VYTAUTAS
MAGNUS
UNIVERSITY
M C M X X I I

Enhancing Teacher Decisions Through Learning Analytics

Airina Volungevičienė, Vytautas Magnus University, Josep M. Duart,

Universitat Oberta, Giedrė Tamoliūnė, Justina Naujokaitienė,

Vytautas Magnus University

The presentation contains the extended research parameters including the empirical data from the manuscript

„Learning Analytics: Learning to Think and Make Decisions"

accepted for publication in the „Journal of Educators Online"

Theoretical foundations

- LA can be defined as the measurement and collection of extensive data about learners with the aim of understanding and optimising the learning process and environments in which it happen

- In the recent decade researchers have started a fundamentally new direction of LA by addressing:
  - initially - big data (Picciano, 2012)
  - educational data mining (Siemens & Baker, 2012)
  - academic analytics, social learning and action analytics (Ferguson, 2012)
  - issues of student dropouts and ways of increasing student success (Arnold & Pistilli, 2012)

  developing a method of how LA may enhance teaching and learning (Gasevic, Dawson, & Siemens, 2015).

3

Open and Online Learning for Digitalised and Networked Society
(No. 09.3.3-LMT-K-712-01-0189)

VYTAUTAS
MAGNUS
UNIVERSITY
M C M X X I I

Problems addressed

- There is a lot of data available in VLEs provided by LA on student and teacher behaviour and performance, but **there is no common practice** among teachers in OOL in HE of using this data for the improvement of learning and teaching process

- Stewart's (2017) research proves that there are inhibitors, such as **lack of training, fear of exposure, too much or too little data, lack of ability, cultural vs procedural behaviour of teachers**, as well as **lack of resources and practices** among teachers, that hinder them from the application of LA in practice

Research question

- **How LA as a metacognitive tool can be applied for developing a LA method for reflective teacher practice?**

It builds on the description of LA as a metacognitive tool for teachers as reflective professionals, but also opens new prospects for the investigation of:

- **the process** of application of LA as a metacognitive method in open and online learning and teaching;

- **the use of LA data** for the implementation of teacher inquiry cycle and reflection on open and online teaching;

- **improvement of curriculum** and learning design

Methodology

A qualitative research design (Creswell, 2013) was chosen to understand how learning analytics can be used as a metacognitive tool in teaching practice, by revealing insights of international experts working in this research field.

When discussing the phenomena of metacognition and reflection in teaching practice, qualitative methodology is the most appropriate approach allowing to grasp important information during the interview and collect a more in-depth data of the researched object

Research

- Interviews with experts working and researching in the field of learning analytics were conducted.

- Experts were asked to describe LA as a metacognitive tool applied in OOL, by sharing their knowledge conforming to the main research question –

How could learning analytics as a metacognitive tool be used for reflective teacher practice?

There were 8 research participants that represented the group of international experts in open and online learning with at least 10 year experience implementing open and online learning in higher education and at least 3 year experience in researching learning analytics

