Welcome to the…

Australian Learning Analytics Summer Institute 2022

In Cooperation with SOLAR
SOCIETY for LEARNING ANALYTICS RESEARCH

University of Technology Sydney, 8-9 Dec. 2022
Building 11, Broadway, Ultimo, NSW 2007
Enter at corner of Broadway & Wattle St

https://cic.uts.edu.au/alasi22

WEDNESDAY 7 DEC • SOCIAL

	The Sneaky Possum (upstairs room booked) 86 Abercrombie Street, Chippendale
5pm →	**Optional meetup for those who are in town.** While this is not covered in the ALASI registration, Sneaky Possum offers a range of affordable meals and drinks for you to choose from ☺

THURSDAY 8 DEC

	CB11.00.401 Foyer			
9.00am	**Registration** (collect your badge!)			
	CB11.00.401 Collaborative Theatre			
9.15am	**Welcome & Acknowledgement to Country** Linda Corrin (Deakin U) & Simon Buckingham Shum (UTS)			
	Panel: Did Learning Analytics Miss the Covid19 Boat? Chair: Simon Buckingham Shum, with Sarah Howard (U. Wollongong), Srecko Joksimovic (UniSA), Lisa Lim (UTS) & Danny Liu (U Sydney)			
10.30am	**Refreshments (Foyer)**			
	CB11.04.105	**CB11.B2.103**	**CB11.B2.104**	**CB11.04.401**
11.00am	**Swapping stories from the frontline of actual learning analytics adoption and implementation** Simon Huband, Eric Parkin, Kade McGarraghy, Jack Hutchinson (Curtin U), Christopher Bridge (La Trobe U), Danny Liu (U Sydney)	**Developing a framework for inclusive design of learning analytics** Sam Rastegari & Mollie Dollinger (Deakin U)	**Designing meaningful interactive visualisations and dashboards in learning analytics** Miguel Canizares & Andrew Gibson (QUT)	**SCHOOLS STREAM (but open to all)** Chair: Sarah Howard (U. Wollongong) **Create bespoke data dashboards using your own contextual school data and Google Data Studio –** Pip Cleaves (Kurri Kurri High) **iGrow Data Project: nurturing student growth and wellbeing** Ben Castelli (Redlands High) **Predictive modelling of student outcomes** Raju Varanasi & Rob Wilkins (Catholic Ed. Diocese Parramatta) **Discussion**
12.30pm	**Lunch (Foyer) and form/join optional thematic lunch groups in the Collaborative Theatre**			
2.00pm	**Learning analytics and complex adaptive systems** Andrew Gibson (QUT), Kirsty Kitto & Ben Hicks (UTS)	**Towards learning analytics for student sense of belonging** Lisa-Angelique Lim & Simon Buckingham Shum (UTS)		**Data storytelling in Australian schools – what we know and where to next** Selena Fisk (Indep. Consultant)
3.30pm	**Refreshments (Foyer)**			
4.00pm	**Writing analytics concerns and capabilities roundtable** Andrew Gibson (QUT) & Antonette Shibani (UTS)		**Learning analytics for learner profile development** Vitomir Kovanovic (UniSA), Simon Buckingham Shum (UTS), Sandra Milligan (Melbourne U), Christine Huynh & Amy Gilchrist (Liverpool Boys High)	← *Join Learner Profiles session*
5.30pm	**Close**			
6.00pm	**ALASI Reception, Knox Street Bar** (Corner of Knox & Shepherd Sts, Chippendale, NSW 2008)			

FRIDAY 9 DEC

	CB11.00.401 Collaborative Theatre		
9.00am	**Welcome Back** Simon Buckingham Shum **Opening Comments** Kylie Readman (UTS Deputy Vice-Chancellor, Education & Students) **Reflections on Day 1** ALL		
9.25am	*Move upstairs to Digital Posters*		
	CB11.04.400 Collaborative Classroom		
9.30am	**Digital Posters Show & Tell**		
10.30am	**Break & Refreshments (CB11.00.401 Foyer)**		
	CB11.04.105	**CB11.B2.103**	**CB11.04.101**
11.00am	**How can 'small data' make teaching more personalised and efficient?** Kade McGarraghy, Jack Hutchinson, Eric Parkin, Simon Huband (Curtin U) & Danny Liu (U Sydney)	**Data justice and walkthroughs: An approach to platform study** Tiffani Apps, Karley Beckman, Sarah K. Howard (U Wollongong)	**Learning analytics and the skills economy** Chair: Kirsty Kitto (UTS) Abbey Hall (Jobs and Skills Australia), Eric Land (NSW Dept Education & Training) & Nik Dawson (Burning Glass Institute)
12.25pm	*Move downstairs for closing session*		
12.30pm	**Crowdsourced Keynote!** Lead: Linda Corrin (Deakin U)		
1.00pm	**Lunch** (sorry, this one is on you ☺)		

Concurrent Session Descriptions

Thursday 11:00am

Swapping stories from the frontline of actual LA tool adoption and implementation

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Christopher Bridge
La Trobe University

Danny Liu
The University of Sydney

Session Format: Brainstorm challenge

Session Length: 90 mins

DESCRIPTION

This interactive session will explore the challenges that have been faced at participants' and facilitators' institutions in adopting, piloting, and implementing learning analytics tools. Moreover, the session aims to allow candid sharing of approaches and strategies that have worked (and not worked) to overcome these challenges, situated within each institution's unique sociotechnical context. These challenges largely fit within Buckingham Shum's (2022) four loci mnemonic of "boardroom, staff room, server room, classroom". With a focus on the staff room and classroom and how to bring educators on board and enact tangible value for them and students, we will also explore aspects of the server room and boardroom that can often present thresholds to cross.

BACKGROUND

Despite the promise of learning analytics (LA), over the past decade there have been few cases of widespread adoption in higher education (Gasevic et al., 2019; Tsai et al., 2020). Reasons have included a lack of engagement with and by stakeholders (most notably, instructors), concerns around ethics and privacy, questions around data reliability, currency, and integration (especially relating to actual student learning), and issues with institutional IT infrastructure and processes (Gasevic et al., 2019; Klein et al., 2019). More recently, Buckingham Shum (2022) has proposed a helpful mnemonic that succinctly conceptualises the loci where the main LA adoption and implementation challenges lie: "boardroom, staff room, server room, classroom". While all of these 'rooms' are important factors in LA adoption, usually the primary users of LA are instructors and student support staff (Tsai et al., 2020), making the staff room and classroom critical. However, time pressures, tool complexity, and not understanding potential benefits or uses of LA hold these stakeholders back (Klein et al., 2019; Tsai et al., 2021). How do we bring educators along to drive change, all while gaining the support of other key stakeholders?

OBJECTIVES OF THE SESSION

1. Surface contemporary challenges in piloting and adopting LA tools in higher education.
2. Brainstorm and share realised and potential solutions to these challenges.
3. Identify common (and uncommon) successful (and unsuccessful!) approaches to engaging stakeholders in using data to impact student learning.

DESIGN OF THE SESSION

- 10 min – Brief welcome and introduction to facilitators and participants.
- 15 min – Open reflection of challenges faced in each of the 'rooms' and other loci.
- 15 min – Facilitators compare their successful and unsuccessful experiences around tool selection, executive buy-in, infrastructure setup, educator awareness raising and onboarding, support, continued rollout.
- 20 min – Brainstorming and sharing (e.g., via brainwriting) in smaller groups on solutions to key challenges.
- 25 min – Share back and open discussion, with collegial feedback from other participants.
- 10 min – Wrap-up and discussion of next steps for participants.

INTENDED AUDIENCE

Educational designers, administrators, management, IT personnel, and educators.

ORGANISER BIOS

At Curtin University's Learning Innovation and Teaching Excellence Centre, Simon Huband is Manager, Learning Analytics, Eric Parkin is an Education Data Scientist, and Kade McGarraghy and Jack Hutchinson are Digital Learning Interns in Learning Analytics. Having implemented other data tools at Curtin, including Blackboard Analytics, they have more recently been piloting the SRES with a group of educators.

Christopher Bridge is a Research Fellow in Teaching Innovation with La Trobe University and the University of New England, who in previous roles has worked with academics to implement SRES in their teaching.

At the University of Sydney, Danny Liu is an Associate Professor in the Educational Innovation Team in the DVC (Education) Portfolio and leads the SRES project which has given staff LA tools for over 10 years to support personalisation and learning.

LINKS / REFERENCES

Buckingham Shum, S. (2022). Embedding Learning Analytics in a University: Boardroom, Staff Room, Server Room, Classroom. In Viberg, O. and Grönlund, Å. (Eds.), *Practicable Learning Analytics*, SpringerNature.

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Klein, C., Lester, J., Rangwala, H., & Johri, A. (2019). Technological barriers and incentives to learning analytics adoption in higher education: Insights from users. *Journal of Computing in Higher Education*, 31(3), 604-625.

Tsai, Y. S., Rates, D., ... & Gašević, D. (2020). Learning analytics in European higher education—Trends and barriers. *Computers & Education*, 155, 103933.

Tsai, Y. S., Kovanović, V., & Gašević, D. (2021). Connecting the dots: An exploratory study on learning analytics adoption factors, experience, and priorities. *The Internet and Higher Education*, 50, 100794.

Developing a Framework for Inclusive Design of Learning Analytics

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Session Format: Brainstorm challenge

Session Length: 45 mins

DESCRIPTION

Too often, the objective of Learning Analytics (LA) to 'understand and optimise learning' (SoLAR, n.d.) is applied through a frame of maximum benefit, where the goal is to provide value to the greatest number of students, staff, or courses. However, the growing massification of our higher education systems underscores the importance for LA to aim not only for widespread outcomes, but also contributions that can support people who have been traditionally excluded, or power marginalised from our educational systems. In this interactive session, therefore, we will showcase a draft framework for inclusive LA that aims to provide researchers and practitioners with a foundation to consider a diverse range of users across platforms and/or LA initiatives. Drawing on the expertise in the room, we will provoke critical conversations on the key considerations of LA regarding equity cohorts, including access, ethics, and privacy, and the assumptions in the 'typical' behaviour or affordances of students.

