A Review of the Digital Learning Environment at the University of Otago

REPORT

May 2023

EXECUTIVE SUMMARY
University of Otago Digital Learning Environment Review

Introduction

Motivation for this Review of our Digital Learning Environment (DLE) came from experiences of staff and students, expressed formally and informally over many years but thrown into sharp focus by the COVID-19 pandemic. Those experiences present straightforward evidence of a need to look more closely at our DLE and how it is facilitating or inhibiting effective and appropriate learning and teaching.

Changes in administrative and support structures, levels of resourcing to key professional areas, conditions and costs of software licenses, and the reality of budget cuts due to the impact of the pandemic were also contributing factors.

The *COVID-19 Effect on Student Learning Experiences Surveys* administered by the Quality Advancement Unit, and the CALT *Lessons Learned from the Rapid Shift to Online Learning and Teaching* report, have gathered student and staff perspectives on their experiences of learning across the last three years. Findings from these surveys add to other regular surveys of students, including the *Graduate Opinion Survey* and *Student Opinion Survey*, both of which are run annually. However, although students have been surveyed about their experiences of the DLE regularly, there have been fewer opportunities for staff to share their perspectives. This lack may be a contributing factor to some of the issues covered in this report.

Thus, the overall goal of the DLE Review was *to investigate the current form and functioning of Otago's DLE from the perspectives of staff and students, to inform decision-making about how the DLE can be enhanced to best support the achievement of Vision 2040 goals for teaching and learning over the next 7-10 years.*

The specific objectives of the Review, undertaken between September 2022 and March 2023, were:

(a) to gather the expressed needs, wants and aspirations about the DLE held by the University community;
(b) to undertake an environmental scan of how comparable and aspirational higher education institutions shape and manage their DLEs;
(c) to make recommendations relating to staff, students, operations, processes, technologies (but not specific products) that will inform the future DLE at Otago, considering existing and foreseeable organisational, operational and resourcing availability and constraints.

Working Principles

The following principles guided all aspects of Review processes:

- *collaborative approaches*: infused into the processes of planning the project, gathering and analysing the evidence, and developing the Recommendations;
- *future-focussed*: rather than re-documenting staff and student perceptions of inhibiting factors of the current DLE, focus was primarily on needs and broad solutions for a better DLE future;
- *consultative*: throughout, activities were consultative in nature;
- *equitable, representative and inclusive*: a wide-ranging interrogation of views and perspectives from many sectors of the University community were sought, gathered and incorporated.

The DLE Review Process

To achieve the overall goal, the Review project was broken into a series of Activity workstreams, each of which contributed to providing a broad picture of the current and aspirational future of the DLE at Otago.

The Activity workstreams were:

- *Activity 1*: Current Otago digital learning map, linked to specific objective (c);
- *Activity 2*: Workshops and focus group discussions with staff, linked to specific objective (a);
- *Activity 3*: Questionnaire for staff, linked to specific objective (a);
- *Activity 4*: Compilation of relevant recent internal reports and surveys, linked to specific objective (a);
- *Activity 5*: External environmental scan of DLEs and ecologies, linked to specific objective (b);
- *Activity 6*: A synthesis of outcomes from across the Activity Streams, linked to specific objective (c).

A Steering Group (SG) led the work, incorporating the contributions of colleagues outside the SG where relevant and needed. An external consultant, Mark Northover, who has longstanding experience in the use of technologies for learning in the New Zealand tertiary sector was employed across the six months of the project to be part of the Review team and provide an "outsider" perspective throughout the project. The consultant, worked alongside and with the SG, taking a collaborative and facilitative approach, matching the consultative and collaborative working principles that underpinned the review process.

Synthesis and Recommendations

The synthesis of current and recent experiences staff and student (Activity 6), and their aspirations for the future of Otago's DLE (Activities 2, 3, and 4) can be linked to critical aspects of modern higher education digital learning environments as evident in institutions external to Otago (Activity 5).

Areas of concern, which simultaneously became areas that are ripe for change, clustered into the following critical themes:

a. communication and integration of fit-for-purpose policy and governance mechanisms;
b. policy, processes and practices of continuous improvement, quality enhancement, evaluation and review;
c. technical and digital infrastructure that aligns with institutional learning goals, and with staff and student learning and teaching needs;
d. resourcing, training and the organisation of the responsibilities and processes for support, to enable effective participation in digital learning by both staff and students;
e. comprehensive processes and structures that focus on current and future course design, development and teaching, and the pedagogical impact of technology enhanced learning (TEL); and
f. processes, procedures and systems that facilitate ongoing responsive and proactive staff and student professional development, training and support.

These themes inform the seven Recommendations made. There are interdependencies between and among the Recommendations and they should be viewed as components of a larger, integrated Programme of Work. Priorities for action follow the Recommendation list.

Recommendation 1: *Develop a Strategic Plan that focusses on the digital learning environment.*

The Review recommends that a *Digital Learning Environment Strategic Plan* complement, but be separate from, the University *Teaching and Learning Plan*, to inform the broader aspirations and direction that the new (pending) *Teaching and Learning Plan* will contain. Keeping the *Digital Learning Environment Strategic Plan* separate would be appropriate at this moment in time, to reflect the need for the University community to come to grips at all levels with the impact of an integrated digital learning environment within the wider learning environment at the University.

The *Digital Learning Environment Strategic Plan* should lay out the plan for a transformative digital learning experience at Otago and include the following aspects:

- concepts of flexible learning, teaching and course design, that make informed use of digital environments by design (this includes physical teaching spaces and environments);
- specific direction about assessment including the increased use of non-exam-based assessment strategies and designs that are digital and non-digital, on-campus and off-campus;
- guidance and application of on/off-campus-virtual principles and practices, partnered with quality criteria for such practices;
- the impact of emerging technologies such as generative AI and cloud-based services, and related issues and challenges such as academic integrity and data sovereignty; and
- continuous improvement to ensure that the changing needs and requirements of students, teachers, courses, and the University are being met by the DLE.

