

NORSMA10

Workshop

4. november, 2021



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Nasjonalt senter for matematikk i opplæringen



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What to do?

- Work with some of the activities from the online resources.
- The activities are related to observing and developing students' strategies in computation.
- Discussion about how this kind of work will strengthen the team around the child.

Through the workshop you will work in groups and take part in plenary discussions.



The team around the child and professional development

- Background
- Online resources
- Exampel of modules

National strategy for science subjects

Four targets

- Improve children and youths competence in science subjects
- **Reduce the number of low-achieving students in mathematics**
- Increase the number of students who achieve on high and advanced level
- **Increase teachers competence in science subjects**



Our task

In cooperation with Statped we have:

- Developed online resources for competence building
- Arranged annual network-conference

Target group

- In-service teachers
- The educational and psychological counselling service (PPT)
- Teacher educators



«Sammen om oppdraget 2021»



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What decisions did we take?

Research

- Special needs education in Norway
 - Individual
 - Expectations
 - Students did not get better

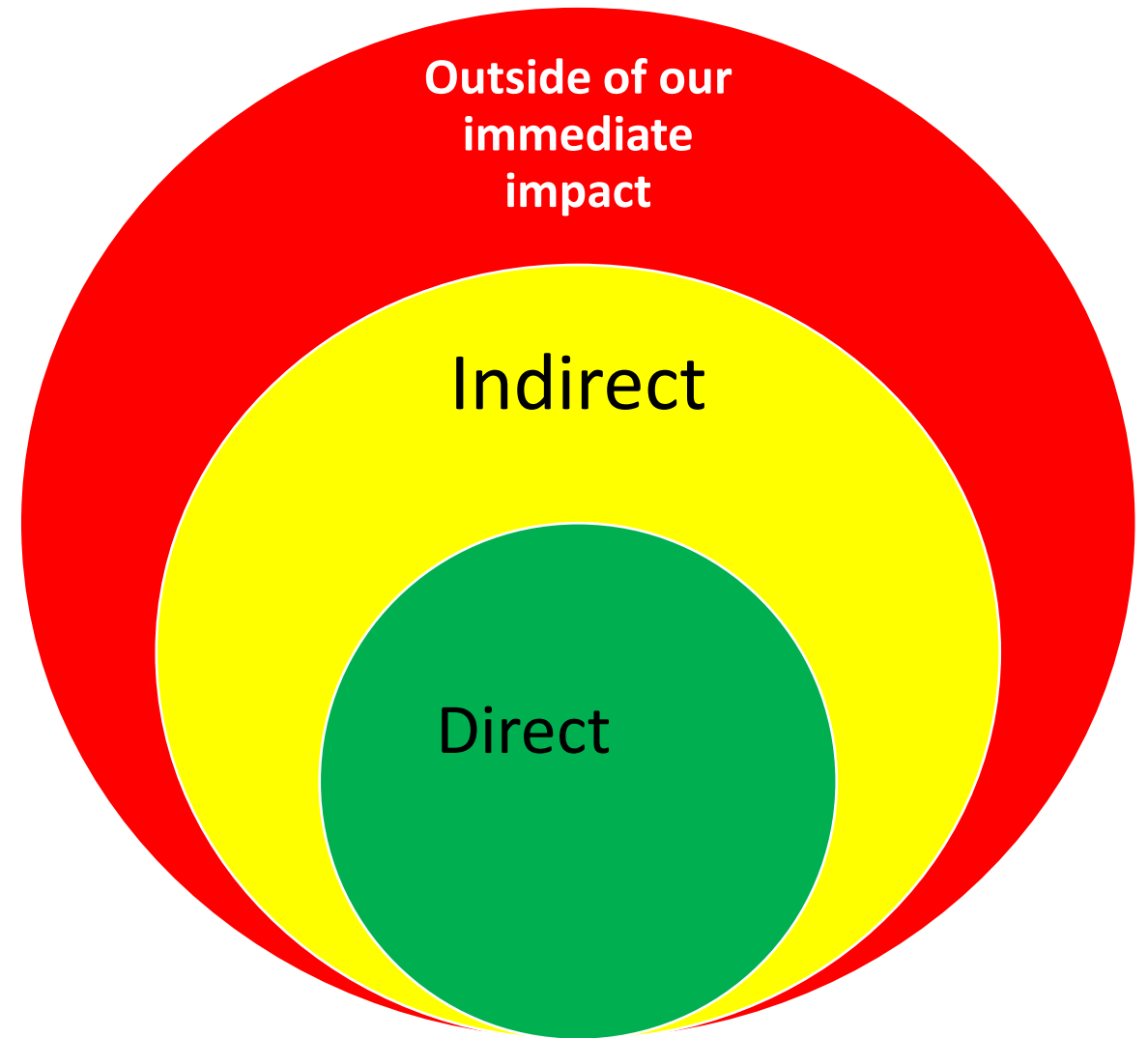
View of

- Students
 - All students can learn important mathematics
