



Inspectie van het Onderwijs
Ministerie van Onderwijs, Cultuur en
Wetenschap

Data management

A Dutch example

12 april 2022

Data management and
evidence-informed policy
making

ERI
SEE | Education
Reform
Initiative of
South
Eastern
Europe


EQET SEE

With funding from
 Austrian
Development
Cooperation



Let me introduce myself

- > 42 today!
- > Biomedical engineering and sociology
- > 10 years Inspectorate of Education
- > 3 years Ministry of Education, Culture and Science



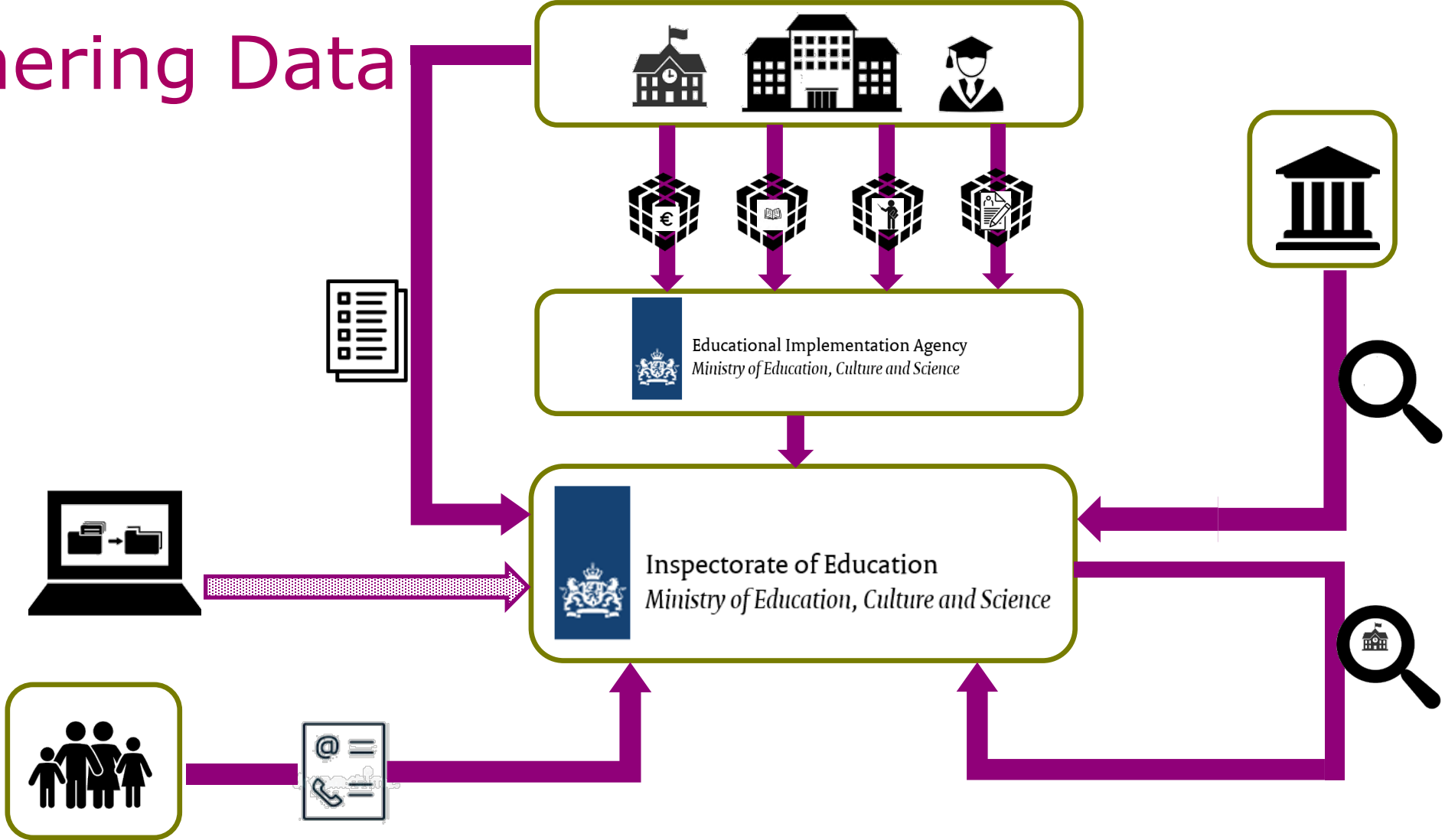


Three sessions

- Overview
 - collecting data
 - Types of data
 - Storing data
 - Using data
- Using data and information in school and school board inspections
 - Who and when do we data use
 - Example: Risk assessment
 - Example: analysing school guides
- Using data and information in system evaluation and thematic reports
 - Annual report
 - Thematic report



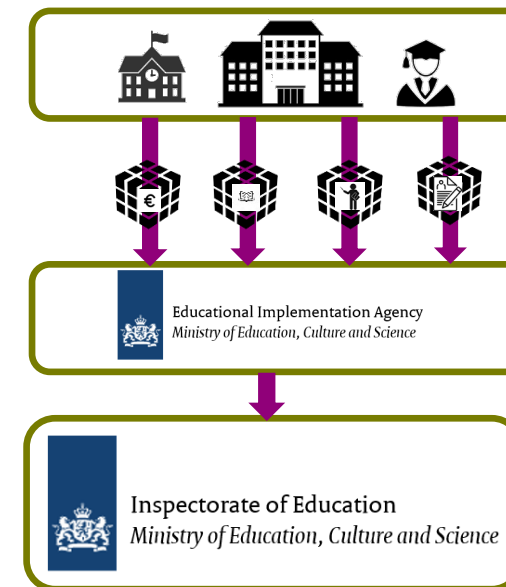
Gathering Data





Register data

- > Main sources of register data
 - Enrollments
 - Financial data
 - Teacher staff data
- > Getting good quality data is not easy
 - Long chain of partners
 - E.g. Schools register their students → commercial suppliers of administration packages → the educational implementation agency (owner of the register) --> transfer of a cleaned dataset to the Inspectorate .
- > Supplied in standardized format once-twice a year(ASCI, csv)
- > Register are not primarily for inspection purpose





Documents

- secure exchange of documents, applications, notifications, questionnaires

* verplichte velden

Bestand(en) toevoegen

Meerdere documenten tegelijk instellen? Selecteer door middel van de selectievakjes de documenten. Selecteer het bovenste selectievakje (voor bestandsnaam) om alle documenten in één keer aan te vinken. Als u op documenttype achter een van de bestandsnamen klikt krijgt u de mogelijkheid om in een keer voor alle geselecteerde documenten het documenttype in te stellen.

Bestandsnaam	Documenttype*	Aanvullende informatie	Privacygevoelige gegevens*
<input type="checkbox"/> TESTdocument#raretekens.pdf	Beleidsdocument	Trefwoorden VIERJAARLIJKS ONDERZOEK	Ja Nee
<input type="checkbox"/> TESTdocumentmettréma.pdf	Pta en examenreglement	Schooljaar 2021 - 2022	Ja Nee
<input type="checkbox"/> TESTdocument\$raretekens.pdf	Verslag van werkzaamheden	Kalenderjaren 2021	Ja Nee
<input type="checkbox"/> TESTdocument.pdf	Beleidsdocument	Trefwoorden THEMAONDERZOEK	Ja Nee

Records per pagina 25 1 - 4 van 4

E-mailadres voor bevestigingsmail *

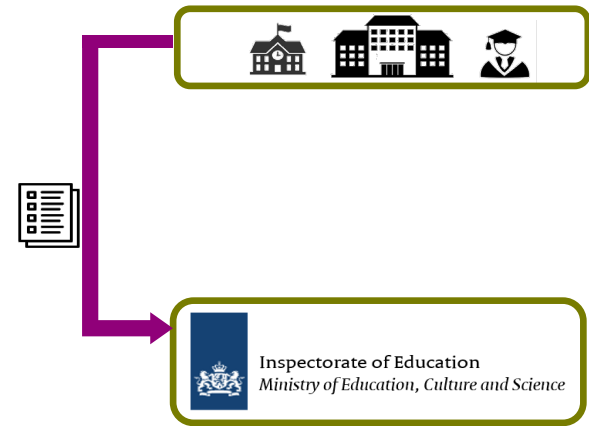
Het bij uw account behorende adres: a.nienhuis@owinsp.nl

Een anders e-mailadres, namelijk:

