

Data-Informed Education (DInE) at KTH – from theory to practice

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Data-informed education is the use of evidence from student data, such as activity progress, course participation, and performance, to guide teaching practices and improve learning outcomes. The outcomes of this research include a set of technical, legal, organisational and ethical requirements, leading the way forward for originating an action plan for DInE, and actions to promote the use of Canvas New Analytics towards data-informed learning design.

Data-Informed Education (DInE)

At KTH, DInE research and development initiated as a point of departure from learning analytics (LA) which in principle, systematically collects and processes learner data for optimized learning.

DInE involves interpreting data in context, and combining it with professional experience, to make well-rounded decisions that support student needs. Rather than relying solely on numbers, it encourages educators to ask meaningful questions, reflect, and adapt their strategies based on both evidence and classroom realities.

Two approaches

We divide DInE into two approaches:

Data-Informed teaching (DIT), which is a teacher-centered approach that has a short-term plan of implementation

Data-Informed learning (DIL) is a student-centred approach having a long-term plan for implementation.

Potential use

The Data-Informed teaching methodologies can help teachers with understanding how students are referring to the course material and verifying the constructive alignment as well as validating the quality of their courses.

New Analytics is a tool in Canvas that provides teachers with interactive graphs and tables showing data about student interactions in a course room.

KTH Digital Learning division plans to help teachers to use New Analytics and other advanced data analytics in future through training sessions.

New Analytics elements

Pedagogical relevance

- Are students progressing through 'on time'/as expected/desired?
 - Is course activity engagement satisfactory?
 - Are some course topics attracted more or being avoided?
 - Is the group more active on some days than others?

Class progress and engagement

Group participations and pageviews

 Group participations and pageviews Pageviews over time Participations and pageviews by day of the week Course discussion participation per topic 	 What are the implications for course timelines and deadlines? Are some course discussions attracting more engagement than others? How could discussions be redesigned to promoted greater peer engagement?
 Individual learner progress and engagement Individual student participation / pageviews over time Comparison of individual student assignment completion and grade achievement with peers/average 	 Which students are not dropping engagement? Are individual students showing sustained participation or reduced engagement over time? Which students are performing comparatively poorly?
 Learner grade achievement Individual and group usage of course resources Course item activity' and no. of students who access them Usage of resources over time 	 Are some assessments harder for the group? Does the evidence suggest that greater use of course resources leads to greater success?
 Engagement with selected course resources Individual and group usage of course resources Course item activity' and no. of students who access them Usage of resources over time 	 Which course resources are students accessing most / Least? Are resources considered 'essential' or 'required' being adequately used / Visited by all students? Which course pages, assignments, or tools are visited most / least frequently? Are the students engaging with resources at relevant and appropriate times in the course timeline?

Teachers' interest in pedagogical questions vs. New Analytics data: drawn from interviews with teachers triangulated with Canvas data and related literature.

