Barriers, enablers, and motivations for staff adoption of learning analytics: Insights for professional learning opportunities from an Australian university

Hazel Jones
University of Southern Queensland, Toowoomba
Queensland, Australia

Understanding the capabilities and motivations of academics towards adopting and using Learning Analytics (LA) to support their development of technology-enhanced learning is an important first step in designing an effective and flexible adoption plan. Situated in a regional university, this paper reports on the initial data-gathering stage of an on-going study aimed at designing and trialing an adoption plan to support individual staff to engage deeply with LA to inform and enhance their teaching practice and their students' experiences. This paper analyses a staff survey (N=74) and transcripts from 28 semi-structured interviews conducted over 22 months with eight academics. Survey respondents reported low levels of knowledge about, and use of, LA, as well as a lack of confidence in accessing, interpreting, and acting on, data. Inductive and deductive thematic analyses of interview transcripts support these findings. Analysis further identified three main themes of indicators of successful LA adoption: effective learning design and enhanced teaching practice; improved student experience; and academic recognition. Based on these results, this paper proposes elements that can be included in a suite of professional learning opportunities that will enable academic developers and institutions to support individual staff to successfully adopt of LA.

Keywords:
Learning analytics adoption, teaching practice, professional learning, learning design.

Introduction

The field of learning analytics (LA) has grown significantly over the past decade, moving from identification of the potential of using data to improve teaching and learning (Fritz & Whitmer, 2015; Gasevic, Dawson & Siemens, 2015; Greller & Draschler, 2012) through to studies of how to use data to improve teaching and learning (Colvin et al. 2015; Sclater & Bailey, 2015; Siemens, 2013) and what successful use of LA looks like (Beer, Tickner & Jones, 2014; Brooks, Greer & Gutwin, 2014). Whilst there is recognition in the literature that LA is useful, this knowledge seems to be remaining at the theoretical level and focused at an institutional level, with practical application of this knowledge to teaching practice and learning design by individual staff still not commonly occurring. This makes an investigation of the barriers, enablers and motivations for individual academics to adopt LA both timely and necessary. Much of the focus of Learning Analytics (LA) research and practice has been on learners and their interaction with their learning environment, with less of a focus on another important stakeholder group: the teachers responsible for designing, developing and working within the learning environment. It is in this context that this ongoing study investigates the design and trial of an extended professional learning opportunity, running for 20 weeks to enable individual academics to engage deeply with LA to inform and enhance their teaching practice to have a positive impact on students' learning. This paper describes the initial data-gathering phase of the ongoing Design Based Research (DBR) study of academic staff conducted at a regional Australian, as outlined in Figure 1.

Figure 1: Outline of the full DBR study

Learning Analytics has been defined as"… the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimising learning and the environments in which it occurs" (LAK11, 2011, para 5). This paper establishes a foundation for the design of professional learning for academics about LA, by investigating the different ways in which academics perceive LA use to be "successful". To meet this overarching aim, this paper considers the enablers and barriers to academics adopting LA at a regional university in Australia to inform and enhance their teaching practice. It further considers the opportunities and supports they identify as being important in using LA to develop their teaching practice. The study is specific to one university, but it provides an example of the type of investigation that can be followed to determine the wants and needs of academic staff and provides insights that can inform approaches for the development of an appropriate adoption strategy in a range of institutional contexts. It shows how gaining knowledge of the barriers, enablers, and complex motivational issues surrounding LA adoption allows academic developers and institutions to implement an adoption strategy that will more likely lead to wide scale adoption by individual staff.

Literature Review

Studies of implementing educational technologies in universities have repeatedly shown that the usefulness of educational technologies does not necessarily result in their implementation. It is only through empowering and engaging staff through inclusive and collaborative approaches; the provision of professional development and suitable infrastructure; technology frameworks; and policy and planning strategies that these technologies come to be successfully adopted (Campbell, DeBlois & Oblinger, 2007; Ertmer, 1999; Gosper et al., 2010; Lawson et al., 2014; Scott, 1999). There is a need to examine barriers and enablers for adoption of LA as this can inform design and development of relevant approaches for successful use of LA by academics.