Bevestigingsmail niet nodig

Lever documenten aan

oefening plusser





Documents

> secure
questi

Schorsingen en verwijderingen

is, notifications,

Internet Schooldos:
Home Aanleveren

Home > Aanleveren

Aanleveren

U kunt aan de Inspectie van he

Documenten

U kunt verschillende soor
documenten aan de Insp
aanleveren

> Bestanden aanleveren

Introductie
Adresgegevens
Contactpersoon
Leerling
Onderwijs
Schorsing
Eerdere schorsing
Reden
Toelichting

8 / 9

Reden

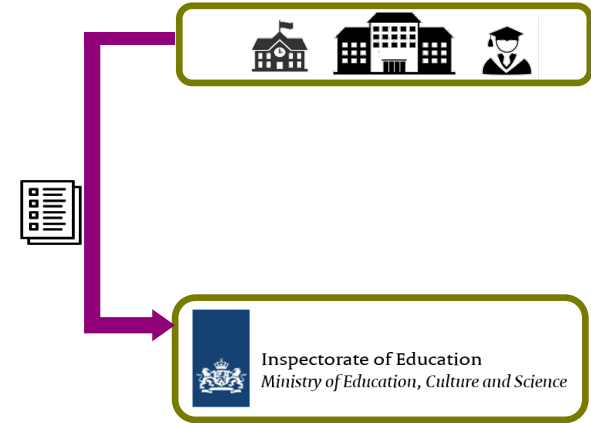
* Geef de redenen van schorsing (meerdere antwoorden mogelijk)

- Fysiek geweld tegen personeel
- Fysiek geweld tegen medeleerlingen
- Intimidatie/bedreigen met fysiek geweld tegen personeel
- Intimidatie/bedreigen met fysiek geweld tegen medeleerlingen
- Verbaal geweld tegen personeel
- Verbaal geweld tegen medeleerlingen
- Discriminatie/racisme tegen personeel
- Discriminatie/racisme tegen medeleerling
- Seksueel misbruik/seksuele intimidatie/ongewenst seksueel getint gedrag tegenover personeel
- Seksueel misbruik/seksuele intimidatie/ongewenst seksueel getint gedrag tegenover medeleerling
- Pesten/treiteren van medeleerlingen zodat zij zich niet veilig voelen in de school
- Verzuim
- Vernieling
- Wapenbezit
- Diefstal/heling
- Bezit en/of gebruik van drugs of alcohol
- Bezit en/of gebruik van vuurwerk
- Fraude (bij proefwerken en examens e.d.)
- Binnen de lessen door storend gedrag het leerproces belemmeren
- Anders, namelijk

* Is de voortgang van het onderwijsproces gewaarborgd?

- Ja
- Nee

< Vorige > Volgende





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> Besi

9%

Sfeer op school en in de les

Geef hieronder aan in hoeverre je het eens bent met de stellingen

	Helemaal mee oneens	Mee oneens	Niet eens, niet oneens	Mee eens	Helemaal mee eens
1. Als ik me niet aan de schoolregels zou houden, dan word ik daar op aangesproken.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Schoolregels worden door leraren op een gelijke manier toegepast.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Als ik een goed cijfer haal dan word ik uitgelachen of geplaagd.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Als ik een probleem op school zou hebben, dan weet ik bij wie van mijn school ik om hulp kan vragen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Als er iemand wordt gepest, of er is ruzie op school, dan weet ik bij wie van mijn school ik om hulp kan vragen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Als ik iemand van mijn school hulp vraag vanwege een probleem, dan probeert hij/zij het probleem op te lossen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Bij mij in de klas is het stoer om een laag cijfer te halen.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Op mijn school worden pesters aangepakt.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Wanneer ik iets niet begrijp in de les, dan vraag ik bij mijn leraren om extra uitleg.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Vorige

Volgende



Inspectorate of Education
Ministry of Education, Culture and Science



Contact form

Use this form to ask any questions you have or to communicate with the Inspectorate of Education. We aim to respond as soon as possible.

The Inspectorate of Education treats personal data with great care. To find out how we do so, please go to the [privacy page](#) on our website.

Nederlands

* mandatory fields

Personal details

- Ms
- Mr

Your name *

E-mail address *

Telephone number

In what capacity are you asking your question or posting your message? *

Your question or message

Which sector does it concern? *

Name of educational institution

Location of educational institution

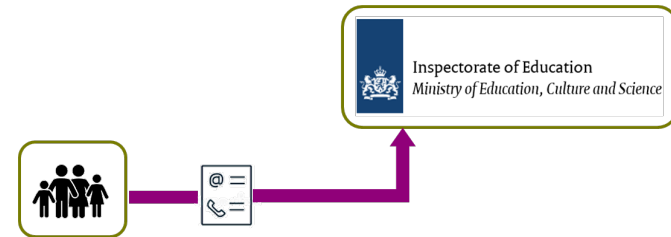
Year of programme

Naar boven

Con

- > We
- > Use
- > But

ents





Scores on quality standards

- > The outcome of school and schoolboard visits are mainly scores on quality standards

Elementen	Onderzoeksteam	Activiteiten	Onderzoeksmap	Indicatoren	Rapporten	Oordelen	Afspraken
Filter	-- Selecteer indicatorstype --	BST Waarderingskader 2021	Wageningen - Stichting Wageningen	-- Selecteer indicator niveau --			
Indicator	Onderzoekskader	Element	In rapport	Score			
EOB	Eindoordeel bestuur	BST Waarderingskader 2021	77533	✓	○○○		
BKA	BESTURING, KWALITEITSZORG EN AMBITIE	BST Waarderingskader 2021	77533	✓			
BKA1	Visie, ambities en doelen	BST Waarderingskader 2021	77533	✓	○○○		
BKA2	Uitvoering en kwaliteitscultuur	BST Waarderingskader 2021	77533	✓	○○○		

