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education

Freudenthal Institute

at

Math@Distance: distance mathematics teaching during COVID-19 lockdown

Paul Drijvers

Moving Forward in the Midst of a Pandemic: International Lessons for Math Teachers

Hosted by the U.S. National Commission of Mathematics Instruction – National Academies of Sciences, Engineering, and Medicine

Board on International Scientific Organizations

U.S. National Commission on Mathematics Instruction

July 9, 2020

De snelweg A2, donderdag midden op de dag in Vught, Noord-Brabant. Het beeld doet denken aan d

CORONAVIRUS OPENBARE LEVEN VALT STIL

Kabinet sluit alle scholen en horeca

Alle scholen, kinderopvang, horeca en sportclubs in gaan tot en met 6 april dicht om de verspreiding van coronavirus tegen te gaan. De al eerder genomen ma worden verlengd. Dat maakte het kabinet gistermid

Remco Meijer
Den Haag

Basisscholen, middelbare scholen, mbo-instellingen en kinderopvangcentra gaan per vandaag dicht. Voor kinderen van ouders die in vitale beroepen werken, zoals de zorg en hulpdiensten, wordt opvang geregeld op de scholen en kinderopvang.

De sluiting van eet- en drinkgelegenheden is gisteren om 18.00 uur al ingegaan. Ook seksclubs en sauna's moesten dicht. En de coffeeshops – wat kort na het bekendmaken van de maatregelen voor langere rijen zorgde. Hotels mogen open blijven, maar hun bars en restaurants niet.

In het weekend zaten sommige cafés en restaurants nog vol, wat leidde tot boos op sociale media. Het kabinet heeft de ingrijpende besluiten genomen na overleg gisteren met het RIVM, onderwijskoepels, vertegenwoordigers van de ziekenhuizen en de Federatie Medisch Specialisten.

Volgens minister Arie Slob (Basis- en Voortgezet Onderwijs) werd het de afgelopen dagen door uitval van onderwijspersoneel en zorgen bij ouders steeds lastiger om scholen open te houden. Wel wordt hoge prioriteit gegeven aan het vinden van een oplossing voor eindexamenleerlingen. Scholen en kinderopvangcentra blijven open voor mensen met vitale beroepen. Daarvoor stelt de overheid een lijst op, waar in elk geval zorg, politie en brandweer op staan.

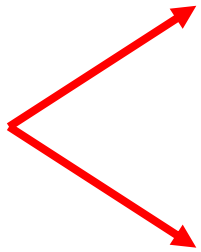
Minister Bruno Bruins (Medische Zorg): 'We baseren onze maatregelen nog steeds op medische experts. We zagen de afgelopen dagen ongewenst café-toerisme. Alle eet- en drinkgelegenheden sluiten daarom hun deuren. Ook sauna's, coffeeshops en seksclubs blijven dicht. Alle Nederlanders moeten gepaste afstand van elkaar bewaren, ongeveer anderhalve meter.'

Het dichtgaan van de scholen is omstreden. Vorige week nog zei premier Rutte dat een sluiting van scholen om

Een leerling van een scholengemeenschap in Oud-Beijerland hoeft voor de grap een wit pak aangetrokken als hij maandag voorlopig voor het laatst naar school komt om zijn schoolboeken uit zijn kluisje te halen. Foto Arie Kievit / de Volkskrant

Today's main questions

1. **What is happening in math ed in COVID times?**



2. **What can we do?**

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Who am I?

- **Math ed researcher with an interest in digital technology**
- **Teacher trainer**

- **Disclaimers:**
  - **Not a math teacher**
  - **Preliminary results**

Math@Distance: distance mathematics teaching during COVID-19 lockdown

Part 1 in the webinar series,
"Moving Forward in the Midst of a Pandemic:
International Lessons for Math Teachers"

Hosted by the U.S. National Commission of Mathematics Instruction –
National Academies of Sciences, Engineering, and Medicine

A talk by Paul Drijvers, Professor in Mathematics Education, Freudenthal Institute, Utrecht University, The Netherlands (pictured below)

The COVID-19 pandemic has drastically impacted education. Schools closed down and mathematics teachers were facing the challenge of developing alternative educational practices, including at distance through digital technology. What distance practices emerged in secondary mathematics education? To find this out, we sent out online questionnaires in three adjacent countries in Europe: Flanders—the Dutch-speaking part of Belgium—, Germany, and the Netherlands. The survey focused on teaching practices, teacher beliefs, didactics and assessment. In this talk, **Prof. Paul Drijvers (Freudenthal Institute)** will summarize the first tentative findings, and reflect on their meaning for mathematics teachers.

Thursday, July 9, 2020 from 11:00 a.m. to 12:00 p.m. EDT via Zoom

Registration for this webinar is free. To register, please visit our Eventbrite page: https://www.eventbrite.com/e/mathdistance-distance-mathematics-teaching-during-covid-19-lockdown-tickets-111883957930.

Please also join us on Thursday, July 16, 11 am EDT for Part 2, featuring **Talli Nachlieli**, Head of the Mathematics Education Department, Levinsky College of Education (Israel), and on Thursday, July 23, 11 am EDT, for Part 3, featuring **Salomé Martinez**, Director of the Laboratory of Mathematical Education, Universidad de Chile (Chile).

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Who are you (1)?

Where are you based?

- ❑ Africa
- ❑ Asia
- ❑ Australia
- ❑ Europe
- ❑ North-America
- ❑ South-America

Who are you (2)?

What are you?

- ❑ A math teacher in primary school (4-11-year-old pupils)
- ❑ A math teacher in lower secondary (12-15-year-old students)
- ❑ A math teacher in upper secondary (16-18-year-old students)
- ❑ A math teacher in tertiary education
- ❑ A mathematician
- ❑ A math education researcher
- ❑ A math teacher educator
- ❑ A non-classroom-teacher school system employee
- ❑ Other

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Part 1: What is happening in math ed in Covid times?

- **The Math@Distance study by Drijvers and colleagues: Distance mathematics teaching in Flanders, Germany and the Netherlands during COVID-19 lockdown**
- **Related studies by Aldon and colleagues, and Trouche and colleagues**


IJsland
Zweden
Finland
Noorwegen
Canada
Hudsonbaai
Labradorzee
Denemarken
Verenigd Koninkrijk
Ierland
Wit-Rusland
Polen
Duitsland
Oekraïne
Oostenrijk
Frankrijk
Roemenië
Italië
Spanje
Griekenland
Turkije
Portugal
Syrië
Irak
Tunesië
Middellandse Zee
Marokko
Algerije
Libië
Egypte
Westelijke Sahara
Saudi-Ara
Mauritanië
Noordelijke Atlantische Oceaan
Verenigde Staten
Golf van Mexico
Mexico
Cuba
Puerto Rico

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The Math@Distance study

Research Team:

- Paul Drijvers, Utrecht University, Utrecht, the Netherlands
- Daniel Thurm, Universität Duisburg-Essen, Essen, Germany
- Ellen Vandervieren, University of Antwerp, Antwerp, Belgium
- Marcel Klinger, Universität Duisburg-Essen, Essen, Germany
- Filip Moons, University of Antwerp, Antwerp, Belgium
- Heleen van der Ree, Utrecht University, Utrecht, the Netherlands
- Amy Mol, Utrecht University, Utrecht, the Netherlands
- Bärbel Barzel, Universität Duisburg-Essen, Essen, Germany
- Michiel Doorman, Utrecht University, Utrecht, the Netherlands

Research Questions

What distance practices in secondary mathematics education have emerged in Flanders, Germany and the Netherlands in the recent period of school lockdown and how did teachers experience them?

1. Which teaching **practices**?
2. Relation to teachers' **beliefs**?
3. Influence on **didactic approach**?
4. Which **assessment** formats?

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Research Methods

Online questionnaires

- For math teachers and their students
- In Flemish, German and Dutch
- Through Qualtrics ©
- Analysis through SPSS ©

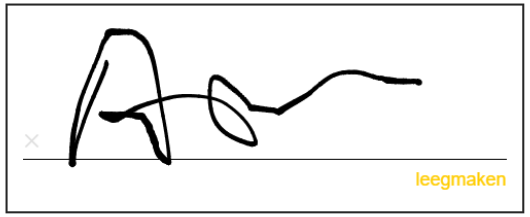
2. Geef uw toestemming.

Hierbij stem ik in met mijn deelname aan dit onderzoek. Mijn antwoorden kunnen anoniem voor onderzoeksdoeleinden worden gebruikt.

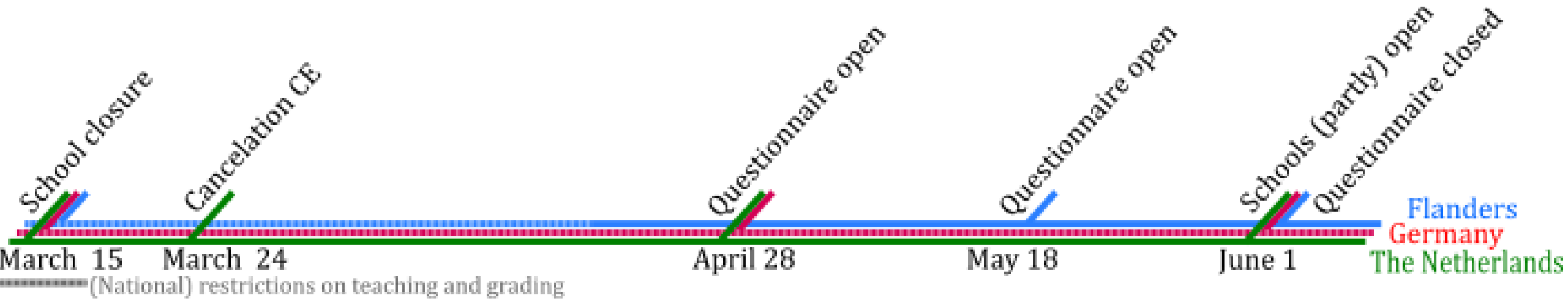
Ik ben bereid om aan een aanvullend interview deel te nemen, en geef de onderzoeker toestemming om me te benaderen via het email adres

Ik wil graag het onderzoeksrapport van de studie ontvangen via mijn email adres

3. Zet in onderstaand vak je handtekening met muis, touchpad of touchscreen.

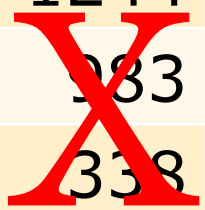


Timeline


School closure
Cancelation CE
Questionnaire open
Questionnaire open
Schools (partly) open
Questionnaire closed
Flanders
Germany
The Netherlands
March 15
March 24
April 28
May 18
June 1
(National) restrictions on teaching and grading