Recommendation 2: *Develop University-level governance policies and practices for the digital learning environment.*

This Review recommends that, in consultation with the University community, policies and procedures are developed to guide and facilitate decision making and continuous improvement of the University's digital learning environment. These policies and procedures should take into account:

- systems of review of all aspects of the digital learning environment;
- frameworks and standards criteria that establish expectations concerning a range of critical technical, functional and pedagogical aspects of high quality (digital) learning environments;
- resourcing;
- support approaches: organisation, structure, management and access;
- learning analytics: meaning, purposes, worth, value, parameters; along with practices and procedures for access, interpretation and use.

Recommendation 3: ***Create a new Teaching and Learning Unit to provide staff and student support that is well-resourced, structured, coordinated, and intentionally proactive and reactive.***

This Review recommends the establishment of a new Teaching and Learning Unit (TLU) to provide the functional and pedagogical support needs of staff and students. Technical support, on the other hand, would come from ITS.

This provision should be deliberately coordinated, planned, structured and well-resourced. It should facilitate overarching continuous improvement and enhancement processes and approaches, balanced with, and informed by, local flexibility and autonomy. Support should come in a range of forms, be proactive as well as timely and responsive to staff and student needs.

The TLU should be organised in a 'hub-and-spoke' arrangement, comprising both locally embedded and centrally based groups, each with separate roles and responsibilities, and scope of knowledge and influence. Processes of engagement and interaction should ensure effective manaakitanga as well as tino rangitiratanga for staff and students.

The core building blocks for this TLU already exist within the University – in both academic and front-facing service and support areas - and should be brought together through a management of change process under the unifying auspices of the Dean, Learning and Teaching.

The unit would not be a centre of research into higher education but have strong research-informed and led underpinnings.

Once the TLU is established, new resource will be required to ensure that ongoing support provision is sufficient, equitable and appropriate.

Recommendation 4: ***Develop an IT integration layer to enable and manage the sharing of data between systems.***

This Review recommends that Otago's DLE systems need to be able to 'talk to' each other, as data flow among systems is fundamental to a well-functioning, modern digital learning ecology.

The 'integration layer' will automate the flow of enrolment and grade data between the main Learning Management systems (currently Blackboard/Moodle/KuraCloud) to the Student Management System (*eVision*). User interfaces should be included to enable assigned personnel to access student enrolment data (incoming data about students in papers and programmes) as well as learning analytics data for the purposes of monitoring progress and provision of pastoral and learning support.

The implementation of this data integration will necessitate the development of a middleware interface that enables management of data flow by staff to provide ability to decide what should flow through.

Recommendation 5: *Introduce one Learning Management System for broad use across the institution.*

The University currently has two main Learning Management Systems (LMS): Moodle for the Medical School and Blackboard Learn for most other papers. A handful of papers are using other products.

It is clear that Blackboard Learn is no longer fit for purpose and should be replaced. There are also concerns about the longevity of its customer base. Open-source products, such as Moodle, are very heavy on resources. This Review therefore recommends developing a business case to propose the best available LMS option for Otago's future.

Reasons for this Recommendation, include:

- to provide a consistent experience for students who study across disciplines and currently need to be familiar with two LMS (this is also an issue for some staff);
- to reduce unnecessary complications and delays (and therefore level of resource required) to develop integrations between multiple systems (Recommendation 4), in particular, between an LMS and *eVision*;
- to remove the necessity to duplicate functional support and documentation;
- to provide equity of access to the tools available for teaching and learning.

This Recommendation should be acted on immediately because the business case preparation phase along with implementation and changeover will take some time to implement. Resultant changes may not reach our teaching cycle until at least 2025.

Recommendation 6: *Establish an explicit digital learning environment product consultation and evaluation process.*

This Review recommends that a consultation and evaluation process is developed to facilitate the exploration, piloting and introduction of new technologies into the digital learning environment. Consultation with users and stakeholders should be a key part of decision-making, with the process being brokered by the TLU (see Recommendation 3) in collaboration with ITS, to provide pedagogical, functional and technical input and perspectives. The process should enable proposals to come from a variety of sources, including staff and students, and facilitate evaluation for incorporation into the University's managed systems.

Some annual budget should be allocated the establishment of pilots and systems of support for new tools, as required. Where possible, new systems should replace and retire existing systems. Priorities should be established and made known to the University community to facilitate decision-making about the kinds of tools that would be given greater or lesser consideration each year.

Recommendation 7: *Formally recognise and acknowledge the workload demands placed on staff to create and support a high-quality digital learning environment.*

This Review recommends that academic and professional staff workload models need to explicitly recognise that ways of working in a digital learning environment differ from ways of working in more traditional, non-digital learning environments. Two important ways of recognising this work should be:

a) *workload models* that explicitly and formally incorporate the time needed for staff to engage in professional learning and practical design and development work.

b) *a teaching and learning accreditation/recognition system* that incorporates technology enhanced learning. The system should be for *both academic and professional staff*, as both groups play critical roles in the quality of the (digital) learning environment that students and staff experience.

Implementation of the Recommendations

Although separate streams of work will emerge from these Recommendations, they should not be seen as separate and separated entities. Rather, the meaning and potential impact of changes they suggest will only make sense when viewed as facets of a larger integrated Programme of Work. This Programme of Work would manage and monitor the many business case projects and other activities that will result, and report on developments and achievements.

The ultimate goal of the Programme of Work would be to ensure that the digital learning environment of Otago is transformed, so that Otago's educational future as expressed through *Vision 2040* will come about.

The following priorities should become starting points for planning the Programme of Work.

Priorities

The development of a *Digital Learning Environment Strategic Plan* is a high priority.

Work on this (Rec 1) should be commenced immediately.

The need for the *Digital Learning Environment Strategic Plan* to align and be complementary to the University *Teaching and Learning Plan* is imperative, but work should not be delayed because of the current absence of an updated version of the *Teaching and Learning Plan*.

An immediate consideration could be given to the appropriateness of Terms of Reference and membership of both CALT and DELT. This would be important foundational work for the development of the *Digital Learning Environment Strategic Plan* and initiate consultation and discussion about strategic direction and imperatives for the future. In this way, contribution would also be made towards actions related to Recs 2, 3, and 7.

Consultation towards establishing aspects of governance is a high priority.

This work should be commenced immediately (Rec 2).

Specifically, consultation should occur towards establishing policy, procedures and practice guidelines about learning analytics, principles of need, place and worth, and access, use and interpretation (linked to Recs 1 and 2). This level of governance detail will feed directly into work out of Rec 4.

