for this article. The interviews had a narrative form (Bryman, 2015), allowing Hasse to offer teaching examples and experiences of the arranged situations. Kaja's observations and the collaborative curriculum development served as a common reference point, allowing Hasse and Kaja to better understand one another. During the interviews, personal views of mathematics teaching emerged. The collegial relationship, in Kaja's experience, resulted in the informant daring to show his involvement and having the desire to convey his unique perspectives.

Extracting Storylines

In this article, storylines are used to bring out Hasse’s narrative about teaching. To identify Hasse’s storylines, a four-step process was carried out (figure 2). The first step was to

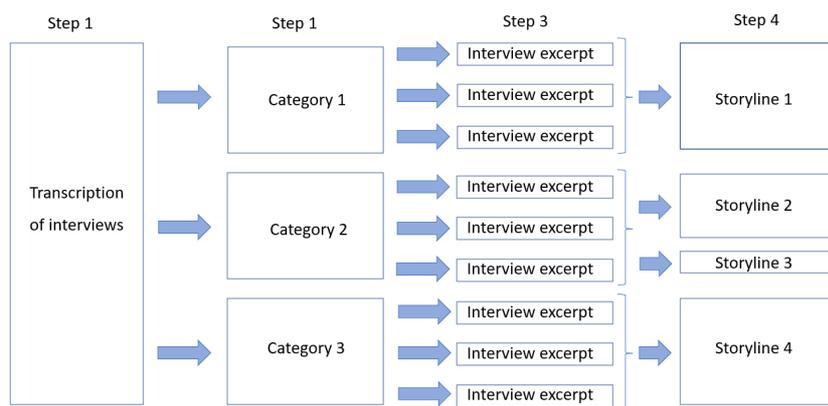


Figure 2: The process of extracting storylines

transcribe the interviews, and the second was to organize the excerpts by topic. Finally, the extracts were separated into new categories and grouped into four different storylines.

Results and Discussion

In answer to the study's research question, the analysis of Hasse's interviews provides the following four storylines.

Storyline 1 "Mathemacy is a competence that enables individuals and groups to assert their rights in society"

This storyline has a close connection to the first paragraph of the Education Act "Students and apprentices shall develop knowledge, abilities and attitudes in order to master their lives and to be able to participate in work and community in society" (The Education Act, 1998, § 1.1). According to Hasse, it is about having enough mathematical knowledge to be able to think critically.

Hasse: That they [students] adopt a critical mindset, that they can reveal and question events that occur around them or in others, since they have learnt to ask, "why is it like that?" rather than simply accepting something because someone said it.

A critical mindset can be developed by asking questions. To enhance the development of critical abilities, education and learning conditions must contribute to raising students' awareness of factors that have an impact on their lives. Through questioning, students must analyze, evaluate, and assess contextual relationships, and decide whether to accept answers and explanations. It also includes having access to and comprehending what Foucault (1984) labeled "the regimes of truth" and how society's power dynamics operate. When evaluating relationships, it is possible that something is unclear or does not match students' convictions. In such a setting, it is possible to see through and reject other people's claims. When you possess a high degree of mathemacy, you will be able to:

Hasse: [...] reveal argumentation. It is easy to be overlooked by someone who seems to know more than you, but having a high degree of mathemacy allows you to make critical points and nuance the debate.

Hasse: It [mathematics] is quite weighty compared to an emotional argument. Because you have nothing to line up with in contrast to the statistics that are so obvious, you may feel inferior to people who are skilled with numbers and have calculations, percentages, and charts... it [mathematics] can be viewed as a stronger voice.

Taking agency also necessitates a critical mindset and the ability to construct and see through arguments. Because agency is dependent on people's abilities in various situations, a person or a group with a high level of mathemacy will be able to exercise more agency. A person who feels inadequate may lack the strength to take action, thereby impacting individuals and society as a whole in a negative sense (Sfard, 2013).

Critical attitude, argumentation competence, and agency, according to Hasse, are fundamental for establishing mathemacy. This creates more freedom for movement in society's development:

Hasse: Politicians utilize mathematics as a source of power. Citizens with mathematical skills can increase their commitment and refuse to accept their arguments.

In the quote, Hasse discusses how mathematical knowledge can help people enhance their positions in political decision-making. There are parallels to democratic philosophy, in which citizens have equal rights and actively participate in society's development. Similar ideas also serve as the foundation for storyline 2.

Storyline 2: "Mathemacy is important for understanding how mathematics can be used as a means of power"

This storyline can be linked to the fact that mathematical arguments are perceived as strong arguments. It emphasizes the necessity of education in developing critical awareness so that students can develop or liberate themselves from existing discourses (Biesta, 2017). In order to succeed, students must comprehend the dual role of mathematics (Skovsmose, 1998).

Once you understand, you can make changes. This is how Hasse describes it:

Hasse: Someone practices or... influences others by referring to surveys and statistics, probabilities, or other facts, and then it becomes a... some people use it as power, but I believe it is equally important to be able to reveal it, and to think that ok, one must be critical, not just accept everything right away.

Hasse: Mathematics, in that sense, can be a source of power. There are countless examples, especially in politics or when negotiating salaries with your boss at work. Knowing something about numbers, comprehending, knowing something about interest rates, and knowing something about growth in a sense, can help you to not being deceived.

The quote illustrates the power of mathematics. This viewpoint is crucial in various discourses because critical thinking can assist people in comprehending how various ideas are presented. Hasse illustrates how the universal power of mathematics is employed as evidence in the following quote:

Hasse: Mathematics is utilized as a power factor since it provides an "answer" quickly. It's difficult to argue against it. So, mathematics is a really powerful language, especially when you see and experience it in newspapers, in discussions, mergers, and politics. It can be used as proof, argument, or claim.