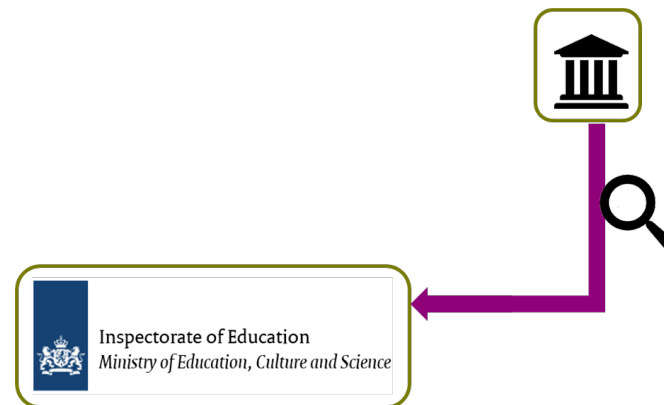
1 - 5

Terug Beëindigen Publiceren Details Planning



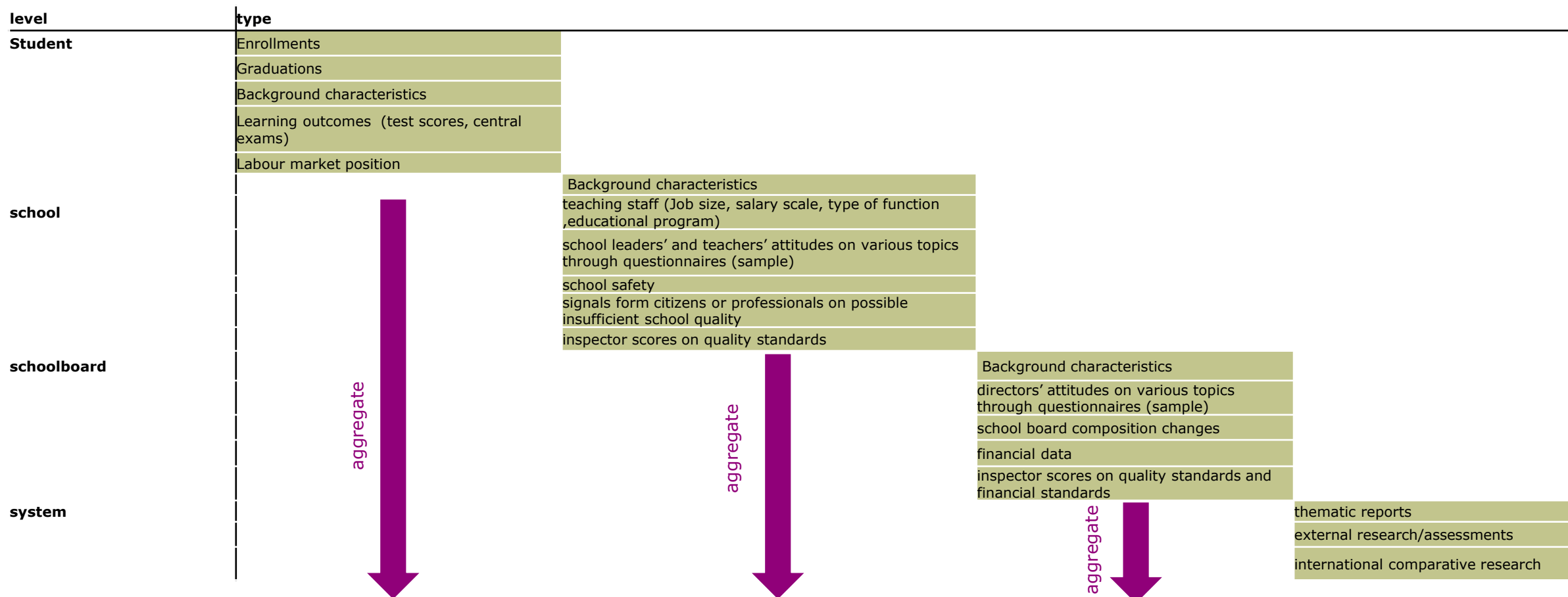
External research

- > In some cases we outsource research.
- > For examples research on skills that are not routinely tested in our national testing program. For example, citizenship skills or writing skills.
- > The whole process from call to finishing the report takes 2 years on average but can take up to 3,5 years (!)



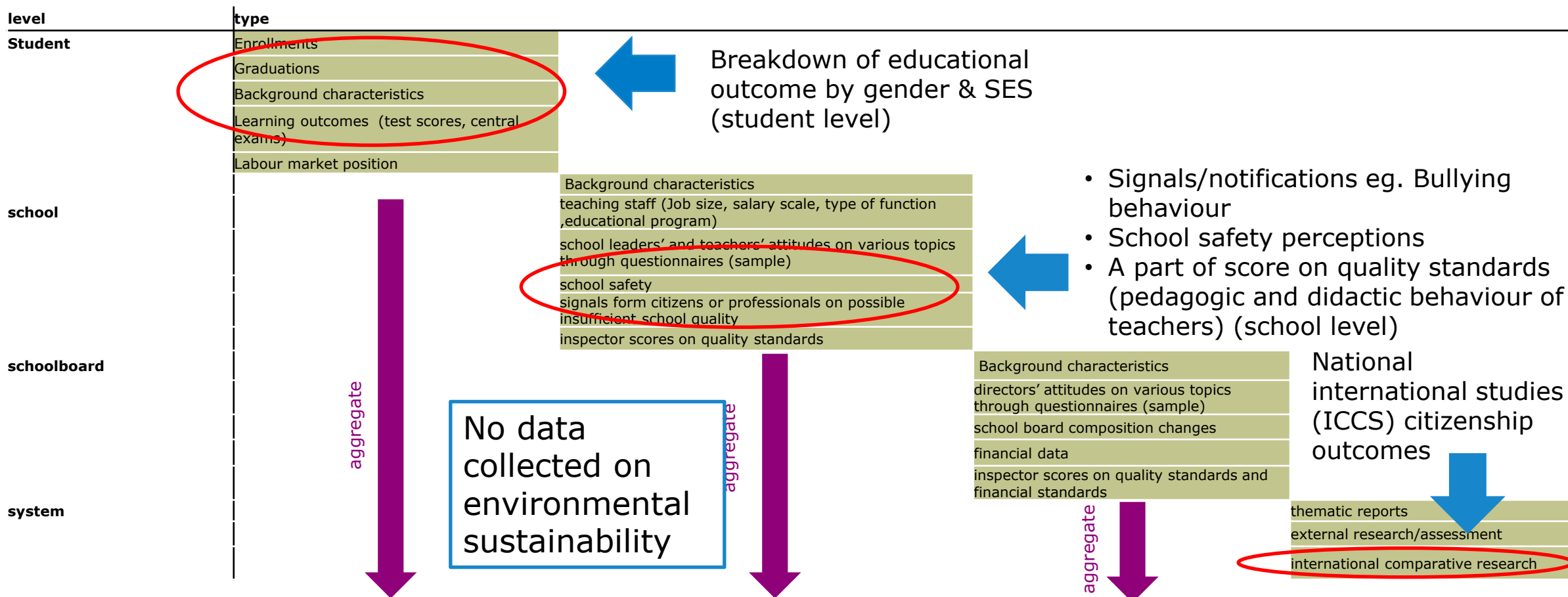


Types and levels of data





Social inclusion, gender equality and environmental sustainability





Storing, analysing and presenting data (1)

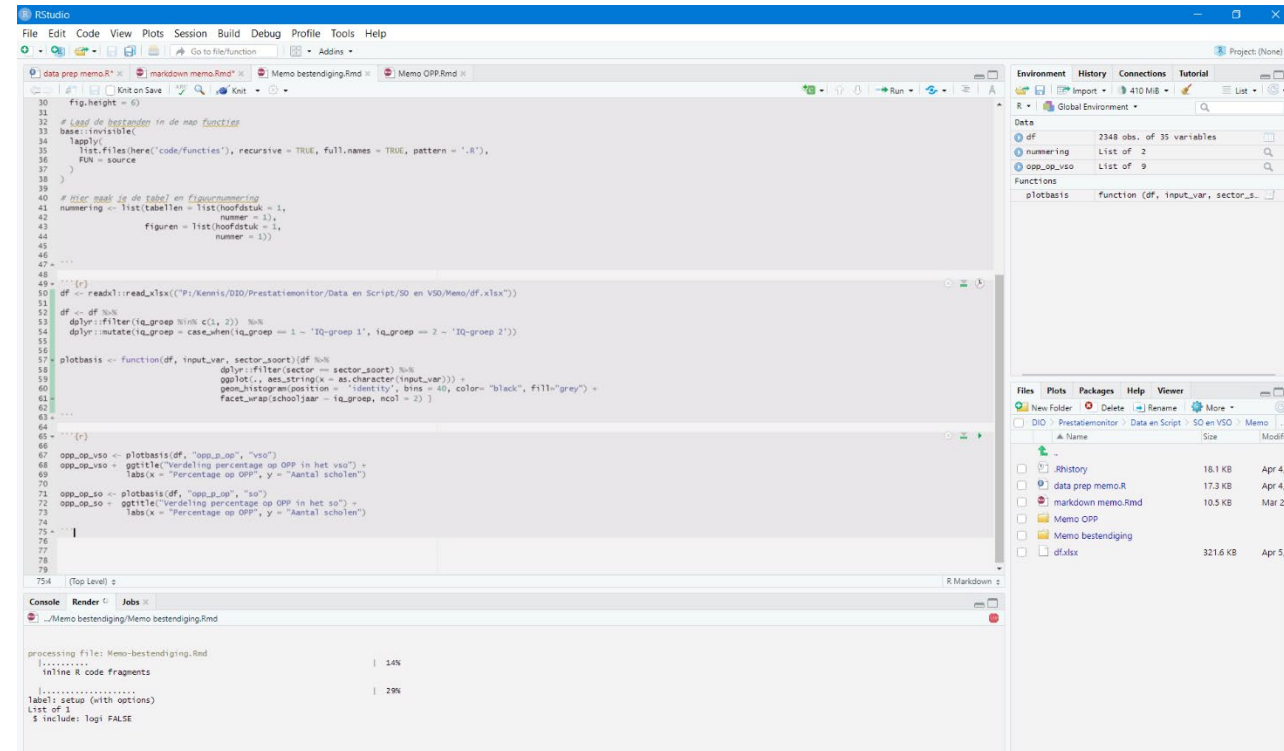
> Storing

- Scores on quality standards and notifications/signals automatically stored in Datawarehouse
- register data and questionnaire data stored on network drive
- Aggregates on school/board level are stored in Datawarehouse for information product purpose



Storing, analysing and presenting data (2)

- Analysing
 - Statistical package R (spss):
 - Code: repeatable
 - R is opensource basic version is free





