# Education data: case studies, Edition 2

April 2021

## Acceleration plan
Educational innovation with ICT

Secure and reliable use of education data

Education Data Zone

**Stakeholders and students have their say »**

# Make use of the opportunities that online education offers

TEXT: MARJOLEIN VAN TRIGT

Ning Ding is a researcher and lecturer at Hanze University of Applied Sciences and the University of Groningen in the Netherlands. She conducts research into technology-assisted collaborative learning. The Covid situation has made it considerably easier for her to obtain reliable data.

“After obtaining my PhD, I realised that my field of research was difficult to translate into practice. My PhD research involved inviting small groups of students to study at the computer under controlled conditions. At Hanze University of Applied Sciences, where I teach, class attendance is not compulsory. Before Covid, the procedure was something like this: in the first week, all students come to class and we have them take a pre-assessment. But in the weeks that follow, half of them disappear and only reappear later for the exam. This makes it difficult to compare their exam results with their learning process, as it takes place in a kind of ‘black box’. Moreover, you cannot conduct an experiment with one group of students and treat another group as a control group. Making distinctions between students in the teaching process is seen as unfair and is not allowed, which makes it difficult to collect reliable data. Basically, we only use snapshots of education data – pre-assessment results and exam results. The learning process itself remains invisible.”

## Virtual classes

“The Covid situation has had a great impact on how we teach. We currently have no choice but to teach all our classes online. As a result, we miss a lot of physical communication with our students, but at the same time it has become much easier to track their learning process. All lecturers use the same environment for virtual classes. In this online setting, we can easily see in the database which students are present in the online classes and for how long. Unfortunately, Blackboard is not very user-friendly when it comes to retrieving data, so I spend my holidays cutting and pasting data manually. I even learned Python to make it a little easier.”

## Week four is crucial

“A course lasts eight weeks – seven weeks of lessons followed by an exam in week eight. I’m currently looking at the subject of Management Accounting at our business school.”

“In the first four weeks, students have four classes of around ninety minutes each. I check how often they come to the online classes and for how long they stay. Students who do not attend or who are present for only two minutes are marked as being at a higher risk of failing the exam. We also identify the most active students.