A wide range of implementation and adoption frameworks for LA have been developed over the last eight years that explore the different dimensions of adoption. Many of the earlier frameworks had their origins in data science with an emphasis on how to collect and use data and to what end LA was being implemented. Many of these early frameworks also adopted an institutional approach and considered that one model would be appropriate for a wide range of contexts (Greller & Drachsler, 2012; Siemens, 2013, van Harmelen & Workman, 2012). There has been a trend since 2014 for the human and socio-cultural aspects to be included in implementation and adoption frameworks and for more research to include qualitative data (Colvin et al, 2015, Gunn et al, 2017). Many of the elements identified as being important factors for successful LA implementation are similar to those noted for implementation of different educational innovations. These include the involvement of all relevant stakeholders at all stages of implementation (Beer et al., 2014; Gasevic et al., 2015), integration with educational research on effective institutional practice (Gasevic et al., 2015), strong leadership (Hrabowski III, Suess & Fritz, 2011), development of a strong learning and teaching culture through different levels of the institution that supports use of LA, implementation of policies (Gasevic et al., 2015; Macfadyen, Dawson, Pardo & Gasevic, 2014), and development of staff skills. Provision of appropriate infrastructure that enables staff to easily access and interpret data is the main technological aspect considered (West et al., 2015), whilst an understanding of the pedagogical intent of using specific tools and activities within the LMS implementation is also considered important (Gasevic et al., 2015). Colvin et al. (2015) suggest that a key component to sustainable uptake of LA is building academic staff capabilities to enable them to move from being interested in LA to implementing LA. Gaps in the LA research surrounding mindful innovation, intentional implementation design, consideration of human and social elements of implementation, and evaluation of impact have been identified by Jones, Beer and Clark (2013), Fritz and Whitmerr, (2017) and Wise and Vytasek (2017). This study considered the socio-cultural aspects of LA adoption through investigation of what academics consider are the capabilities they need to successfully adopt LA.

Continuing the discussion of the importance of human factors in successful LA adoption, Colvin et al. (2015) and Howell, Roberts, Seaman & and Gibson (2018) note that academics' perceptions of the usefulness of LA need to be more carefully considered when designing and developing implementation strategies, with Howell et al. (2018) noting that "it would be informative to specifically identify how academics view learning analytics so that academic concerns can be addressed in the implementation of learning analytics systems. Such an approach may then facilitate the adaptation of technological advancements within academic settings" (p3). Two recent studies (Gunn et al., 2017; Rehrey, Goth, Fiorini, Hostetter & Shepherd, 2018) augment this discussion through reporting on pragmatic approaches to adoption strategies. They provide two different approaches with the same aim of building staff capabilities and confidence in adopting LA. Rehrey et al. (2018) describe a Student Learning Analytics Fellows Program which has been successfully running for three years and addresses cultural barriers and resistance to change through ongoing support and access to communities of staff with an interest in using LA to conduct scholarly research. Gunn et al. (2017) outline the development of a framework to support academics to choose relevant LA data to address their specific questions regarding learning and teaching. They also focus on professional development for academics noting that this, along with incentives, is necessary to "promote both the

benefits and the methods of data informed teaching, learning design and learning support" (p8). This study combined elements of both these approaches and contributes to this emerging conversation through a broad and deep investigation of academics' beliefs about the usefulness of LA and their motivations for adopting LA at one institution.

Methods

The present study was conducted at a regional university where approximately 75% of students enroll as online students and their interaction with all course content, and most contact with the university, is conducted through the Learning Management System (LMS), in this case, Moodle. On-campus students experience a blended approach to learning, using the LMS to view online course material and resources and submit in-semester assessment tasks. The institution currently has no overarching institutional strategy or LA policy, placing it at the *Aware* stage of LA deployment maturity (Siemens, Dawson & Lynch, 2013), where basic reports and log data are the main forms of data used and there is no cross-system data integration.