Research results

Experts unanimously alert not to forget that LAprovide only a compendium of data, i.e. statistical indicators. It is the teacher who brings life to these indicators by reflecting on them and by deciding how these data should be used and analysed for teaching and learning process improvement and curriculum designing
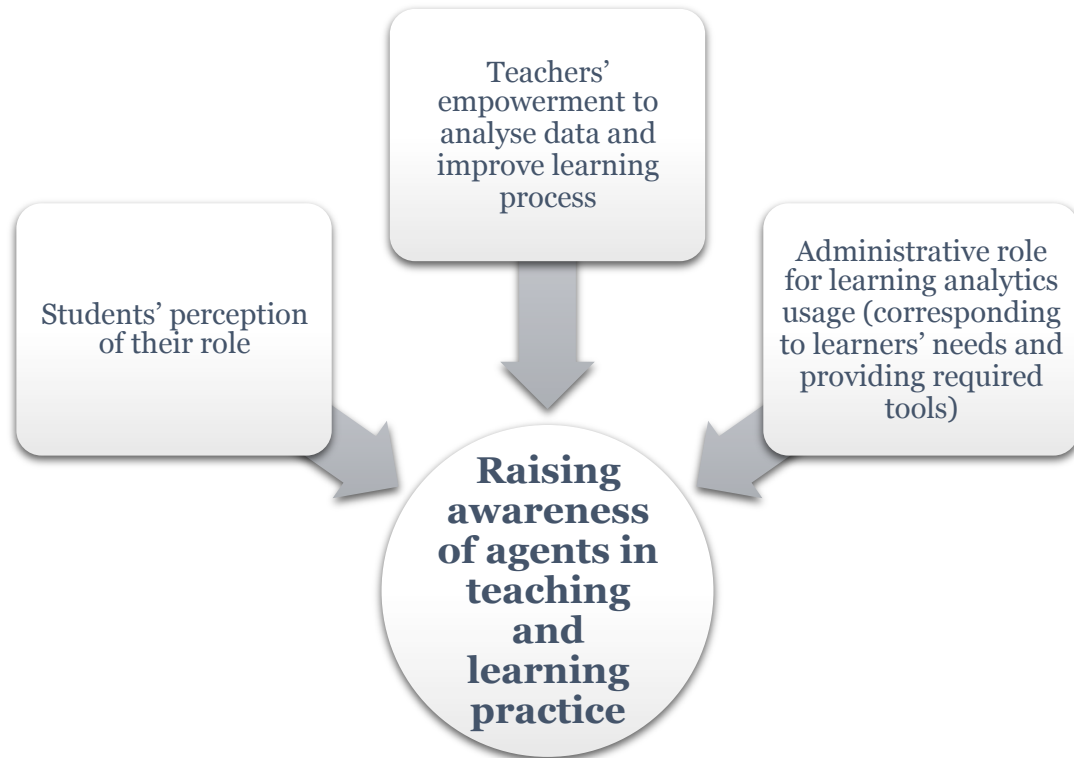