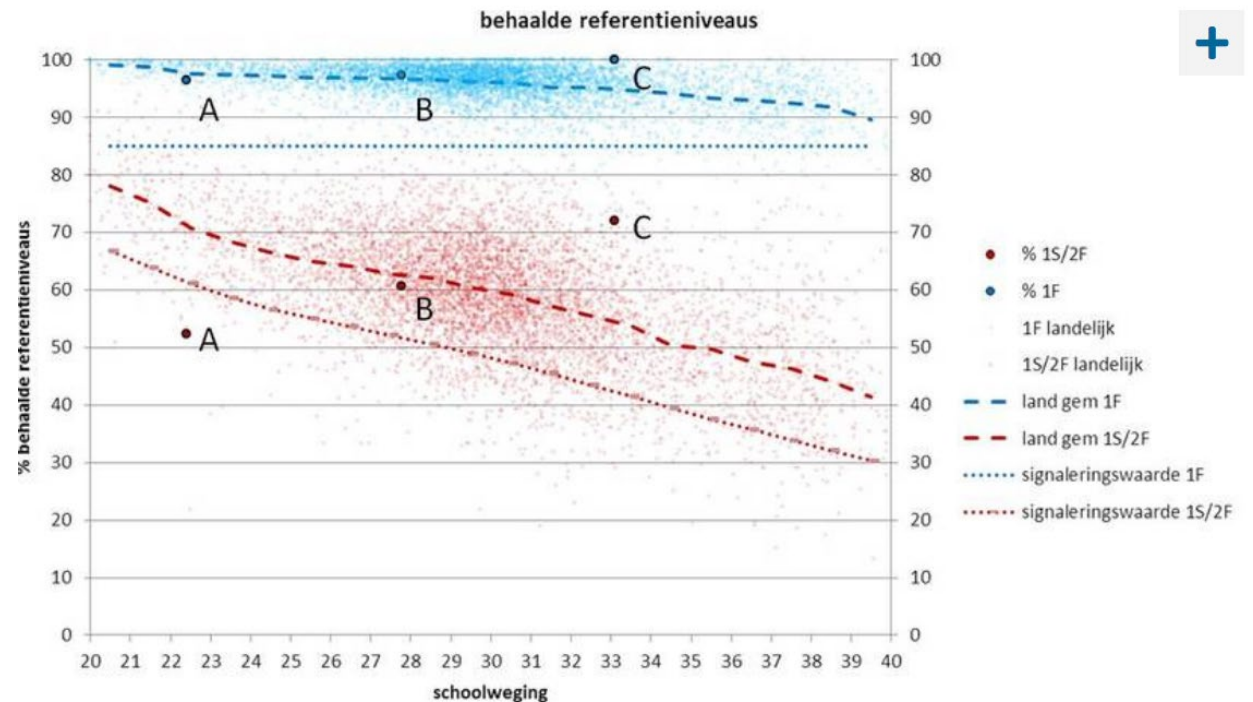
Example 1 longitudinal indicators

student ID	year	school id	level	Zip code	grade	graduation	
1	2018	a	primary	1011	1	Na.	
1	2019	a	primary	1011	2	Na.	
1	2020	a	primary	1011	3	Na.	Grade retention
1	2021	a	primary	1011	3	Na.	
2	2018	a	secondary	1011	8	Na.	
2	2019	b	secondary	1011	9	Na.	
2	2020	b	secondary	1011	10	Na.	Drop out
3	2018	c	tertiary	1011	14	no	
3	2019	c	tertiary	1011	15	Yes	Graduation
4	2018	a	primary	1011	3	Na.	
4	2019	a	primary	1011	4	Na.	School switch
4	2020	b	primary	1011	5	Na.	
4	2021	b	primary	1012	6	Na.	
5	2018	a	primary	1011	3	Na.	
5	2019	a	primary	1011	4	Na.	Incentive but no school switch
5	2020	a	primary	1012	5	Na.	
5	2021	a	primary	1012	6	Na.	



Example 2 Measuring educational output primary education

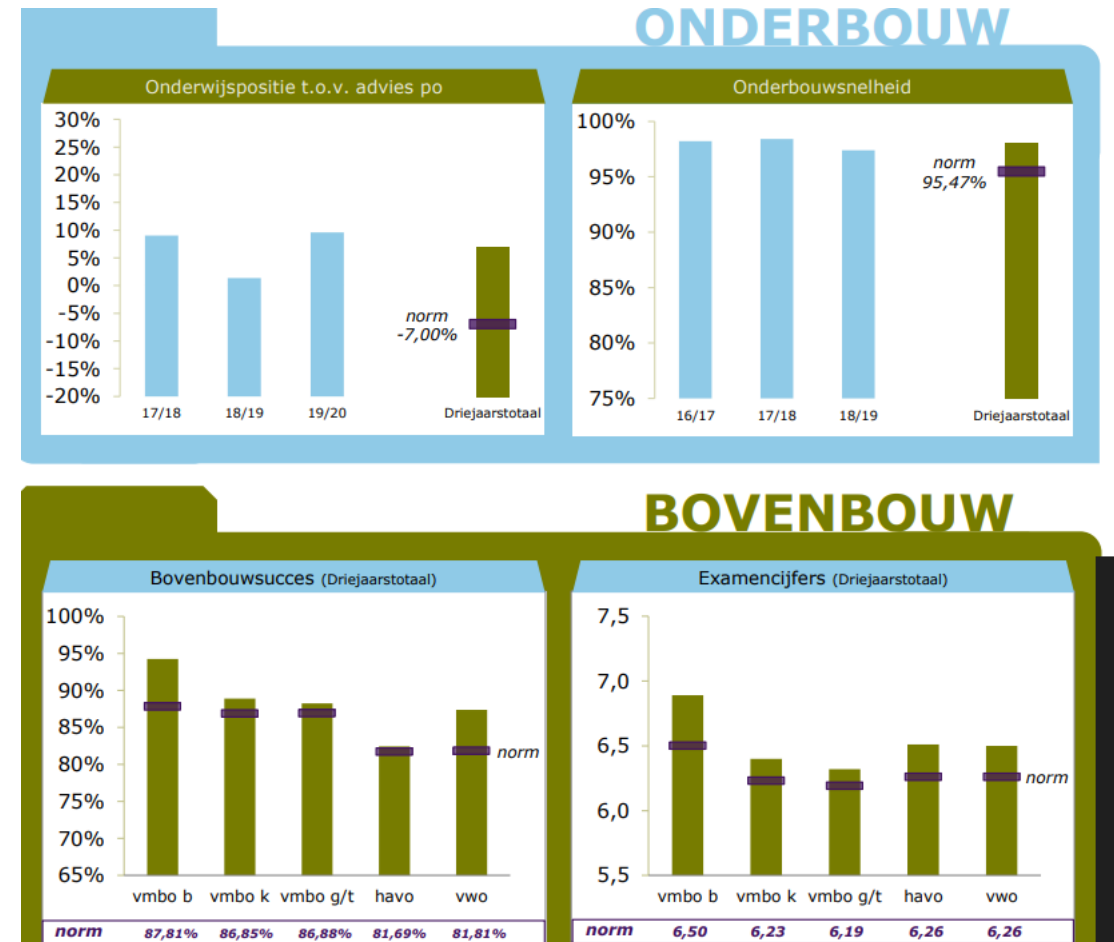
- > Principles;
 - Central testing end of primary (grade 6)
 - three outcomes (<1f, 1f, 2f/T)
 - “single indicator”
 - 3-year averages
 - Population dependent norm





Example 2 Measuring educational output Secondary education

- > Principles;
 - Balanced score
 - Teacher advice vs. Position
 - Lower grade speed
 - Upper grade success
 - Exam results
 - School population dependent norm
 - 3 years averages
- > insufficient if 2 indicator below the norm



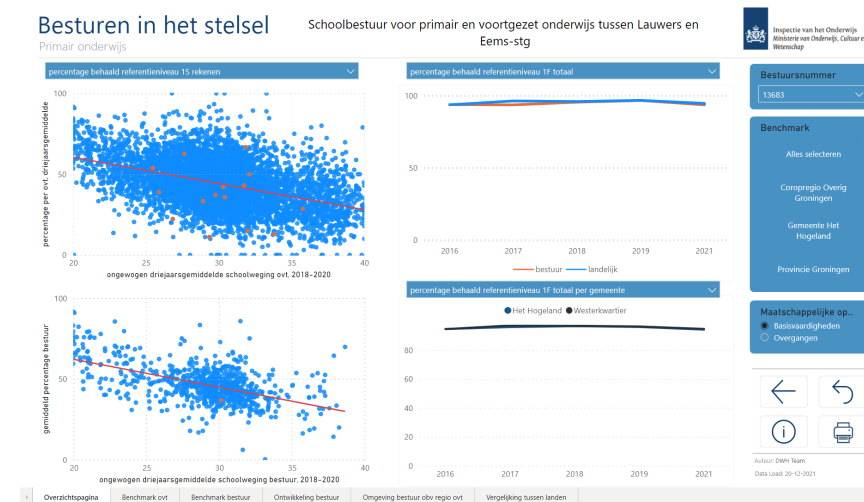
Storing, analysing and presenting data (3)