BACKGROUND

From its inception, LA has been seen as a mechanism to better understand and modify learning environments and design. And significant research has evidenced its power to do just that – including supporting students' self-regulated learning, improving retention, and helping educators better understand their students' 'just in time' needs (Gibson & Ifenthaler, 2020; Sahin & Ifenthaler, 2021). However, experts in the field, including Ochoa, Knight and Wise (2020), have challenged the equity pursuits in LA research, calling on more to consider the 'cognitive, emotional, and social well-being of learners" (p.1). Numerous scholars have also concluded a lack of focus on equity cohorts in LA, such as students with disability (Baek & Aguilar, 2022; Cooper, Ferguson & Wolff, 2016) and the importance for designers to better understand students' unique contexts, backgrounds, and dispositions towards – and for – learning. These calls are intensified as higher education in Australia and globally, continues to massify and include greater numbers of students from equity-deserving backgrounds, as well as students who may be returning to study, studying part-time and/or have carer responsibilities. In essence, the challenge for LA in the coming years is not only to continue to evidence widescale value but highlight how LA also has the power to drive inclusion and equity in our learning communities.

OBJECTIVES OF THE SESSION

In this session, we will present a short presentation on the existing work on equity goals and outcomes in LA and highlight the gaps. We will then present a draft framework for inclusive learning analytics and ask participants to examine the work critically and challenge what is missing or needs modification.

DESIGN OF THE SESSION

We will ask participants to work in small and diverse groups (mixing up researchers and practitioners, for example) and identify gaps or missing elements in the framework. Each table will also be asked to consider unique equity cohorts, such as students from a low-socioeconomic area, Indigenous students, or mature-age students, to help explore how the framework can help researchers and practitioners understand the needs of these cohorts. We will end with short presentations from each group and a general discussion.

INTENDED AUDIENCE

Researchers, experts, and practitioners in the field of learning analytics

ORGANISER BIOS

Dr Sam Rastegari is the Manager of Analytics and Innovation with the Learning Design team at Deakin University. She currently leads the learning analytics program and development of the learning analytics strategy for Deakin University.

Dr Mollie Dollinger is a Senior Lecturer in the Deakin Learning Futures team. She is interested in learning analytics, equity, and student voice. She is a member of CRADLE and REDI research centres.

LINKS / REFERENCES

Baek, C., & Aguilar, S. J. (2022). Past, present, and future directions of learning analytics research for students with disabilities. *Journal of Research on Technology in Education*, 1-16.

Cooper, M., Ferguson, R., & Wolff, A. (2016, April). What can analytics contribute to accessibility in e-learning systems and to disabled students' learning?. In *Proceedings of the sixth international conference on learning analytics & knowledge* (pp. 99-103).

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Sahin, M., & Ifenthaler, D. (2021). Visualizations and Dashboards for Learning Analytics. In: Springer.

SoLAR (Society for Learning Analytics Research) (n.d). What is learning analytics? Accessed at https://www.solaresearch.org/about/what-is-learning-analytics/

Designing Meaningful Interactive Visualisations and Dashboards in Learning Analytics

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Dr. Andrew Gibson
Queensland University of Technology

Session Format: Roundtable

Session Length: 45 mins

DESCRIPTION

Learning analytics systems often use dashboards to display relevant information. But who can, and who should decide which information is displayed? Deciding what is meaningful prior to designing a visualisation constrains users to the designers' view and can limit the users' ability to make meaning from the underlying data. This roundtable opens the discussion whether interactions in interactive visualisations can provide users with greater opportunities for agency in meaning-making than static visualisations.

BACKGROUND

In Learning Analytics (LA), data visualisations and dashboards are often used to deliver insights to different stakeholders (Verbert et al., 2020). The extensive use of data visualisations stems from the need to represent complex data analytics succinctly so they can be easily understood (Sosulski, 2019). Interactive visualisations (e.g., zoom, filter, search, etc.) have become a popular design strategy to visualise high-dimensional data (Yi et al., 2007), addressing a key limitation of static visualisation by allowing users to select which data are displayed and the form they are presented (Few, 2009).

Typically, visualisation techniques are selected according to user experience criteria such as usability. However, these techniques are dominated by an assumption that the role of the visualisation is to transmit pre-defined insights to users in a one-way channel. The users' role is relegated to one of "information consumer", with minimal opportunity for agency or consideration of context and environment. This can be problematic in dynamic learning contexts where concepts and meanings are constructed over time and include opportunities for learning in the moment.

Learning which is meaningful to the learner is seldom limited to receiving or recalling pre-packaged information but involves active meaning-making through interactions; seeking novelty and integrating new ideas with previous experience; recognizing possibilities for application, critiquing, challenging, extending; and allowing the process to change their actions or perspectives. This active engagement is a process of meaning-making which relies on the learner's socio-cultural context, previous knowledge and immediate learning environment (Martinez-Maldonado et al., 2017). The designer cannot know many of these factors in advance. Thus, pre-defined visualisations will always be deficient to some extent, limiting meaning-making opportunities for the learner.

OBJECTIVES OF THE SESSION

The objective of the session is to open the discussion around the role that interactions in interactive visualisations and dashboard can play is users' meaning-making.

DESIGN OF THE SESSION

The session is designed to share experiences between participants about how interactions have changed the user's perspective. The session aims to be interactive with possible share of prototypes of interactive visualisations and dashboards.

INTENDED AUDIENCE

This round table is open to learning analytics practitioners interested in information visualization and human computer interaction. No prior experience is required.

ORGANISER BIOS

Mr. Miguel Canizares is a PhD student with a focus on information visualisation and human computer interaction in educational environments. His research embraces the idea that meaning is more than an attribute of an object and that should be found in interactions with the world and the environment. He has previous experience as a full-stack developer with technologies such as C# and React.

LINKS / REFERENCES

Few, S. (2009). Now you see it : simple visualization techniques for quantitative analysis. Analytics Press.

Martinez-Maldonado, R., Goodyear, P., Carvalho, L., Thompson, K., Hernandez-Leo, D., Dimitriadis, Y., Prieto, L., & Wardak, D. (2017). Supporting collaborative design activity in a multi-user digital design ecology. Computers in Human Behavior, 71, 327–342. https://doi.org/10.1016/j.chb.2017.01.055

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Verbert, K., Ochoa, X., De Croon, R., Dourado, R. A., & De Laet, T. (2020). Learning analytics dashboards: The past, the present and the future. Proceedings of the Tenth International Conference on Learning Analytics & Knowledge, 35–40. https://doi.org/10.1145/3375462.3375504

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Schools Stream – Thursday 11:00am

From Data Analytics to Insights - a K-12 school system's journey

Catholic Education Diocese of Parramatta
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Rob Wilkins, *Head Information Services*
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Session Format: Deep Dive Presentation (***session can only be run on 9th due to presenter availability***)

Session Length: 45 mins

DESCRIPTION

Catholic Education Diocese of Parramatta has a strong commitment to new technologies and data analytics to enable the delivery of contemporary learning and teaching in schools.

Since 2016, the introduction of dashboard visualisations of student, school and system data, automated machine learning and more recently data storytelling in CEDP, has opened up conversations and sparked curiosity about the power of insights to improve learning outcomes.

This is part of a broader strategy to create a more data-informed culture across the system and to change the educational focus and narrative from performance to progress.

BACKGROUND

This session will provide an overview of CEDP's analytics journey. It includes a 6 Lens Framework, a range of visualisations covering all aspects of a school system. The presentation will also outline the architecture, tools, workflows and related data management processes. An example of predictive analytics for HSC marks will also be discussed.

OBJECTIVES OF THE SESSION
By the end of this session participants will gain an understanding of:

- Data cycle, data architecture and management
- Six Lens Framework and drill down to interactive dashboards
- Power of predictive analytics
- Usage of visualisations and impact

DESIGN OF THE SESSION

A 30 min presentation on how data analytics is being used in a K-12 school system with 15 mins Q&A.

INTENDED AUDIENCE

System, school leaders and teachers.

ORGANISER BIOS

Gina Pianta is Snr Manager, Data Storytelling. Gina works closely with the Director Data Intelligence and the Data Analytics team on data stories for the Executive team and system, developing visualisations and predictive models. Prior to joining CEDP, Gina worked in radio and spent more than a decade working on strategic communications for CEDP's Executive Director around a new narrative for schooling in today's world. Gina has an MA in International Communications and a Bachelor of Psychology (Hons).

Dr Raju Varanasi is Director, Data Intelligence and Chief Information Officer with responsibilities that include cloud & networks, enterprise program office, applications & security, data & analytics, service desk, change management and related user services. With over 30 years of experience in the Australian education system, in both government and non-government sectors. Raju obtained his PhD in Education in March 2021, focusing his research on transforming school systems with analytics and systemness.

Rob Wilkins is Head of Information Services. Rob has had extensive experience in learning and performance, change management, digital learning, knowledge and information management systems, IT strategy and governance, data analytics and governance. Prior to joining CEDP, Rob gained over 30 years experience in the Financial and Professional services industries, across private and public sectors.

LINKS
Dr Raju Varanasi - Transforming School Systems (2020)

Suite of Google Data Studio analytics tools

Kurri Kurri High School | Francis Greenway High School | Hunter Sports High School | Singleton High School | Cessnock West Public School

Pip Cleaves, Deputy Principal Strategic Initiatives

This is a suite of tools to use in school. All using Google Data Studio, which is free for use.

This will demonstrate

- learner profiles based on Australian general capabilities and Credly micro credentials
- School report replacement
- Personalised learning plans for aboriginal and Torres strait island students
- Behaviour dashboard that deep dive into Sentral data
- Professional learning dashboards to show mandatory PL completions
- Positive behaviour leaderboards
- Yr 6-7 transition information dashboards
- Class literacy and numeracy dat slinking to support resources

The dashboards created use or combine scout data, Sentral data, in house data as needed.

Change Labs

Redlands

Ben Castelli, Head of Learning Analytics

A live demonstration of how this is used as a school community. There are three main components to the overall project.

- Dashboard design – We have designed several P-12 dashboards fit for purpose.
  - The individual student dashboard captures holistic growth across the full range of student achievement. It frames the data as a dynamic and growing tree which allows students to instantly identify where their 'light shines'.
  - The strategic planning dashboard informs our research teams and school leaders. It also measures our impact on focus groups.
- Coaching Conversations Program – this is how teachers, students and parents interact with the data.
- Change Labs - attached is an overview of the change labs project which goes into some detail regarding the staff research teams.