This study, which was granted ethical approval by the university's Research Ethics Committee (HREC), adopted a qualitative research methodology to determine the barriers and enablers that impact how individual academics implement LA to inform and enhance their teaching practice; including the design and development of their learning environments. The study began with a survey which was disseminated by email to all academic staff in the institution (420 in total), and a total of 100 responses were received, with 68 complete responses. A further 6 respondents answered only the first section of the survey on knowledge and use of the LMS and LA tools, which was sufficient to include these results in this analysis for a total of 74 responses. The instrument included one short answer and 31 multiple-choice questions and took participants approximately 15 minutes to complete. The survey was conducted in March – June 2016 and was administered using Qualtrics software. There were three main sections to the survey with questions focused on knowledge and use of the LMS and LA tools; perceptions of LA and motivations to adopt; and demographic information related to their academic level and length of service. Deductive thematic analysis was applied to the one free response question.

The demographic distributions of respondents in terms of academic levels and length of service were similar to the actual distribution of staff across the university, according to data provided by the Human Resources department who reported a total population of 420 academic staff. Most staff are Level B Academics (40.5% of respondents and 44.5% of total staff) and there was a slight under-representation of Level C staff (24.3% respondents compared with 30.2% total staff). In terms of years of service at University of Southern Queensland (USQ) and in higher education, the highest proportions were for >10 years' service; 47% at USQ (compared with 37.4% of all staff) and 63.5% in higher education.

Building on responses to the survey, a series of 28 semi-structured interviews were conducted over a period of 18 months in 2016-2017 with each of four pairs of academic staff from across the university. The number of interviews for each pair ranged from five to ten, depending on when the staff were recruited and their availability. Using semi-structured interviews allowed for consistency of the opening questions across the four groups whilst providing opportunities for all participants to expand on these in their own way, which also gave the participants some ownership of the tone and direction of the conversations. The aim of the interviews was to collect in-depth data on participants' knowledge and use of LA and their motivators and approaches to adopt LA and to determine if having the opportunity for such discussions over an extended period had any effect on these factors. Both inductive and deductive thematic analysis of the transcripts was conducted with the deductive themes related to the research questions and considerations of the barriers and enablers to adoption, along with the participants' motivations and the supports they indicated they would need. The inductive analysis focused on emerging themes and ideas from the interviews.

Results

Survey

Within Moodle there are a series of reports that staff are able to access to gain insights and data on how their students are interacting with the various activities and resources included in their course sites. These range from simple, high level reports that indicate the number of students who have accessed a particular resource or activity to the more in-depth and detailed statistical analysis of results for quizzes. The more in-depth reports generally require some interaction and input from staff through choice of parameters and manipulation to interpret the data. Each of these tools or reports are standard inclusions in the Moodle LMS, except Communications, a custom-

made report at this institution. Staff were asked about their current levels of knowledge and use of the various reports and analytics tools that are available within the LMS and these responses are summarised in Table 1.

Table 1: Knowledge and Use of LA Tools in the LMS (n=74)

	Knowledge			**Use**		
	Mean	SD	Median	Mean	SD	Median
Participant List	4.45	1.04	5	3.86	1.25	4
Gradebook	4.43	0.86	5	3.19	1.10	3
Course Participation	3.81	1.12	4	2.54	1.40	2
Activity Report	3.73	1.17	4	2.46	1.31	2
Quiz Results	3.70	1.42	4	2.38	1.17	2
Communications	3.64	1.49	4	3.49	1.71	4
Quiz responses	3.59	1.46	4	2.27	1.20	2
Quiz statistics	3.38	1.53	4	2.12	1.18	2
Log data	3.18	1.44	3	2.00	1.16	2
Activity completion	3.09	1.46	3	1.96	1.14	2
Statistics	3.08	1.32	3	1.62	0.84	1
Progress bar	2.76	1.37	3	1.46	0.81	1
Engagement analytics	2.69	1.32	3	1.74	1.07	1

Key: Knowledge 1=I don't know anything about this, 2= I have seen this but know nothing about it, 3= I have seen this and have a vague understanding of this, 4= I have a moderate understanding of this, 5= I have a good understanding of this
Use 1=I have never used this, 2= I use this 1-5 times per semester, 3= I use this once a month, 4=I use this 2-4 times a month, 5=I use this at least once a week