8

Data analysis

The data were analysed by using qualitative data analysis. The following categories and subcategories were derived based on the interview data that respond to the main research question
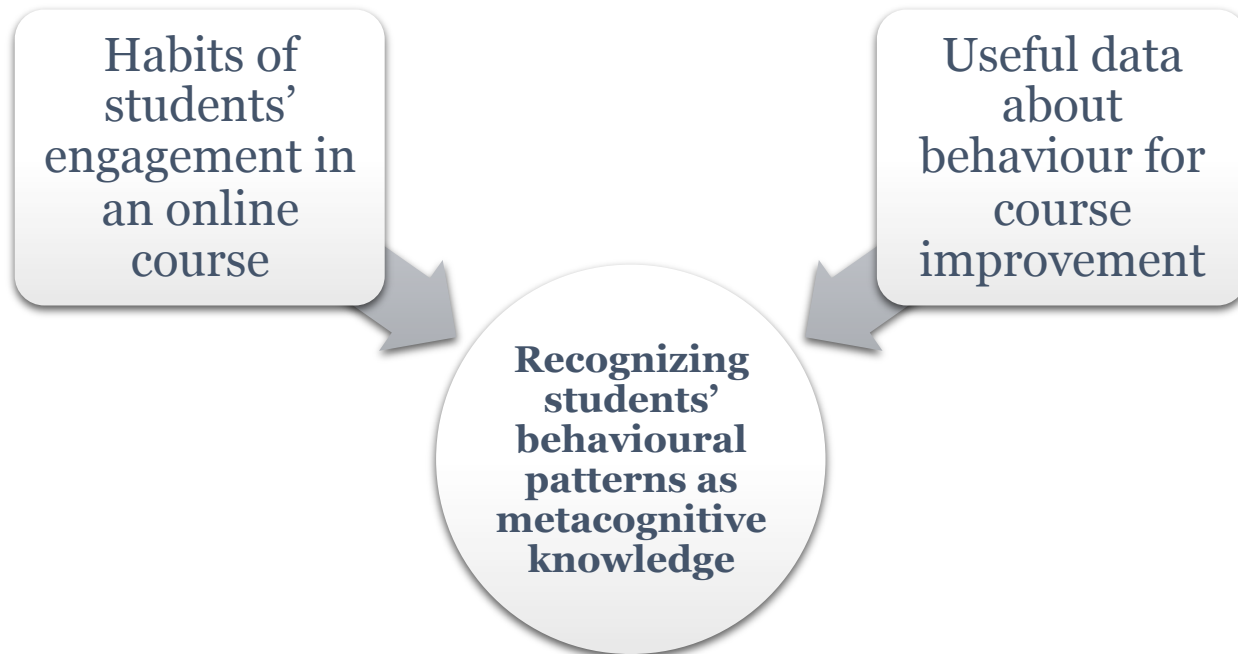
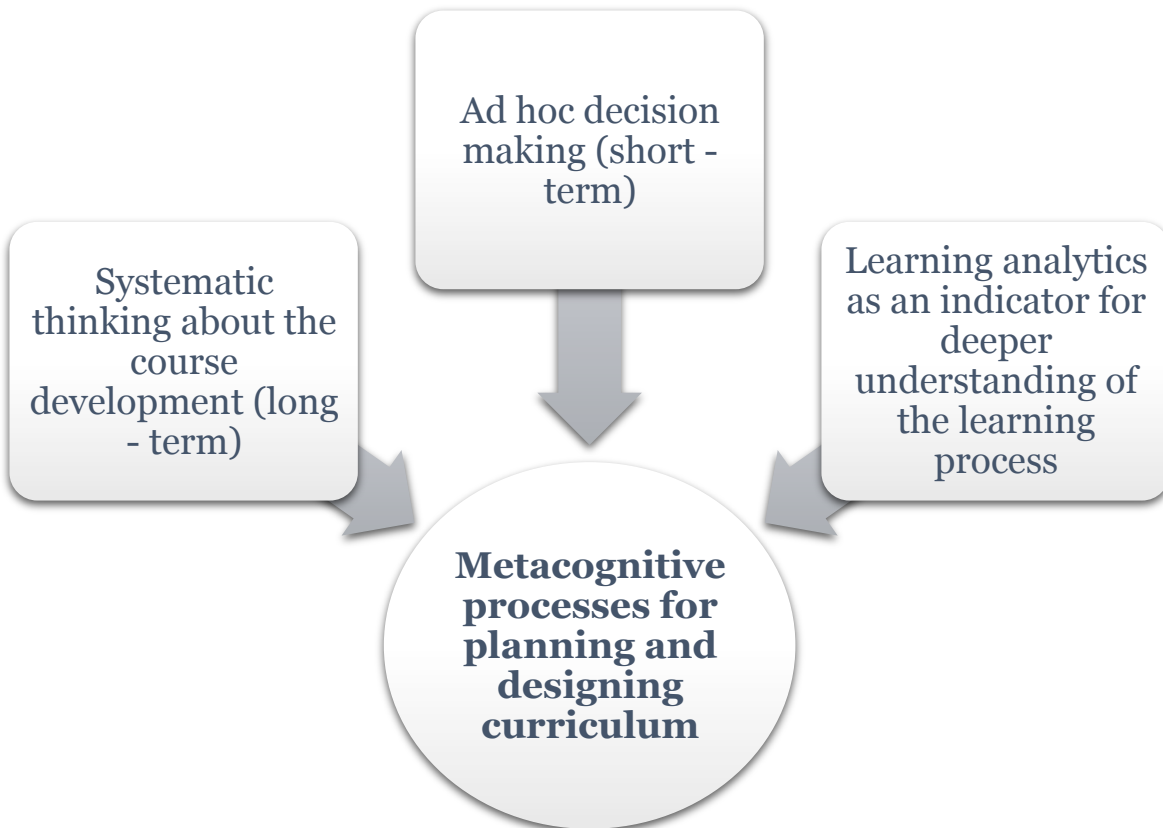# Raising awareness of agents in teaching and learning practice