Respondents

Country	#Teachers	#Students	Population
Flanders	384	1244	6.6M
Germany	1131	983	83.0M
The Netherlands	204	338	17.3M
TOTAL	1719	2565	



Teachers' age and gender

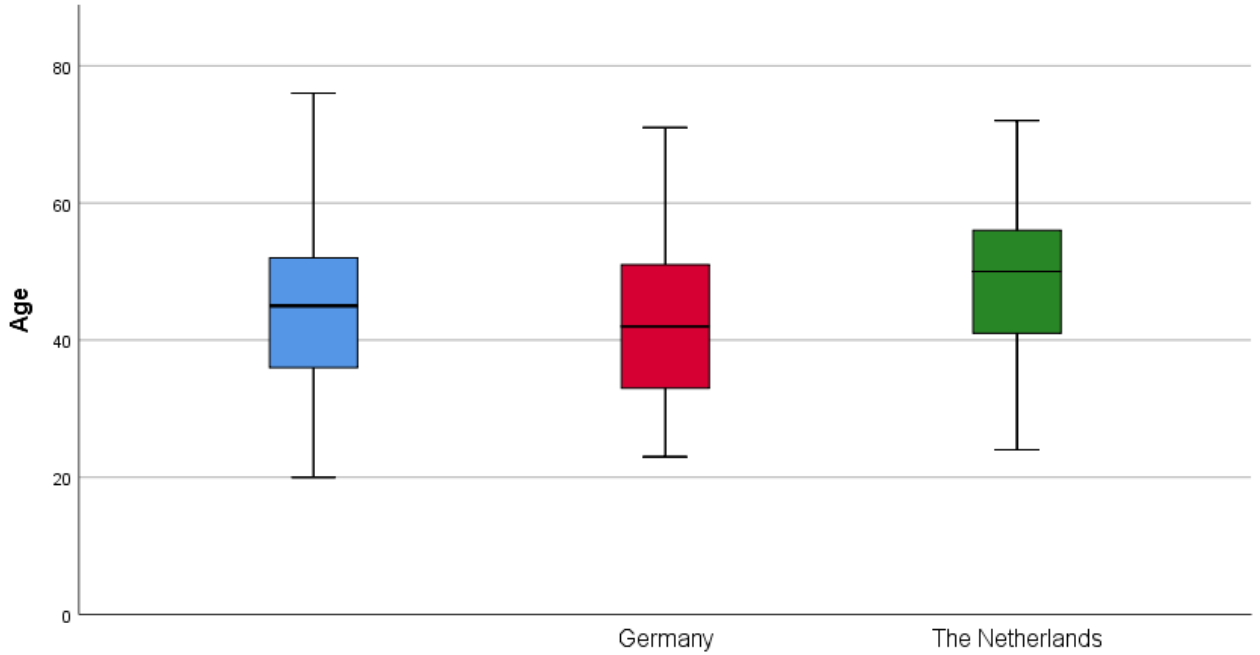


Table 1. Teacher gender for the participating countries

Gender	Flanders	Germany	The Netherlands	Total
Female	287 (74.7%)	637 (56.7%)	113 (55.7%)	1037 (60.6%)
Male	96 (25.0%)	485 (43.1%)	90 (44.3%)	671 (39.2%)
Other	1 (0.3%)	2 (0.2%)	0 (0.0%)	3 (0.2%)
Missing	0 (0.0%)	7 (0.6%)	1 (0.5%)	8 (0.5%)
Total	**384 (100%)**	**1131 (100%)**	**204 (100%)**	**1719 (100%)**

Results

1. Which teaching practices?
2. Relation to teachers' beliefs?
3. Influence on didactic approach?
4. Which assessment formats?

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Results teaching practices: delivery tools before and since lockdown

	Flanders (N=384)		Germany (N=1131)		The Netherlands (N=204)	
	Before	Since	Before	Since	Before	Since
Video conferencing software	6.5%	86.7% ***	3.6%	55.9% ***	9.4%	96.6% ***
Social media	17.2%	6.0% ***	6.7%	9.4% *	21.2%	6.9% ***
Learning management system	68.5%	68.2%	39.5%	56.3% ***	96.6%	74.5% ***
Online video clips	45.3%	40.6%	70.6%	61.1% ***	80.9%	59.3% ***
Online exercisers	56.5%	18.8% ***	23.0%	19.1% *	53.9%	13.7% ***
Online learning environments	75.8%	25.0% ***	65.8%	26.2% ***	64.7%	16.2% ***
Homemade video clips	19.3%	66.7% ***	16.3%	33.3% ***	26.2%	27.5%
Audience response systems	45.8%	12.5% ***	31.2%	9.7% ***	53.2%	26.5% ***

. (p<.1), * (p<.05), ** (p<.01) en *** (p<.001)

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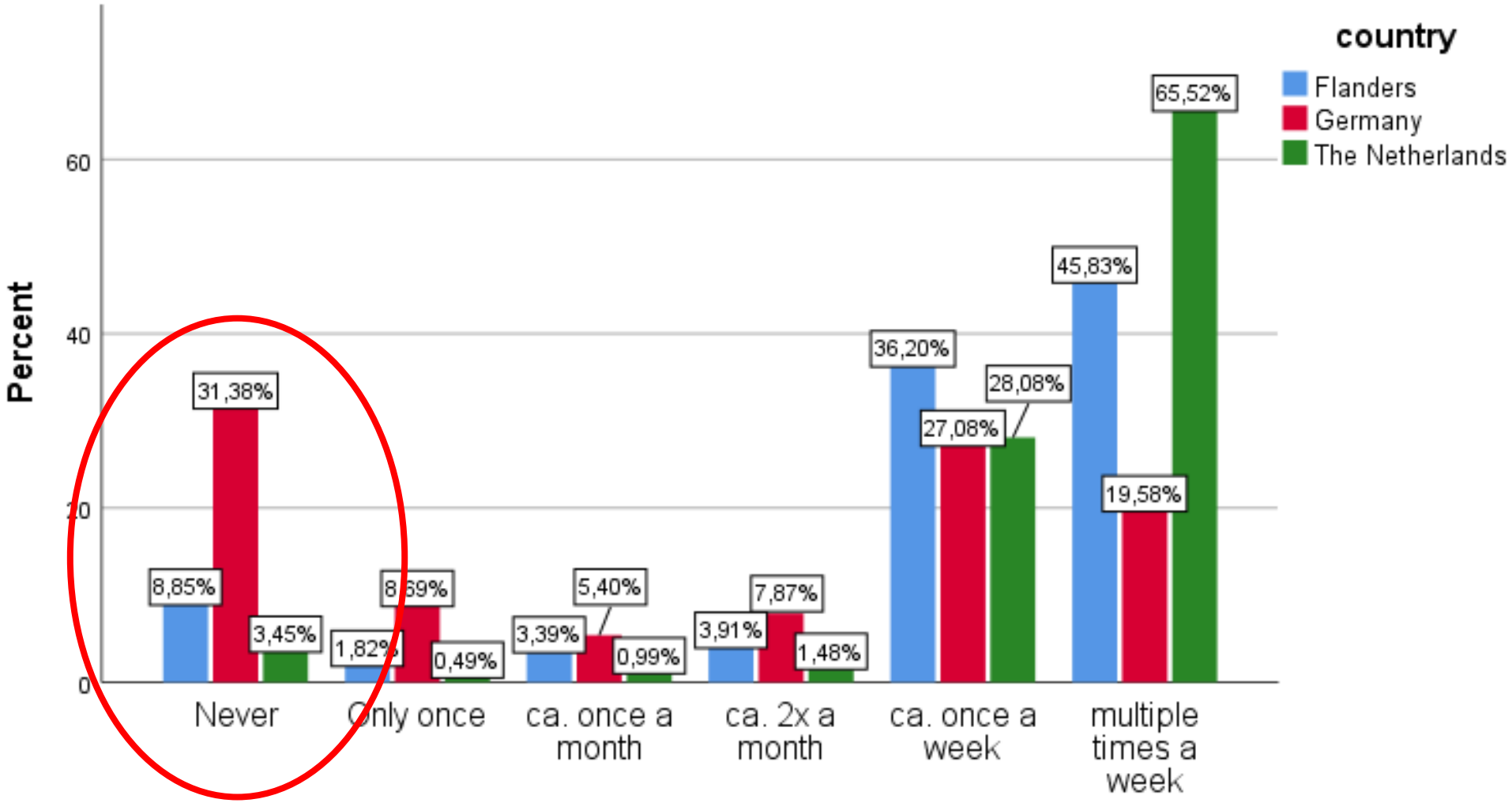
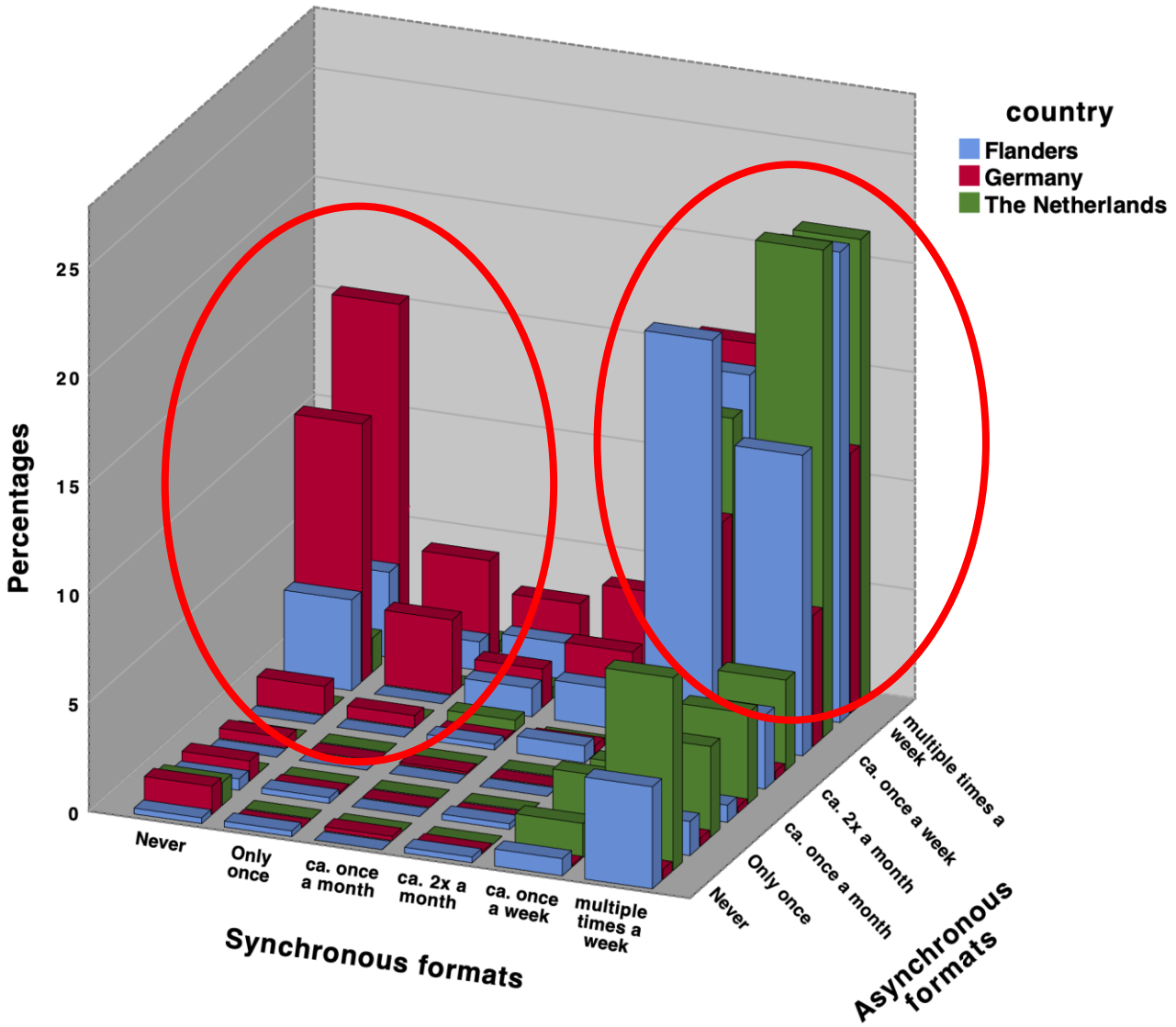
Results teaching practices: frequency of synchronous format use