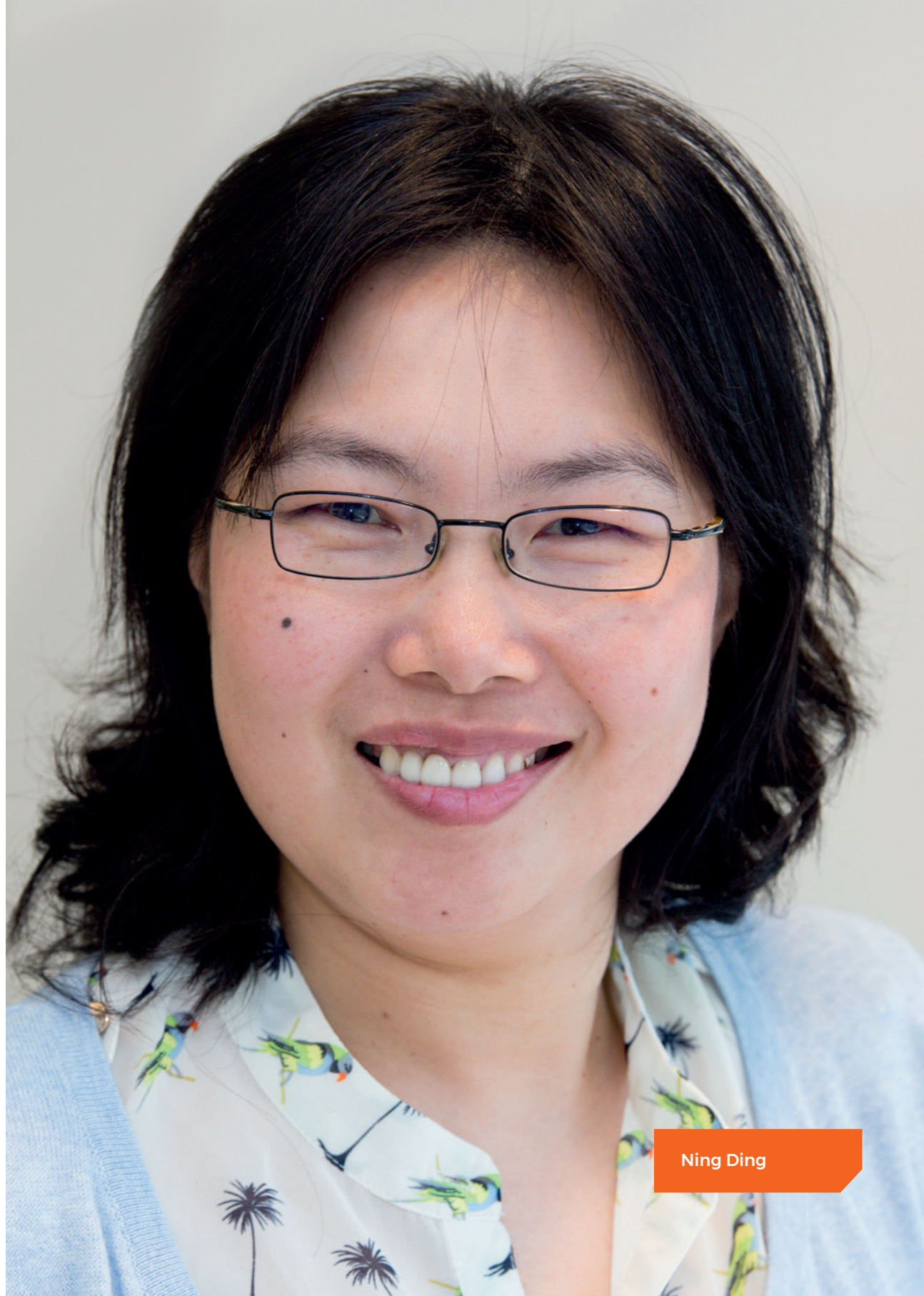
I asked the tutors, who have much more personal contact with the students than the regular lecturers, to send a personal message to both the at-risk and the very active students in week four. Why in week four? Because I know from previous research, pre-Covid, that students who actively search for materials on Blackboard in the first four weeks normally pass the exam. Students who only become active on Blackboard in the final weeks run a high risk of not passing the exam, even if they are much more active than other students in those final weeks. That’s why week four is a crucial week.”

## Personal message

“The most active students receive an inspiring message from their student advisors. The least active students are asked whether they might be experiencing technical problems in starting virtual classes. In that case, they can contact the Blackboard coordinator. If they have questions about the content of the classes, they are encouraged to post their questions on the discussion board. So they are not approached as at-risk students.

After these messages are sent, these students’ presence on Blackboard increases considerably. We are still processing the research results, but this is how we use education data. I will be happy to see everyone in person again when this is possible, but there are definitely advantages to teaching online for my research!”

**‘Until recently, the learning process remained invisible’**



Chris van Klaveren

# Put students at the helm

TEXT: MARJOLEIN VAN TRIGT

Chris van Klaveren and Ilja Cornelisz are researchers at the Amsterdam Center for Learning Analytics of the University of Amsterdam (VU). They collaborate quite frequently, for example on the Comenius Project Plan for Success.

“A lot of effort is put into trying to get students to improve their study success, without much result,” says researcher Chris van Klaveren. “At VU, we would like to turn the tables: students take the initiative and we facilitate. Using machine learning models, we can predict how students will perform in the second year and use that knowledge to help students make informed choices.”

## Expected number of credits

The Comenius Project Plan for Success offers students a dashboard showing which subject packages they can choose from. The student’s expected number of credits, which is calculated using algorithms, is indicated for each package of subjects. Drawing on previous cohorts and the subjects the student failed to pass in the first year, the algorithms come up with a prediction of the expected number of credits in the second year.

## Take a step back sometimes

“We are trying to optimise study behaviour on the basis of data and machine learning,” says Chris. “It is quite possible that the model will predict that a student who takes five courses will get fewer credits than a student who takes three courses.” This may take some getting used to, because students who do not pass their first-year courses often register for all second-year courses and find themselves facing a huge workload. Chris: “The choice to take one less subject has a significant impact on the workload in that period. Does that advice make a difference? Do they follow it? These are critical issues in our research.”

