Teacher-facing learning analytics
Recap

Learning analytics
Many data sources

Users
  ◦ Teachers
  ◦ Students
  ◦ Parents
  ◦ Administration
Learning analytics

“Learning analytics is the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environments in which it occurs.”

-- The Society for Learning Analytics Research (2011)
Teacher-facing learning analytics

No exact definitions... (yet)

Concept not new
- e.g. teacher dashboards
Student-facing learning analytics

Student-facing LA are

“solutions that enable students to view their own data via a **dashboard**, in order to **interpret** and **act upon** it in some way, but (...) other forms are possible”

-- Kitto, Lupton, Davis & Waters (2017)
Possible new definition?:

Solutions that enable teachers to see the data of their students via, for instance, a dashboard, in order to interpret the data and act upon it in some way.
Learning dashboards
(Verbert, Duval, Klerkx, Govaerts & Santos, 2013)

Dashboards that support learning or teaching

Used in
• Face-to-face teaching
• Online learning
• Blended learning setting
Teacher dashboards

Systems that aid teachers in (Molenaar & Knoop-van Campen, 2017):

• **improving** their daily practices;
• **understanding** the ability, development, frequently made mistakes and learning processes of their students.
Learning analytics process model i

Source: Verbert et al. (2013)
Learning analytics process model ii
(Verbert et al., 2013)

1. **Awareness**: Observing the data
2. **Reflection**: Interpreting the data, asking questions and determining how relevant they are
3. **Sensemaking**: Answering the questions of stage 2 and getting insights
4. **Impact**: Change behaviour based on the insights

Source: Verbert et al. (2013)
Learning analytics process model iii (Verbert et al., 2013)

Each stage in the context of teachers (Molenaar & Knoop-van Campen, 2017):

1. **Awareness**: The teacher observes the data in the dashboard

2. **Reflection**: The teacher asks questions about the data

3. **Sensemaking**: The teacher tries to answer the questions and tries to understand how these answers can be used in their teaching

4. **Impact**: The teacher determines (pedagogical) actions

Source: Verbert et al. (2013)
Learning analytics process model iv
(Verbert et al., 2013)

Each stage in the context of teachers
(Molenaar & Knoop-van Campen, 2017):

1. **Awareness**: Find out which information/data is shown

2. **Reflection**: Are there students that do not understand the material?

3. **Sensemaking**: Identify risk student

4. **Impact**: Give extra explanation to that student

Source: Verbert et al. (2013)
Pedagogical actions
(Molenaar & Knoop-van Campen, 2017)

“Interventions teachers take to support students’ learning”

Examples:
• Providing extra explanations or help
• Using other learning material
• Increasing or decreasing the speed of teaching
Important notes

The dashboards are only meaningful when the teacher (Molenaar & Knoop-van Campen, 2017):

• is aware of the data;
• is able to interpret the data in a right manner;
• is able to determine the right actions based on the data.
Dashboard design

Designing effective dashboards in the context of education is difficult (Echeverria et al., 2018)

Dashboards have to be designed for the teacher:
- Their time is limited
- They are not skilled in analysing data or using advanced visualisations
- There is a risk of getting no insights from the data

Dyckhoff, Zielke, Bültmann, Chatti & Schroeder (2012); Echeverria et al. (2018)
Dashboard design ii

Proposed guidelines by Echeverria et al. (2018):

• Use explanatory visualisations instead of exploratory
• Implement data storytelling principles
• Use a learning design-driven approach
• Designers should keep the learning intentions in mind

Source: Echeverria et al. (2018)
Use of dashboards
(Molenaar & Knoop-van Campen, 2017)

Teacher who used the dashboard more often, undertook also more and more diverse (pedagogical) actions

Use of the dashboard influences their teaching practices
• E.g. students with a middle or high ability got more help after teachers consulted the dashboard
Summary

Teacher-facing learning analytics new name for older concept
Dashboards are central
Teachers carry out multiple steps in LA
Dashboards have to be designed in a right way for them
There are various ways to design those dashboards
Thank you