Results teaching practices: synchronous and asynchronous formats



Synchronous formats:

- video conferencing
- simultaneous work in shared document
- live chats

Asynchronous formats:

- forum
- sending out exercises via mail

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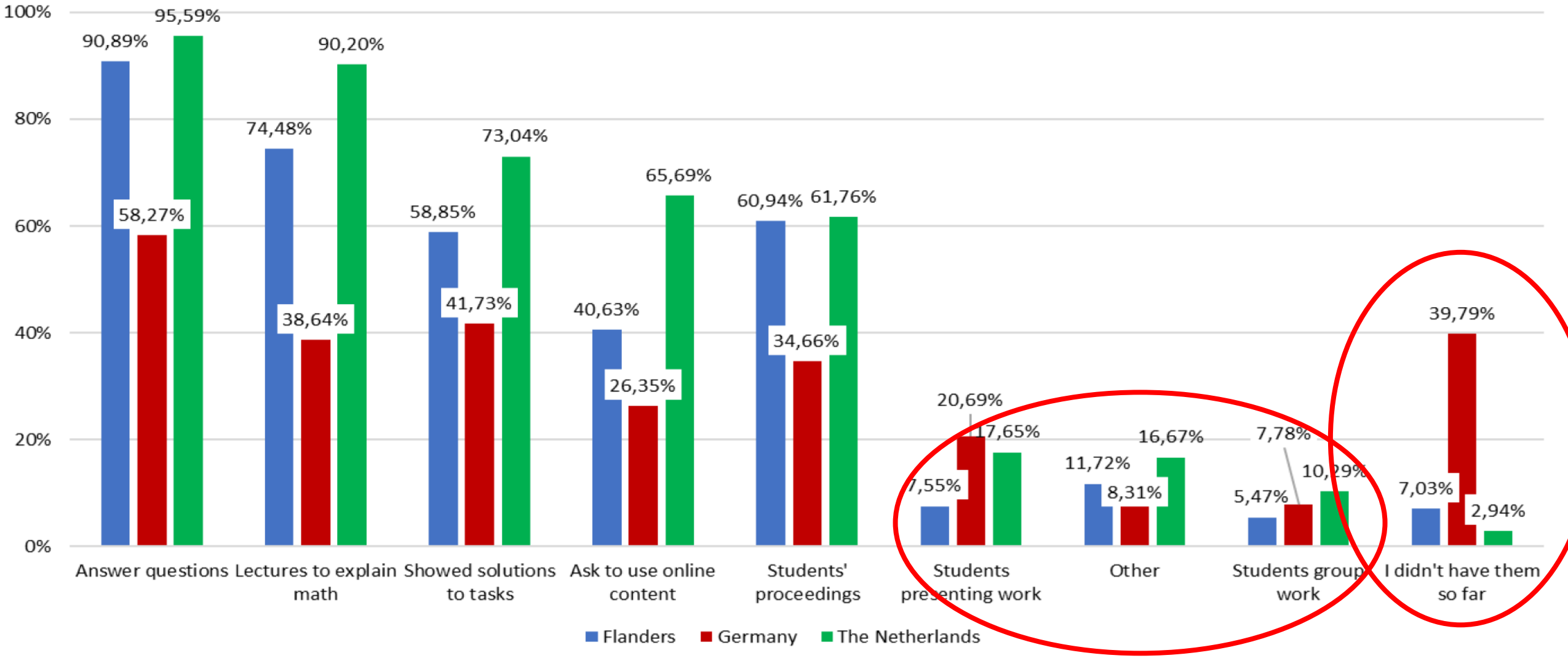
Results teaching practices: what do you do in video conference lessons?



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Results teacher beliefs

- Teachers like working with technology (mean 4.60 on 1-6 Likert scale)
- This correlates with confidence before and after lockdown (τ = 0.42, τ = 0.43)
- And with their experience in using digital tools (τ = 0.23)
- Some believe distance learning supports teaching algorithms (mean 4.11 on 1-6 Likert scale)
- Some believe distance learning provides means to make students discover mathematics on their own (mean 3.38 on 1-6 Likert scale)

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Results didactic approach in distance lessons

Focus	Flanders Mean (SD) N	Germany Mean (SD) N	The Netherlands Mean (SD) N	Total Mean (SD) N
Rehearsing practicing	2.83 (1.55) 384	4.03 (1.56) 1118	1.76 (1.05) 204	3.49 (1.71) 1706
New topics	5.29 (0.84) 384	4.22 (1.38) 1128	5.07 (1.01) 204	4.56 (1.33) 1716
Conceptual understanding	4.51 (1.21) 384	3.62 (1.42) 1106	4.27 (1.22) 202	3.90 (1.41) 1692
Procedures algorithms	3.95 (1.41) 384	3.97 (1.41) 1104	3.79 (1.44) 202	3.94 (1.41) 1690

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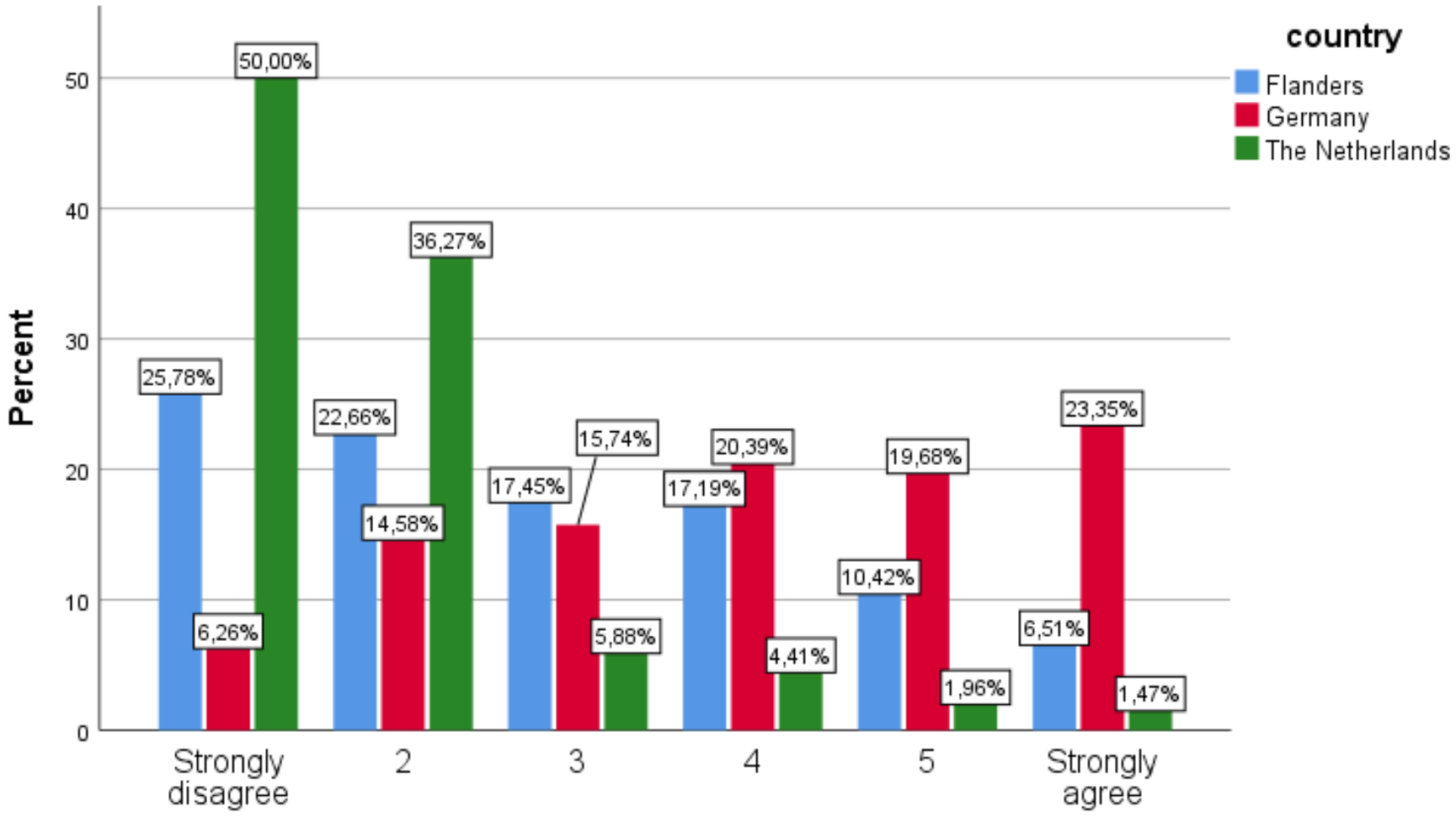
Results didactic approach



In times of school closure, my math lessons focus on rehearsing and practicing topics that the students already knew

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Results assessment

Assessment focus	Flanders Mean (SD) N	Germany Mean (SD) N	The Netherlands Mean (SD) N	Total Mean (SD) N
Executing algorithms and procedures	4.45 (1.41) 371	4.23 (1.60) 1060	4.20 (1.60) 185	4.30 (1.57) 1616
Concepts and understanding	4.31 (1.40) 372	3.67 (1.77) 1058	3.78 (1.50) 186	3.83 (1.50) 1616
Argumentation and reasoning	2.64 (1.54) 371	2.87 (1.43) 1047	2.88 (1.48) 186	2.82 (1.50) 1604
Authentic complex mathematical activity	2.09 (1.42) 371	2.34 (1.80) 1044	2.30 (1.49) 184	2.28 (1.40) 1599

My mathematics assessment formats that I used since the schools closed down focused on …

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Results crossing four themes

- **School technical facilities and support may hinder video conferencing (Germany)**
- **Initial opinion, confidence, and experience are not decisive for engaging in (synchronous) teaching practices…**
- **… but do impact views on digital assessment**

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Gilles Aldon et al.