Thursday 2:00pm

Learning Analytics and Complex Adaptive Systems

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Kirsty Kitto
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Session Format: Brainstorm challenge

Session Length: 90 mins

DESCRIPTION

This brainstorm session will challenge participants to consider how learning analytics might accommodate learners, learning and learning environments as complex adaptive systems. The challenge will be to think beyond common reductive assumptions of representation and measurement, and to engage meaningfully with learning as a dynamic ecosystem. Following a very brief introduction to complex adaptive systems, an example case of LA for learner reflexivity will be provided as a catalyst for discussion. Participants will be encouraged to engage in a free ranging discussion where they explore how learning analytics might be applied to a system resistant to representation.

BACKGROUND

Much of what we do in learning analytics assumes that significant aspects of learning are predictable and can represented by corresponding computational features, allowing a single appropriate analysis of the representations to yield consistently meaningful insights about the learning. However, there are good reasons to think about learners and learning as complex adaptive systems where the most salient characteristics of the system are emergent and contingent on dynamic interactions with other aspects of the system. However, when taking a complex adaptive systems approach, reductive and constructivist data analytics techniques become at best ineffectual and at worst erroneous – the underlying assumptions based on the ability for systems to be decomposed into component parts no longer hold, and therefore measurement (and analysis) of components are unlikely to provide any meaningful connection with higher order aspects of the same system. This means that new approaches to data analysis need to be considered when complex adaptive systems are being investigated.

OBJECTIVES OF THE SESSION

This brainstorm session aims to tap the creative thinking of the participants to think of possible approaches to learning analytics that might be useful in investigating learners, learning, and learning environments as complex adaptive thinking. There are two objectives:

1. To raise awareness of the nature of the problem of complex adaptive systems for LA
2. To identify possible analytical approaches to complex adaptive systems

DESIGN OF THE SESSION

The main body of the session will include:

1. Concepts (25 mins)

1. the concept of complex adaptive systems will be introduced
2. an example of approaching an LA problem (analysis of reflexivity) will be provided and discussed

2. Possibilities (55 mins)

1. Initial brainstorm of possibilities (in small groups if needed)
2. Brainstorm of possible cases where suggestions are linked to problems. How might this apply to participants own work
3. Discussion of low hanging fruit – which approaches/cases might be suitable for immediate investigation

INTENDED AUDIENCE

This session will be of particular interest to LA researchers and practitioners who are looking for new LA approaches and techniques to address complex problems that are resistant to normal data analytics techniques.

ORGANISER BIOS

Andrew Gibson is a Lecturer of Information Science at QUT researching cognitive reflexivity and expression, particularly as it relates to learning.

Ben Hicks is a PhD student at the Connected Intelligence Centre, UTS and a Data Analyst with Charles Sturt University building Learning Analytics systems and causal representations.

Associate Professor Kirsty Kitto works at the Connected Intelligence Centre at UTS. She works on modelling people in complex and contextual socio-technical systems, such as learning.

Towards Learning Analytics for Student Sense of Belonging

Lisa-Angelique Lim
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Simon Buckingham Shum
University of Technology Sydney

Session Format: [Brainstorm challenge]

Session Length: 90 mins

DESCRIPTION

How can we harness the potential of learning analytics to capture - and support - students' ongoing sense of belonging at university? Research has well-documented the importance of students' sense of belonging in fostering their engagement. Research in belonging has tended to draw on students' self-reports. While there are validated instruments such as the Psychological Sense of School Membership, PSSM (Goodenow, 1993) to measure students' belonging, the challenge lies in getting students to respond to these surveys, in order to collect data on, and provide support to,
students with respect to their belonging. Learning analytics may be able to provide a solution, by harnessing students' digital traces and then providing technology-mediated, personalised support to students. However, to date there is little research in learning analytics for belonging. In this session, we explore the challenge of capturing students' ongoing sense of belonging through learning analytics, as well as personalizing support to students with respect to their belonging.

BACKGROUND

Students' sense of belonging is critical for their engagement at all stages of students' academic life. Belonging refers to students' sense of 'being accepted, valued, included and encouraged by others (teachers and peers) in the academic classroom and of feeling oneself to be an important part in the life and activity of the class' (Goodenow & Grady, 1993, p.25) and is a subjective experience for students, relating to their affective engagement. In higher education specifically, students' sense of belonging has been found to be a significant factor in retention (Thomas, 2012). Research has tended to draw on the use of self-report instruments to understand students' belonging (e.g., Benedict et al., 2022), or learning dispositions which include belonging (Deakin Crick, et al. 2015). While some of these instruments have been widely used and have demonstrated adequate reliability, the challenge lies in encouraging uptake of self-report surveys by students. Furthermore, self-reports have been known to have their own limitations. It is also a challenge to capture students' ongoing sense of belonging in order to provide personalised support and feedback especially to those who may be experiencing a lower sense of belonging, affecting their engagement and ability to self-regulate their own learning. Learning analytics has the potential to provide insights into students' engagement through their behavioural patterns (Joksimovic et al., 2019). There is also a growing body of research evidencing the impact of harnessing learning analytics to scale personalised feedback for self-regulated learning (e.g., Lim et al., 2021; Pardo et al., 2019). However, research in learning analytics that explores students' affective engagement is lacking (Joksimovic et al., 2019), and especially, their sense of belonging.

OBJECTIVES OF THE SESSION

The session aims to: 1) share experiences / challenges of being able to support students' belonging; 2) discuss the possibilities as well as challenges of using a data-informed approach to supporting students' belonging.

DESIGN OF THE SESSION

During this 90-minute session, participants will be involved in rich discussions conducted in small groups and round-table discussions with plenaries to consolidate ideas and questions.

INTENDED AUDIENCE

This workshop will be useful for educators who are actively involved in teaching, student experience/transition coordinators, as well as learning analytics researchers who are supporting educators in implementing learning analytics interventions.

ORGANISER BIOS

Lisa-Angelique Lim is a postdoctoral research fellow with the Connected Intelligence Centre at UTS. In her work, Lisa works closely with staff to design and implement automated feedback to support students with timely and actionable data-informed feedback. Her research focuses on learning analytics interventions and their impact on students' emotions and self-regulated learning.

Simon Buckingham Shum is Professor of Learning Informatics at the University of Technology Sydney, where he directs the Connected Intelligence Centre, inventing and evaluating tools to provide personalised, data-driven feedback to students. His research focuses on the human dimensions of designing and embedding such tools into practice.

REFERENCES

Benedict, A., Al-Hossami, E., Dorodchi, M., Benedict, A., & Wiktor, S. (2022). *Pilot Recommender System Enabling Students to Indirectly Help Each Other and Foster Belonging Through Reflections* LAK22: 12th International Learning Analytics and Knowledge Conference, Online, USA.

Deakin Crick, R., Huang, S., Ahmed-Shafi, A., & Goldspink, C. (2015). Developing Resilient Agency in Learning: The Internal Structure of Learning Power. *British Journal of Educational Studies, 63*(2), 121- 160. Goodenow, C., & Grady, K. E. (1993). The Relationship of School Belonging and Friends' Values to Academic Motivation Among Urban Adolescent Students. *The Journal of Experimental Education*, *62*(1), 60-71. Goodenow, C. (1993). Classroom Belonging among Early Adolescent Students: Relationships to Motivation and Achievement. *The Journal of Early Adolescence*, *13*(1), 21-43.

Joksimović, S., Kovanović, V., & Dawson, S. (2019). The journey of learning analytics. *HERDSA Review of Higher Education*, *6*, 37-63.

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Pardo, A., Jovanovic, J., Dawson, S., Gašević, D., & Mirriahi, N. (2019). Using learning analytics to scale the provision of personalised feedback. *British Journal of Educational Technology*, *50*(1), 128-138. Thomas, L. (2012). *Building student engagement and belonging in higher education at a time of change: A summary of findings and recommendations from the what works? Student retention & success programme.* Paul Hamlyn Foundation.

Data storytelling in Australian schools – What we know and where to next

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Session Format: Roundtable

Session Length: 90 mins

DESCRIPTION

The use of data to monitor and improve student and community outcomes is an expectation of teachers and leaders across the country. In many cases, however, educators have not had adequate professional learning opportunities to upskill, and many school and system structures are yet to authentically and efficiently embed data analysis into school culture. Data from a teacher data diagnostic tool indicates that some educators, in fact, do not know what using data to inform their work means, or what it looks like.

The effective use of data in all organisations requires three key elements: data literacy (understanding the numbers and their context), data visualisation (both access to, and skill in using and interpreting the visualisations), and data storytelling (where the user considers the insights in the data, and how they respond to these insights). Some research indicates that of the time taken from collection to action, 80% of the time is taken up organising and collecting the relevant data into an appropriate format. In a school setting, this is reflected in the smaller percentage of time spent acting on data in classrooms to improve teaching and learning, and the larger focus on data collection protocols. However, unless educators reach the point of data storytelling, the collection, analysis and visualisation of data does not impact classrooms, young people or their outcomes.

BACKGROUND

As a data storyteller and grounded researcher, I get to work with schools across the country on utilising the data they have access to. There have been approximately 2500 people across the country who have completed the data diagnostic, meaning this is most holistic representation of Australian educators' perceptions on the use of data.

OBJECTIVES OF THE SESSION

This workshop unpacks data literacy, data visualisation and data storytelling through the lens of data collected from the data diagnostic, and includes a discussion on the school structures that help (and hinder) the effective use of data in schools. The workshop focuses on Australian educators' lived experiences with the expectations of using data, and the ways in which we could move forward.

DESIGN OF THE SESSION

This session will be interactive, with opportunities for participants to talk with one another, share experiences and perceptions with the group, and participate in a Q+A at the end of the session. Adult learning requires processing time and an opportunity for participants to synthesise the ideas and connect it to their context – there will be ample opportunities for this to occur.

INTENDED AUDIENCE

School-based practitioners, researchers interested in the lived experience of teachers grappling with this challenge in Australian schools.

ORGANISER BIOS

Dr Selena Fisk is a grounded researcher and data storyteller who works with educators and schools across Australia to build data storytelling skills. Her 'data diagnostic' tool has been completed by approximately 2500 Australian educators, and as well as providing participants with a summary of their own results, it has generated over half a million data points on teacher perceptions of their own skills with data, and of the structures and supports that exist within schools.

Thursday 4:00pm

Writing Analytics Concerns and Capabilities Roundtable

Andrew Gibson
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Antonette Shibani
UTS
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Session Format: Roundtable

Session Length: 45 mins

DESCRIPTION

This roundtable will provide an opportunity to connect participants interested in writing analytics and/or natural language processing. With an aim of starting conversations which can be continued after the roundtable both in-person and online, we will identify current (a) problem areas that need writing analytics research, and (b) existing and developing capability in writing analytics research. Key topics will be used as a catalyst for further online conversation with the SoLAR Writing Analytics SIG (SIGWA) with the aim of connecting local research concerns and capabilities with other international researchers.