Teachers' empowerment to analyse data and improve learning process

Students' perception of their role

Administrative role for learning analytics usage (corresponding to learners' needs and providing required tools)

Raising awareness of agents in teaching and learning practice

- ***Administrators' role for LA usage*** is seen through helping to create a unifying system and provide required tools corresponding to specific learners' needs for personal learning monitoring and improvement, as well as teachers' needs for curriculum development
- ***Teachers' empowerment to analyse data and improve learning process*** is revealed through enabling teachers to observe and monitor trends of learners' behaviour and learning pathways
- ***Students' perception of their role*** distinguishes different approaches on how students can make use of data provided by learning analytics. It is important develop students' analytic skills and encourage them to reflect and be aware of their individual learning process

10

Recognizing students' behavioural patterns as metacognitive knowledge

Habits of students' engagement in an online course

Useful data about behaviour for course improvement

Recognizing students' behavioural patterns as metacognitive knowledge

- Students' role is very important for teachers, as a result, LA could help teachers recognize different behavioural patterns as students engage into a course. Experts also indicate that there are specific **habits of students' engagement in an online cours**e

- When discussing the most **useful data about behaviour for course improvemen**t, it is important to consider different types of information that learning analytics can demonstrate

11

Open and Online Learning for Digitalised and Networked Society
(No. 09.3.3-LMT-K-712-01-0189)

VYTAUTAS
MAGNUS
UNIVERSITY
M C M X X I I

Metacognitive processes for planning and designing curriculum

Ad hoc decision making (short - term)

Systematic thinking about the course development (long - term)

Learning analytics as an indicator for deeper understanding of the learning process

Metacognitive processes for planning and designing curriculum

- **Systematic thinking about the course development** is described through the thinking about the proposed learning activities in the course and questioning whether those activities are right for these students, or there is a need of a change, which will affect all the course

- LA also can be seen as the right tool for teacher to get involved in **ad hoc decision making** as it was disclosed that it helps to identify students' habits in real time

- Metacognition could be seen through different perspectives in this case: first, how teachers are using LA for better understanding of students' learning process; second, how we as teachers evaluate our own activities, how we design our work; which leads us to **LA as an indicator for deeper learning process understanding**

12

VYTAUTAS
MAGNUS
UNIVERSITY
M C M X X I I

Discussion and Conclusions

Application of LA is possible only when all stakeholder groups (administrators/ institutional managers, teachers and learners) are actively involved and demonstrate their interest and the need for the use LA for teaching or learning development.

Discussion and Conclusions

- **The institution** should consider the application of LA as an important tool for learning and teaching development; institutional administrators are motivators and supporters of the process, especially in recognition of the application of LA in reflective teacher practices;

- **Teachers' personal involvement** and interest to work with LA data plays a crucial role in the process; teachers are empowered to analyse data and improve learning process by application of LA as a metacognitive tool; they should be the agents raising learners' awareness on their learning behaviour and making predictions for success or failure in learning;

- **Learners' role** is seen as a very important one in these processes as it is important to develop students' analytic skills and encourage them to reflect and be aware of their individual learning process.

- ***Teachers as reflective professionals*** should understand different learning habits of their students, recognize learners' behaviour, understand their thinking capacities, willingness to engage in the course etc., and based on this information, make real time adjustments to their course curriculum.

- ***Metacognition*** could be seen through different perspectives in this case: first, how teachers use LA for a better understanding of students' learning process; second, how we as teachers evaluate our own activities, how we design our work - which leads us to ***LA as an indicator for a deeper learning process understanding***