These results showed that the two most well-known and used reports were the Participant List, which provides details of all students and their last access to the course; and Gradebook, which collates students' results and grades for each assessment task administered through the LMS. Respondents also indicated that they generally had good understanding of easily accessible reports, such as Course Participation and Quiz Results which are also likely to be those that staff perceive to be most immediately relevant or important. However, staff levels of knowledge decreased quickly as the level of detail of the reports and complexity in accessing increased. Whilst there were some minor changes in the order of rankings for means between Knowledge and Use, there were still indications that it was the high level, easy to access reports that were more regularly used.

When participants were asked about barriers to adopting LA (see Table 2), time constraints were reported as the main barrier to current levels of knowledge and use of LA with lack of training also rated as an important factor, being noted by 62% of respondents. Lack of institutional guidelines regarding use of LA was the least noted factor, with only about 30% citing this as a factor. Seventeen respondents noted that all 4 options impacted their level of knowledge and 14 of those also noted all 5 factors as barriers to use. Conversely, for the 16 respondents who only noted one barrier to knowledge and use, time was the only barrier being noted by 12 of these 16 respondents.

Table 2: Barriers to adopting LA (n=74)

	Impacts my level of knowledge of LA		Impacts my level of use of LA	
	Number	%	Number	%
Time constraints	54	88.5	52	85.2
Lack of training	38	62.3	38	62.3
Lack of support	29	47.5	28	45.9
Lack of institutional guidelines	19	31.1	17	27.9
Lack of knowledge	na	na	35	57.4

Responses to questions regarding confidence levels in a range of aspects of LA use, (see Table 3) showed that respondents generally had low levels of confidence in their abilities to access and interpret data and implement appropriate actions based on interpretation. Whilst 51% agreed or strongly agreed that they were confident in accessing data, only 44% had similar responses regarding ability to interpret data, and 45% to take appropriate actions. There were also approximately 25% who indicated they neither agreed nor disagreed with each of the

statements. Comparison across all of these questions for individual respondents showed that most respondents had the same level of confidence for each of the statements in Table 3, with 6 respondents noting they strongly agreed with all statements, 11 agreed across all statements, 7 were neutral across all statements, 9 disagreed with all statements and 3 strongly disagreed with all statements.

Table 3: Confidence levels (n=74)

I am confident in my ability to:	Strongly disagree/ disagree (%)	Neither agree nor disagree (%)	Strongly agree/ agree (%)
access appropriate student data from the LMS	25.7	23.0	51.3
interpret student data extracted from the LMS	29.5	26.2	44.3
implement appropriate actions based on interpretation of student data	34.4	19.7	45.9

The importance of aspects of accessing data and support were measured on a 4 point scale where 1= not at all important, 2= slightly important, 3= moderately important and 4= extremely important (see Tables 4 & 5). All aspects were considered important, with mean scores of >3. The one exception was policy/guidelines on ethical use of student data. A 4-point Likert scale was deemed appropriate for these questions as there was no clear mid-point or neutral response (Chyung, Roberts, Swanson, & Hankinson, 2017).

Table 4: Importance of aspects of accessing student data

	Mean	SD	Median
Being able to easily access the data in a format I can use	3.82	0.42	4
Knowing what student data is available	3.54	0.61	4
Having support for accessing data	3.47	0.66	4
Having access to consolidated information from a number of sources and systems about my students	3.46	0.76	4
Having support for analysing and interpreting data	3.32	0.74	3
Having easy access to graphical representations of data	3.19	0.76	3
Having access to professional development regarding accessing LA	3.16	0.8	3

Comparing Tables 4 & 5 suggests staff were more interested in having support to undertake different aspects of LA rather than having the professional development to enable them to complete those tasks themselves.