BACKGROUND

Writing analytics has been a vibrant area of research, but specialization, geography and other contextual factors can lead to siloing within the community, and a lack of awareness of both common problems and capability to address them. These issues can be overcome by providing opportunities for writing analytics researchers to start conversations with others in community that involve sharing both concerns and capabilities to address them.

OBJECTIVES OF THE SESSION

The session aims to start conversations which can be continued in-person and online by identifying current top-of-mind writing analytics concerns, and sharing research capabilities.

The session also aims to use the roundtable as a starting point for connecting researchers to other international researchers through the SoLAR writing analytics SIG (SIGWA).

DESIGN OF THE SESSION

Format:

1. Introductions and purpose (5 minutes)
2. Question 1 – What WA concerns/needs are we aware of? (15 minutes)
3. Question 2 – What capabilities do we have or aware of in others? (10 minutes)
4. Question 3 (to extend beyond session) – How do we support matching capabilities to concerns? (10 minutes)
5. Wrap up and invite to continue online with SIGWA (5 minutes)

Organisers will facilitate:

- Setting the scene and keeping focus
- Moderating to ensure everyone can provide input
- Encouraging further conversations

INTENDED AUDIENCE

Any researchers currently involved (or interested in being involved) in writing analytics or research involving NLP.

ORGANISER BIOS

Andrew Gibson is a Lecturer of Information Science at QUT researching cognitive reflexivity and expression, particularly as it relates to learning. He is actively involved in reflective writing analytics to support his research.

Shibani has a background in computer science engineering and teaches into the Master of Data Science and Innovation course at Transdisciplinary School, UTS. She researches applied areas of data science and artificial intelligence, with a particular focus on educational technology and writing analytics.

LINKS / REFERENCES

SoLAR Special Interest Group on Writing Analytics (SIGWA): https://www.solaresearch.org/community/sigs/writing-analytics-sig/

Learning Analytics for Learner Profile development

Vitomir Kovanovic

Education Futures, University of South Australia

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Simon Buckingham Shum

Connected Intelligence Centre, University of Technology Sydney

Session Format: Workshop

Session Length: 90 mins

DESCRIPTION

Over the last few years, the term Learner Profile has been increasingly used within education to describe different approaches for collecting important information about student learning. Demographics, prior knowledge, motivation, as well as knowledge, skills and competencies, have all been used to create different learner profiles, creating an important source of information for supporting teaching and learning in various domains. At the core of such initiatives is the idea that educational experiences can be personalised by knowing enough about students and their learning processes and outcomes. With the growing number of government initiatives looking to use learner profiles to provide a better view of student learning, there is a growing need to better understand how such approaches can be effectively used to drive student success. The wide range of approaches for creating learner profiles raises a wide range of questions about their development. Which constructs should be included in learner profiles? How should those constructs be operationalised and measured? How valid are such operationalisations? How scalable and time-consuming is the collection of learner profile data? The goal of this session is to gather experts working in the learner profile area and try to provide answers to some of those questions.

BACKGROUND

Within the educational sector, there has been growing momentum for assessing the growth and progress of learners' abilities and knowledge over time. The push for reporting on learning progress over static assessment scores is mirrored in recent government initiatives and reports, such as Gonski et al. (2018) and Masters (2014). These reports emphasise the need for a development-oriented mindset instead of an assessment-oriented mindset and the need to assess learning progressions rather than performances at specific time points. Such data is typically collected in learner profiles that contain information about students' learning processes, skill and competency development and learning progression. Importantly, these reports also highlight the need to use data-driven approaches to improve student learning. Research in learning analytics shows significant work around profiling students and developing their profiles. Initially, the focus was on identifying students at risk of attrition or academic performance to model study strategies and pathways. LA studies tend to utilise learning traces generated from education technologies (such as learning management systems) to profile learners based on their strategy adoption and other motivational and demographic information (Zamecnik et al., 2022). The trace data collected from these environments are longitudinal, provide fine-grained information about students' learning, and represent an important source for learner profile development.

OBJECTIVES OF THE SESSION

The participants can expect to critically engage in the discussion around the development of learner profiles across secondary and tertiary school settings. The session's objective is to discuss ways in which learning analytics could be used to support their development and adoption at scale. We will discuss questions such as: What should be included in the learner profile? How should profiles be populated? What is the validity behind constructs in the profile? What should be the purpose of learner profiles? How scalable are current profiling approaches? How should profiles be integrated into the curriculum?

DESIGN OF THE SESSION

The session will run 90 minutes and consist of two parts: In the first part (60 min), four 10-min presentations, each followed by a short 5-minute table discussion. In the second part of the session (30 min), we will have an open panel discussion with the presenters, moderated by the session organisers. The audience will have the opportunity to ask questions as we discuss the key points from each presentation. The presenters will be selected to cover different approaches to leaner profile development and different educational sectors.

INTENDED AUDIENCE

The intended audience for the session consists of educational practitioners and researchers, broadly from learning analytics, educational technology, educational policy and assessment domains. The audience would shape the conversation around learner profiles, and identify challenges and opportunities for future research in this area.

ORGANISER BIOS

Vitomir Kovanovic is a Senior Lecturer at the University of South Australia, investigating the use of learning analytics for supporting teacher decision-making. He is also Co-editor-in-Chief of the Journal of Learning Analytics (JLA) and was the Program Co-chair of the LAK20 conference.

Simon Buckingham Shum is the Professor and Director of the Connected Intelligence Centre at the University of Technology Sydney

LINKS / REFERENCES

Gonski, D., Arcus, T., Boston, K., Gould, V., Johnson, W., O'Brien, L., Perry, L.-A., & Roberts, M. (2018). *Through Growth to Achievement: Review to Achieve Educational Excellence in Australian Schools*. Department of Education and Training.

Masters, G. N. (2014). Towards a growth mindset in assessment. *Practically Primary*, *19*(2), 4–7.

Zamecnik, A., Kovanović, V., Joksimović, S., & Liu, L. (2022). Exploring non-traditional learner motivations and characteristics in online learning: A learner profile study. *Computers and Education: Artificial Intelligence*, *3*, 100051.

Friday Show and Tell – 9:30am

1. Predicting Science Student Performance from LMS Data in the Post-COVID Era

Dr. Ari Pinar
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Rothleakanha Lim
Biomedicine Discovery Institute, Monash University, Melbourne, Australia

Associate Professor Julia Choate
Biomedicine Discovery Institute,
Department of Physiology,
Biomedicine Education Research and Scholarship Team (BERST), Monash University, Melbourne, Australia

DESCRIPTION

The present study utilised a data mining approach to investigate whether digital data from Learning Management Systems (LMS) could be used to predict academic performance of students. Over the course of a semester, LMS activity data was collected from a cohort of second-year Biomedical Science students (N=534) enrolled in a core physiology subject. Measures of student activity from these digital data were used to predict academic performance (students' final unit results), using linear regression analyses. This student activity included – total number of clicks, discussion forum posts and views, frequency of LMS course page and content page views, frequency of views and downloads of lecture recordings, frequency of quiz attempts and reviews, and, average time spent viewing lecture recordings. Data capturing the frequency of physical, in-person attendance to traditional physiology laboratories and workshops was also collected.

We found that frequency of views and downloads of lecture recordings, average time spent viewing lecture recordings, and physical attendance to in-person laboratories and workshops, were significant factors in predicting students' academic performance. Our analyses show that student learning behaviours, specifically those around viewing lecture recordings online, can be used to predict the academic performance of students, a finding largely consistent with previous literature.

BACKGROUND

The global COVID-19 pandemic has significantly impacted science education. With the continued shift and emphasis toward delivering educational content on-mass, in the online space, and away from traditional, in-person laboratories, the current findings provide valuable insights on how our 'digital native' students are increasingly engaging with LMSs for their learning. As we discover students are engaging with LMSs more than ever, and as delivery of education towards the online space gains momentum in the post-COVID era, this evidence-based approach will help inform and enhance teaching practices. This in turn, will enable the development of teaching resources that better compliment and enrich student behaviours, in particular, those identified to predict academic performance.

DESCRIPTION OF THE SHOW AND TELL PRESENTATION

In this presentation (interactive discussion, and Q&A session), we will demonstrate how LMS data (Moodle logs) can be used to extract meaningful data on student behaviours. Attendees will learn how this data can be incorporated into course learning design to enhance academic outcomes.

INTENDED AUDIENCE

Educators (Undergraduate/Postgraduate), Student Support Teams

PRESENTER BIO

Dr. Ari Pinar is a teaching academic within the Biomedicine Discovery Institute. He is currently a full time Education-Focused lecturer within the Biomedicine Discovery Institute at Monash University, working with large cohorts of undergraduate biomedical science students. His research examines predictors of student academic performance, student experiences of undergraduate career development, as well as evaluating virtual learning platforms

2. Innovative Data Analysis to Improve Student Achievement through Professional Learning Communities

Sarah Hipwell
Assistant Principal Curriculum & Instruction
Mannering Park Public School
Sarah.Hipwell3@det.nsw.edu.au

DESCRIPTION

Sarah will demonstrate how she analyses and triangulates academic data to drive teaching and learning sprints through stage-based professional learning communities at Mannering Park Public School. She will showcase digital analysis tools used by the School Leadership Team, and demonstrate different ways to engage staff in the effective use of data to drive improvement.

BACKGROUND

Innovative data analysis that drives student learning has been a focus at Mannering Park Public School for the last three years. We collect achievement data including reading levels, Check-In Assessment, PAT Assessment and internal data, present the data in engaging ways and drill down to find areas of need. The APCI leads weekly stage professional learning communities (PLCs) where staff engage in tailored professional learning and evidence-based collaborative planning to address areas of need.

The School Leadership Team uses this data to identify student growth longitudinally, identify students requiring additional support and support teacher development and performance where required.

DESCRIPTION OF THE SHOW AND TELL PRESENTATION

The presentation will include a snapshot of the tools and processes used at Mannering Park Public School to drive student improvement through effective data use. The presentation will include examples of how a triangulation of external data can be drive improvement in small sprints, as well as a demonstration of class / individual reports than can be generated through Microsoft Excel to support teacher impact meetings and supplement reporting to parents.