> Presenting

- Reports (thematic/visits)



- Information products;
data visualization tool (powerBI)





Questions - discussion

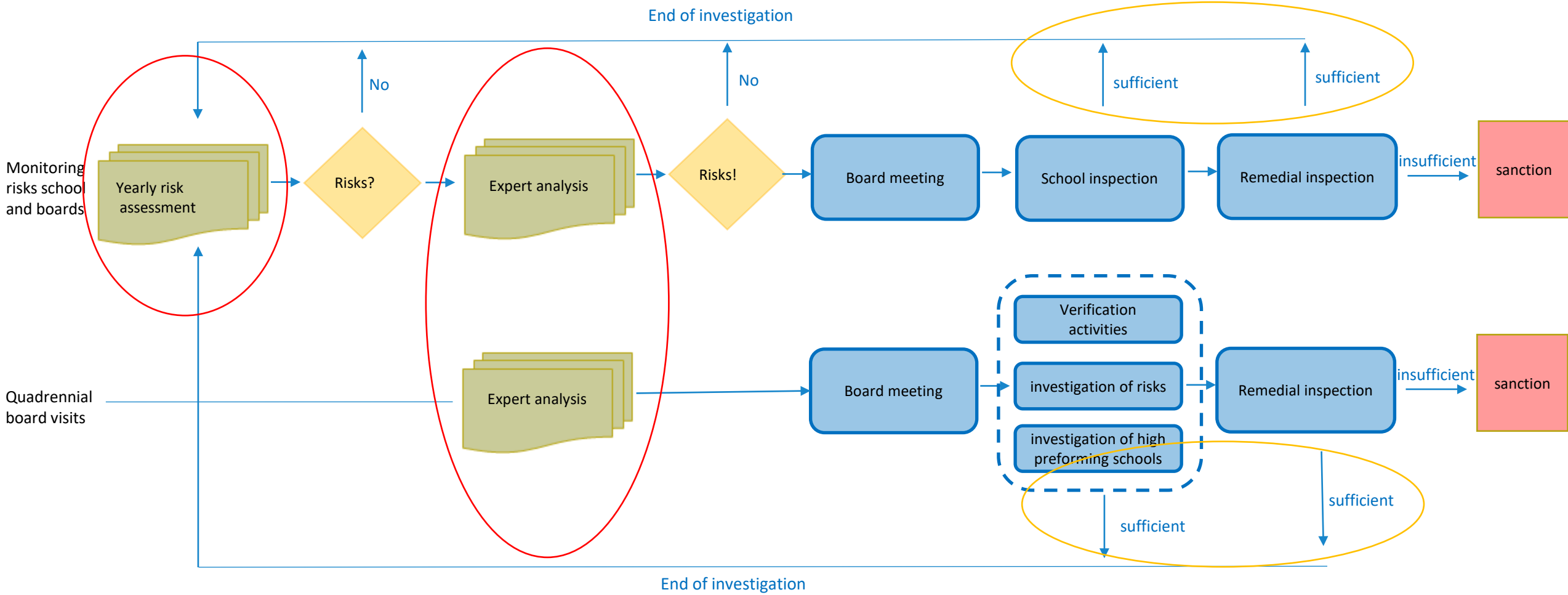




Session 2 Using data and information in school and school board inspections



School and school board inspections





Risk assessment

- › In addition to the quadrennial school board inspections, the Inspectorate performs yearly monitoring of all schools and school boards.
 - Based on qualitative knowledge of inspectors; signals; and risk models
 - When there may be (large) risks; analysts perform desk research.
 - This could result in an inspection visit.
- › Both the risk assessment and the desk research involve quantitative data. Data /information is provided to analyst and inspectors via a data visualization tool (power BI)



Risk assessment model

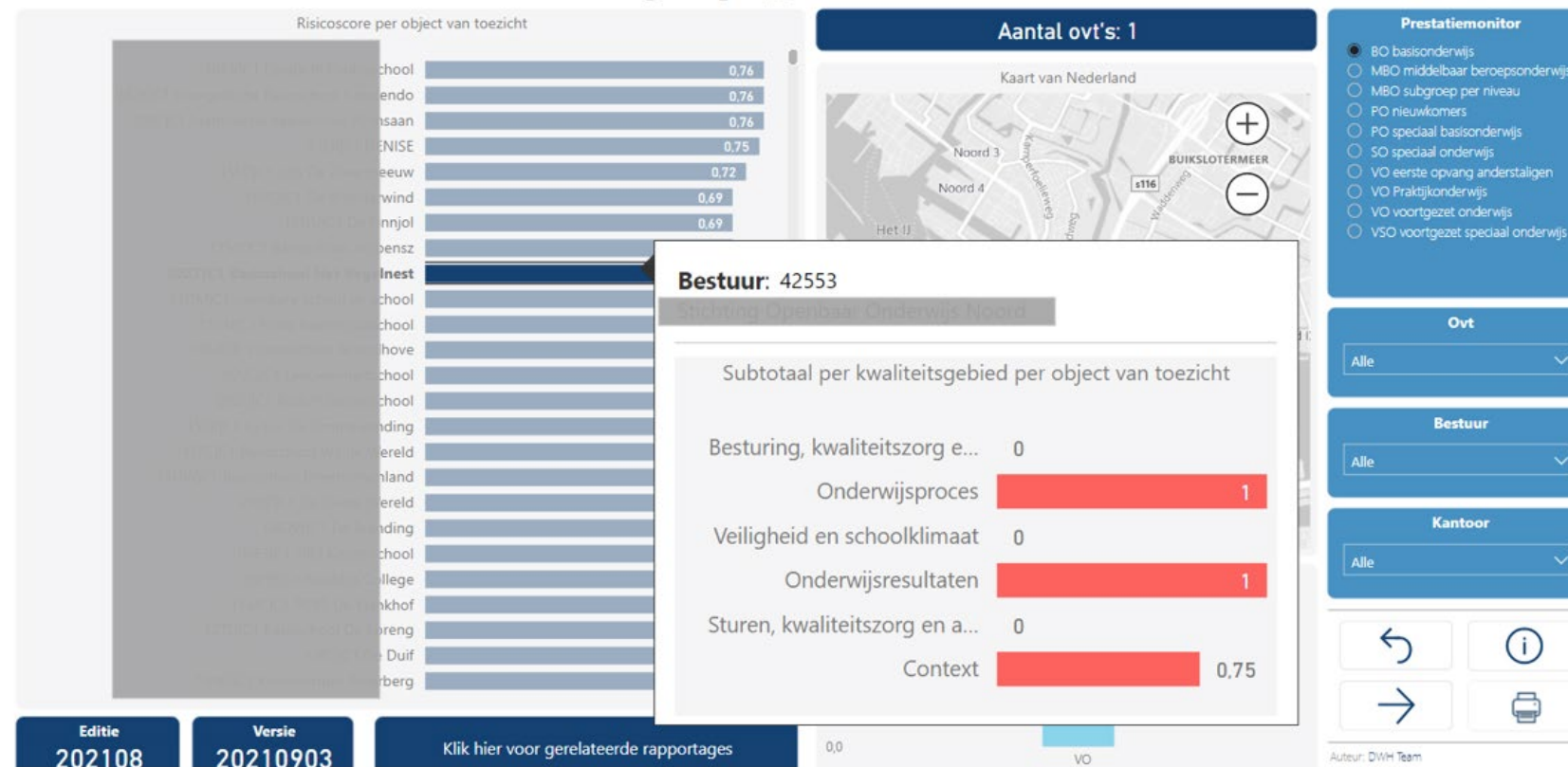
- › For each educational level we have a risk model
- › a ranked list of schools/school boards with a risk score. With this score we try to predict insufficient school quality. Scores are based on a combination of indicators (depending on monitor)
- › A norm per indicator
 - Legal
 - Empirical
- › Dichotomous outcome per indicator (yes/no risk).
- › Total score is weighted summation of indicators.
 - Weights are mostly appointed by annalists/inspectors, partly empirical