Table 5: Importance of support

	Mean	Std Dev	Median
Support for accessing data	3.43	0.7	4
Support for contacting students identified as at risk of not satisfactorily completing course	3.29	0.81	3
Support for analysing and interpreting data	3.19	0.76	3
Professional development in regards to understanding learning analytics	3.16	0.84	3
Policy/guidelines on ethical use of student data	2.94	0.9	3

Sixty-five responses were received to the open-ended question, "What is your opinion on learning analytics?" Responses generally showed cautious optimism towards LA, with 25 responses commenting on the usefulness of LA and a further 18 including qualifiers such as "good", "important", "valuable"," essential". However, most comments included caveats or cautions. These comments were coded to expand on the barriers and areas of support raised in the multiple-choice questions and the main themes are described in Table 6. There were 22 comments indicating a more negative perception as indicated through use of language including "don't know" and "too slow".

Table 6: Barriers to adoption identified in free response question

Barrier	Responses	Exemplar Comments
Knowledge & skills	9	...using them more meaningfully and accessing them and interpreting them more expediently is something I don't fully understand how to implement. IF I knew more about it and how it could enhance learning and teaching I might be interested in using it in my own teaching, but I sense it may be of less use to courses where student numbers are small.
Time	7	Something that could improve my teaching if the information was timely. Something I hardly bother with because it sounds too academic and I don't see how I can use it is a time effective practical way. Also I am not allocated any time to use it.
Interpretation	7	...unless a full understanding of interpreting analyses and the implications of those analyses is gained, learning analytics are not likely to be very useful. A useful tool that needs careful interpretation
Accessibility of data	6	Can be very useful for broad data gathering but the time for downloading often leads to system freeze Probably useful but currently inaccessible
Training and support	2	Would be useful but no training has been given on how to use this information. An important tool in improving outcomes, retention and progression, but support is required to act on students at risk
Institutional guidelines	1	Platform is solid but use is fragmented with little to no overarching theme or direction.
Other	4	I believe it has a lot to offer but also to be weary of it - quantitative tool. useful but not to overtake substance of curriculum design. They are useful but should not be another aspect of evidence used to judge the lecturer / student experience. The tracking of interactions with course materials and tasks by ONL students is improved when the tasks / assessment is expectant weekly. I have used analytics to track interaction across course offerings for the benefit of arguing interaction often equals better results. Good in theory, not sure about its practical application at USQ.

Interviews

The 28 interviews conducted with eight participants were designed to build on the responses to the survey to provide a deep knowledge of the different ways academics choose to engage with LA and any changes over a period of time. This approach resulted in many different strands of conversations and the data presented here represents one small portion of these. Deductive thematic analysis of the interview transcripts focussed on the barriers and enablers to adoption and Table 7 provides some examples of comments, showing that access to data is a major area of concern.

Table 7: Barriers identified in interviews

Barrier	Exemplar comments
Knowledge & skills	*Yes so these are things I don't know, I'm not sure about the detail of what to look at, some things will tell you how many times it has been accessed, not who or when, is there data that tells you, there must be data that tells you when students accessed* (Finlay)
Time	*Time obviously one of the barriers* (Dallas)
Interpretation	*We need the help of a statistician to help interpret so we can report on this* (Jamie)
Accessibility of data	*Lack of easy access is an inhibitor* (Blake) *I wish the analytics were much more of a push analytics and targeted at important dates* (Greer) *Limitations of using Useful links to recordings etc does not record analytics* (Dallas) *There are issues with missing* data (Hunter)
Training and support	*I need session on how to download and collect data and store for future* (Jamie)
Institutional guidelines	*so much we could be doing and need time and reward/incentive* (Jamie)

Inductive thematic analysis of transcripts from the interviews revealed three main themes of main motivators for engaging with LA. An example of comments from each of the participants are included in Table 8.