INTENDED AUDIENCE

Teachers, School Leaders, Leaders of Curriculum

PRESENTER BIOS

Sarah Hipwell has been the Assistant Principal Curriculum and Instruction (former Instructional Leader) at Mannering Park Public School for 3.5 years. She has a Master of Leadership and Management in Education on top of her Bachelor Degree, and a passion for evidence-based school improvement and student wellbeing.

LINKS / REFERENCES

Please provide relevant links and/or references

3. Graphical Causal Models for Co-Designing Actionable Learning Analytics

Ben Hicks
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DESCRIPTION

Causal understanding is important for enabling actionable Learning Analytics (LA). To take action based on data we want to know *if I do this, how will it change the outcome?* To develop a causal understanding from learning data we have to understand the context in which the learning occurs, and apply this to a rigorous statistical framework.

Graphical Causal Models (GCMs) can achieve this without the practical and ethical concerns of the more traditional randomised control trial approach. They offer a collaborative way to construct theories about the causal mechanisms of the world, that carries a direct interpretation for making causal claims from statistical associations. The visual formalism of the model requires little technical knowledge to engage with, whilst informing the statistical modeller about how to make stronger causal claims.

In this showcase I will show how GCMs use Directed Acyclic Graphs (DAGs) to encode causal knowledge in order to make causal claims. I will also propose a Co-Design methodology to use these tools to help bring modellers closer to understanding the relevant context from the educators, and the educators closer to meaningfully participating in the construction of models.

BACKGROUND

A desire for actionable insights and theory based Learning Analytics has been highlighted in recent years (Marzouk, et al. 2016; Jørnø, & Gynther, 2018). The GCM framework developed by Pearl (2009) helps approach both these problems. By informing stronger causal claims the GCM promotes the chances of LA being actionable. By requiring that assumptions be encoded in an interpretable, graphical form the GCM framework enables a concrete process for encoding theory in the model. This process has the potential to me more inclusive, as the low technical barrier allows non-technical experts to have an active say in the construction of abstract causal and statistical models. This is a continuation of the work published in Hicks et al. (2022).

DESCRIPTION OF THE SHOW AND TELL PRESENTATION

There will be a brief overview of what Causal DAGs are, and how they can be used to model causal systems in order to make causal claims from data. Following this a prototype of a "participatory modelling" methodology will be outlined, and then opportunities for feedback and discussion on possible ways forward or potential applications in LA.

INTENDED AUDIENCE

Anyone curious about how diagrams such as causal DAGs can be leveraged to make stronger causal claims. Also those interested in finding ways for embedding contextual knowledge in an LA system through a meaningful collaborative process.

PRESENTER BIOS

Ben Hicks is a PhD student at the Connected Intelligence Centre, UTS and a Data Analyst with Charles Sturt University building Learning Analytics systems. Ben has worked with a wide variety of mathematical and statistical models, from water catchments and policy to student engagement and retention. He has taught mathematics for over a decade across three continents, occasionally well but always playfully. Ben's research focuses on collaborative methods of modelling causality to help bring the abstract world of modellers and data closer to the world of teaching and learning practitioners.

LINKS / REFERENCES

Hicks, B., Kitto, K., Payne, L., & Buckingham Shum, S. (2022, March). Thinking with causal models: A visual formalism for collaboratively crafting assumptions. In *LAK22: 12th International Learning Analytics and Knowledge Conference (pp. 250-259)*.
Jørnø, R. L., & Gynther, K. (2018). What constitutes an 'actionable insight' in learning analytics?. *Journal of Learning Analytics, 5(3), 198-221*.
Marzouk, Z., Rakovic, M., Liaqat, A., Vytasek, J., Samadi, D., Stewart-Alonso, J., ... & Nesbit, J. C. (2016). What if learning analytics were based on learning science?. *Australasian Journal of Educational Technology, 32(6).*
Pearl, J. (2009). *Causality*. Cambridge university press.

4. Developing students' feedback literacy using a learning analytics approach

Ian Farmer
University of Technology Sydney
ian.farmer@uts.edu.au

Supervisory Panel (Amara Atif, Simon Buckingham Shum, Lisa-Angelique Lim)

DESCRIPTION

One of the key enablers for learning is feedback. The student's experience in receiving feedback can have long lasting impacts on their beliefs, motivation and behaviour which influences levels of academic achievement as well as their lifetime learning potential (Carless & Boud, 2018).

For students to become pro-active in the feedback loop process, they require competencies (understandings, capacities and dispositions) for the feedback process, which is known as Feedback Literacy (Carless & Winstone, 2020).

This session will present preliminary findings of an existing research study seeking to validate a Student Feedback Literacy (SFL) instrument in order to quantify SFL literacy against six dimensions. This presentation will demonstrate how Feedback Literacy was integrated into Learning Design for a 2022 subject at UTS, using a survey tool, and automated feedback intervention. It will discuss some preliminary findings and insights with respect to how SFL literacy can be integrated into Learning Design to inform and trigger automated feedback, and what opportunities this has for connecting learning goals across subjects through learning analytics.

BACKGROUND

Learning Analytics has a cyclic relationship with Learning Design where each informs the other in order to improve student learning. Quantifying Student Feedback Literacy helps to inform Learning Design through incorporation of Feedback Literacy learning components, and these feedback literacy levels can be used to inform and trigger automated feedback.

DESCRIPTION OF THE SHOW AND TELL PRESENTATION

Short series of slides / demonstration explaining how Feedback Literacy was integrated into Learning Design for a 2022 subject at UTS, using a survey, automated feedback intervention showing some preliminary findings and insights with respect to Learning Goals.

What will attendees learn? Learning Centred Design approach & opportunities to integrate feedback literacy measurement within Learning Analytics in order to inform and influence automated feedback. How this could assist with connecting feedback literacy across subjects through course completion to a lifelong learning approach.

INTENDED AUDIENCE

Learning Analytics community,
Subject & Course Coordinators,
Teaching and Learning Design professionals.

PRESENTER BIOS

Ian Farmer is an HDR Masters Student at UTS researching the measurement of student feedback literacy and how this can inform and trigger automated feedback.
He has an extensive background in IT, Marketing and Business Management and is a casual academic in the management schools of UTS and UNSW.

LINKS / REFERENCES

Carless, D., & Boud, D. (2018). The development of student feedback literacy: enabling uptake of feedback. *Assessment & Evaluation in Higher Education*, *43*(8), 1315-1325. https://doi.org/10.1080/02602938.2018.1463354
Carless, D., & Winstone, N. (2020). Teacher feedback literacy and its interplay with student feedback literacy. *Teaching in Higher Education*, 1-14. https://doi.org/10.1080/13562517.2020.1782372

Lim, L.-A., Dawson, S., Gašević, D., Joksimović, S., Pardo, A., Fudge, A., & Gentili, S. (2021). Students' perceptions of, and emotional responses to, personalised learning analytics-based feedback: an exploratory study of four courses. *Assessment & Evaluation in Higher Education*, *46*(3), 339-359. https://doi.org/10.1080/02602938.2020.1782831
Molloy, E., Boud, D., & Henderson, M. (2020). Developing a learning-centred framework for feedback literacy. *Assessment & Evaluation in Higher Education*, *45*(4), 527-540. https://doi.org/10.1080/02602938.2019.1667955
Nicol, D., & McCallum, S. (2021). Making internal feedback explicit: exploiting the multiple comparisons that occur during peer review. *Assessment & Evaluation in Higher Education*, 1-19. https://doi.org/10.1080/02602938.2021.1924620
Nicol, D., Thomson, A., & Breslin, C. (2014). Rethinking feedback practices in higher education: a peer review perspective. *Assessment & Evaluation in Higher Education*, *39*(1), 102-122. https://doi.org/10.1080/02602938.2013.795518
Sutton, P. (2012). Conceptualizing feedback literacy: Knowing, being, and acting. *Innovations in Education and Teaching International*, *49*(1), 31-40. https://doi.org/10.1080/14703297.2012.647781
Zhan, Y. (2021). Developing and validating a student feedback literacy scale. *Assessment & Evaluation in Higher Education*, 1-14. https://doi.org/10.1080/02602938.2021.2001430

5. Visible analytics with Canvas

David Summerville – Head Teacher Technology
Callaghan College Wallsend Campus
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Stacy Lambert – Deputy Principal
Callaghan College Wallsend Campus

DESCRIPTION

Student analytics on Canvas (and Tentacle) are not just for the teachers. Students and Parent/Caregivers can see their own analytics to support their learning journey. Teachers and executive can use the analytics that Canvas provides through many avenues such as learning mastery, Canvas gradebook and engagement to improve student outcomes.

BACKGROUND

Callaghan College Wallsend Campus analyses data from the learning analytics to identify gaps in learning, where learning has been mastered (or beyond – HPGE students) and where this could be improved in task questions, teaching, and learning. Effective use of data is an area of improvement for our strategic improvement plan and our annual SEF SaS.

DESCRIPTION OF THE SHOW AND TELL PRESENTATION

We will present partially live student data demonstrating how it looks, what we can learn from the data and how as a school we learn about and analyse student data.

What will attendees learn?

- Effective use of Canvas for learning analytics
- Questions to be asked of the data – and stories behind data
- What the learning mastery data tells us from Canvas and Tentacle Insights

INTENDED AUDIENCE

Secondary teachers, delegates that are interested in Canvas and Tentacle Insights and how schools use these tools with the students and the wider school community. Delegates that are interested in assessment data and visual mastery data that gives teachers ideas as to improving student outcomes based on singular outcomes

PRESENTER BIOS

David Summerville is the Head Teacher Technology at Callaghan College Wallsend Campus and the Callaghan College Technology Coordinator. His career began in the Central West of NSW as a Mathematics Teacher before David started teaching computers / computer coordinator at Rutherford Technology High School. David also volunteers for WorldSkills as a Skill Advisor and has received numerous awards regarding integrating technology into schools, systems, and management. David has a keen interest in learner analytics and supporting teachers with the right tools for successful students.

Stacy Lambert is Deputy Principal at Callaghan College Wallsend Campus. Stacy began her teaching career over twenty-five years ago in the Central and Far West of NSW, Australia. Stacy has led the way in language teaching and technology integration across the Hunter in both consultancy and network roles. She is passionate about integrating technology in both classroom and systems applications to enhance student outcomes and assist teachers to work smarter not harder.