So far, the storylines indicate that mathemacy may help people gain access to societal and political discourses and to understand “the regimes of truth” (Foucault, 1984). But how can education encourage development of mathemacy and agency, the tools needed to access social discourses?

Storyline 3 "The activity in the mathematics classroom must merge with society to provide students with opportunities to develop mathemacy and agency"

Storyline 3 focuses the classroom's micro community having to represent the larger community outside of the classroom (i. e. Mellin-Olsen, 1987). For Hasse, it is about:

Hasse: ...bringing society into the classroom so that school isn't a closed environment, and what happens outside here, in your free time, is a different kind of life, but that the two worlds combine in some manner. As a result, students don't have the experience of sitting in a classroom and then learning something that has nothing to do with the life they live or will live.

This quote can be interpreted in two ways. The first dimension focuses on connecting learning activities to life outside of the classroom. Hasse believes that to succeed, you must:

Hasse: Connect percentages, graphs, functions, budgets, and everything else to reality. It's also important to understand how democracies work. To comprehend this, you must be ready to execute some math; nevertheless, you should not think of it as math; rather, it is more about life...

Mathematics education can provide a foundation for building knowledge of society's hidden mathematics using real numbers (Skovsmose, 1998), which was the purpose of the curriculums used in this study. During the interview, Hasse indicated that students had inquired about and discussed social distinctions as well as the global economy, hence demonstrating commitment.

Hasse: ...many claim that they were unaware that it was so unjust, and the girl that was North America who received five pieces of chocolate all to herself developed a guilty conscience that she couldn't share [...]. Another student stated that she had captured the world of mathematics.

The second dimension of storyline 3 is that classroom activities should be similar to activities in society and workplaces.

Hasse: In our classroom, there isn't much of a difference between the classroom and the outside world in terms of choices, topic, and conversation. [...] The idea is that the students shall realize that what happens in the classroom has an impact outside of the classroom.

Hasse explains that he wants students to experience different opportunities in the classroom, such as in society. For the classroom interaction to work, Hasse highlights some values that are particularly important:

Hasse: They should be allowed to be citizens in a sense, that I do not run the classroom as a dictatorship, but rather as a democratic community, where one can say something without fear of being criticized or voted down, but that one is in fellowship with the others, and that compromises must be made.

The agency concept occurs between the lines. In storyline 1, agency was associated with knowledge, however in this context, it is associated with classroom social engagement.

Hasse: Agency is a gift I would like to provide to students. I consider that agency refers to the flexibility, opportunities, and framework that students are given, but it is also vital that they use it, so that there is a dialogue between me and the students about what we can gain out of a class.

Hasse: It seems to me that it [agency] has a lot to do with motivation. I believe that the fact that they can take responsibility and control in the classroom makes it more real and meaningful for them, and that when they are participating in their own learning process, the learning environment and intensity improves.

Hasse encourages cooperation and communication to help the students practice taking agency. This also supports Hasse's perspective on the use of language in the classroom.

Storyline 4 “For multilingual students to gain a good conceptual comprehension, it is critical that students are permitted to utilize their own language in the mathematics classroom”

Hasse: I want students to work together, discuss and talk about math. I want them to assist one another, explain things to one another, and work together with learning partners or in bigger groups.

More than half of the students in Hasse's class speaks more than one language and the students' knowledge of the Norwegian language differs. Students are given the chance to use other languages than Norwegian, acknowledging language as a resource (Planas, 2016). Hasse believes that strong language abilities are essential for reaching all students. In Hasse's classroom, language is a path to learning mathematics, and mathematics learning is recognized as a path to language (Lampert & Cobb i Erath et al., 2018; Halai & Clarkson, 2016).

Hasse: Several students use classmates as interpreters so that messages and stuff may be translated.

Hasse: [...] It is the class that helps each other to correct each other to a large extent. And it is easy for help, and it is understandable if it is a word or concept that one does not fully comprehend.

Kaja regularly highlighted in the observation field notes that Hasse urges students to engage in dialogue; "...speak to one other about...". By participating in discussions, Hasse was actively engaging his students.

Hasse: It is impossible to learn if you are sitting alone on a desert island in a classroom; the best learning scenarios occur in the group, in dialogue, in discussion, and in supporting each other.

Hasse: I overhear students discussing and questioning one another about their understanding of certain ideas. They're constantly explaining concepts to one another. As a result, there is a win-win situation where some students put what they know into words and other students learn from them.

Because mathematical concepts are required to understand the significance of mathematics in society, conceptual comprehension is essential to developing mathemacy. Making oneself understood in class, may be a preliminary step for participation in public debates. Hasse's form of teaching, in Kaja's opinion, make it safe and comfortable for students in class. The students interact with each other and mathematics in a friendly environment. The fact that students who are not proficient in the Norwegian language of teaching are allowed to speak their own language, can make them feel safe.

Closing

It is our understanding that educational institutions have a responsibility to facilitate the development of knowledge and critical awareness, so that students can recognize, understand, and engage freely in societal discourses, and to enhance the development of our democracy. Additionally, educational institutions must enable students to free themselves from and access existing discourses. This article demonstrates the storylines, shared by a teacher, who implements an expected democratic mandate from the national curriculum in a multicultural mathematics classroom. We consider it necessary to listen to teachers to develop mathematics education for all students, and that the storylines accounted for in this article are an important start of this work. This analysis, along with the students' storylines (Høyer-Hansen, 2021) has the potential to impact the educational sector in Norway, and the political conversation surrounding mathematics education, particularly in receiving classrooms where students do not yet fully understand the language of instruction and the culture of Norwegian education. The teacher's storylines also indicate a potential of a CME teaching in reception schools.

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Commented [AMS1]: Changed from "chapter in book" to "book".

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