Table 8: Motivations for using Learning Analytics

Theme	Exemplar comments
Students: LA were useful in understanding what resources students were accessing, when and why they were accessed, and whether particular patterns had any correlation to grades or tendency to engage in academic misconduct	*"It might be interesting from their (student) point of view. What do they find useful to help them, you know tracking their progress and helping them in the course"* (Dallas) *"...progression/retention, being able to provide student husbandry- identifying students at risk and providing appropriate support, why are students struggling with assignments"* (Finlay) *"...is cohort A who have been found guilty of academic misconduct are they behaving differently to cohort B who have done minor misconduct or cohort C who have done nothing wrong so that's the kind of thing, maybe we can get something from the logs that give some kind of measure"(*Frankie*)* *"if I got a weekly summary of students at risk so I or the tutors could reach out to students and ask if there is anything we can do, is it something as simple as technology or something as complicated as my life is falling apart and I'm sleeping in my car"* (Greer)
Teaching Practice –LA could help staff become more effective and efficient as well as the benefits of upskilling themselves through professional learning opportunities associated with building levels of knowledge around different aspects of adopting LA. The skills required to access, analyse and interpret appropriate data and then implement interventions as a result of that analysis and interpretation were also mentioned	*"I'm writing another course. When I have the time this stuff will influence me in how I work and how I deliver."* (Jordan) *"Do changes to course design have impact on students; - what is my cost/benefit ratio for the amount of effort undertaken; I want to gain an understanding of what interventions work* (Blake)
Academic recognition – staff considered factors such as they type of publications they would be able to write from their investigations, and how using LA would help with recognition through Teaching Grants and Awards and how this could help their career progression and promotion.	*"Acknowledgement of my excellence in teaching has been provided through the following awards…"* (Hunter, in response to how they measured success) *"I think it would be good if this could lead to a publication for the school."* (Jamie)

Discussion and implications

Overall, the results from the two different types of evidence of this phase of the study highlighted similar patterns showing low levels of knowledge and use of LA. However, many were keen to learn more and use LA more regularly to inform their practice, if the barriers of lack of time and lack of support could be minimised.

Comparison of means for responses on levels of knowledge and use of LA (Table 1) show that there were higher levels of knowledge than use for all reports and tools. This suggests that knowledge alone does not mean that staff will adopt LA and it is thus important to also consider other factors. The responses to the question on barriers to knowledge and use suggest that time is the most common barrier although institutional guidelines are not an important factor (Table 2). Most respondents (54/64) noted multiple barriers, indicating that an effective implementation plan needs to include training and support, and finding ways to embed the use of LA in normal workload will be important to overcome the barrier of time constraints. The low levels of confidence in ability to interpret data and implement actions (Table 3) reinforced the need for training and support to include these aspects of adoption. A significant aspect from both the survey results and interviews was that staff attributed more importance to support than professional development (Tables 4 & 5). This may be due to the reported lack of time as a major barrier, and a preference for some tasks to be undertaken by support staff rather than building the knowledge and skills to complete themselves. A deeper understanding of what staff actually mean by "support"

is still needed as is an understanding of how this intersects with professional development, which academics may understand as simply attending workshops.

Approximately half of survey respondents reported high levels of confidence in ability to access (53%) and interpret data (44%) and implement changes as a result of that interpretation (46%) (Table 3). Matching this question with the demographic data showed that staff who responded positively were spread across the two faculties (19 from Faculty A and 13 from Faculty B). This suggests that discipline background and the concomitant teaching needs of those backgrounds do not necessarily play a role in the confidence levels of staff in these areas. In contrast, interview participants all noted that accessing data in a usable format was a barrier for them. Having ready access to actionable data also ranked highly in terms of importance and support (Tables 4 & 5), suggesting that readily accessible data is instrumental to any successful implementation plan. Just as important though is ensuring that staff have high levels of knowledge about how each set of data or tools can be used and data interpreted as this will improve their ability to select the most appropriate data to address their specific questions.