- **Teaching mathematics in a context of lock-down: a study focused on teachers' praxeologies in France, Germany, Israel, and Italy**

http://revue.sesamath.net/spip.php?article1360

MathémaTICE

Intégration des TICE dans l'enseignement des mathématiques

À propos de MathémaTICE | Mentions légales | Comment contribuer ? | Appels à contribution | Fonctionnement du moteur de recherche

Sommaire > Articles à paraître dans les numéros à venir > L'enseignement des maths pendant le confinement en

Moteur de recherche

Rechercher :

L'ENSEIGNEMENT DES MATHS PENDANT LE CONFINEMENT EN ALLEMAGNE, FRANCE, ISRAËL ET ITALIE

Mis en ligne le 2 juillet 2020, par Gilles Aldon

Autres articles de Gilles Aldon dans MathémaTICE

Retour au sommaire

Introduction

Dans la période que nous venons de vivre, du jour au lendemain, sans aucune préparation, les enseignants ont été confrontés à une situation inédite : continuer à maintenir un rapport à l'école positif à des centaines de milliers de jeunes adolescents ou jeunes adultes. L'enseignement à distance n'est pas nouveau dans le paysage de l'éducation et de nombreuses expériences et travaux ont donné lieu à des comptes rendus et des articles, notamment dans cette revue (Clerc 2016, 2019, Aldon 2015). La question d'une brève du n°35 de mai 2013 posait déjà la question : « L'enseignement supérieur de demain se fera-t-il à distance ? ». Mais aussi, bien sûr, dans la communauté de l'éducation dans le monde (Rosa & Lerman 2011, de Carvalho Borba & Llinares 2012, Arzarello & al. 2014, Silverman & Hoyos 2018 etc.) ; cependant toutes les expériences relatées étaient fondées sur un travail préalable avec les acteurs de l'enseignement à distance, les professeurs, bien sûr, mais aussi les étudiants qui dans la grande majorité des expérimentations conduites bénéficiaient de conditions de travail permettant une connexion rapide et sure. Ce n'a pas été le cas dans les mois de confinement que nous avons vécus ; malgré les discours rassurants (ou de pure communication) rien (ou peu de choses) n'était effectivement prêt pour faire face à ce nouveau type d'enseignement : les enseignants ont dû s'adapter rapidement en tenant compte des situations parfois difficiles que leurs élèves vivaient, en comptant sur leur propre matériel et les connexions personnelles. L'éducation est un « fait total » (Mauss 1923). Ce qui signifie qu'elle est liée étroitement à l'organisation de la société, dont l'école est un des piliers fondée sur des valeurs humaines qui ont comme but le progrès de la société dans son ensemble et le développement des connaissances héritées des siècles d'histoire. Lorsqu'un événement se produit qui bouleverse toute l'organisation de la société, l'École doit s'adapter et montrer qu'elle peut le faire. Le président de la République a déclaré que la nation était en guerre, et on ne peut s'empêcher de penser au discours de Ferdinand Buisson à l'issue de la première guerre mondiale, lorsqu'il déclarait :

"*Ce serait une erreur de parler de l'école comme d'un petit monde indépendant. Elle n'a ni fin, ni sa loi en elle-même. Faite par le pays, pour le pays, en tout temps elle lui doit des comptes. Combien plus dans celui que nous traversons !*" (Buisson, 1915, p. 233)

La crise sanitaire actuelle est un événement sans précédent, imprévu, qui a surpris et profondément modifié le fonctionnement de la société. La question se pose donc : Comment l'École a-t-elle réagi ?

Avec quelques collègues avec lesquels j'étais en contact pour d'autres travaux de recherche, Annalisa Cusi en Italie, Florian Schacht en Allemagne, Osama Swidan en Israël, nous avons échangé sur les conditions de l'enseignement dans nos pays respectifs et nous avons souhaité étudier plus précisément ce qui se passait. Les conditions de confinement n'étant pas très propices à une méthodologie fondée sur l'observation, la rencontre et la discussion directe avec les enseignants, nous avons pris le parti d'interroger, à travers un questionnaire, des enseignants de nos quatre pays. L'idée initiale était de recueillir une trentaine de questionnaires dans chaque pays de façon à conduire une analyse qualitative des réponses ; grâce à une diffusion réalisée à travers des listes professionnelles, des journaux (merci à Gerard Kuntz d'avoir diffusé l'adresse du questionnaire dans MathémaTICE) et des réseaux d'enseignants (la liste des animateurs des IREM en France, par exemple) nous avons au total recueilli environ 700 réponses de collègues enseignants depuis les classes primaires jusqu'à l'université. Je profite de cet article pour remercier tous ces enseignants qui ont bien voulu prendre un peu de temps pour répondre à ces questions. Dans la suite de cet article, j'aborde tout d'abord la méthodologie et les principes théoriques qui ont guidé la constitution du questionnaire, puis l'analyse des réponses, et je donne les principaux

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Luc Trouche

- **13 primary teachers in Shanghai**
- **Animation videos**
- **Video conferencing**
- **Collaboration**

Le café pédagogique

Toute l'actualité pédagogique sur internet

L'enseignant | Le système | La recherche | La classe | L'élève

Accueil > L'expresso

L'EXPRESSO

Voir le forum | Réagir sur le fo

Luc Trouche : Comment Shanghai répond aux défis de l'enseignement des maths à distance

Durant la fermeture des écoles de Shanghai, 90% des écoliers ont travaillé en ligne et fait leurs devoirs de maths. Un succès qui mérite explication et peut-être aussi quelques nuances. Observer comment les écoliers chinois ont étudié pendant la pandémie c'est aussi découvrir ce qu'est l'enseignement habituel des maths dans cette métropole chinoise, comment il est organisé pour aider au mieux les élèves à progresser. Professeur émérite à l'Institut français de l'éducation (ENS de Lyon), Luc Trouche nous fait bénéficier de sa collaboration, via l'Institut Joriss, avec des chercheurs de l'East China Normal University (ECNU) et des premiers éléments d'un article à paraitre sur la façon dont 13 professeurs d'école primaire de Shanghai ont répondu aux défis de l'enseignement à distance.

Un enseignement qui repose fortement sur la collaboration des professeurs et le suivi des élèves

On présente d'abord des éléments de contexte de l'enseignement à Shanghai, puis les décisions institutionnelles prises pour faire face à la pandémie, ensuite la méthodologie de l'étude, et enfin quelques résultats.

La structure de l'enseignement primaire, à Shanghai, diffère fortement de la structure française. Les professeurs d'école ne sont pas généralistes. Les professeurs de mathématiques des écoles, par exemple, enseignent cette discipline dans deux classes (environ une heure par jour pour chacune d'entre elles). L'essentiel de leur travail, au sein de l'école, n'est donc pas la présence en classe, mais est dédié à la préparation de leurs leçons, aux interactions individuelles avec leurs élèves et avec leurs collègues (ils disposent d'espaces de travail pour cela).

http://www.cafepedagogique.net/LEXPRESSO/Pages/2020/06/09062020Article637272874349312877.aspx?actId=ebwp0YMB8s1_OGEGSsDRkNUc

(Preliminary) Conclusion Part 1

What is happening in math ed in COVID times?

- **Teachers engage *en masse* in video conferencing**
- **Teachers use general educational tools rather than mathematical tools**
- **They report not to focus just on rehearsal / practice / procedures, but also on conceptual understanding**
- **Interaction seems limited**
- **Teachers' attention seems so much taken by that, that they may tend to forget about their didactic ideas on "good" math teaching**

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Part 2: What can we do?