6. A new interactive tool for subject coordinators to replace existing static reports

David Fulcher
University of Wollongong
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Soroush Homayounpour
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DESCRIPTION

We need your help! The University of Wollongong (UOW) is trialling a new interactive dashboard for subject coordinators to enable exploration of different facets of learning design and delivery. This work aims to bring the top-down and bottom-up aspects of Learning analytics implementation closer together so that university teachers have more nuanced, contextualised and thus more trusted tools to enhance educational practice. In this show and tell session we describe the design rationale and results so far for the pilot implementation. We would love you to check out the tool and share your feedback with us. We don't expect it will take much of your time and it will help shape the future of institution-wide learning analytics tools.

BACKGROUND

The learning analytics team are part of the centralised teaching and learning unit at UOW, which distribute a series of reports at key points in the academic semester to subject coordinators to help draw attention to patterns that may not be readily apparent. 95% of undergraduate student-subject enrolments are in subjects receiving these reports. 50% of postgraduate coursework student-subject enrolments are in subjects receiving these reports. This reflects the focus of learning analytics at UOW being on large first-year undergraduate subjects. The reports are designed with scalability in mind. Regardless of the subject taught, the coordinator receives similar looking reports that display results specific to their student cohort. While this has yielded capabilities that have been extended across UOW, it can create issues of trustworthiness (Kaliisa et al., 2021; Tsai et al., 2021). This is where the subject coordinator dashboard comes in. This alternative tool, co-designed with university teachers, presents the same information provided in the pre-formatted reports but packaged in an interactive manner to provide a better understanding of students who may be at risk of failure or withdrawal and provide insights related to engagement, progress and assessments. 204 subject coordinators have piloted this tool at UOW so far as part of their teaching practice.

DESCRIPTION OF THE SHOW AND TELL PRESENTATION

Screenshots of an anonymised version of the dashboard tool will be presented as well as lessons learned along the way. Attendees will learn about:

- Data visualisation approaches to see both at-a-glance summaries and related details
- Technical problems involved with a broader rollout and some of the alternative solutions put in place
- The feedback received from academics about their use of the tool

INTENDED AUDIENCE

The intention is for this show and tell session to be a useful source of ideas about ways of implementing institutional approaches to learning analytics. Anyone involved with the implementation of learning analytics in higher education will benefit from the presentation, including university teachers.

PRESENTER BIOS

David Fulcher holds the role of Manager, Learning Analytics at the University of Wollongong, Australia. He has twenty years' experience working with analytics in complex organisations to support decisions and actions. This includes extensive involvement in the design, development and implementation of analytics tools across a variety of domains. David is also a PhD candidate investigating Australian higher education teachers' interpretation of learning analytics and its impact on practice.

Soroush Homayounpour is the Educational Data Analyst at the University of Wollongong, Australia. He has a Masters of Financial Mathematics and a Bachelor of Applied Mathematics. During the last 4 years at UOW Soroush has applied a variety of analytical techniques to create information which supports decision-making in both teaching and research domains.

He loves learning new technologies and is pursuing a deep knowledge of R, Python and JavaScript.

LINKS / REFERENCES

Kaliisa, R., Mørch, A. I., & Kluge, A. (2021). 'My Point of Departure for Analytics is Extreme Skepticism': Implications Derived from An Investigation of University Teachers' Learning Analytics Perspectives and Design Practices. *Technology, Knowledge and Learning*. https://doi.org/10.1007/s10758-020-09488-w

Tsai, Y.-S., Whitelock-Wainwright, A., & Gašević, D. (2021). More Than Figures on Your Laptop: (Dis)trustful Implementation of Learning Analytics. *Journal of Learning Analytics*, *8*(3), Article 3. https://doi.org/10.18608/jla.2021.7379

7. Professional Learning Analytics for Researchers

Presenter Name 1: Yuveena Gopalan
UTS
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DESCRIPTION TO APPEAR IN THE PROGRAM

How do professionals learn and develop throughout their careers? Is this something that is well thought out and planned? Can understanding how professionals actually learn, with advancements in data and analytics help in better supporting workplace career development? We learn continually in various forms, and we have in some ways come to accept that learning occurs mostly in a much more formal context, and we bring this notion into adult or professional workplace learning, where organisations create numerous forms of structured learning and development plans. Although there is great value in planning one's development, the act of learning and developing one's skills is largely an informal and introspective process. It is susceptible to changes resulting from one's personal predisposition, environment and circumstances. My research looks specifically at understanding this from researchers' perspectives, with the aim of shaping digital tools to empower and facilitate their development.

BACKGROUND

Professional Learning (PL) is central to lifelong learning, and very different to formal education. Professionals learn largely through informal means with varying degree of structure and intention at the workplace to complete tasks, develop and enhance their skills and competencies (Littlejohn, 2017, Pammer-Schindler and Rosé, 2021). They learn by undertaking work and engaging with peers (Wenger, 1998, Littlejohn et al., 2019). As a result, the ability to reflect, self-regulate learning, and track long-term progress is essential for workplace learning. Pervasive digital tools for workplace search, design, documentation and collaboration are now indispensable, while prompting ethical concerns surrounding data use, analysis and ownership, and risks of deskilling professionals (Poquet and Laat, 2021, Salomon et al., 1991). Although LA tools are dominated by formal educational contexts, it has been argued that PL could benefit from tools to support metacognition, learner agency and self-regulated learning using visual dashboards (Ruiz-Calleja et al., 2021), social networks to understand participation, connectivity (de Laat and Schreurs, 2013) and knowledge co-creation (Littlejohn, 2017), and thereby prompting professionals to reframe their professional identity and learning needs (Buckingham Shum et al., 2022).

My doctoral research is focused specifically on researchers, a particular kind of knowledge-intensive professional. How do researchers learn and approach their development and growth? How can we help support their development? The typical institutional approach is to adopt a human resource capability model, but researchers are rarely consulted about their own development needs (Evans, 2011, Åkerlind, 2005, Åkerlind, 2008), and studies of workplace practice reveal much more informal forms of learning (Brew et al., 2017, Francisco and Boud, 2021, Reich et al., 2015). As the first step in clarifying whether digital tools can add value as professional LA, I am interviewing respected researchers on how they have, in their own terms, navigated their careers to become better researchers. These narrations capture both real-life experience and reflections on their career development that I anticipate can be used to facilitate dialogue with other researchers to provoke productive reflection, and gathering requirements for tools that support professional development for researchers. I welcome feedback from the LA community.

DESCRIPTION OF THE SHOW AND TELL PRESENTATION

Brief 10 minutes slide presentation on researcher professional development, with 5 minutes feedback and comments from LA community. Attendees can expect to learn more about how learning occurs in the workplace, ways in which we can gain insights from engaging with professional learners on their development and how LA can contribute towards analytics in the professional learning context.

INTENDED AUDIENCE

Researchers in working in Professional/Workplace Learning, Adult Education.

PRESENTER BIOS

Yuveena Gopalan is a PhD student at the Connected Intelligence Centre, UTS and is a Research Data Insights Analyst with UTS's Research Office. In her current role within the Research Office, she has been using a range of digital tools to analyse institutional research capabilities and sector-based funding opportunities for UTS. Her research is focussed on tackling the challenge of designing Researcher Professional Learning Analytics, that is, the use of data-informed tools and visualisation to support academics develop their careers.

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8. Using Trace Data to Find Evidence of Curiosity in Learning

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DESCRIPTION TO APPEAR IN THE PROGRAM

In this show and tell session, I will present a pilot analysis that looked for traces of exploratory behaviour in telemetry data created by undergraduate data analytics students use of Jupyter notebooks. This is a work in progress for a PhD project focused on identifying and supporting curious learners with learning analytics. Preliminary results from the analysis demonstrated that curious learners tended to behave differently by performing activities associated with exploratory behaviour. This presentation will provide an overview of this work, highlight the importance of curiosity in learning, and demonstrate how learning analytics may be helpful to nurture and sustain learner curiosity.

BACKGROUND

It is acknowledged that curiosity enhances learning. Empirical studies have found that curiosity has a positive impact on learners' learning experiences, including motivation to explore and remember new information, and persistence in learning (Kang et al., 2009; Lee et al., 2022). Learning analytics can be helpful in nurturing and supporting learners' curiosity. However, there is an absence of research on curiosity in the learning analytics field.

In this show and tell session, I will present a work in progress project towards the aim of identifying and supporting curious learners with learning analytics. As an initial step, I will present how I intended to find evidence of learner curiosity from trace data in the form of log files and telemetry derived from students' use of the JupyterLab environment in undergraduate data analytics classes. The underlying hypothesis is that more curious students will exhibit different patterns of behaviour in the telemetry data and moreover those different patterns will correlate with features signifying curiosity.

The data were collected from an undergraduate data analytics unit (13 week class). The data were fine grained real-time user interaction data, including signals (events) from student interactions with their Jupyter notebooks, which were used for lectures, practicals and assignments. The vast differences in events indicative of significant differences in levels of interaction suggest that students at the extremes exhibited very different learning behaviours. Particularly, two questions were raised and will be answered in the presentation: (1) When were students more active? (2) How did different students behave differently?

DESCRIPTION OF THE SHOW AND TELL PRESENTATION

The presentation will take the form of a digital poster. An oral presentation will be provided to introduce the main focus of the poster. In this 15 minute session, a preliminary program is as following:

- 3 min: Introduce the background of the study, including the importance and working definition of curiosity in learning, research context and an overview of the data.
- 5 min: Discuss the findings from the data and focus on the patterns for different behaviours; address the two questions mentioned in the background.
- 3 min: Discuss how learning analytics can be helpful in nurturing and supporting curiosity in learning; discuss the future directions of this ongoing project.
- 4 min: Q&A, and discuss this topic with attendees.

Attendees are anticipated to have a better understanding of the importance of curiosity in learning, understand that there is some evidence of curiosity from learners' trace data and learning analytics has the potential to identify and support curiosity in learning.

INTENDED AUDIENCE

The intended audience includes participants who are interested in understanding how curiosity can enhance learning, and how learning analytics can be a potential solution to identify and support curiosity in learning. In addition, it will be beneficial for participants who are generally interested in understanding how learning analytics can be used to have a better understanding of learners' learning processes. The topic will also be relevant to participants who are interested in self-regulated learning, among other relevant principles.