## Making better choices

“We are currently building the dashboards for students and for tutors. Next academic year, Chris and Ilja will carry out comparative research into a group of students who receive the recommended subject packages and a group who do not. Ilja: “Student career counsellors are happy with the dashboard, because they see that it is a helpful tool for students. A data-driven recommendation is part of the interview with students. They bring along their own expertise and know best how their personal situation has affected their study results. That combination allows them to make better choices.”

## Misconceptions about education data

Ilja en Chris have been using education data in their research for a long time, for example in studies into the effects of the binding study advice. They notice that there are many misunderstandings about education data. Ilja: “Data is often used as a kind of objective validator of what people have always thought, be it intuitively or based on professional insights. But in doing so, you are short-changing the value of both your own expertise and the data. It may well be that a lecturer, tutor or student has insights that are not reflected in data traces. Conversely, trends and patterns can be discovered in data that are not immediately visible. We want to bring expertise and data together so that they strengthen each other. It’s not a battle but a puzzle.”

**‘We are trying to optimise study behaviour on the basis of data and machine learning’**

# Use education data to improve flexible education

TEXT: MARJOLEIN VAN TRIGT

Robin Vos is project leader for flexibilisation at the Faculty of Management and Business of Leiden University. In this role, he sees a rapidly growing need for the use of education data.

### How data-centric is your institution?

“We’re getting there. The more flexible a programme, the greater the need for data for students, lecturers and educational logistics.”

### How is education data related to flexibilisation?

“Within our faculty, we have made one part-time and five full-time programmes flexible. This has increased the need for insights from education data. Students follow their own learning path and want to know where they stand and what choices are best for them. We can give them appropriate advice by comparing programme data with student data.

The danger of flexibilisation is not giving students enough direction. To be able to support them properly, their coaches must, first of all, have programme data at their disposal. You have to know which routes are available to students in order to provide them with meaningful advice about their specific situation. We also want to provide students with a personalised portal that gives them insight into their progress and choices.”

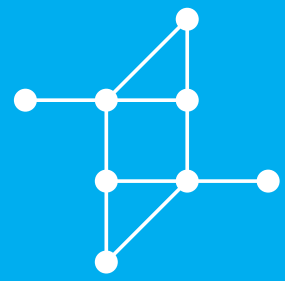
### How far along are you in this process?

“We are just at the beginning. We will soon be conducting a market survey to find ways of informing students about where they stand in their educational and learning process. After that, we want to explore the needs of other faculties. We also need education data from the point of view of educational logistics, because our way of timetable scheduling has not changed, but the way students progress through the programme has. I want to be able to make forecasts about the intake for next year’s subjects on the basis of education data. It may well be that part of a class takes longer to complete a part of the course. We must be able to anticipate this in our logistics. We also want to use education data to make better policy decisions. We are now looking at how many students make use of resits and what effect it will have on the success rates if we increase or decrease the maximum number of resits.”


Robin Vos

**What is the biggest challenge?**

“Our challenge lies in both technology and vision. To be able to offer students a highly personalised portal, you need a lot of data which you have to combine in smart ways. We do not yet have that data. And because our faculties are different, the vision of what students need will also differ. I’m very happy the conversation about these issues is getting underway.”



‘How we schedule the timetable has not changed, but the way students progress through the programme has’


Roland Kleve

# Use education data to have students graduate with the right professional skills

TEXT: MARJOLEIN VAN TRIGT

Roland Kleve is Academy Director of the Academy for Leisure & Events van Breda University of Applied Sciences (BUas) in the Netherlands. He believes that education data can help to improve graduates' connection with the professional field.

Roland Kleve's curriculum vitae includes board positions at Stage Entertainment, Circuit Zandvoort race track and Bobbejaanland amusement park. The incumbent Academy Director of the Academy for Leisure & Events at BUas is already accustomed to using data in his work. And although he prefers not to compare customers and students, he sees opportunities for higher education when it comes to education data.

"In the professional field, customer data is at the heart of organisational operations. Knowing what your customer wants is essential for communication, the business model but also product development. In education, for example, education data can show how things are going, where students are lagging behind and where adjustments are needed. In this way, we can improve the quality of education to better meet students' needs."

Ideally, he would like – at the push of a button –to retrieve information about years, results, student backgrounds but also different forms of teaching and assessment and how these are catching on. "The key is to ensure that the information cannot be traced back to the person and always serves a higher purpose. That purpose is to lay the foundations for better education."