The consultation process will facilitate discussion and engagement with relevant ideas by the University community, and thereby also have a connection with implementation of a new TLU (Rec 3). It should reflect other aspects of governance including levels of decision-making and strategy setting as they relate to the digital learning environment in the broad sense (Recs 1 and 2), and with respect to Otago's requirements of tools and technologies (Recs 4, 5 and 6).

The process of evaluating and replacing the current LMSs with one main LMS is a high priority.

Work on this should commence immediately (Rec 5).

Development of a business case to identify the best LMS for Otago will not only address pragmatic issues concerning the future of our main LMS (related to the renewal of the license) and the rising ongoing costs of maintaining multiple systems, it will also demonstrate to staff and students that the University has heard their feedback about the DLE challenges they have been facing.

A learning management system is a concrete and tangible tool with a direct link to teaching and learning practice and therefore it has a big impact on student and staff perception of their overall learning and teaching experience. Thus, a systematic, well planned and implemented evaluation and review process, via a business case, that is primarily driven by input from teaching, service and support needs, will have a significant impact on a response to Recs 2, 3 and 6.

Establishing a Teaching and Learning Unit (TLU) is a high priority.

Establishment of a TLU should be commenced immediately (Rec 3).

A major focus of immediate work on Rec 3 should be on re-organising, re-focussing, and aligning our current expertise and resource into the new grouping arrangements, clarifying roles, relationships and working principles with academic departments, Divisions and central administrative support and service units. One of the starting points for this work would be identifying and learning from, the variety of academic and professional staff with a range of expertise, who are already within the University and instigating professional development on required new skills and ways of working.

Ensuring that central drive, oversight, and guidance are balanced with local flexibility and autonomy would suggest a 'hub-and-spoke' arrangement as being workable. To achieve this, a management of change process would need to be set in motion.

While the building blocks may already be in existence in the University, it is inevitable that *new* resource will be needed to invest in providing professional development for current staff joining the TLU, and for extending the permanent team of people providing support for the long term. New resource would also be needed to increase that number staff for shorter periods at times of significant change (such as the introduction of a new LMS). This will be necessary to ensure that *ongoing*, *equitable*, and *appropriate* support across divisions becomes part of the fabric of the TLU support mechanism.

One of the most important aspects of this work is creating a structure that supports processes of engagement and interaction that ensure effective manaakitanga as well as tino rangitiratanga for staff and students.

Acting on this Rec will send a strong message to staff and students that the University has listened and responded to their support needs and concerns.

Developing an IT integration layer is a high priority.

Ensuring that IT systems 'talk' to each other is fundamental to achieving a state where data are accurate and safe, and the flow of incoming and outgoing student-related data happens efficiently and effectively (Rec 4). This integration will also enable the development of dashboards and other mechanisms for generating and viewing analytics that can be useful for monitoring and reporting on student learning, effectiveness of teaching and learning, pastoral care and support for student learning, and course development and reporting.

Integration layer work (already begun by ITS) will be further informed as other actions from these Recs are implemented (viz., Recs 1, 2, 3, 5 and 6).

Concluding remarks

This Review has shown that our systems are cumbersome, poorly supported, and falling behind what is expected and available at other institutions. The Review has highlighted that there is an urgent need to act on investing in teaching and learning and in the transformation of our digital learning environment into one that can ensure our survival, now and into the future. There is a need to make some bold decisions that will attend to the challenges that the University is facing in attracting students and managing finances, while achieving the aspirations that we have expressed in *Vision 2040*.

Developing business cases can take more than 6 months. In the case of Rec 5 regarding seeking a new LMS, for example, with a business case taking that long, followed by a procurement process, implementation of the new system, and transfer for actual use by staff and students (including planning and implementation of a professional development and learning programme for staff), 2 or 3 years may be needed before we can start to see the beginnings of an impact on our digital learning environment.

Granted, new money will have to be spent on investing in our systems and personnel, but finance is only one facet of 'efficiency'. There will be much that we can do for ourselves, by reallocating and reconfiguring some of our currently ad hoc and disparate activities and efforts and adding to them in a strategic way. A unified focus via a well-defined *Digital Learning Environment Strategic Plan*, and consistency and comprehensiveness of approach, will provide strong foundations and overarching quality enhancement guidance for local (Divisional and discipline) flexibility and variation.

Reputation can be lost in a moment, even if good things are happening. The risk of not transforming our digital learning environment now, is risking loss of reputation for the University.

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GLOSSARY

ACODE	Australasian Council on Open, Distance and eLearning (https://www.acode.edu.au)
CALT	Committee for the Advancement of Learning and Teaching
DELT	Digitally Enhanced Learning and Teaching group. A group of CALT.
DLE	Digital Learning Environment
functional support	refers to support for using and capitalising on the built-in workings and features of an application or system to undertake the jobs the applications or system is designed to do (*e.g., Which features and utilities in the learning management system do I use to create a check-up quiz?* and *How do I go about setting up that quiz?*)
HE	Higher Education
ITS	refers to Otago's Information Technology Services
LMS	learning management system (e.g., Blackboard, Moodle)
NGDLE	Next Generation Digital Learning Environment
pedagogical support	refers to support for how the (technical) systems can be best integrated, used and capitalised upon for enhancing and facilitating teaching and learning using the functions built into the system or application (*e.g., How can these ideas for learning and teaching be enhanced through the integration of technologies into the fabric of the paper design?*)
QAU	refers to Otago's Quality Advancement Unit
SG	refers to the Steering Group for the Review of Otago's digital learning environment project
SMS	Student Management System (at Otago, it is *eVision*)
T&L	teaching and learning
technical support	refers to support required to ensure that the deeper technical layer of the systems work; the domain of ITS
TEL	Technology Enhanced Learning which is the integration of technologies into the teaching and learning environment
TLU	Teaching and Learning Unit

INTRODUCTION TO THE REPORT

This report documents a review of the University of Otago's digital learning environment (DLE). Preparation of the document was undertaken as part of the activity of the Committee for the Advancement of Learning and Teaching (CALT) through consultation with individuals and groups involved in teaching, learning and supporting teaching and learning across the University, and with close and direct guidance from members of the Digitally Enhanced Learning and Teaching group (DELT) and CALT. It was led by a Steering Group (SG) (see Appendix 1: Steering Group Membership).