All interview participants discussed elements of each of the identified themes of motivations for use of LA, for example, Jordan and Greer each discussed students and teaching practice in one of their conversations:

> "*...what things are students focusing on? How can I make them more fantastic (as opposed to working on things they are not engaging with?)* and *"This stuff will influence me in how I work and how I deliver."* (Jordan)
> *"In my StudyDesk these are the things that students focus on and so, for instance I know they will focus on assessment and things like that so if they focus on some things in a good way I can spend more time on making them fantastic, you know doing videos around assessment or something but if they don't touch on some of the other things then I'm wasting my time on those and I would reform the way I deliver."* (Greer)

All participants did, however, have different emphases, and a diverse range of goals from use of LA: Finlay, Greer and Dallas all focused on the student, while Jamie and Hunter both held some focus on the benefits for themselves. Knowing these differences can help in the way staff are approached and supported, all with the aim of providing a satisfying learning experience for students. For academics like Finlay, Greer and Dallas - academics who are focused on pastoral care - the support and discussions would focus on how interventions will help their students and how they can build up an evidence base that the interventions have had a positive outcome. In contrast, for academics like Jamie, who are focused on publication, it will be important to ensure that they have a relevant and measurable research question. They can be directed to relevant literature and previous research that has investigated similar questions and the discussion can be centered on the understanding of how implementing these changes will not only benefit their students but also help provide evidence for their teaching grants and awards or promotion applications. The areas that staff do not focus on can also be used as a focus for further support and development.

Referring back to the Research Questions, this paper has shown that:

- The main barriers for LA adoption are lack of knowledge of the tools and reports available in the LMS; in interpreting data; implementing appropriate actions; as well as lack of time to effectively engage with LA;
- The opportunities and supports that need to be provided to academics include provision of time to engage, and provision of support to access and interpret data and design appropriate interventions; and
- Academics perceive successful adoption of LA in a number of different ways, including a combination of improved student experience, more effective course design and efficient teaching practice, and evidence to enable academic recognition and career progression.

Building on these results it is proposed that the following elements need be included in a suite of professional learning opportunities, to meet the challenge of successful adoption of LA by individual staff.

1. Understand the motivations and competencies of staff to allow some personalisation and cater for their diverse goals;
2. Ensure relevant and accessible support from a range of specialist staff is available at all stages of adoption;
3. Ensure that academic staff are core participants and stakeholders and supported to take ownership of the ways they use LA in their unique contexts;
4. Adopt a flexible and adaptable approach that caters to the different focus and meanings of success for individual staff; and
5. Include a variety of professional learning and support options including 1-1, small group, peer support and self-help resources.

Conclusion

This paper has brought together discussions of results from a survey of academic staff and analysis of interviews with staff, to provide an understanding about the barriers, enablers and motivations for adopting LA to enhance technology-enabled learning in a regional university. It has shown that, in general, there is a perceived lack of knowledge about tools and reports available within the LMS that may provide relevant data to inform and enhance their teaching practice as well as how to interpret that data and implement appropriate actions and interventions based on that interpretation. These findings are supported by log data from the LMS which showed low levels of engagement with these tools across the university. Findings from the survey and interviews have also shown that staff generally have positive perceptions of the benefits of LA, and are cautiously optimistic about the benefits of engaging with LA. Further, they will be willing to adopt LA, provided appropriate support and professional learning are provided, and they receive recognition in their workload models of the time that will be required to engage deeply with LA. Three themes emerged from inductive thematic analysis of the interviews of the reasons for engaging with LA and consequent benefits: improved student experience, more effective course design and efficient teaching practice, and evidence to enable academic recognition/career progression. Taken together, these findings support an understanding that, in the university studied, academics generally have a positive attitude towards LA and are likely to engage more deeply with using LA to inform and enhance their teaching practice if they are provided with ready access to actionable data, support from relevant professional staff, professional learning and time. Whilst some of the results are not surprising and align with results from previous studies (eg Colvin et al., 2015, Gunn et al., 2017, West et al., 2015), this paper adds to the literature by focusing on a single university and gaining the opinions of teaching staff, rather than institutional leaders of LA.

This study is limited in that it focuses on a single university, and it is not possible to know if results are generalisable to other institutions without further research. The research is concerned not just with identifying these barriers, enablers and motivations, but with attempting to understand how institutions might be able to better support academics in adopting LA. Future work following this research will involve implementation of an LA adoption plan that has been designed to address the elements identified as important in this study, and analysis of the effectiveness of using a carefully designed adoption strategy.

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