a. Teaching practices
b. Teaching content
c. Teaching support policies

a. Teaching practices: NCTM

NCTM | NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS

NCSM LEADERSHIP IN MATHEMATICS EDUCATION

JUNE 2020

Moving Forward: Mathematics Learning in the Era of COVID-19

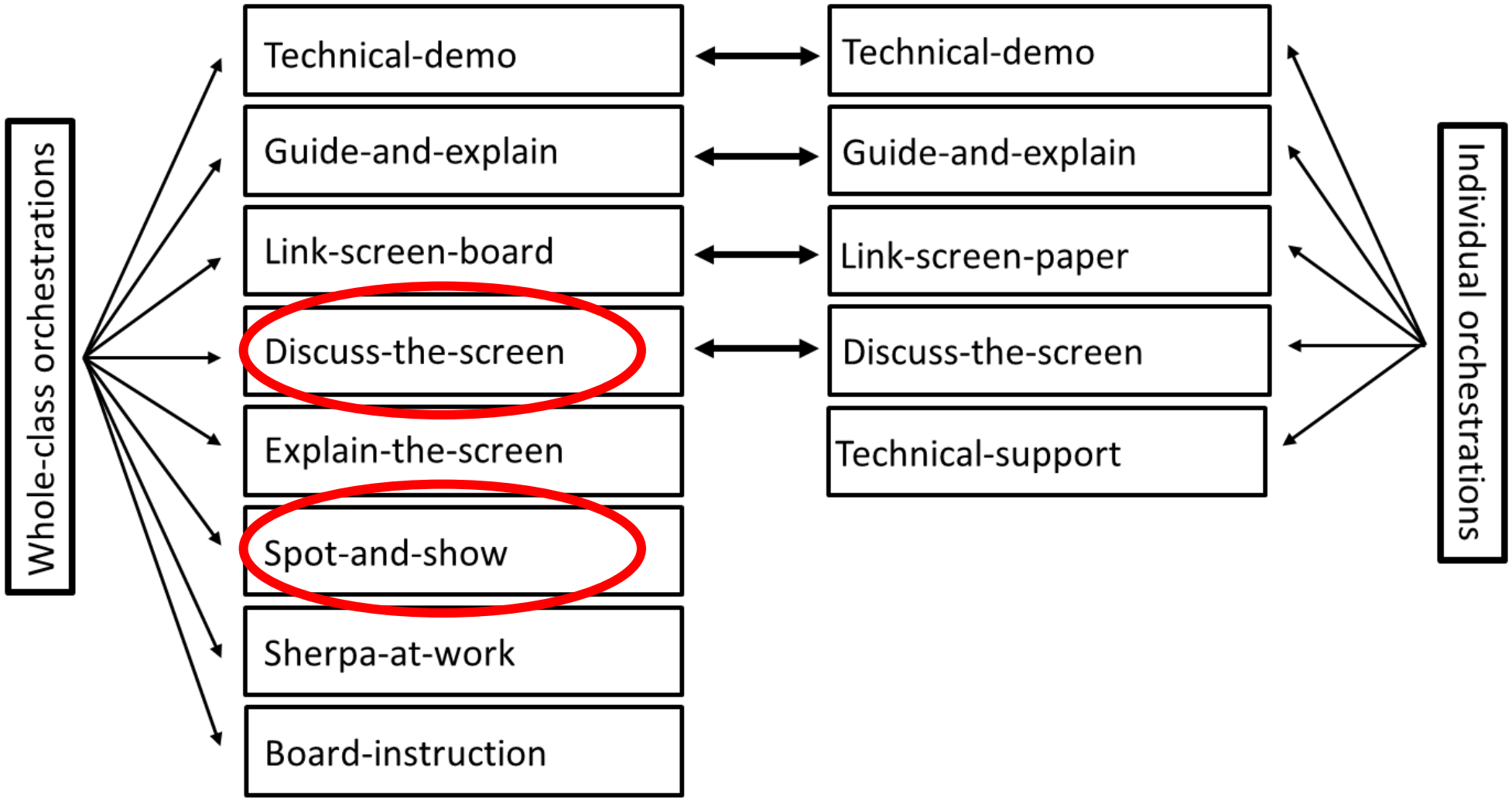
We live in uncertain times. Public health is at the forefront of our minds, and our schools have been disrupted in ways we have never seen. Although no one can predict how education might look in the coming months, it is in the best interests of our students to strategize how we might best meet their needs in the upcoming months. *Moving Forward* is the result of a joint effort of NCSM: Leadership in Mathematics Education (NCSM) and the National Council of Teachers of Mathematics (NCTM) that presents considerations, questions, and potential solution processes to educators and school leaders to address the challenges induced by the COVID-19 pandemic of spring 2020. In this document, we show how effective practices for mathematics teaching and learning can provide helpful direction to address the challenges that teachers, school leaders, and policymakers face now and will continue to face in the months ahead.

This document is organized around three major areas that require consideration when planning for the 2020–2021 school year. These three areas have serious implications for equitable access to high-quality mathematics teaching and learning: (1) structural considerations, (2) teaching practices, and (3) advocacy.

THREE AREAS WITH SERIOUS IMPLICATIONS FOR EQUITABLE ACCESS TO HIGH-QUALITY MATHEMATICS TEACHING AND LEARNING

https://www.nctm.org/uploadedFiles/Research_and_Advocacy/NCTM_NCSM_Moving_Forward.pdf

a. Teaching practices: instrumental orchestration



Drijvers, Tacoma, Besamusca, Doorman, & Boon (2013, ZDM)

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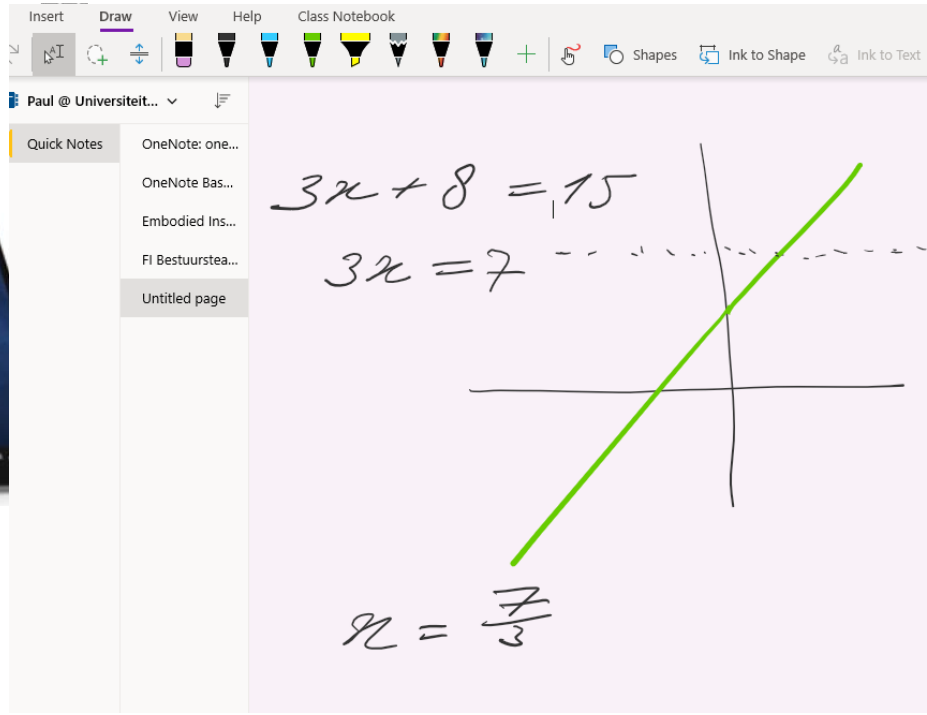
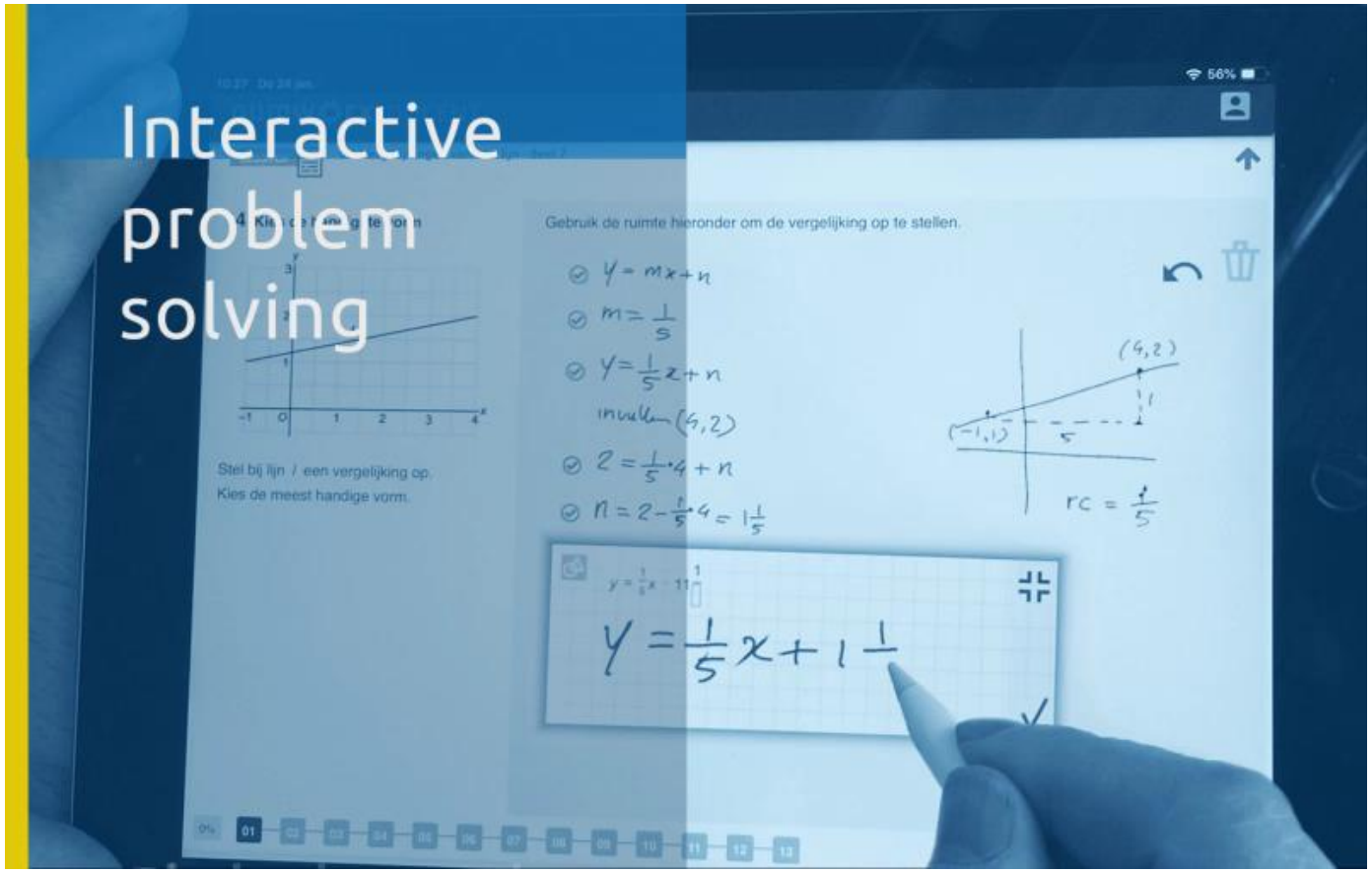
I want… (1) to write “life” on a board, rather than to spend hours preparing ppts with equation editors



I want… (2) my students to write, instead of type

Tools available that …

- **… allow for writing, like on scratch paper**
- **… including drawings and diagrams**
- **… and even interpret the input**
- **… and provide intelligent feedback**