PRESENTER BIOS

Joe Tang is a first year PhD student at Queensland University of Technology (QUT), Brisbane. He is also a participant of the Centre for Data Science at QUT. Joe's research focuses on identifying and supporting curiosity in learning with learning analytics. Joe is

interested in finding behavioural patterns from learner data in order to gain a more comprehensive understanding of their learning processes.

LINKS / REFERENCES

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9. Increasing inclusivity and fairness in learning analytics: Exploring the LMS behaviours of students with and without learning disabilities

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DESCRIPTION

Are we genuinely moving towards "fair education" in the educational race? There is limited research to highlight how learning analytics can help students with learning disabilities. Traditional teaching methods (including the "one size fits all" approach) disregard students with learning disabilities, which poses severe challenges for these students. It is conceivable to analyse and enhance students' learning practices with learning disabilities by utilising
educational data mining. For example, data from student interactions can be used by teachers to trace any difficulties that students may be encountering (Baek & Aguilar, 2022), through the potential of big data obtained from students with learning disabilities, teachers will be able to analyse students' academic and behavioural progression (Lenz et al., 2016). Moreover, using data mining technology in education can determine each student's needs while also encouraging inclusivity in education. This presentation will demonstrate if there was any difference in interacting with the learning management system (LMS) between students with a learning disability and students who don't and if that difference affected their final grade using a publicly available data Open University Learning Analytics Dataset, OULAD (Kuzilek et al., 2017).

BACKGROUND

The use of technology in learning has advanced over the years. Alarmingly, research on learning analytics for students with learning disabilities lags in this race of educational development. Building adaptable learning environments, identifying at-risk students, and supporting students' learning with personalised feedback at scale are all now feasible because of the development of Educational Data Mining which enhances the quality of education (Yağcı, 2022). However, this swift advancement has paid lesser attention to the needs of the students with learning disabilities (Baek & Aguilar, 2022). The most prevalent instance in this situation is how neglecting a text description or accessibility in reading-specific fonts can make it more challenging for students with learning disabilities to comprehend (Chen, 2021).

Students may not feel compelled or comfortable to reveal their impairment (Kent et al., 2018), and ethical issues arising from adopting learning analytics and other factors may be the most important contributors to the slower growth of research in this area. Consequently, there is a pressing need to build up this area of research in order to ensure greater inclusiveness for students in this equity group. The study described in this presentation takes a first step to this agenda by analysing student trace data to understand the learning of students with disabilities.

DESCRIPTION OF THE SHOW AND TELL PRESENTATION

This presentation will describe the findings from the analysis of an openly available dataset (Open University Learning Analytics Dataset, OULAD). The analysis involved exploratory data analysis (EDA) of students with learning disabilities and those without. The two groups were analysed based on their interaction with the LMS to uncover any differential effects on grades.

The participants will acquire an additional perspective into how learning-disabled students interact with a virtual learning environment.

INTENDED AUDIENCE

Academics, researchers, and HDRs

PRESENTER BIOS

Maliha Homaira is an HDR student in the School of Computer Science, Faculty of Engineering and IT. Maliha's research interest lies in learning analytics and Metacognition. She is currently exploring the innovative uses of educational data mining approaches such as Epistemic Network Analysis and Process Mining.

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10. Finding confusion in a haystack: Challenges of identifying confusion in students' MOOC posts

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Hannah Prior
Te Herenga Waka – Victoria University of Wellington

DESCRIPTION

Supporting student learning in MOOCs in the absence of direct contact presents some challenges. One challenge is discovering what students are confused about. Assuming MOOC students signal their confusion to peers and teachers in course forums, our research project explored ways of identifying such instances through computer-assisted text analysis. We used data from an *Introduction to Data Analysis* MOOC. Adopting an iterative approach, we started with a manual qualitative analysis of student posts, followed by computer-assisted text analysis. We sampled posts from the same sections of two offerings of the MOOC (run2 and run3, 2000+ posts each). We used run2 for the initial analysis and run3 for the verification analysis. After the human coder marked-up instances of confusion in run2 posts, computational text analyses were conducted to identify prominent *linguistic indicators of confusion*, which contained top-ranked marked-up items, their collocates and cooccurrences in the text, and 'influential' low-frequency items. A verification analysis was conducted on run3 of the MOOC and approaches to generating a confusion index were compared. In this show-and-tell presentation, we will share key challenges encountered at different stages of this project and seek attendees' thoughts and suggestions on how our approach may be further improved.

BACKGROUND

The contemporary focus on bringing higher education to a mass audience, exemplified by Massive Open Online Courses (MOOCs) has led to a shift from traditional educational models towards new forms of teaching and learning. However, in large online courses, such as MOOCs, new ways of supporting student learning need to be developed, since traditional approaches requiring personal teacher engagement with individual students are not scalable. Yet, effective teaching requires timely and relevant identification of the students' incomplete or incorrect understanding. In this project, we focus on computer-assisted analysis of student language in MOOC discussion forums, in an attempt to identify instances of confusion and bring them to teachers' attention in a timely and efficient manner.

Confusion is not a simple construct to define (Yang et al., 2015). Atapattu et al. (2019) propose that "confusion for a learner is an individual state of bewilderment and uncertainty of how to move forward." Here's an example of confusion from our data:

"I **need help please**. I **seem** to have a **problem** with my version of iNZight I've **tried** deleting and loading it **again** but it **still only** displays one variable field."

Computational text analysis has been used to automate tasks that humans perform inefficiently (Nguyen et al., 2020). Adopting a natural language processing (NLP) approach to this problem is appealing, but indices generated by NLP tools are not easy to interpret with confidence, especially when the goal is to probe developing student understanding (Lipton, 2018; McNamara et al., 2017). An alternative to fully automated text analysis (and one which is more amenable to the uncertainties inherent in teaching) is using computational text analysis techniques from corpus linguistics and computational linguistics to augment human interpretations. This approach allows teachers to take advantage of the affordances of computational text analysis (scalable to thousands of learners) without relying on automatically generated conclusions. The advantage of this approach is that teachers do not need to sift through hundreds or even thousands of posts each week to identify cases of confusion, since this is taken care of by the automated text analysis. All they need to do is scan pre-identified student posts and draw their own conclusions about whether the cases of confusion expressed in these posts need to be addressed in some way.

DESCRIPTION OF THE SHOW AND TELL PRESENTATION

After a brief introduction to the project, we present and explain our design and development approach which involves cycles of human text coding and computational analyses. Then, the session attendees will be invited to come up with examples of language that might indicate confusion, followed by the presentation of our preliminary findings, including examples of single-word and multi-word items associated with confusion in the student posts corpus from the first offering of the MOOC. We will discuss these findings in relation to the attendees' initial suggestions. Next, we will share the result of the verification stage conducted on the second offering of the same MOOC (with different students), briefly outlining our approaches to generating an *index of confusion*.

Throughout this presentation, a number of choices and challenges the project team had to deal with will be highlighted, and attendees will be invited to offer their thoughts, feedback, and suggestions.

What will attendees learn?

Attendees will learn about an approach to addressing a practical educational problem that combines insights from qualitative data analysis and efficiencies of computational text analysis, conducted in a top-down and bottom-up directions. They will observe and decide for themselves whether we were able to achieve our goal of keeping all decisions at all stages of the analysis transparent and open to researcher and teacher critique (exemplified through the way we conduct this session).

INTENDED AUDIENCE

Educators and learning analytics researchers interested in combining computational analysis efficiencies with transparent analysis and research practices.

PRESENTER BIOS

Irina Elgort is Associate Professor of Higher Education at Victoria University of Wellington. She is the PI on the *Linguistic Indicators of Confusion in Texts* (LICIT) project, presented in this session.

Hannah Prior is a final-year undergraduate student of Data Science and Modern Language Studies at Victoria University of Wellington. She is a research assistant on the LICIT project, with a focus on the computational text analysis.

LINKS / REFERENCES

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11. Automated Identification of Skills Gap of the Curriculum Occupations

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DESCRIPTION

One of the key objectives of higher education is to deliver skilled graduates that are ready for employment. However, given the dynamic nature of the requirements of the job market, aligning graduate outcomes with the demands of world of work has not always been easy. A few studies have attempted to map the curriculum of the universities to occupation standards and demands. Yet a full scale mapping of skills and knowledge taught at university to the occupational skill demands has not been carried out.

In this showcase, I apply skills analytics to construct full representation of both the entire university's curriculum, and the occupation market, which allows measuring complementary and similarity across the skill gap. After extraction of the knowledge and skills from the curriculum, I will demonstrate how mapping these skills to the skill requirements of occupation data can be done. Using a similarity method for calculating the similarity between different "bags of skills", I showcase how the gaps between what is taught in university and what is sought by employers can be identified to provide insights for improving graduate employability in higher education.

BACKGROUND

As modern society increases in complexity, many people argue that higher education is becoming a necessity for success in the world of work [1]. While this claim is sometimes questioned by labor market pundits [2], we still commonly see a university degree regarded as the entry-level qualification for a professional job [3]. While some claim that the primary objective of higher education is to transform the students through enhancing learning skills, behavior, and lifelong empowerment as a critical and logical reflective person [4], we see a continual pressure by both government and employers to prepare graduates who can make an immediate contribution in the workplace [5].

Voluntary work, internship schemes, career advice, and international travels aim to enhance students' employability narratives [6]. While providing such interventions for individual students can yield excellent results on a case-by-case basis [7], these activities require direct involvement of students which is subject to availability of students and university resources. Nevertheless, there is much that higher education institutions can do to improve the employability outcomes of their students through improvements of the curricula. But how do we know that a university degree adequately prepares a student for the labor market? The main goal of this showcase is to attempt to provide an answer for that question through Skills Analytics.

DESCRIPTION OF THE SHOW AND TELL PRESENTATION

There will be a brief overview of how the skills profiles for occupations, higher degree offerings are generated. This will be followed by overviewing related Information Retrieval techniques to measure the similarity between different bags of word. Finally, I showcase how the similarity between the elements of the two spaces can be used as means of measuring the gap between the curricula and the university offerings.

INTENDED AUDIENCE

Anyone curious about curriculum analytics and interested about the use of Labor Insight Data in improving the curricula.

PRESENTER BIOS

Alireza Ahadi completed his Doctoral degree in Software Engineering with a thesis entitled "Novice Programmer and Data Analytics". Currently, he is a research fellow at Connected Intelligent Centre (CIC) at University of Technology Sydney with a focus on Learning Analytics through data science.

REFERENCES

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Friday 11:00am

How can ‘small data’ make teaching more personalised and efficient?