Risk assessment model

Prestatiemonitor BO basisonderwijs

Overzicht van de risicoscores per object van toezicht





Risk assessment model

> Insight in origin of risk-scores

Ovt	Standaard/categorie	Indicator	Norm/risicocategorie	Risico	2018-2019	2019-2020	2020-2021	Gemiddelde
Basisschool Het Vogelnest	OP2: Zicht op ontwikkeling en begeleiding	Zittenblijvers	< 1,55	X	16,14	9,00		11,38

Score indicator per jaar

Jaar	Score
2018-2019	16,14
2019-2020	9
Gemiddelde	11,38

(Gewogen) gemiddelde	Norm	Risico
11,38	< 1,55	X

Metadata	
Titel	Waarde
Berekeningswijze	Op basis van de schoolweging wordt een verwacht percentage van de leerlingen dat blijft zitten berekend. De indicatorscore is het verschil tussen het daadwerkelijke percentage zittenblijvers en het verwachte percentage.
Beschrijving /definitie	Deze indicator is berekend op basis van het percentage van de leerlingen dat blijft zitten, gecorrigeerd voor de schoolweging.
Indicatornummer	1006
Korte naam	Zittenblijvers
Kwaliteitsgebied	Onderwijsproces

Aanvullende informatie		
Toelichting	2018-2019	2019-2020
Het totaal verwachte percentage zittenblijvers aan de hand van de schoolweging	4.42	4.76
Percentage zittenblijvers bovenbouw	19.67	20.59
Percentage zittenblijvers onderbouw	21.74	2.44

Sector: **PO** OVT: **202T|C1**

Bestuur: **42553** Versie: **20210903**

Selecteer een kwaliteitsgebied

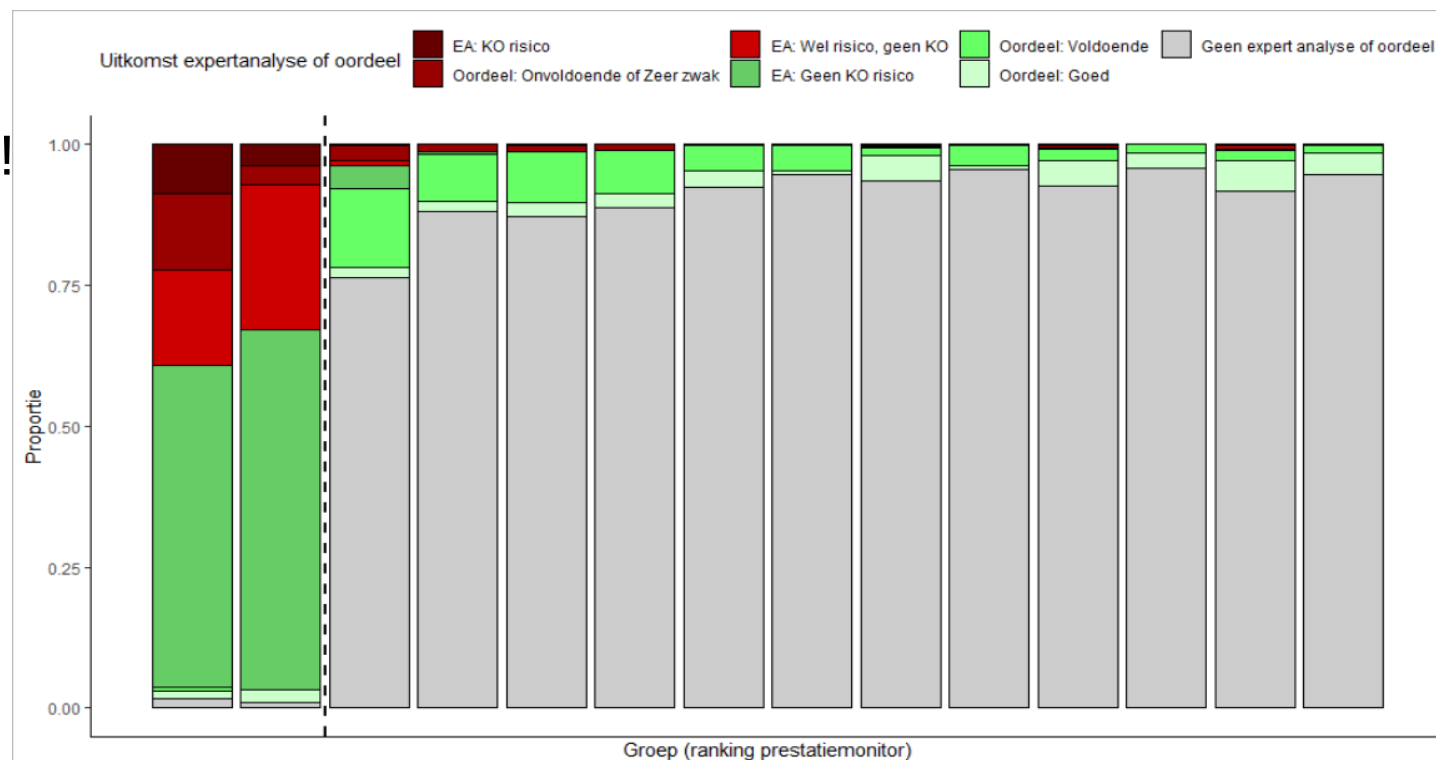
Onderwijsproces

←
🏠
🖨️



Predictive power of the risk assessment model

- > part of PDCA cycle
- > inspector's assessments as "ground truth"
- > quite a few false positives
- > experts' options very important!
- > false negatives?





Datasciense programme

- > New ways of using data
- > Example: Text mining for parental contributions in school guides
 - Schools in the Netherlands often request additional parental contributions for 'extra' activities: Bilingual-education; school-trips; Christmas celebrations; etc.
 - But, by law: "Every child/student should be able to participate in all school activities, regardless of whether parents are able (or willing) to pay the additional contribution".
 - Important topic in relation to equal opportunities / segregation
 - But reading all school guides is time-consuming...
 - Hackathon: can we 'mine' the school guides to look for potentially unlawful texts
- >



Text Mining

- Step1. For the hackathon we transferred ~2000 school guides to 'flat' text (from pdf to .txt). Partly based on image recognition.



Schoolkosten

Er zijn drie soorten schoolkosten. De eerste categorie komt voor rekening van de school en bevat het lesmateriaal. De tweede categorie schoolkosten is voor rekening van de ouders. Dit zijn materialen die persoonsgebonden zijn, zoals gymkleren, of zaken die meerdere leerjaren of door meerdere kinderen binnen één gezin gebruikt kunnen worden, zoals woordenboeken en atlassen. De derde categorie zijn de overige schoolkosten voor activiteiten waar de school

geen geld van de overheid voor ontvangt. Vaak wordt voor deze kosten een bijdrage gevraagd van de ouders. Deze ouderbijdrage is vrijwillig. Ouders zijn dus niet verplicht deze bijdrage te betalen. Scholen kunnen een kwijtscheldings- of reductieregeling instellen om minder draagkrachtige ouders tegemoet te komen in schoolkosten.

Categorie I	Categorie II	Categorie III
Wat scholen gratis aan leerlingen moeten verstrekken*	Waar scholen kosten voor in rekening kunnen brengen bij ouders**	Waar scholen kosten voor in rekening kunnen brengen bij ouders***
• Leerboeken	• Atlas	• Excursies



There are three types of school fees. The first category is for the account of the school and includes the teaching materials. The second category of costs is for the account of the parents. These are materials that are personal, like gym clothes, or things that can be used for several years or by several children within one family, like dictionaries and atlases. The third category is the other school costs for activities for which the school does not receive any money from the government. Often parents are asked to contribute to these costs. This contribution is voluntary. Parents are not obliged to pay this contribution. Schools can set up a waiver or reduction scheme to help less well-off parents meet their school expenses.



Text Mining

- > Step 2 Detection rules
- > Niet...kunnen... betalen / niet... willen ... betalen
- > -> "can not... pay" / "do not... want... to.. pay"
- > Betaling Verplicht (negatief)
- > -> "payment obligatory"

Other contributions

For the extra activities of Cult and Rockblock, a separate contribution is charged. For the special programme of the students of the culture classes, an extra contribution of 295 euro per year is asked. All these components do not fall under the voluntary parental contribution. There is an **obligation to pay** if your son/daughter makes use of this.

10.12 School fees in general

The law states that no one may be denied good education because parents/carers **cannot pay** the parental contribution. We endorse this wholeheartedly. The school guide therefore states that all parental contributions are voluntary. This means that you could indicate for which facilities and for which excursions you do not wish to pay. We believe that, with the exception of the international trips mentioned above, it should not be so optional.