- Mathematics
 - Inquiry-based teaching
- Math difficulties
 - System rather than individual



What can teachers change?

- Student?
- Parent?
- Curriculum?
- School environment?
- Schedule?
- Instruction?
- Teacher?
- PPT?



Mathematics difficulties and differentiated instruction



Om matematikkvansker og tilpasset opplæring

Vil du få flere elever til å mestre og engasjere seg i matematikk? Matematikksenteret og Statped har utviklet ressurser for lærere og ansatte i PPT for å utvikle og styrke kompetanse og samarbeid om elever som har behov for ekstra støtte i matematikk.

About mathematics difficulties and how to deal with the diversity.

How to get students engaged in mathematics?



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[Matematikkvansker og tilpasset opplæring | Matematikksenteret](#)

Structure

1. How to start?
2. Assessment tools
3. Follow-up assessment
4. Mathematics for all students



How to start?

PPT

Module 1
Difficulties in
mathematics
– what does it
mean?

Module 2
Investigate the
school's
assessment and
follow-up practices

Module 3
Be inspired to
include



Assesment tools

Module 1
Mapping test «Alle
Teller»

Module 2
Observe students'
thinking

Module 3
Interview to
discover
misconceptions

Module 4
Dynamic mapping



Follow-up assessment

Module 1
Follow-up mapping
test

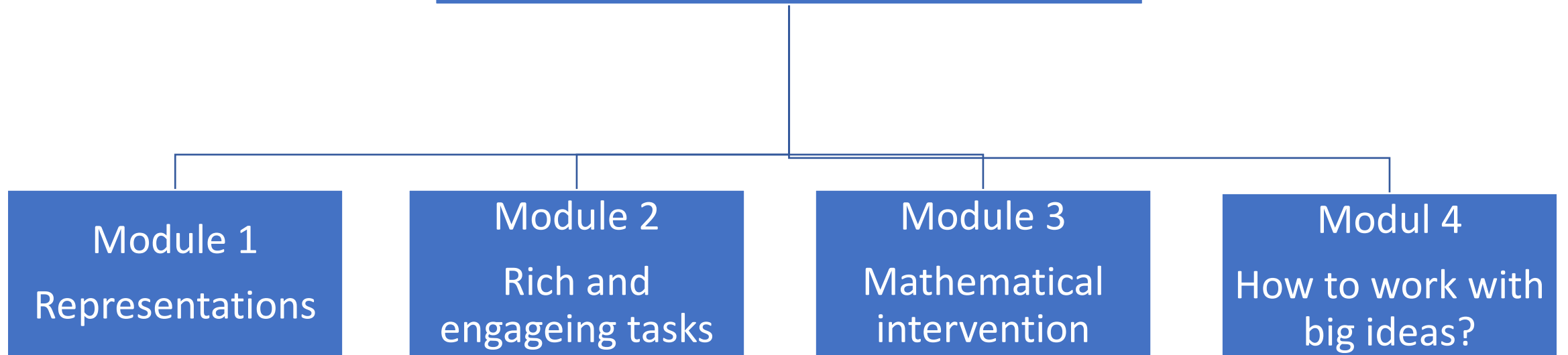
Module 2
Develop
students' strategies

Module 3
Use diagnostic
tasks

Module 4
Make students'
thinking visible



Mathematics for all students



What`s the goal with the recourses?