A review of the DLE, of this kind, has never happened at the University of Otago before. The Review is simultaneously: (a) strategic; (b) reflective of staff and student experiences; and (c) informed by developments in the wider higher education context within and external to New Zealand.

The overall aims of this report, therefore, are to:

- outline the background to the DLE Review, including how the Review is situated within the wider strategic context of the University;
- describe the Review implementation plan, including its aims, purposes and intended outcomes;
- describe the data gathering processes used and broad findings;
- present a series of Recommendations for action, with accompanying discussion.

The Review served to look beyond the immediate, to the matter of potential for a transformative digital learning environment, to enable innovation in course development and design; and to enhance accessibility, flexibility and inclusivity of learning and teaching experiences. This Review process has provided the University community with an opportunity to reflect upon current and past experiences of the digital learning environment to identify aspirations and goals about the future digital learning environment.

For the University to define and enact that future, it needs to know what it wants for its DLE. The Review Recommendations thus target critical work that needs to be done to enable the University to reach that future.

1 BACKGROUND TO THE REVIEW

Exploration, investigation and review of Otago's digital learning environment was understood as a strategic challenge, being undertaken in the light of strategic-level goals and aspirations. The rationale for the current Review therefore was founded within the imperatives expressed in the University's *Vision 2040*. Even though it was not released until the latter stage of the Review was underway, the *Vision* document does express the underpinning principles to this Review.

The principles underpinning the Review, which can be traced throughout the University strategic framework documents, were:

- academic freedom: flexibility, autonomy, rights, responsibilities;
- leadership: teaching excellence; honesty; accountability; integrity; curiosity; engagement;
- community and partnership: safe; collegial; collaborative;
- stewardship: safe; healthy; supportive; maintaining and enhancing physical, digital and financial resources;
- sustainability.

Our other high-level documents express complementary sentiments, but with slightly varying emphases depending on the focus of each. Those documents include the University Strategic Frameworks, particularly: the *Māori Strategic Framework 2022*; *Pacific Strategic Framework 2022–2030*; *Sustainability Strategic Framework 2017–2021*; and *Te Aka Whakaranea ā-Ao | Internationalisation Framework 2021–2025.*

The Academic Audit Cycle 6, which examines teaching, learning, support and outcomes for students, provided further rationale. Contributing directly to Guideline Statement 3: *Teaching and Learning Environments: Teaching and learning activities are supported by appropriate learning environments (infrastructure, spaces, media, facilities & resources),* the Review was framed as an enhancement project linked to Cycle 6 of the Academic Audit.

In addition, the following University plans and projects, which have overlapping scopes with that of the DLE Review, were also kept in mind:

- IT Roadmap 2020 to 2024 (particularly Focus 4.8)
- SMS Enhancement Project (particularly Focus 3.3, Enrolment process)
- OU Digital Workspace project (Focus 3.2.1)
- UoO Digital Maturity Assessment
- Digital Strategy (ICT Strategic Direction to 2021).

The principle of 'community and partnership' was especially important for shaping the approach taken to this Review. While no more important than any of the other principles listed above, for community and partnership to be nurtured, the others would, by necessity, be evident.

In particular, with respect to the Review, the reality that **learning and teaching is a joint endeavour shared by many academic and professional individuals and units across the University** was front-of-mind throughout all phases of the Review. The Review was not about separating academic and professional staff activity, but about how academic and professional staff roles and activities work in conjunction and collaboration with each other.

The Review was undertaken as a way to explore what the University needs in order to ensure that in the future, that digital learning environment is capable and fit for facilitating and enabling high quality positive teaching, learning and associated administrative, support and service experiences for staff and students.

1.1 Main issues prompting the Review

1.1.1 Staff

Issues with the digital learning environment described anecdotally for the most part, by staff, included:

- technical difficulties and inadequate support;
- user-unfriendly systems and interfaces;
- lack of integration (across the digital systems);
- limited customisation;
- inadequate assessment and feedback tools;
- inadequacy of our DLE (especially our core LMS) to provide:
    - more than basic content delivery;
    - assessment and tracking;
    - facilities and functions for communication and collaboration;
    - accessibility and usability;
    - security and data management.

Personal experience, colleagues at other universities, or accounts in the literature have raised staff awareness that the digital learning environments of other universities are quite different from Otago's. Some areas of limitation at Otago that staff note regularly include: an up-to-date learning management system; streamlined processes; adequate/any support for instructional design of papers; interconnected and easily accessible learning and training support for staff (and for students); a responsive request system for getting help and advice.

The ACODE (Australasian Council on Open, Distance and e-Learning) Benchmarking exercise is undertaken by members of ACODE every two years. Members of ACODE include almost all universities across Australasia. The Benchmarking exercise involves member institutions self-assessing their capacity in technology enhanced learning (TEL) using the ACODE Benchmarks. The 2022 exercise served to highlight staff perceptions of limitation about Otago's digital learning environment, as compared with other higher education institutions. The report on the 2022 benchmarking exercise, presented to DELT and CALT, can be found in Appendix 2: 2022 ACODE Benchmarking Summit Report.

1.1.2 Students

Anecdotally, and through formally collected survey responses over recent years, students have expressed confusion, uncertainty and frustration about the digital learning environment due to:

- lack of platform integration, coordination and streamlining of systems: e.g., many systems do not 'talk' to each other, resulting in timetabling/room allocation inaccuracy and currency; variations in the suite of systems used across different papers;
- multiple learning, communication and administrative systems (especially Moodle/Blackboard/*eVision*/email) increases effort required to know each of them and to know which one needs to be paid attention to, for which purpose;
- learning management systems being user-unfriendly;
- lecture recordings:
    - availability (or lack, thereof);
    - timeliness of uploading to Echo;
    - poor wi-fi in their study locations, including at home or in some parts of the campus (thus affecting live access to and/or easy downloading of, lectures and other sessions);

    - poor quality, especially audio;
    - essential components of lectures not recorded (e.g., practical demonstrations and whiteboard content);

- lack of consistency:
    - across papers, between lecturers, between departments and school: e.g., timeliness of uploading of material and resources, organisation of content, general use of the learning management systems;
    - of exams/assessments; and
    - classes being variously online or in-person – no consistent academic strategy;

- engagement:
    - generally low levels of training amongst staff;
    - lack of integrated use of the digital learning tools to enable a seamless experience;
    - online experiences needing to be more engaging.