Together with Acceleration Zone member Tom Konings, Kleve examined the relationship between his students' prior training and the fit with education. Kleve: "We are a small institution, with small classes and lots of guidance. We see, for instance, that students with a pre-university education background (VWO) find it easier to engage with our content than students with an intermediate vocational education background (MBO). We use such insights to tailor coaches' guidance to the needs of different groups of students."

The drop-out rate in the first year was also analysed using education data. Kleve: "As the name implies, a course of study in Leisure and Events is focused on leisure and events, which is a lot of fun. But it obviously also involves economics, with a lot of focus on finance and running a

busines.s If you communicate that well, you have more control over the drop-out rate because some students will, based on this information, decide not to take this course of study while others will be attracted to it. We seek the right balance of students in collaboration with the communications and marketing department. We want to communicate clearly what we do and deliver what we promise.”

You could consider this a commercial approach, but he feels it is primarily in the student’s best interest. Kleve: “It’s about making decisions that improve education based on insights derived from data. I want to ensure that a student graduates with the right knowledge and attitude to meet the needs and expectations of the professional field. This is also good for the student, as they are assured of a job. Everyone benefits from this.”

**‘We want to communicate clearly what we do and deliver what we promise’**

# Show students the benefits of using their data

TEXT: MARJOLEIN VAN TRIGT

Daan Dekker is a Business Administration student at Hanze University of Applied Sciences in Groningen in the Netherlands. He is in favour of using education data more often in education, as long as the purpose of such use is communicated properly.

“When Business Administration students receive a grade, it also shows how we have performed compared to others. This can be confrontational at times. On the other hand, when I see that only five per cent did better than me, it is gratifying. But I don’t think it affects the way I study. I don’t let that depend on how others perform. I also have no insight into how they learn.

What would be useful is to measure the impact of a lecture, or the interest in a particular subject. I find it easier to get through a textbook if I have attended the lecture, as the material takes on more meaning. If that translates into better grades, it should be reflected in data analyses. These kinds of insights have a motivating effect.

As far as I am concerned, institutions of higher education should be allowed to use education data to full potential. It is important to me that education is well organised, and I appreciate it when institutions do their best to meet students’ needs. Students sometimes too easily blame the institution for what is not going well, without being willing to contribute to an improvement plan. If the use of education data can improve education, you have to do something with that. However, it is important to know what your data will be used for. We tend to dismiss pop-ups requesting the use of our data. That is why it is necessary to inform students about and engage them in the use of their data so that they can see the benefits for them.”

‘We tend to dismiss pop-ups requesting the use of our data’

# Use my data to help future students

TEXT: MARJOLEIN VAN TRIGT

Students Frederique Veenstra and Vincent Plompen are members of the Participation Council of Avans University of Applied Sciences in the Netherlands. They see added value in using data to improve education, gain insight into their own learning process and monitor student welfare.

## Improving education

**Vincent**, third-year student of Business Administration: “When you think of data, you think of software and computers, but this can also be basic data. As far as I can see, this is used effectively at Avans to improve the quality of education. A student survey is conducted after each quarter. In addition, we discuss in an evaluation panel how the lectures can be improved for the next group of students.”

**Frederique**, second-year student of Healthcare Technology: “You can track your progress in the Avans One app and in Osiris, the student information system. If you click on the result, you can see how you scored compared to other students. This is a useful insight. I recently got a failing grade and when I saw that this was true for almost half the students in the course, I was reassured. But it’s not the case that I would work less hard if I didn’t have insight into how others scored.”

## New applications

**Vincent**: “Before choosing a minor, I would like to see how others with my study background and who made the same choice fared. That would have added value.” Frederique: “I am involved in the well-being monitor, a project aimed at tracking how students are doing and their study progress. I would like to expand that with insights on sleep, mood and health. Preferably, the data from all those different apps should be accessible from one portal.”

**Vincent**: “In student career counselling, we already use a tool to gain insight into our personal development. What are your personality traits? How do you react to situations? If you were to fill it in regularly, you would see whether you are making progress in how you deal with difficult issues and what you still need to work on.”

## Privacy

**Vincent**: “As an individual, I am perhaps somewhat naive when it comes to privacy matters. Take everything I put online if it helps others in their development. But from my position in the participation council, I consider data protection to be paramount.”