Questions - discussion





Session 3

Using data and information in system evaluation

- Annual report 'State of Education' (Maarten)
- Thematic evaluations/inspections (Herman)





The State of Education (SoE)

- > Constitution, art. 23.8:
- > The government reports every year on the state of education to the parliament
- > Since 1817
- > National report made by the Inspectorate of Education
- >



Characteristics SoE

- Description of developments/ trends over time (based on framework for system level quality)
- Pupil's perspective
- Inspector's knowledge (causes), research & literature
- Transparent; infographics, open data
- Independent



Core function: Qualification

Education provides pupils with the knowledge, attitudes and skills that meet the needs of society and are appropriate to the abilities and talents of pupils.

Description

The educational achievements and the level achieved by all pupils collectively are of an optimum level across various groups and subject areas. One aspect of this is that every pupil is literate and numerate with respect to his or her abilities. Educational achievement is consistent with the needs of society, meaning that every pupil will ultimately be able to function well in society. In comparison with (previous) trends, both national and international, there is stability or movement in the direction of the ambitions of society. The quality of assessment and examinations leads to relevant and reliable statements at the system level regarding the level, educational achievement and reference levels of pupils. The quality of the curriculum includes knowledge, attitude and (digital) skills and is regularly evaluated in the light of current events and (international) scientific standards.

Core function: Socialization

Education contributes to the acquisition of the social and civic skills necessary for proper participation in and a proper contribution to society.

Description

The knowledge, attitude and skills of pupils are consistent with the level that is required to function properly in a multifunctional society governed by a democratic state. This means social and civic skills, and the fundamental values of a democratic state, which are necessary in order to participate successfully in it. In evaluating education's contribution to society, previous results achieved in the education system, international comparisons and substantive requirements take precedence, as well as the needs and ambitions of society. A free and multifunctional society requires citizens who respect basic democratic rules and norms, who can form opinions independently, are willing to take responsibility and are equipped to handle diversity.

Core function: Allocation, including selection and equal opportunities

Pupils pursue an educational career that is consistent with their abilities and talents as well as the labour requirements of society.

Description

Education ensures that pupils pursue an educational career that is appropriate to them and have an equal opportunity to take part in the type of education that suits them best. Education ensures that pupils succeed in their (subsequent) education and obtain a qualification that enables them to find a suitable place in the labour market or to continue their education in a suitable way. The recommendation of a future school or place, the choice of school, the transition between schools and connections within (inclusive) education are effective and do not hinder pupils' advancement. In other words, education is equally accessible and available to all those pupils who belong there based on their abilities. There is stability or movement in the direction of the ambitions of society in relation to (previous) trends, both national and international.

Requirements for fulfilling the core functions

Education is resourced and organized in such a way that continuity can be ensured and it contributes to the three core functions outlined above.

Description

Education is organized in such a way that it is able to fulfil the three core functions of the system by means of cooperation and a shared dynamic. Good governance and a proper vision of what needs to be achieved are important in this respect. Cooperation between institutions, in order to achieve

- New: a framework for system-level quality; Core functions
 - Qualification
 - Socialization
 - Allocation
 - requirements



The making of SoE

State of Education System section

Version: 8 March 2021

- > Output:
- > short and long report (30 & 200 pages)
- > website
- > conference to discuss the results with educational stakeholders

- > With:
- > interdisciplinary team of 20 inspectors and researchers (parttime, total: 9 fte)





Which data and information is used

- > Own data:
 - From schoolboard inspections
 - From thematic evaluations/inspections
 - From data schools have to submit to the Inspectorate (e.g. Testresults, wellbeing,..)
 - Combination of register data and secondary data mostly from national statistical bureau
- > External data:
 - Results from research universities
 - International reviews (PISA, PIRLS, etc.)



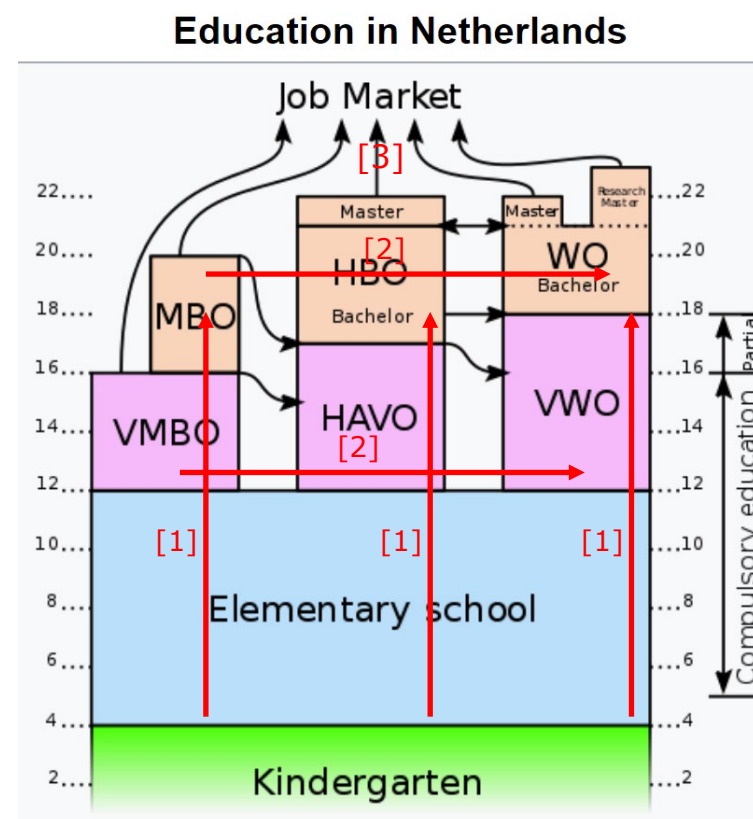
Accountability

- › Try to keep it readable for our target group (policy makers, school leaders, teachers, non-researchers)
- › However, claims must be supported and publicly available
 - Technical notes (own work)
 - Academic papers
 - External studies



Connecting indicators to framework

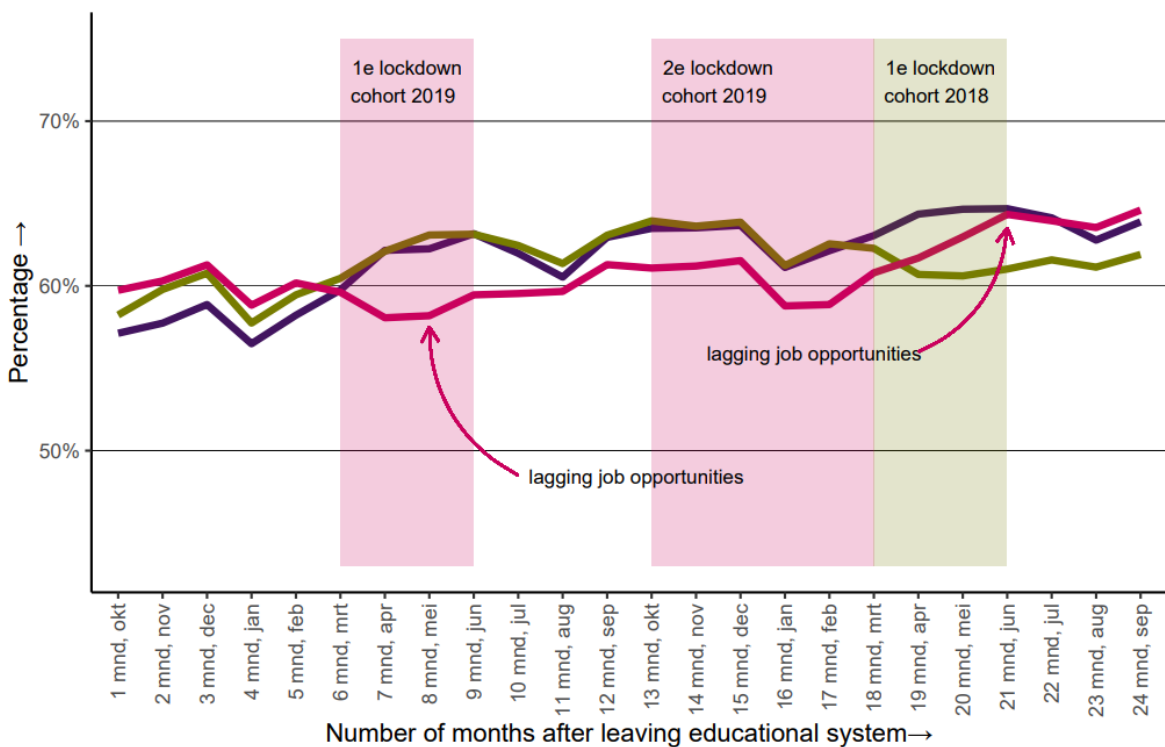
- > Example: Allocation
- > We have a tracked system.
 - equal opportunities in transition between educational levels [1]
 - Flexible route within educational levels for late bloomers [2]
 - Do we educate for good job opportunities? [3]