In summary, feedback from across staff and students highlight a raft of common issues the University faces with the current digital learning environment. As noted, these include lack of unified planning and implementation, insufficient support and resources, technical challenges, and a lack of ongoing development and integration of the various systems in use. Additionally, while the digital learning environment has been increasingly embraced as a convenient and flexible tool over the past few years, there are also concerns around equal access and the limitations of online interactions.

Feedback from students, and work undertaken by staff, highlight a range of ways these problems can be addressed. Better integration of systems, and providing suitable support and training will see greater ability to maximise the strengths of these systems, while making them more user-friendly and accessible.

In the light of the issues briefly described above, the Review was conceptualised as needing to be simultaneously:

(a) *strategic* – as it needed to examine how our digital learning environment can best facilitate the higher-level goals the University has for the education it offers; and, its specific focus on teaching, learning, support and outcomes for students, linked to Cycle 6 of the Academic Audit;

(b) *reflective of staff and student experiences* – that have emerged most pointedly across recent years, indicating barriers and challenges to the capacity of the DLE to facilitate or inhibit effective and appropriate learning and teaching; and

(c) *informed by developments in the wider higher education context* within and external to New Zealand – a strong awareness of the changes that are happening in other higher education institutions to shape and continue to shape their DLEs in response to changing demands of staff, students, technologies, and contexts.

1.2 Goals of the Review

The key question the Review addressed was:

> *In terms of the digital learning environment, what is best for our Otago context for the foreseeable future at the strategic level?*

with the following sub-questions giving shape to the Review plan, implementation, and outcomes:

1. *What does the current map of Otago's digital learning environment look like?*
2. *What are Otago staff and student views, experiences expectations of, and aspirations for, the digital learning environment?*
3. *How do contemporary higher education institutions within and external to New Zealand shape their digital learning environments?*
4. *How do we refine or reconfigure our current digital learning environment to best suit our needs and aspirations for the next 7-10 years?*

The Review took the form of a series of Activity workstreams, the outcomes of which were synthesised to produce a series of Recommendations about a way forward. The Activities were:

Activity 1: Otago DLE map: entailed generating a map, of the digital learning ecology at Otago, using the framework provided by Sankey (2020) as a basis (see Appendix 3: Contemporary TEL ecology). This Activity provided a current picture of the IT educational systems environment. (See full report in Appendix 4: Activity 1 Digital Learning Ecosystem at Otago.)

Activity 2: Workshops/focus groups: resulted in a set of themes and broad ideas gathered from workshop-focus group sessions run with staff. The external consultant to the Review led this Activity, and the broad themes were then used as bases for the development of a staff questionnaire. This Activity provided a staff perspective, gathered through live interactive processes that enabled discussion and interaction. (See report in Appendix 5: Activity 2 Focus Group Summaries.)

Activity 3: Staff survey: This questionnaire for professional and academic staff aimed to gather experiences, practices, use cases, pain points and critique of existing tools, resources and processes, and aspirations for the DLE at Otago. This Activity provided a staff perspective.

Activity 4: Recent internal reports and surveys: This Activity assembled, summarised, and synthesised findings of recent staff and student experiences of the DLE that had already been documented in research project outcomes, results from QAU surveys of students/Lessons Learned, and recent CALT teaching development projects. This Activity provided an internal, predominantly student, perspective. (See full report in Appendix 6: Activity 4 Internal Reports and Surveys.)

Activity 5: Environmental scan of DLEs and ecologies: This Activity comprised mapping comparative systems and approaches to providing and supporting high quality digital learning environments in other higher education institutions, especially in the Australasian context. This material provided an external institutional perspective. (See report in Appendix 7: Activity 5 External Environmental Scan.)

Activities 1-5 contributed to the development of a picture of the current DLE at the University of Otago and other higher education institutions. They also contributed to identifying the needs for a future DLE for the Otago context.

Activity 6: Synthesis report (this document): This Activity brought together all material generated by Activities 1-5 and synthesised the findings to present a set of Recommendations for action.

1.3 Review process: Roles, responsibilities and working arrangements

The Review was sponsored by the DVC(A), Professor Helen Nicholson, through CALT. CALT handed responsibility to DELT and a Steering Group (see Appendix 1: Steering Group Membership), to oversee and drive the Review implementation. Because the SG was kept relatively small to facilitate the work that needed to be done within the timeframe, it was not constituted in a way that was representative of the full University community. However, the SG drew on expertise and guidance from DELT through to CALT, both of which *are* representative. Reports on progress were made to both groups and directly to the DVC(A), and feedback and advice were sought throughout.

1.3.1 Participation by an External Consultant

In addition, an external consultant, Mark Northover, was employed to provide an 'outsider' perspective on the review activities. Mark has longstanding experience in the use of technologies for learning in the New Zealand tertiary sector and was employed across the six months of the project. As per the brief presented to him before the commencement of the Review, Mark worked alongside and with the SG, not separated from it. This matched the consultative and collaborative principles that underpinned the review.

Across 6 months (October 2022 until end of March 2023), the external consultant provided input, posed questions, and sought to develop an understanding of Otago's digital teaching and learning context. The consultant made suggestions about the implementation of the Activity work and played major roles in Activities 2, 3 and 6.

The draft Recommendations were initially developed by the consultant. The draft Recommendations were then clarified, modified and refined in conjunction with the SG. This was followed by further checking with key role holders in the University, to ensure that the Recommendations and accompanying background ideas/rationale were realistic, appropriate and fit-for-purpose. The consultant then played a major role in writing the substance of the discussion that builds on and contextualises the Recommendations presented in this report (Sections 3 and 4. The timeline of the Review implementation appears in Table 1.1.

