**PODCAST: Learning analytics: Why, What, How – Valuable tool for teachers and learners**

**Episode 2: What information does learning analytics provide?**

This is a “Why, What, How” podcast series in which we delve into the world of data and learning analytics from the perspective of teachers and learners.

Information and analytics play an increasingly central role in the world of education. In the second episode of our podcast, we dive deeper into the world of learning analytics and explore what valuable information it can provide to teachers and learners. We discuss performances, participation, monitoring of progress and other relevant information that can change the way in which we understand learning. But above all, we focus on the concept of analysis and find out what learning analytics really means.

The expert guest is **Sami Suhonen**, Principal Lecturer at Tampere University of Applied Sciences. The episode is presented by **Olesia Kullberg**, Senior Lecturer at LAB University of Applied Sciences.

OLESIA KULLBERG

Welcome to the ‘Learning analytics: Why, What, How – Valuable tool for teachers and learners’ series, where we’ll focus on the basics of learning analytics and why its use is so central in the development of teaching. We’ll discuss the role of learning analytics in supporting decision-making done by teachers and how it can help students succeed. The podcast series is part of the Digivisio work of higher education institutions.

I’m Olesia Kullberg, Senior Lecturer at LAB University of Applied Sciences, and I have an expert guest here today, Sami Suhonen, Principal Lecturer at LAB University of Applied Sciences.

Welcome, Sami!

SAMI SUHONEN

Thank you, thank you, and thank you for the invite.

OLESIA KULLBERG

Information and analytics play an increasingly central role in the world of education. Today, in our podcast, we’ll dive deeper into the world of learning analytics and explore what valuable information it can provide to teachers and learners. We’ll discuss performances, participation, monitoring of progress and other relevant information that can change the way in which we understand learning. But above all, we’ll focus on the concept of analysis and find out what learning analytics really means. Get ready to focus on the world of learning in a new way as we discuss the secrets of learning analytics.

It's amazing you're here with us! But, would you first tell us how learning analytics is related to your work and what’s made you interested in this theme?

SAMI SUHONEN

My background is in physics, and I’ve taught engineering physics online for some time now. Maybe the need for analytics emerged from the interest in knowing what students are doing and what they don't do in an online course, how active they are and what kind of information the platform provides about their activities and learning. On the other hand, data has always been close to the heart, of course, all kinds of measurement data. And now that this conveniently combines learning and data processing, learning analytics swept me away. I use it to support my own teaching, but I’ve also participated in a few projects, the eAMK project and the APOA project section on learning analytics.

OLESIA KULLBERG

Let’s start the discussion with data collection. Data on education is divided into three broad categories: student progress, student behaviour and student learning. Could you explain what these categories mean, please, which data are concerned, and who is it collected for?

SAMI SUHONEN

Let’s start with student progress. At its simplest, this means that the progress bar in Moodle allows students to track how much of the course they have completed. On the other hand, the teacher can see where the group is at on average and whether there are students who are lagging behind who may need support. The teacher can use this perspective to send reminders to students, encourage them and ask how to help to ensure progress. And maybe this progress isn't so much a measure of how many lessons have been learned, but of how materials have been accessed and which assignments have been completed. This means it’s more about quantity than quality at this stage.

Well, then the second category, learning. Of course, this is reflected in the outputs learners submit to different learning assignments. And to get some kind of continuous situational picture of this during the course, of course, the assessment must also be continuous. Here I must say that the pedagogical and data perspectives are heading in the same direction. From a pedagogical point of view, of course, it makes sense that there's not just one huge final exam in the course, but that the assessment is continuous and that when it’s arranged in this way, you also get data points for the course and students can see how their learning progresses and accumulates.

Well, then there’s student behaviour. I, personally, interpret this as indicating who does what and when in the course. Of course, this is important information for the teacher. You can see how the materials are used, how they respond to different learning assignments, how active the learners are. This may also indicate what the learner's strategy is for studying. I could give you an example of this. I teach engineering physics in online courses. The course uses, for example, a topic-specific or week-specific small weekly test, which students can try three times. Of course, the assignments are drawn for each time. And some students do all these three times in a row. So, it seems that they're using a trial-and-error method than actually studying things that they haven't learned yet.