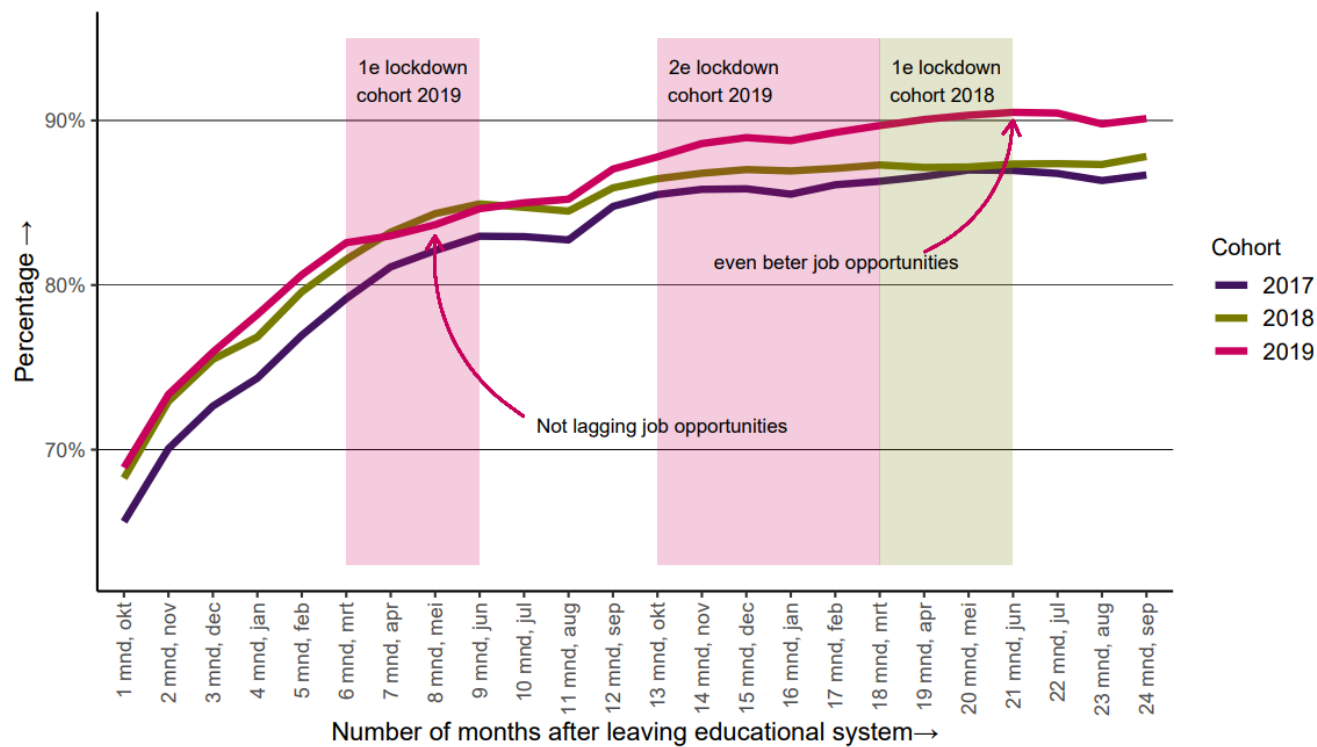


Example: corona pandemic and transition to the labour market

Lower level VET



Masters degree





Thematic evaluations/inspections

- Difference between schoolboard/school inspections and thematic inspections/research
 - Schoolboard/school inspections are standard: standard framework and processes
 - Thematic inspections: specific, special designed framework and processes
- Why we need thematic inspections?
 - To gather information we do not gather during school board/school inspections
 - To answer specific question (e.g. from parliament, ministry)
 - To monitor specific developments in education



Preparation of thematic inspections

- Request from minister to do research because of public debate
- Formulate research questions
 - What are characteristics of pupils with dyslexia? How many pupils?
 - What is relation with quality of education in reading in school and number of pupils with dyslexia?
- Develop specific framework (in consultation with research department of Inspectorate and often also with external researchers)




Preparation of thematic inspections

- Develop research instruments (questionnaires, observation forms, interview guidance, etc.)
 - Questionnaire to gather data about number of pupils with dyslexia, characteristics of these pupils (e.g. gender, age), test results reading, etc.
 - Lesson observation form based on knowledge of effective teaching of reading
 - Interview guidelines to gather structured information
 - Overall form for judgements of inspectors
- Inspector is researcher!



Use of data of thematic inspections

- Analysis of all gathered data by research department of inspectorate
- Statistical analysis to answer research questions  technical report
- Public report about the thematic inspection



Some examples of thematic inspections

- > Dyslexia in Primary education
 - Why?
 - How?
 - Which data?

- > Monitoring quality of teaching
 - Why?
 - How?
 - Which data?



Specific type of systemic evaluation: annual evaluation of knowledge and skills of pupils

- › About parts of curriculum that are not routinely tested in our national testing program
- › Variable: each year other subject(s)

- › Aims
 - To get insights in the development of achievements of pupils in several subjects
 - Obtained achievements are compared with national standards
 - To get insights in relation between level of achievement and the quality of education
 - To generate dialogue and debate in education about quality of education



Specific type of systemic evaluation: annual evaluation of knowledge and skills of pupils

- Inspectorate is in charge of the performance of this research
- Performance is done by external partners (e.g. universities, test institutes)
 - Development of instruments (e.g. questionnaires, observation forms)
 - Development of specific instruments to test the achievement
- Schools are not obliged to participate
- No consequences for other supervision of Inspectorate
- Specific public report and results used for annual report

Schrijfvaardigheid in beeld

In visie nadruk op communicatieve en expressieve functie



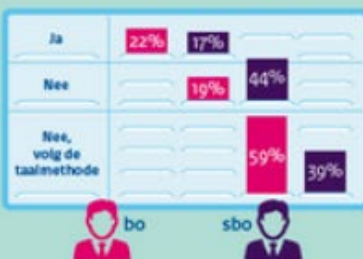
Top 3 tekstsoorten, schrijfdoelen en soorten publiek



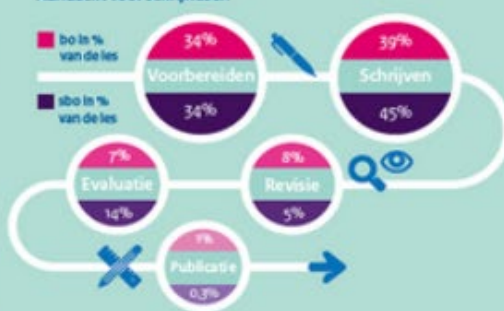
In lesdoelen nadruk op correct taalgebruik



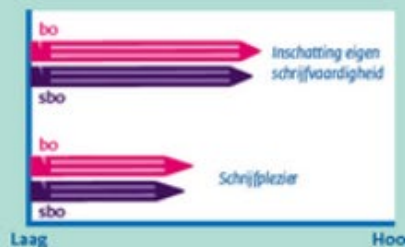
Leerdoelen met name op basis van taalmethode



Aandacht voor schrijffasen



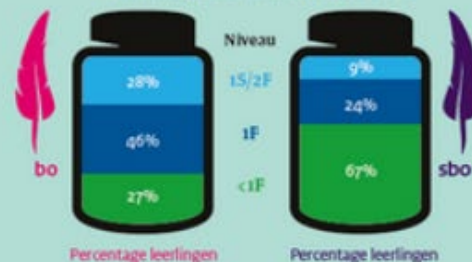
Inschatting eigen schrijfvaardigheid en schrijfplezier leerlingen



Nagenoeg geen verschil in prestaties tussen 2009 en 2019



Beheersing referentieniveaus in bo en sbo



Samenhang schrijfprestaties met kenmerken van leerlingen, leerkrachten, scholen en schrijfonderwijs





Thank you for
your attention!

Questions? Please contact:





Text mining

> *step 3 Risk score per school guide*