Table 1.1: Timeline of the Review implementation

Review plan developed & approved	August to September 2022
Review commencement; External consultant employed	October 2022
Activity 1: Otago DLE map	October to November 2022
Activity 2: Workshops/focus groups	November to December 2022
Activity 3: Staff survey	• development phase: October 2022 to end January 2023 • administration phase: mid-February 2023 to mid-March 2023 • analysis phase: mid-March 2023
Activity 4: Recent internal reports & surveys	October 2022 to January 2023
Activity 5: Environmental scan of DLEs & ecologies	October to December 2022
Activity 6: Synthesis report	• development phase: October 2022 to March 2023 • consolidation phase, including development of draft Recs: February-March 2023 • final report phase: March 2023

2 OUTCOMES OF THE REVIEW ACTIVITY WORKSTREAMS

This section presents a brief summary of the findings and conclusions that were generated through each of the Activity workstreams.

2.1 Activity 1: Current Otago digital learning map

The following is taken from the report on this Activity concerning the digital learning map at Otago (see full report in Appendix 4: Activity 1 Digital Learning Ecosystem at Otago).

Otago's current digital learning environment is one that has come about from organic growth, and components have been adopted to meet immediate or individual area needs. This has resulted in a collection of loosely coupled tools that could not be termed a designed digital ecosystem with student and staff experiences at the centre. The flow-on results have led to a fragmented support model across areas and different learning systems across divisions.

Taking the contemporary digital learning ecosystem model (see Appendix 3: Contemporary TEL ecology), there are a number of elements that are evident when considering Otago's *current* learning technology state shown in Figure 2.1.

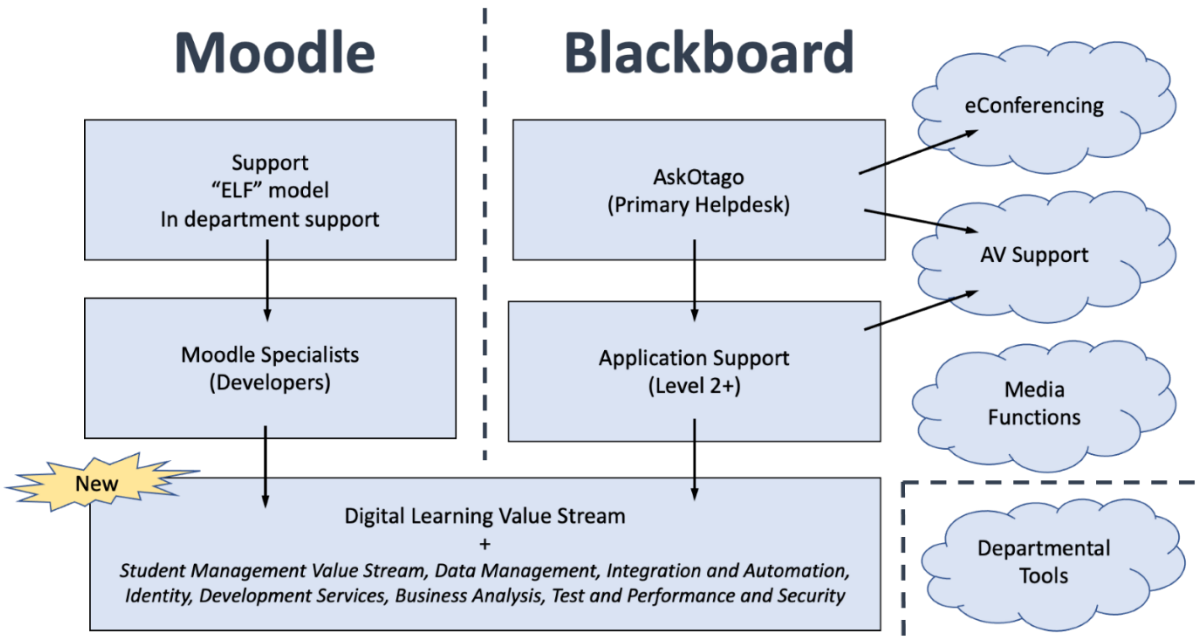


Figure 2.1: Current Otago support model

It should be noted that the model presented in Appendix 3: Contemporary TEL ecology focuses on the technology ecology and does not cover the key higher-level elements that would be expected in the digital transformation of a learning environment, which, as shown in Appendix 8: Transforming education in the digital realm, include both Instructor and learner development, and wider requirements such as policies and planning, instructional modality, partnerships, and support.

In considering the support models that underpin the technology ecology, the following are apparent currently at Otago:

- The model in Appendix 3: Contemporary TEL ecology considers a single Learning Management System whereas at Otago we have two major systems, with multiple instances and completely different support models for each main system.

- There are also several outliers being utilised at Otago as well, for example, Teams being used as an LMS (note class lists are not fed into Teams) or OLAF in Maths and Statistics, Bracken, xOtago, KuraCloud, LT and more, across a variety of other departments.
- Otago's current model (Figure 2.1) is centred around student and curriculum management systems. The former is an area needing continuous improvement (Blackboard). The latter (Moodle) is mainly linked with bespoke work done in Health Sciences.
- Synchronous (streaming, conferencing, and classroom tools) are supported by our transactional technology groups (ITSS) or not at all in some cases. There is a significant opportunity to align the functions needed for a coherent and integrated digital experience.
- There are a number of elements that are missing from Otago's current ecology, such as a consistent e-portfolio technology across the organisation, as just one example.
- There are a number of 'glue functions' that are missing, including content management system capability to link a coherent experience (noting that a new web platform is currently being adopted).
- Predominantly on the right side of the diagram in Figure 2.1 there are a number of toolsets which are in a state of fragmentation across social, productivity and communications.
- The thread of data running through all of the ecosystem has not been able to be leveraged as an asset at Otago and will require some redesign to get to a point of integration that will enable potential benefits to be realised.

It should be noted that the model in Figure 2.1 is not the model that has been in operation prior to 2023, as the bottom 'Digital Learning Value Steam' was missing and only recently added.

Important considerations about the future

Requests routed as tickets through AskOtago are currently handed off to groups to handle higher level problems/enquiries. It should be noted that much of this can be considered not deeply technical. We have seen other organisations look at how to better handle this area with learning developers, instructional designers, and other pedagogical expertise**.**

There is potential that bringing together these pedagogical functions (such as those normally dealt with by learning developers, instructional designers, and other pedagogical expertise) into one area in a similar model to that of the eLearning Facilitators in Health Sciences (ELFS), and focusing on a selected ecology that could deliver across the organisation, would add significant value to both staff and students without substantive increase in cost by the consolidation involved.