OLESIA KULLBERG

Learning analytics can provide information about the learner's profile, behaviour, performance, assessment, student support and teacher support. Would you tell us more about what kind of data is collected for each category and how? Who has access to this data?

SAMI SUHONEN

Let's start with how data is collected and who can access it. Probably most of the data will be collected automatically from the digital learning platform. So, when a student logs in, accesses materials and navigates Moodle or another platform, their clicks accumulate log data on how active they are and what they have done there. As a rule, this data is available to the teacher.

On the other hand, if learning takes place elsewhere than on the platform, for example if the teacher has their own YouTube channel where they share the learning materials, it’s naturally possible to examine the view counts and retention, i.e. where the students have spent the time and at which point they’ve left the video. So, is there some material that doesn't interest anyone? Then you can always try to improve those materials.

Of course, other types of data can also be collected. Not everything is automatically accumulated log data. For example, you can ask students to fill in different kinds of surveys or simple tables, where they can, for example, assess their own competence in relation to the learning outcomes on a scale. This can be done anonymously so that it’s visible to everyone, and then the teacher can see at a glance which topics the group already knows, which topics should be boosted, and in this way, we can get these hit buttons on the topic we're working on.

So, the learning platform collects different types of data. And, of course, it depends on the platform what gets collected. As to the need for support, the question is: among the thousands of students, how do we find those who should be offered help and who is at risk of falling behind. In this case, too, the data helps, because usually if the enthusiasm for studying diminishes, it’s visible in less logins to Moodle or at least not opening any learning materials. So, a decrease in activity may indicate that the student is at risk of falling behind. And here the data really helps to find those at risk of falling behind.

OLESIA KULLBERG

Let’s continue with the theme of learning analytics functions. What are the learning analytics functions offered by different learning platforms? You already mentioned monitoring the progress of learning, but what else is there?

SAMI SUHONEN

We can start with what the teacher does. I think the teacher should be able to focus on teaching and counselling, and the analytics should produce more or less automatic descriptors and visualisations to support the teacher's main task. And some of these features can be found in Moodle, for example. In addition to monitoring progress, there’s an Analytics graphs section that shows activity reports, participation, activity completion, grade graphs, and material access. It also shows how the number of active students varies on a weekly basis and how activity is divided there. That alone gives you some idea of what’s happening on the course. However, I often like to download the actual log file from there and view it in Excel. So, I don't have to confine myself to what's already done in Moodle. In Excel, I can then group and compile the information according to how I think it’s useful.

OLESIA KULLBERG

Monitoring progress is probably the most popular learning analytics function, so how should it be used to make the data obtained from it usable?

SAMI SUHONEN

I would perhaps start by saying that it’s always worthwhile to start planning a course from a pedagogical perspective. However, as I've mentioned, perhaps the pedagogical perspective and data perspective will go in the same direction. When the course plan has enough learning activities, it makes pedagogical sense but, at the same time, it also makes sense from the data collection point of view because you're creating sufficient data points. What to include in progress tracking will definitely depend very much on which course it is, what it makes sense to track and what not. Personally, I think that at least the submissions that influence the grade, so like they should be included. I'd probably say that less is more. Not too many steps in the tracking, so it’s clearer for both the teacher and the learner what’s going on.

OLESIA KULLBERG

Well, like you mentioned, in addition to tracking learning, there’s log data that provides information on how actively the students use the materials and what they study more and what less.

In practice, learning analytics functions on the learning platform only measure activities taking place on the learning platform. Learning can also take place elsewhere, for example in projects, at the workplace, in practical training. Do you know how to give advice or tips on how to sort of bring that learning to the learning platform, in order to take advantage of learning analytics functions?

SAMI SUHONEN

If we start with learning, it's the most important thing here, and analytics is only the second most important thing. No solution can leave learning secondary. Analytics doesn’t lead us, but learning does. And now, if we have a situation where learning takes place outside the platform, that’s, of course, a really typical situation. Of course, you can build learning actions, or assignments, discussion forums, etc. in Moodle. Even if the studies themselves took place earlier and elsewhere, then their output and dismantling would sort of happen there using different tools on the learning platform. That’s how you leave some kind of trace of what’s been learned and get analytics on how active the students are. And, if it can be broken down into slightly smaller parts, for example, and you're not including the three-month long full traineeship in one task at one go, but dividing it over the course of time, then you’ll have a little more data points and also slightly smaller sections for students to complete in one session.