See https://www.numworx.nl/en/

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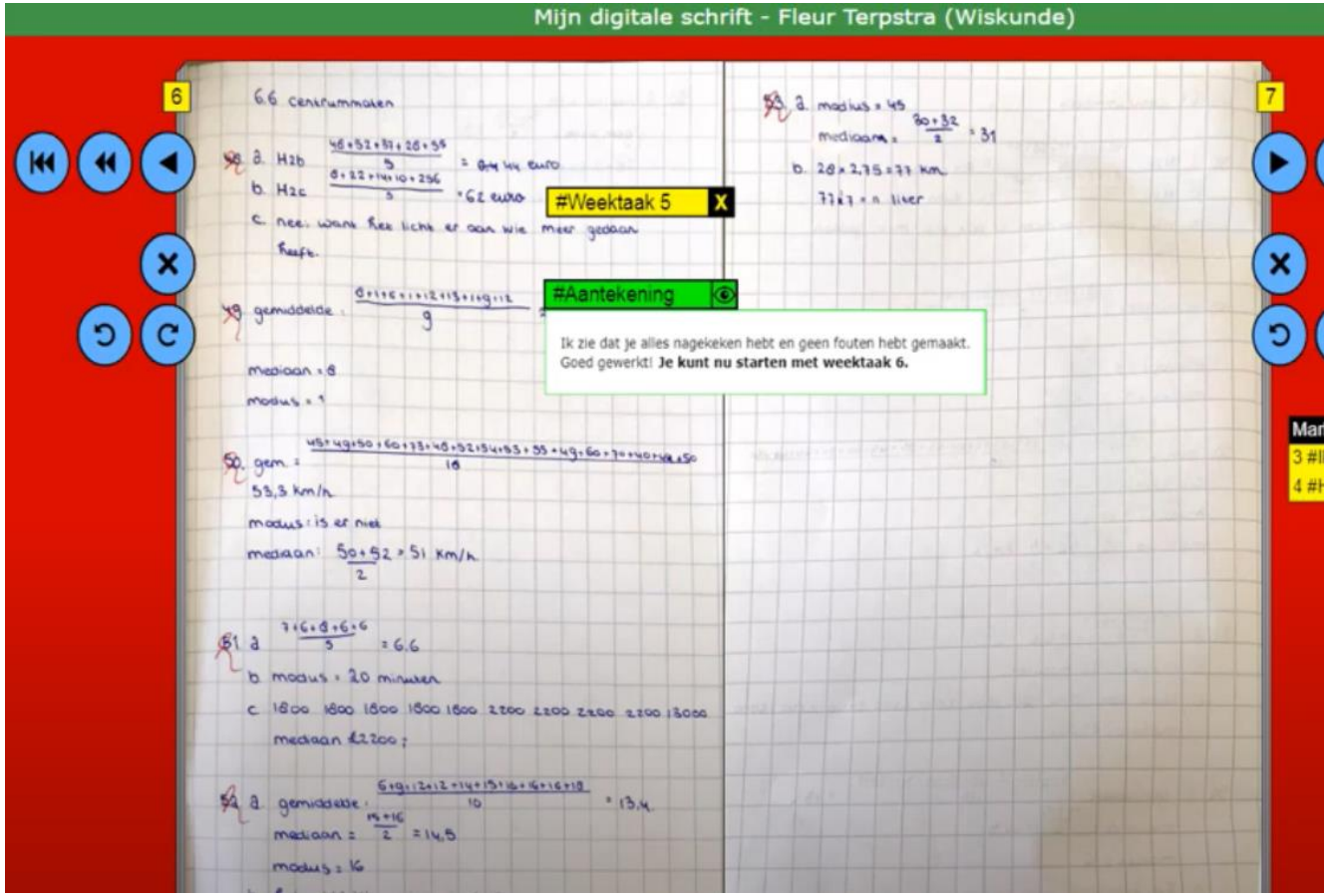
I want… (3) to see my students' work

Tools available to…

- **… upload student work**
- **… comment and grade**

e.g., MijnSchrift.nl



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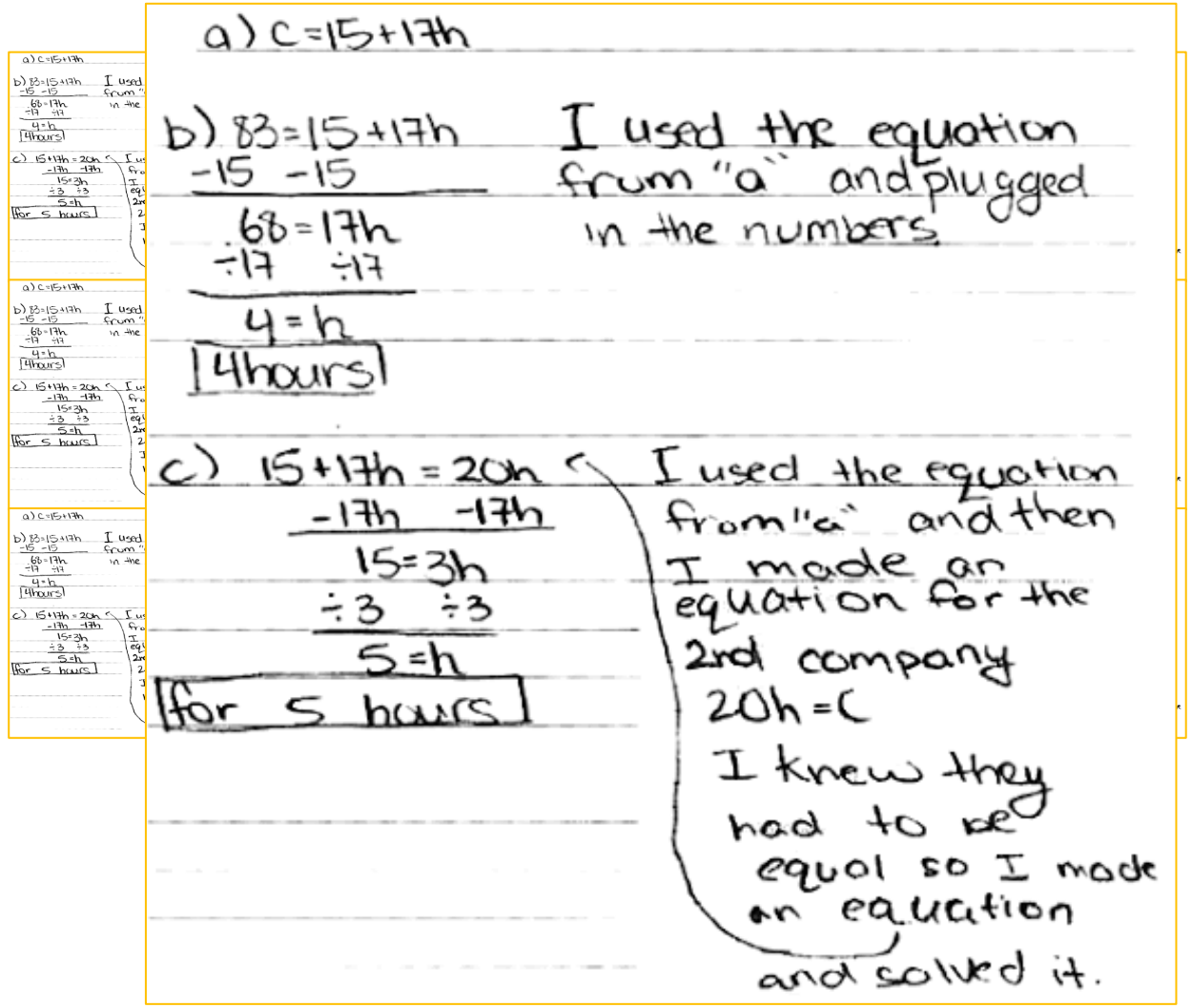
I want… (4) to discuss my students' work with them, to foster interaction and discussion

Tools available to…

- **… make students send in (pictures of) their work**
- **… show these as icons**
- **… select and enlarge**
- **… discuss, explain, comment…**

Cf. Spot-and-Show orchestration

https://classkick.com/
https://www.lessonup.com/en/
http://www.rayclass.com/



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I want… (5) to deliver hybrid teaching

Technology available to…

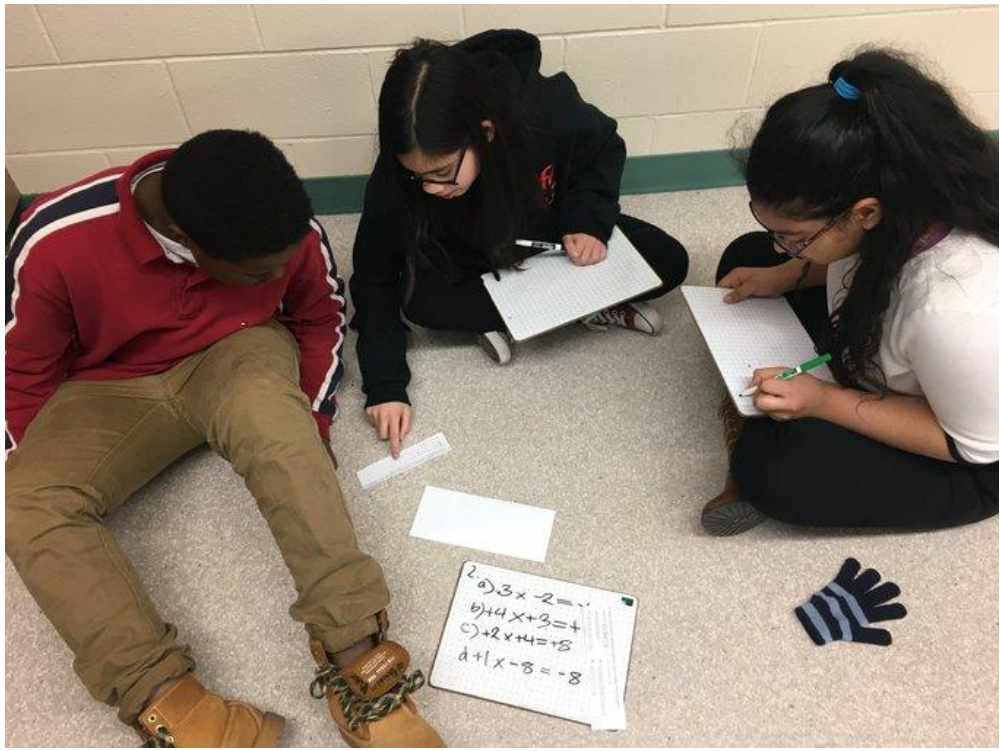
- **… teach at distance in a virtual classroom**
- **… combine this with students present F2F**
- **… and in this way set up hybrid teaching**
- **… for students at distance / ill / unable to attend …**

Less sophisticated: use IWB in combination with video conference
https://teachinglearninglab.nl/virtual-classroom/