We want teachers and employees at PPT to

- develop some common tools for assessment and how to follow-up
- develop a common language
- be curious about students´thinking
- focus on what students´can do, rather than what they can not





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Assessment tools

Module 2

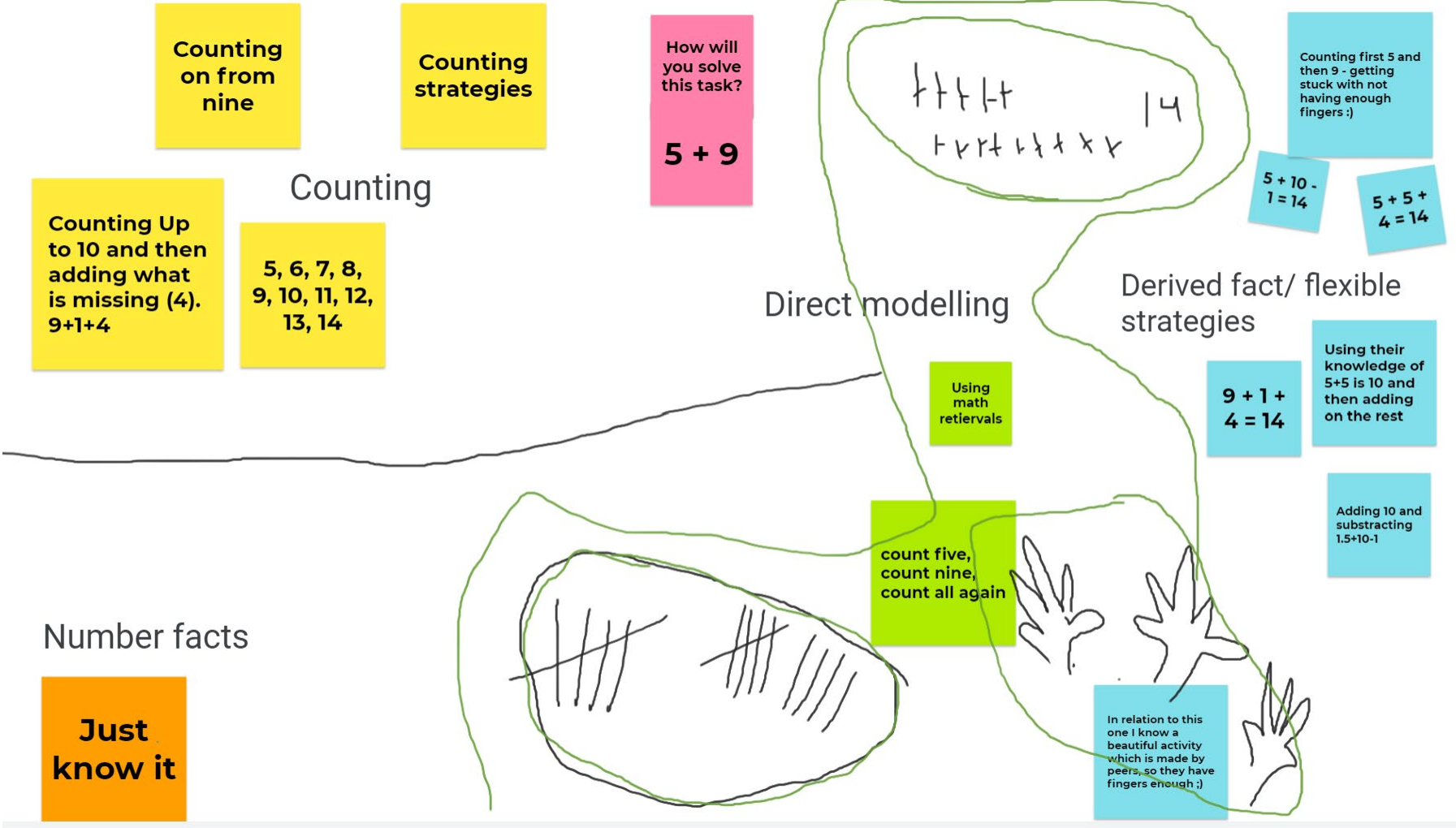
Observe students' thinking

How will students solve $5 + 9$?

- Write different solutions in [Google jamboard](#)



Jamboboard from Workshop



What can you say about the students' thinking?

While you watch the videos, take some notes:

Name	Task	Describe what the students did	Strategies
Magnus	$5 \cdot 7$		
Ragnar	$5 + 9$		
Magnus	$16 - 7$		
Maya	$56 : 8$		
Karianne	$5 \cdot 7$		
Magnus	Problem		





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Follow-up assessment

Module 2

Develop students' strategies

Number Strings



GOAL:

After 2. grade the students are supposed to explore the commutative and the associative property in addition and use it in mental calculation



Number Strings

198 + 7 198-199-200-201-202-203-204-205 (fingers)

$$198 + (2 + 5) = (198 + 2) + 5$$

$$198 + (10 - 3) = (198 + 10) - 3$$

$$198 + 2 + 7 - 2 = 200 + 5$$

$$190 + 8 + 7$$

198	7	
198	2	5
198	2	5
200	5	
205		

199 + 13

27 + 148

139 + 43

a	b		$a + b$
a	c	d	$a + (c + d)$
a	c	d	$(a + c) + d$
$a + c + d$			

Associative property in addition

$$a + (c + d) = (a + c) + d$$



Important questions in the discussion

- How do these activities influence the view of learning and teaching mathematics?
- How do we position children as learners?
- How can these activities enhance the cooperation between different members of the team around the child?



How do you think about ...?

- Discussion in Break Out Rooms
- Questions on a Padlet



Comments on the padlet



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Olaug Ellen Lona Svingen + 3 · 1h
NORSMA10
Summing-up breakout-rooms