**Frederique**: “The same goes for me. I think it’s good if my confidential counsellor has access to data about my well-being. Of course, security and privacy must be guaranteed in the process.”

‘I want to know how others with a similar background and who chose the same minor as me performed’

Wijnand van den Brink

# Education data should help both students and lecturers in supporting student success

TEXT: MARJOLEIN VAN TRIGT

Wijnand van den Brink is a member of the Executive Board of Rotterdam University of Applied Sciences and chairman of the Information-based Management (*Sturen op Informatie*) programme steering group. He sees considerable added value in using education data for strategic issues in real estate and IT.

**For what purposes does Rotterdam University of Applied Sciences use education data?**

"We primarily use education data to measure our students' success and progress in their studies. We take an evidence-informed approach to educational innovation. Education data can help to make the right choices.

The other reason we use education data is to make long-term strategic decisions about real estate and IT, among other things. As a result of not implementing the binding study advice (BSA), this year 2400 students decided to continue their studies with fewer than the required number of credits. Even at a university of applied sciences with 40,000 students, that is a considerable number. In view of planning, mobilising resources and future financing, we created a number of scenarios: what if these students do or do not move on to another programme, leave in two years or take seven or eight years to complete their studies? These are the kinds of calculations you can make using education data. To me, this forward-looking application of education data is very valuable."

**What is the biggest challenge in using education data?**

"As we are based in Rotterdam, the students here are a reflection of Rotterdam society. We are interested in identifying which students are clearly experiencing difficulties in their studies. In the past, for example, it was found that only eight per cent of boys with an intermediate vocational education (MBO) background and a migrant background who started a higher education course for the first time obtained a diploma. It is now no longer permitted to register a student's migrant background, but that does not eliminate the problem."

Wijnand: “The question is how you use that data. If you only measure it for the sake of knowing, you might as well not do it at all. But if you measure it so that you can take it into account in the institution’s educational vision, you might be able to use an educational approach that appeals to these students more and thus get them over the finish line.

At present, we would like to know whether online learning is equally effective for all target groups. While we are not sure we can persuade DUO to give us the figures, it is a topic of discussion at the Netherlands Association of Universities of Applied Sciences. We think this aspect should be carefully reconsidered.”

### What is the role of a director in the use of education data?

“The board should encourage research on how making education data available to students can support them in the study process, particularly in view of flexibilisation. We work with lecturers and students to shape the contours of this process and then decide what investments to make. Our role is primarily to steer innovation by means of resource allocation.”

### How do lecturers at Rotterdam University of Applied Sciences view education data?

“Lecturers are eager to get to work with students’ education data. It is useful for a student career coach to be able to see in more detail how a student is doing. And lecturers want to see the kinds of effects their interventions have. That is where it gets interesting. As a board, we are having the discussion about how far we should go in this. What data is public information for lecturers and for what data should they first have the students’ consent?”

### What are you most proud of?

“A few years ago, one of our lecturers conducted extensive research into the effects of setting a BSA at sixty credits. They found, using education data, that this does indeed have a positive effect, both at the level of target groups and on the general progress of students. Because of this evidence-based foundation, we are sceptical of the motion to abolish the BSA.”

### What would be the best way to use education data?

“Ideally, you want education data to help both students and lecturers in supporting student success. Approximately 25 percent of the students at the university switch between programmes or institutions. It is currently difficult to keep track of a student who switches to another programme. If we had a kind of student passport, obviously with the right privacy and security safeguards, we would be able to track students’ progress better. And if we can take steps in that direction by analysing the data properly, we might be able to guide and support those students better. This shifts the institution’s focus from study success to student success, which is extremely valuable for students.”

**‘We want to find out whether online learning is equally effective for all target groups’**

*The Acceleration Plan for Educational Innovation with ICT is a four-year programme set up by SURF, the Netherlands Association of Universities of Applied Sciences and the VSNU to bring together initiatives, knowledge and experience and to make rapid and concrete progress on opportunities for higher education. This takes place in eight different 'zones'. In the Education Data Zone, 11 institutions are involved in 16 sub-projects to make safe and reliable use of education data in higher education.*

You can find more information and our publications at
**www.versnellingsplan.nl**