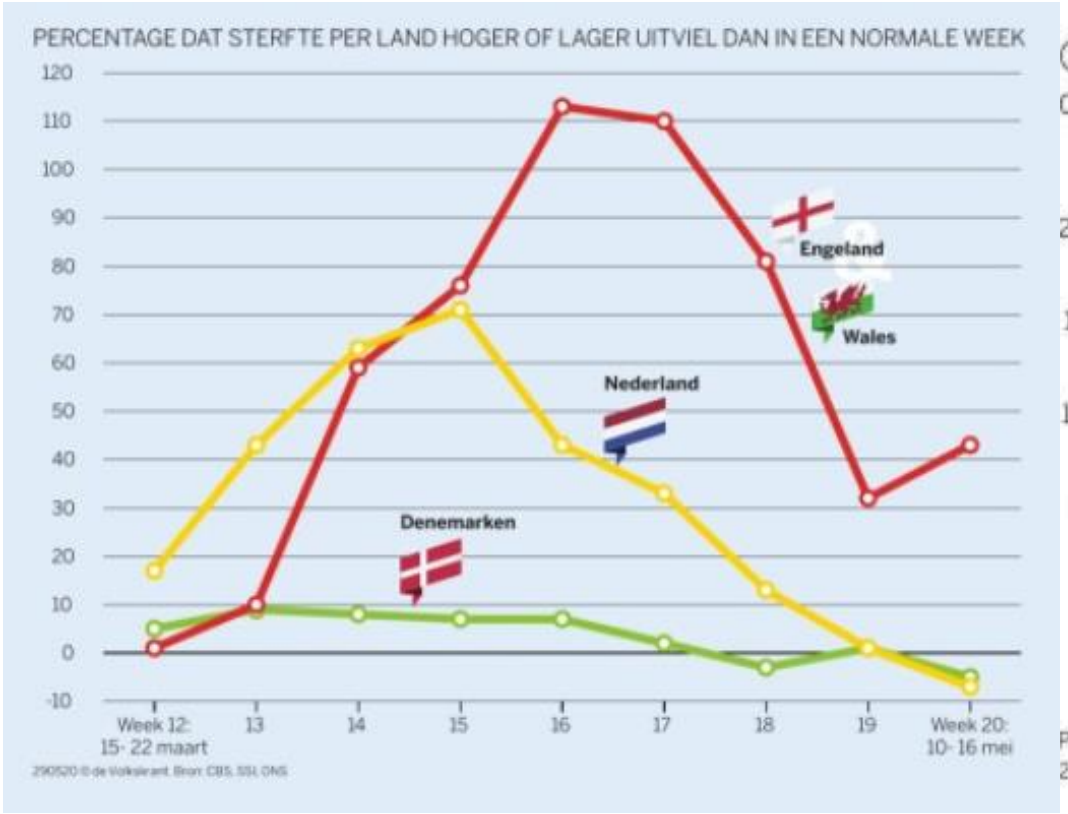
I want… (6) to my kids to catch up with what they missed over the last months

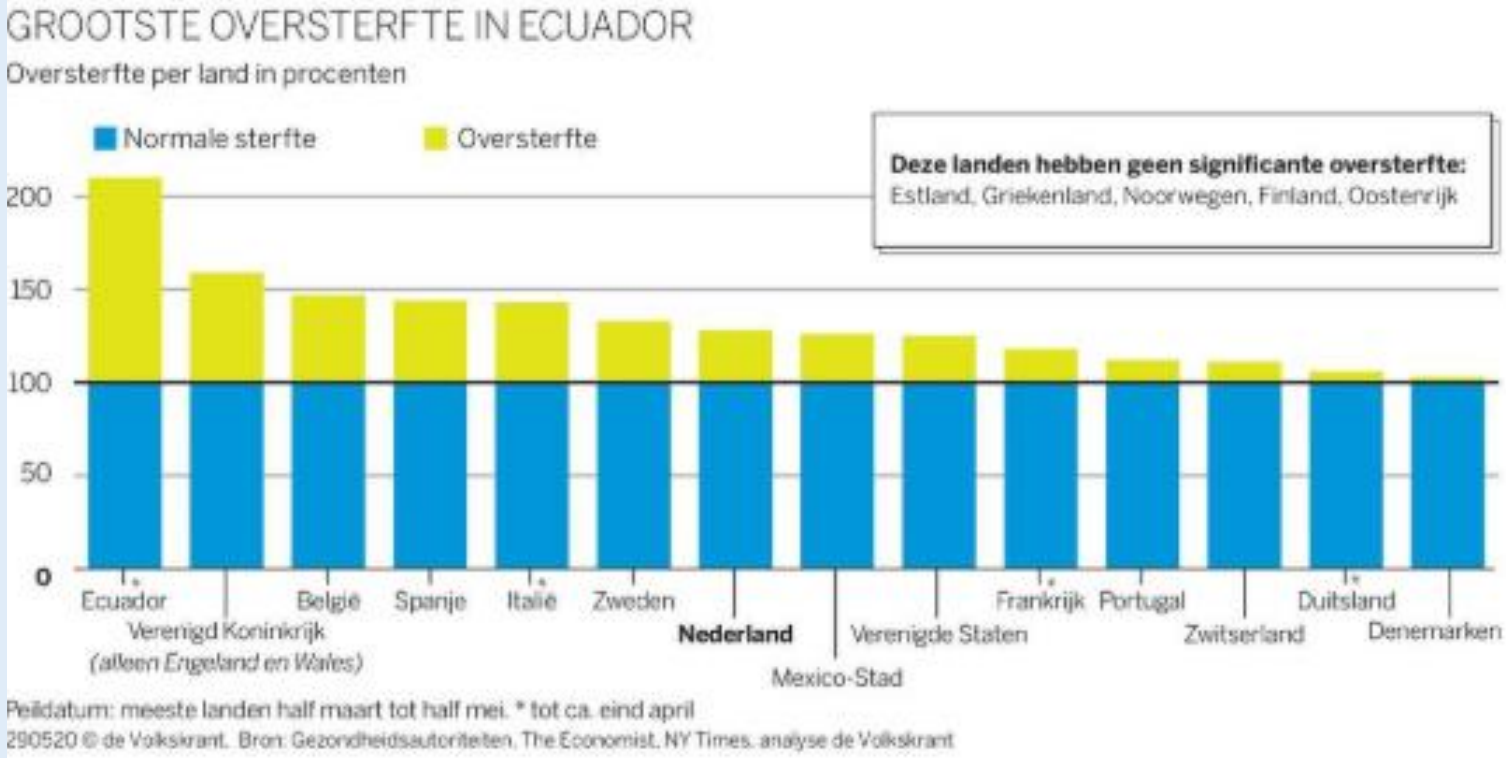
Set up peer instruction through…

- **… assigning buddy students**
- **… preparing the buddy students to their role**
- **… organizing peer teaching**
- **… think about rewards**



b. Teaching content: media on COVID





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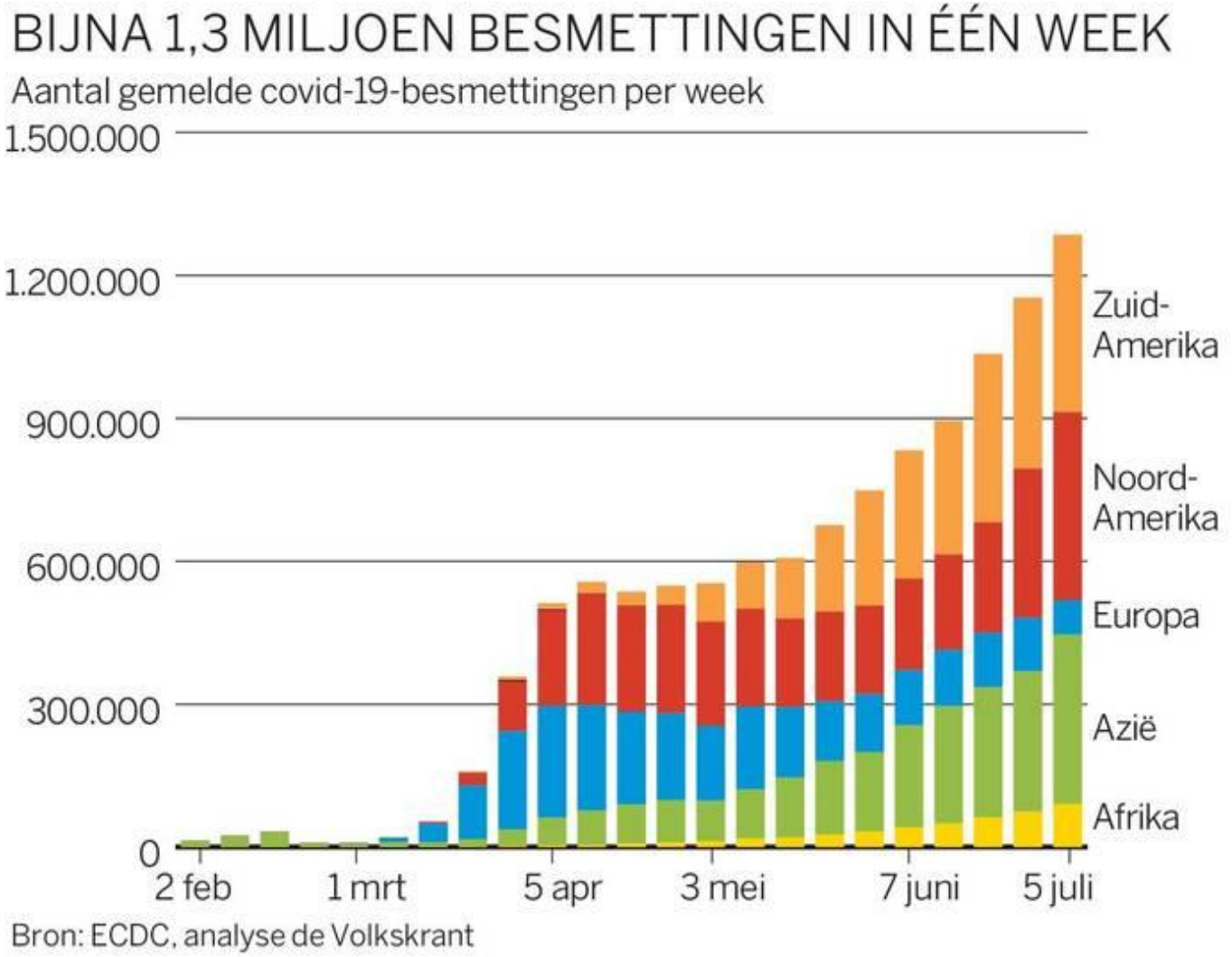
b. Teaching content: media on COVID



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Leuk zo'n bloedtest. Maar kunt u daarna weer naar buiten?

Coronavirus Wildgroei aan bloedtests

BUISJES MET BLOED IN HET MAASSTAD ZIEKENHUIS IN ROTTERDAM. FOTO ARIE KIEVIT

Heeft u het coronavirus nou al gehad of niet? Om dat uit te zoeken, zijn de ogen steeds meer gericht op bloedtests. Goed om in te schatten hoever het virus in een land is opgerukt - maar over de vraag of u weer naar buiten kunt, zegt het toch wat minder.