It should be noted that moving to a fully decentralised model that supports its own technology ecosystem will set the organisation back to how it operated for many years, and which effectively created a level of technical debt that will not be quickly paid down. Where there is a need for focusing and strengthening of operational and pedagogical function, there is also the same need for specialist management of the technology and product services.

2.2 Activity 2: Workshops and focus group discussion with staff

This section is taken from the report on this Activity (see Appendix 5: Activity 2 Focus Group Summaries):

During November and early December 2022, thirteen workshop sessions were held for staff to prompt discussion about the future digital learning environment (DLE) at Otago. The sessions were facilitated by Mark Northover, the external consultant to the DLE Review project. Eight in-person sessions were held in Dunedin, two in Christchurch and one in Wellington. Two sessions were held via Zoom. A mix of just under 150 academic and professional staff participated.

The overarching, future-focussed questions the workshop groups were asked to consider were:

- *How do we see Otago's future teaching and learning environment?*
- *What should Otago's future digital learning environment be like in order to support that future?*

Table 2.1 shows the prompts used to generate discussion and the major thrust of the thoughts participants were asked to consider during the workshops (right hand column).

Table 2.1: Discussion prompts for focus group-workshop sessions.

DLE components	**Discussion areas for consideration**
information flow	For example, how do student details get into the supported systems and how do assessment grades get back into *eVision*/SMS?
digital pedagogies & assessment	What is required for professional development programmes to get the best out of the technology?
digital learning environment flexibility	How do current and emerging tools get evaluated for further support and integration?
analytics	What can the University learn from activity and achievement data to improve student outcomes?
support models	Where do support services for using tools and technologies come from, and what level of technical, operational, pedagogic support do they need to provide?
governance structures	Who gets to make all these decisions and how does information flow to decision-makers?

Major ideas gathered form the participants at the workshops were:

1. Professional learning and development for digitised pedagogies and assessment should be founded on a higher level UO education strategy and vision, including principles that underpin and reflect the way the DLE is shaped and functions, and how people (staff and students) need to use and interact with it.
2. A support structure is needed to encompass a balance between local, contextually based in-person support and direct connection with central 'oversight/coordination'. It should make use of a variety of methods, and be focussed on central/standardised frameworks but with flexibility to facilitate local discipline/departmental requirements. Integrated and collaborative connections are needed among the technical, functional and the pedagogical aspects of practice and application.

3. Provision of support can come from both local and central groups, each with different roles and responsibilities and scope of knowledge and influence. This provision should be deliberately coordinated, planned, structured and resourced. Support should come in a range of forms, be timely and responsive to staff needs.
4. Acknowledgement and recognition of professional development learning should be factored explicitly into workloads.
5. The potential for easy-to-access learning analytics based on data that are generated automatically by the various tools and technologies that are part of our DLE should be capitalised upon to support our aspirations for providing learning and other support for students. Monitoring of progress/learning should be possible and easy to access.
6. Governance and decision-making processes more generally should be 'in touch' with those who are affected by the decisions. Decisions should be made at the right level and therefore include, appropriately, a range of staff and students.
7. Integration, flexibility and workflow are vital attributes of our future digital learning environment. Flow of data about students into the system and flow of data about students leaving the various systems would reduce double handling, and risk of error. Moreover, an integrated system would result in improved workflow efficiencies and drastically reduce costs currently expended on tasks that digital systems are designed to undertake rapidly (viz., data flow and transactions).

2.3 Activity 3: Questionnaire for staff

A questionnaire for staff was administered early in 2023. Perspectives of staff gathered in Activity 2 were used as the core areas that the questionnaire surveyed. All staff involved in any role within the digital learning environment, with responsibilities of teaching, administration, support and/or service were invited to participate in the questionnaire.

A list of the core questions making up the survey can be found in Appendix 10: Staff Survey Questions.

Open invitations to participate were sent via emails to DVCs, PVCs and HoDs and also via notices in the *Otago Staff Update*. The questionnaire was open for 3 weeks and attracted 297 responses.

The following provides a summary of staff responses. They are *perspectives expressed from staff, based on their experiences*. The full report of the questionnaire response data can be found here.

Respondents were extremely engaged with the topics of the survey, with optional free-response questions of the form, "*If you have any other thoughts to add, please add them here*" attracting a large proportion of responses. Highlights of the numerical, closed-ended responses include:

- Both Blackboard and Moodle are regarded as equally usable, but Moodle rated as significantly more fit for purpose.
- Respondents who use Blackboard more frequently rate it **lower** in terms of usability ($r = -0.17$, $p < 0.014$), however participants who use Moodle more frequently rate Moodle **higher** in terms of fitness for purpose ($r = 0.38$, $p < 0.000$).
- Business Objects is rated below "neutral" in terms of usability, all other tools are above, but *eVision* only just.
- Business Objects and *eVision* are rated lowest, only slightly above neutral, in terms of fitness for purpose.

- A majority feel that staff use of technology falls below student expectations.
- Respondents disagreed that they have adequate information and training on data storage and data sovereignty, and a ⅔ majority are concerned with issues regarding data sovereignty.
- Most respondents disagreed that class lists in their LMS are synchronised with *eVision* in a timely and accurate manner.
- There is dissatisfaction with all aspects of the functionality of the LMSs, especially those relating to grade management.
- Increasing standardisation of delivery approaches, e.g., LMS templates that provide a consistent experience for students, was the most divisive question, with a majority in favour of a standardised but customisable approach. However, a substantial minority are opposed. This question attracted the most optional free-text responses.
- Respondents expressed a strong desire for increased learning analytics.
- Finally, and most importantly, the majority of respondents feel that their concerns are not heard by senior management who make decisions about the DLE.

There was a gratifying level of engagement with the survey by those who responded, exemplified by responses to free-text questions after each section of the form, "*If there's anything else you'd like to add about …*". The mean proportion of respondents giving their thoughts across all questions is 39%, with 4 of the 10 free response questions attracting comments from more than 50% of participants, and one question, about Support (standardisation), attracting responses from 70% of the respondents.