How do these activities influence the view of learning and teaching mathematics?

The activities can influence how teachers view student knowledge

That we can learn a lot by listening

That we can use different solution strategies in discussing big ideas

They show to the teachers how they can guide the thinking and learning of the student but, at this level, the most important thing is to start from what the student knows.

These activities also teach teachers about the power of patience. They need to wait and the brilliant answer of the kid will come up! But we need to allocate the time to THINK.

How do we position children as learners?

It shows them as active learners, as thinkers that are able to build knowledge since they are being asked to think and to express their thoughts.

By listening to them and understanding the different ways of working through problems we support the idea that knowledge of mathematics is not one-dimensional

Learners are active, creative and thinkers

How can these activities enhance the cooperation between different members of the team around the child?

videos are good to discuss from, but we should take care not judging or measuring too much

These activities are interconnecting many skills. Expressing what we are thinking about is not just a matter of mathematics but also language and communication. So other members of the teaching team can work with these tasks and use them to improve the learning outcomes of the student.

It is good to have these activities as a platform to discuss learner's abilities and their misconceptions. Seeing their understanding as developing not as stagnant and needing repair - maybe also this gives opportunities to discuss how to bring their understanding forward.

increase knowledge about childrens thinking and more respect for them

Summing up activity in Padlet

- Comments?
- Questions?

Thank you for
your attention!

<https://www.matematikkcenteret.no/>



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