Van DOOR MAARTEN KEULEMANS

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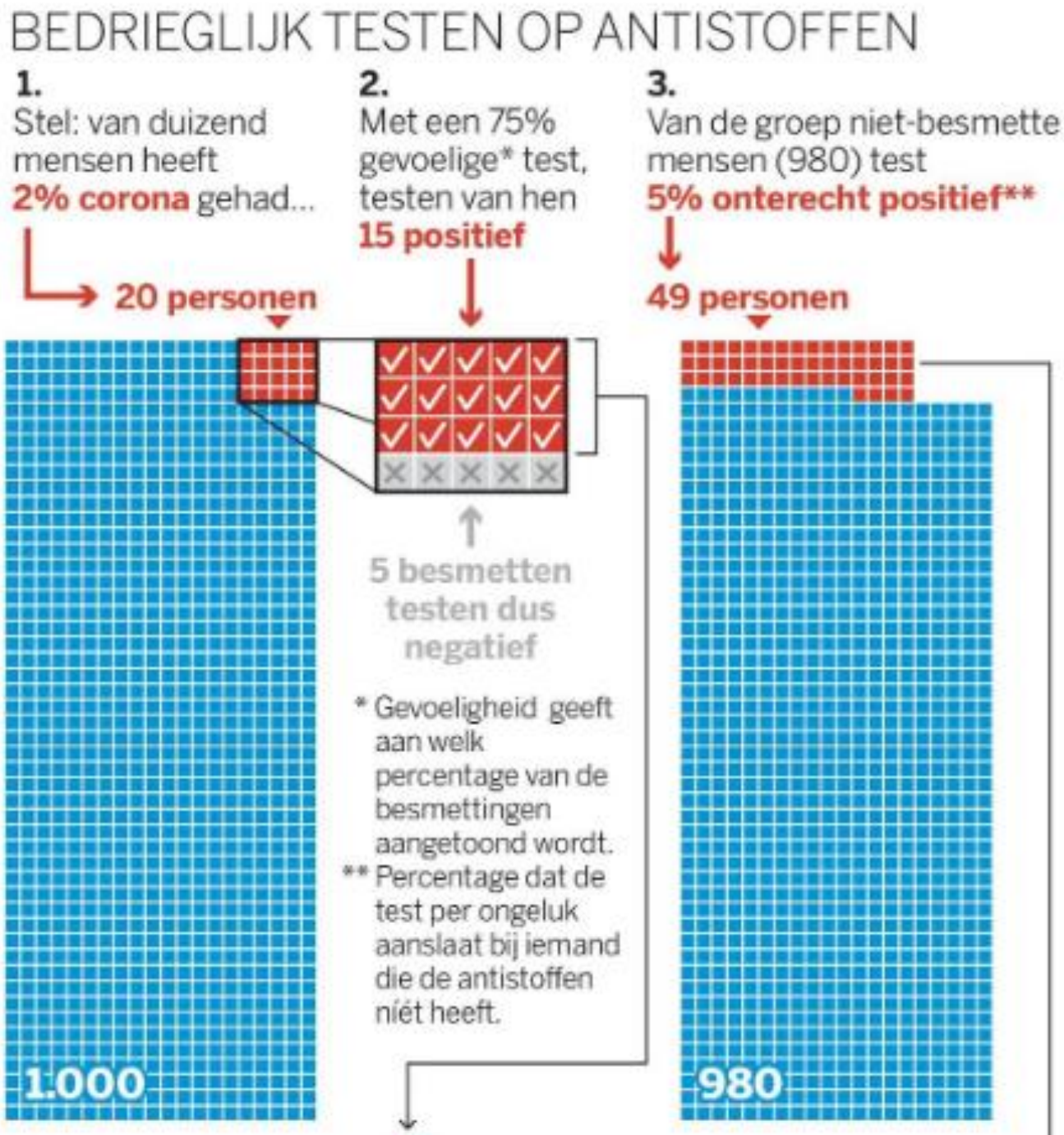

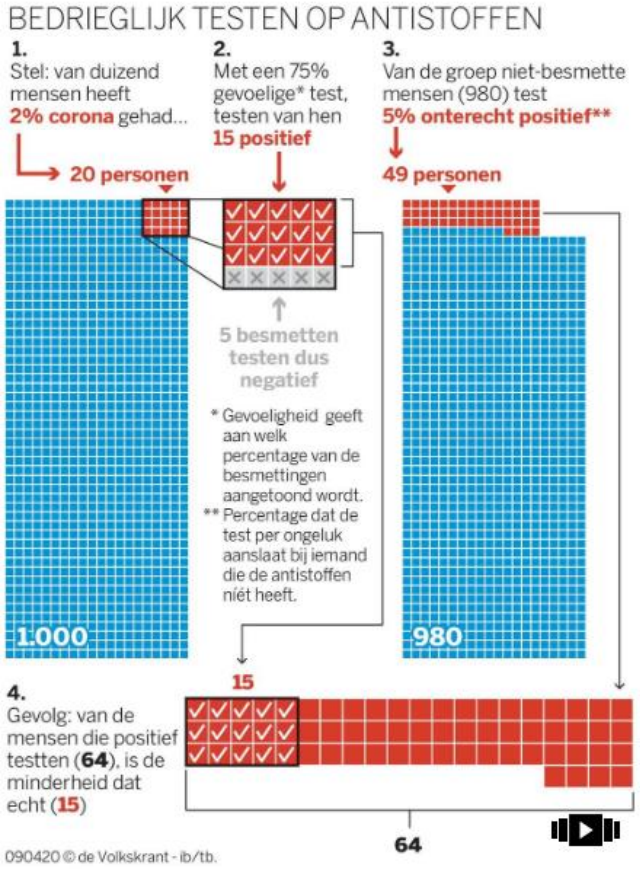

Data destilled (not trivial!):

- 2% of the population is infected
- The test detects infection in 75% of the infected cases
- For 5% of the non-infected cases, the test gives a false positive result

- If a test result is positive, how likely is it that this indeed indicates infection?

❑Less than 25%
❑Between 25% and 50%
❑Between 50% and 75%
❑Above 75%

-> Please enter your guess in the Zoom poll

Strategy: start with 1000 persons

	Infected	Non-infected	Total
Test positive			
Test negative			
Total			1000

Solution

	Infected	Non-infected	Total
Test positive	15	49	64
Test negative	5	931	936
Total	20	980	**1000**

- ✓ **Less than 25%**
- ❑ **Between 25% and**
- ❑ **Between 50% and**
- ❑ **Above 75%**

$$P(\text{person infected} \mid \text{test positive}) = \frac{15}{64} \approx 0.23$$

c. Teaching Support Policies

- School level: co-teaching
- School level: technical facilities (school, home, students)
- District level: assessment regulations
- District level: technical facilities (school, home, students)
- District level: pedagogical support and guidelines
- State/national level: advocacy for equity
- State/national level: funding opportunities for the above

NCTM | NATIONAL COUNCIL OF TEACHERS OF MATHEMATICS

NCSM

Conclusion Part 2: What can we do?

- **Teaching practices:**
  Many technical means available to get back to the pedagogical principles and views you had before COVID-19
- **Teaching content:**
  Several opportunities for mathematics teaching in COVID-19 data
- **Teaching support policies:**
  Support is needed at levels of school, district and state/nation

Overall conclusion/recommendation

- **Worldwide, math teachers engaged in distance teaching practices, with video conferencing getting popular**
- **This may have caused us to “forget” the math tools and math didactic approaches**
- **So, now that we’ve learned a lot, let’s go for more rich, didactic and interactive distance teaching practices!**

Utrecht University

Freudenthal Institute

Thank you for your attention!

iMath@Distance: distance mathematics teaching during COVID-19 lockdown

Paul Drijvers

Moving Forward in the Midst of a Pandemic: International Lessons for Math Teachers

Hosted by the U.S. National Commission of Mathematics Instruction – National Academies of Sciences, Engineering, and Medicine

July 9, 2020

Board on International Scientific Organizations

U.S. National Commission on Mathematics Instruction

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Board on International Scientific Organizations
U.S. National Commission on Mathematics Instruction

Q & A Time

Remember to place your questions in the ZOOM Q & A section.

Please complete the webinar survey.

- https://tinyurl.com/USNCMISu2020 **or**

  https://www.surveygizmo.com/s3/5709122/USNC-MI-Webinar-Survey-July-2020

- **Link available in chat box**

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Moving Forward in the Midst of a Pandemic: International Lessons for Math Teachers

Secondary-school mathematics: Looking ahead, an Israeli perspective

Part 2 in the webinar series,
"Moving Forward in the Midst of a Pandemic: International Lessons for Math Teachers"

Hosted by the U.S. National Commission of Mathematics Instruction – National Academies of Sciences, Engineering, and Medicine

A talk by Talli Nachlieli, Head, Mathematics Education Department, Levinsky College of Education (pictured below)

This time of uncertainty has brought with it a need for quick changes in teaching and learning. Now, after initial reactions to the requirement for remote teaching, and towards the next year, we ask: what could, or perhaps should, be breached in classroom teaching to provide math students with rich learning opportunities? This question is asked in the context of vagueness regarding the environment in which learning would take place. In this talk, we will address this question from different perspectives - the ministry of education in Israel, teachers, teacher educators and researchers, as we all prepare for the coming year.

Thursday, July 16, 2020 from 11:00 a.m. to 12:00 p.m. EDT via Zoom

Registration for this webinar is free. To register, please visit our Eventbrite page: https://www.eventbrite.com/e/secondary-school-mathematics-looking-ahead-an-israeli-perspective-tickets-112118882596

Please also join us on Thursday, July 9, 11 am EDT for Part 1, featuring **Paul Drijvers**, Professor i Mathematics Education, Freudenthal Institute, Utrecht University (The Netherlands) and on Thursday, July 23, 11 am EDT, for Part 3, featuring **Salomé Martinez**, Director of the Laborato Mathematical Education, Universidad de Chile (Chile).

Join us
July 16 & 23

A school year from home: How Chile has taught math during the pandemic

Part 3 in the webinar series,
"Moving Forward in the Midst of a Pandemic: International Lessons for Math Teachers"

Hosted by the U.S. National Commission on Mathematics Instruction – National Academies of Sciences, Engineering, and Medicine

A talk by Salomé Martínez, Professor, Director of the Laboratory of Mathematical Education, Center for Mathematical Modeling, Universidad de Chile (pictured below)

The COVID pandemic has been a great challenge for the Chilean school system. All primary and secondary schools closed just when the school year was starting. This situation has mobilized the Chilean Ministry of Education, school communities, and universities, to provide support and guidance for teachers, parents, and children. For instance, a prioritized curriculum was developed for 2020-2021, as well as new orientations for the teaching of math and other subject matters. In this talk we will discuss some of these nationwide efforts and share mathematics teachers' experiences with distance teaching. We will also present some principles and ideas to develop online mathematical tasks, drawn from our teacher professional program, that can be useful for mathematic teachers.

Thursday, July 23, 2020 from 11:00 a.m. to 12:00 p.m. EDT via Zoom

Registration for this webinar is free. To register, please visit our Eventbrite page: https://www.eventbrite.com/e/a-school-year-from-home-how-chile-has-taught-math-during-the-pandemic-tickets-112675663944.

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For more information, contact:

For additional information about the webinar series and USNC MI search: USNC/MI or visit:
https://www.nationalacademies.org/our-work/us-national-commission-on-mathematics-instruction-usnc-mi