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Danny Liu
The University of Sydney

Session Format: Workshop

Session Length: 90 mins

DESCRIPTION

Relevant data for supporting learning can sometimes be easy to access, although may not be useful, or perhaps not available at all. This workshop explores how useful ‘small data’ can be used to augment existing teaching practices to be more personalised and efficient. Participants will share how to gather and use meaningful data from students, teachers, and other sources such as the LMS, use this data to tailor learning experiences, and ‘close the loop’ with students. Participants will also experience how, through a freely available and actively developed learning analytics (LA) system used at a number of Australian universities, to use small data to personalise learning, reduce data ‘blind spots’, and speed up existing teaching tasks. Through this, we will explore how this extra efficiency, alongside pedagogically informed use of data, allows teaching staff to expand the scope of assessments and activities, increase use of data in analysing and evaluating units, and better support students’ needs.

BACKGROUND

Gašević and colleagues’ seminal paper emphasised that “learning analytics cannot be decoupled from actual, situated learning and teaching practice”, and that one-size-fits-all big data models miss out on course and instructional nuances (Gašević et al., 2016). Similarly, in healthcare, a ‘small data’ approach that focuses on meaningful individual (as opposed to population-scale) idiosyncrasies and is concerned for the person about whom data is gathered can enable more actionable insights (Hekler et al., 2019). Lodge & Corrin (2017) also identified that “some… data are easy to access, some may not be available. Some data that are available are not useful” and that ‘small data’ about individuals is critical for LA to transition from research to practice. Further, instructors need data that is aligned to their needs and pedagogical designs and is understandable and usable in an efficient way (Klein et al., 2019). All this speaks to the need for a LA approach, supported by appropriate system(s), to enable instructors to better collect and utilise data that is contextualised in teaching practice and learning design to support student learning. This workshop will help participants think about such ‘small data’ that supports learning, and provide hands-on experience with a LA system, the ‘SRES’, that operationalises this and is in use at several Australian institutions.

OBJECTIVES OF THE SESSION

1. Brainstorm current usage of small data in learning and teaching
2. Explore the benefits of small data in learning and teaching
3. Experience first-hand how small data can be operationalised in a LA system

DESIGN OF THE SESSION

- 5 min – Brief welcome and introduction to facilitators and participants. • 10 min – Icebreaker activity on design of tailored student support and feedback. • 15 min – Collective brainstorm of existing learning and teaching challenges around (im)personalisation of learning, (in)efficiency of teaching, and how use of data may resolve these
- 15 min – Quick demonstration of possibilities, followed by discussion on experiences collecting and using ‘small data’
- 25 min – Hands-on with a LA system (SRES) to collect and use small data to support student learning and teaching efficiency
- 10 min – Sharing participants’ thoughts on actioning small data, and new educator capabilities
- 10 min – Wrap-up, providing resources to participants that tie the icebreaker activity and presentation together

INTENDED AUDIENCE

Coordinators, educators, educational designers, learning support staff, data analysts.

ORGANISER BIOS

At Curtin University's Learning Innovation and Teaching Excellence Centre, Kade McGarraghy and Jack Hutchinson are Digital Learning Interns in Learning Analytics, Eric Parkin is an Education Data Scientist, and Simon Huband is Manager, Learning Analytics. Their recent focus has been piloting the SRES with a group of educators, supporting them to collect and use small data for more effective teaching.

At the University of Sydney, Danny Liu is an Associate Professor in the Educational Innovation Team in the DVC (Education) Portfolio and leads the SRES project which has given staff LA tools for over 10 years to support personalisation and learning.

LINKS / REFERENCES

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Data justice and walkthroughs: An approach to platform study

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Karley Beckman
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Sarah K. Howard
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Session Format: Workshop

Session Length: 90 mins

DESCRIPTION

In this workshop we introduce a data justice approach to walkthrough methodologies (Howard et al., 2022) for examining socio-technical arrangements of digital education platform use in education. The notion of data justice provides a way to engage with the uncertainties and power relations created by digital education platforms in education. Specifically, in this workshop we will consider the intentional opacity of digital platform design together with teachers' everyday use of digital platforms and data, across school and higher education sectors. To expand and unveil these socio-technical arrangements we focus on walkthrough methodologies (Light et al., 2018). The application of such methodologies to policy, platforms and *with* people aims to expose, interrupt and reimagine digital data practice in education settings. Participants will be provided with worked examples of platform case studies to explore using this approach, followed by a discussion of findings and future possibilities.

BACKGROUND

The work of educators is increasingly focused on the collection and analysis of student data. Together with the expeditious uptake of digital platforms in schools, the use of digital data for knowing, comparing and improving teaching and learning has become a normalised education practice. In this socio-technical arrangement, the digital platform operates as a form of power through promotion of certain pedagogical approaches, 'easy' access to 'sophisticated' learning data and opaque data usage practices. The use of platforms raises critical questions about the integration of digital platforms in education, the agency of teachers and students, and whose interests are being best served?

OBJECTIVES OF THE SESSION

- Introduce a novel methodology for examining education platforms
- Engage in guided walkthroughs of two case studies
- Discuss implications of the methodology paying attention to notions of visibility, representation and treatment of users.

DESIGN OF THE SESSION

This workshop will run in two parts. First participants will be introduced to research a novel methodology for examining education platforms. Participants will then engage in guided exploration of the walkthrough methodology through two case studies. The workshop will finish with a discussion of the implications of the methodology for more just educational practice.

INTENDED AUDIENCE

Academics and professional staff at universities working in the learning analytics areas, along with school practitioners and educational designers.

RESOURCES REQUIRED

Overhead projector, Participants should bring laptops

ORGANISER BIOS

Tiffani Apps' current research explores the impact of digital data on education and associated data. **Karley Beckman's** research explores children, young people and adult learners' technology practice and the place of technology in our lives. **Sarah K. Howard's** focuses on the use of new technologies and data science to explore classroom practice and teacher change.

LINKS / REFERENCES

Howard, S. K., Swist, T., Gasevic, D., et al. (2022). Educational data journeys: Where are we going, what are we taking and making for AI? *Computers and Education: Artificial Intelligence*, *100073*. https://doi.org/https://doi.org/10.1016/j.caeai.2022.100073

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Learning Analytics and the skills economy

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Session Format: Roundtable

Session Length: 90 mins

DESCRIPTION

We are living through a global skills shortage, a problem that is increasingly on the agenda of governments and business. This year's Jobs and Skills summit is likely to result in a rush of work on the topic, with many players already emerging. Indeed, the National Skills Commission (NSC) is currently looking at mapping skills across the tertiary curriculum (for both VET and HE) and a wide variety of companies and platforms are selling skills services to education providers. Lifelong learning and the unbundling of educational offerings will require us to track learning across a wide range of institutions, and the Business Council of Australia (BCA) is now calling for a "skills passport" to support employers in finding employees with the skills that they need. Where is Learning Analytics (LA) in this emerging agenda? And how can we work as a community to ensure that we capitalize upon the opportunities arising from it? This roundtable will bring together people using skills analytics in a wide range of different sectors to show what type of work is occurring in this space before turning to a consideration of how to ensure that the LA community can leverage a topic fast becoming a national priority.

BACKGROUND

The 4th industrial revolution (WEF, 2020) means that people will increasingly need to return to the education sector: for further training, to gain new skills as their position is disrupted by technology, or to reskill and transition into new careers. In the wake of COVID-19, and the resulting global skills shortage a number of different sectors of the economy are seeking to understand what skills they require, and what workers might already have them. Approaches like Skills and Curriculum Analytics (Kitto et al., 2020, Dawson et al., 2021) are being used to map curriculum gaps, the job market, and skills gaps between people and jobs they would like to target. These approaches rely upon data generated using Natural Language Processing (NLP) over curriculum descriptions and job ads. Companies like Lightcast are selling datasets and API services to support these skills based analytics, but a number of other competing representations of skills are also emerging. For example, the Australian National Skills Commission is working to represent jobs and courses in an updated Australian Skills Classification (ASC), with a pilot project that aims to map skills across the HE curriculum currently in progress. Skills will increasingly be used for the recognition of prior learning as flexible lifelong learning reskilling pathways emerge and degrees are disaggregated. For example, entities like the Business Council of Australia (BCA) are arguing that long term growth of the future workforce will need a "skills passport" that recognises short courses and micro-credentials and somehow works like a digital CV. This round table will bring various stakeholders together from this complex environment to discuss the current state of the art in the field, where it might go next, and to consider how the LA community might work to ensure that it can leverage a topic becoming a high priority on government agendas across Australia.

OBJECTIVES OF THE SESSION

This session aims to position LA so that it can take advantage of the Jobs and Skills summit:

- Increase understanding in the LA community about the Australian skills agenda and how it might be leveraged in our future work
- Share stories from the frontline of how skills analytics is being used to understand people, curriculum, and occupations
- Identify opportunities for funding bids and collaborations on this topic.

DESIGN OF THE SESSION

This session will take the form of a round table, with representatives invited to present their work on the topic of skills analytics for brief 5min slots, before turning to a curated discussion with questions from the audience. Targeted participants in the round table will include:

- Dr Nik Dawson (Burning Glass Institute)
- Abbey Hall (Jobs and Skills Australia)
- Eric Land (NSW Department of Education)

The final 30 minutes will be devoted to brainstorming future collaborative work in the area.

INTENDED AUDIENCE

Learning Analytics researchers, senior management thinking about how to position their institution within the national skills agenda, and data scientists working in the field.

RESOURCES REQUIRED

A round table setup that invites people to participate in questioning the speakers. A screen for brief presentations of work at the beginning of the session.

ORGANISER BIOS

Associate Professor Kirsty Kitto works at the Connected Intelligence Centre at UTS, where she leads the TRACK project, which uses skills analytics to improve graduate employability.

LINKS / REFERENCES

Dawson, N., Williams, M. A., & Rizoiu, M. A. (2021). Skill-driven recommendations for job transition pathways. *Plos one*, *16*(8), e0254722.

Kitto, K., Sarathy, N., Gromov, A., Liu, M., Musial, K., & Buckingham Shum, S. (2020). Towards skills-based curriculum analytics: Can we automate the recognition of prior learning?. In *Proceedings of the tenth international conference on learning analytics & knowledge* (pp. 171-180).

WEF (2020). The future of jobs report 2020. Technical report, World Economic Forum (WEF), Geneva, Switzerland. https://www.weforum.org/reports/the-future-of-jobs-report-2020/