OLESIA KULLBERG

Well, the last theme I'd like to discuss with you today is data analysis. What methods from learning analytics are used to analyse data and does the introduction of these methods require special expertise?

SAMI SUHONEN

As a rule, I think that the teacher doesn’t need to know anything extra, but the data should come ready from Moodle or another platform. However, as we know, these ready-made perspectives are limited, and at least I often want to view the data in a little more detail. And that means that, for example, the log file is uploaded to Excel, processed, meaning, we’re deleting corrupt data and sensitive data, if such exists, and then possibly pseudonymised. And then you start processing it. If you do it yourself, you need at least expertise in some programme, for example Excel will do.

OLESIA KULLBERG

Can you give a concrete example? What are you really looking for in Excel?

SAMI SUHONEN

Well, one possibly typical use, which I always show my students at the beginning of the course, is that once I’ve exported the data to Excel, I simply count how people who got different grades were active on the platform. What I show to start-up students is usually that the more active the student is, the more likely they are to get a better grade. It’s not a surprise, but it helps to show that, on average, this is the case for the course in question, and there’s a surprisingly strong correlation between how active the learner has been on the platform and what final grade they receive on average. Of course, this is an average.

OLESIA KULLBERG

We talk about how we need to be able to read data. What does it mean for learning analytics data? How should I be able to read it?

SAMI SUHONEN

Well, let me give you an example. Let's imagine that we have an active course and we're looking at student X. He seems to have 153 log events in this course at the moment. Is that a lot or a little bit? What does that tell us? It doesn't actually tell us anything. So, you need to know the context and maybe have some experience. Something you can relate this information and these figures to. So, as I see it, reading the data means being able to relate something that the data tells me to the reality of the course. What does it mean? And now, this 153 could tell us, for example, that he’s a relatively passive student, that he had three months to complete the course but that he’s only made 153 clicks there, and that’s not quite a lot yet.

On the other hand, it may be a good idea to remember that you get what you measure when you read data. First of all, things that don’t produce data points are logged there, and there’s no way to see or measure it. Examples are reading a textbook or completing other learning activities outside the platform. On the other hand, if you put in data points that don’t indicate progress or learning, they’re unnecessary data points.

And again, comparing one course with another is quite challenging because they involve different learning activities, different structures, different types of learning assignments and so on. So, the experience is quite important when reading data. And usually, when you're comparing a course of one type to a previous one, you can say something about the data, such as how students have been more active or what they have done more or better and so on. You always need the context the data is related to.

OLESIA KULLBERG

Before we finish, one final question. How can learning analytics help a teacher or instructor?

SAMI SUHONEN

I’ve experienced it in such a way that it provides a better understanding of what students are doing, something about what they spend time on, how they use materials, what they have completed, and so on. Of course, from the point of view of course development, if you notice that there are materials that no one ever accesses or you notice that something looks like a bottleneck or so on, then it’ll also help you develop the course further. And, like I said before, showing students the correlation between activity and learning outcomes, for example, I hope that it’ll increase their motivation to spend time on studying. The introduction of analytics always requires time, so at least in the short term it won’t save time. However, if it helps you build your own course in such a way that you get fewer questions from students during the course, fewer new needs and so on, it may also bring time savings to the teacher in the long term.

OLESIA KULLBERG

Thank you, Sami, for a great interview! You've shared a lot of good ideas and tips with us today. Thank you so much!

SAMI SUHONEN

Thank you!

OLESIA KULLBERG

Thank you also to the listener for joining in this interesting discussion on learning analytics data and data analysis. We hope this podcast gave you the impetus to gather useful information about your students’ learning process and how you can apply it. In the next episode, we’ll examine three different case descriptions of how teachers in different fields use learning analytics in their courses.

Olesia Kullberg is responsible for producing and editing the episode.