Highlights of the free-text optional responses include:

- Regarding *Support* (Q27 & Q78):
    - There is widespread and passionate disappointment with AskOtago and *eVision*. Crucially, perceptions are that ITS/ITSS appears unable or unwilling to accept this. Participants recognise that the support staff are dedicated and often perform 'above and beyond', however they are massively under-resourced. Academics accept the defects of AskOtago and *eVision* are due to management and resourcing rather than the people doing the customer-facing work.
    - There is a strong demand for localised support, i.e., in-Division or in-Department.
- Regarding *Tools and Data* (Q19 & Q30):
    - Tools and data are deeply intertwined, as the concerns of many staff revolve around (a) extracting actionable data from tools, and (b) gaining efficiencies *and* effectiveness by data flowing between tools, notably the two LMSs and *eVision*.
    - The difficulty of using standard tools was consistently raised, with many comments reflecting the perception that effective training is unavailable, or if available, unhelpful.
    - Audio visual infrastructure was repeatedly raised as being unreliable and ad-hoc, i.e., different hardware and UI in different teaching rooms.
    - The overwhelming theme in Q30 responses was a lack of knowledge – noted by participants themselves around their own lack of knowledge, as well as that of their colleagues. It was identified that there is inadequate information and training in these areas (while also acknowledging people have little time to train in these areas). In particular, people noted a lack of discussion/information around data

sovereignty. The lack of knowledge was also argued to have been exacerbated by too many storage systems/changes between storage systems.

- Participants did note key concerns:
  - That off-site storage is risky in terms of natural disasters and other unforeseen events (and thus some participants argued for on-site storage).
  - Those working with health data have specific concerns around data privacy.
  - Concerns around research data and ethics.
  - Fears around cybersecurity.
  - Finally, there was an argument that this should not simply be a 'technical' discussion, but should consider data storage much more carefully in terms of ethics, in regards power, wealth, machine learning, etc.

- Regarding *Governance and Final Thoughts* (Q47 & Q58):
  - As noted above, there is a strong sense that the concerns of teaching are not heard at the management level capable of addressing those concerns, partly because of reporting lines, committee structures etc., but also because top managers lack recent experience teaching large undergraduate classes (i.e., marking, administration etc., not just delivering lectures).
  - More alarmingly, there were a few comments expressing the concern that management do not value quality teaching, evidenced by the amount of money spent on teaching compared to other University expenses.
  - There is a perception that ITS makes decisions and presents them as a *fait accompli* to teaching staff, rather than being responsive to the needs of teaching staff, and also students.
  - Decision-making regarding the DLE is perceived by some as lacking transparency and coherence (i.e., a strategic vision as opposed to ad-hoc decisions).
  - "*Final thoughts*" included thanking us for performing the DLE Review and urging us to not let it become a list of recommendations that are never implemented, and some cynicism relating to past experiences where consultation was viewed by participants as a mere box-ticking exercise rather than a genuine attempt to gather information, and act on it.

2.4 Activity 4: Compilation of relevant recent internal reports and surveys

This summary is taken from the report on this Activity (see Appendix 6: Activity 4 Internal Reports and Surveys).

A raft of internal reports on feedback gathered from students and staff, via a variety of questionnaires and surveys, along with reports on scholarly (often CALT-funded) projects into teaching undertaken by individuals and groups of staff, contributed to the work done for this Activity. While the full report describes more detailed synthesis of views of the DLE expressed by staff and students, the following couple of paragraphs, taken from the report, capture the main points. See also section 1

Surveys, reports, projects and feedback from across staff and students highlight a raft of common issues the University faces with the current digital learning environment. As noted, these include lack of unified planning and implementation, insufficient support and resources, technical challenges, and a lack of ongoing development and integration of the various systems in use. These issues, if not addressed properly, can significantly impact the effectiveness and success of these systems in enhancing the learning experience of students.

Overall, the feedback suggests that while the digital learning environment has been increasingly embraced as a convenient and flexible tool over the past few years, there are also concerns around equal access and the limitations of online interactions. Feedback from students, and work undertaken by staff highlight a range of ways these problems can be addressed given their experiences with using various systems and tools. In particular, better integration of systems, and providing suitable support and training will see greater ability to maximise the strengths of these systems, while making them more user-friendly and accessible.

2.5 Activity 5: External environmental scan of DLEs and ecologies

The summary in this section is taken from the report on this Activity (see Appendix 7: Activity 5 External Environmental Scan).

The full report on this Activity provides explanation and some illustration of dimensions of digital learning environments that modern higher education institutions deem to be important. The summary, following, captures the essence of those dimensions and therefore has been very useful as an inclusion in this Review.

Global Lessons

Building a distinctive (online) educational student experience requires significant time, effort, and investment. Most institutions whose practices we reviewed for this Activity took several years to understand student needs and refine their approaches to online education.

For those institutions in the early stages of rethinking their online offerings, the following three steps may be useful:

- *Assess your online offerings*. An initial diagnosis could provide an understanding of how satisfied students are with the existing online experience, their expectations and preferences, and the competitive landscape.
- *Eight key dimensions* may be helpful for structuring groups and surveys, in addition to self-evaluation of institution performance and potential benchmarks. Those dimensions include:

1. Building the education road map;
2. Enabling seamless connections;
3. Offering a range of learning formats;
4. Ensuring captivating experiences;
5. Utilising adaptive learning tools;
6. Including real-world application of skills;
7. Providing academic and non-academic support;
8. Fostering a strong community.

- *Set a strategic vision for your online learning experience*. The vision should be student-centric and link tightly to the institution's overarching manifesto. The function leaders could evaluate the costs/benefits of each part of the online experience to ensure that the costs are realistic.
- *The online model may vary depending on each institution's core focus*. An institution with high tuition, for example, is more likely to afford and provide one-on-one live coaching and student support, while an institution with lower tuition may need to rely more on automated tools and asynchronous interactions with students. Whichever approach is taken, quality should not be compromised.
- *Design the transformation journey*. Institutions should expect a multiyear journey. Some may opt to outsource the program design and delivery to dedicated program-management companies. An increasing number of institutions are developing capabilities internally, especially as online learning moves further into the mainstream and becomes a source of long-term strategic advantage.

Leading organisations often begin with 'quick wins' that significantly raise student experiences, such as stronger student support, integrated technology platforms, and structured course road maps. In parallel, they begin the incremental redesign of courses and course modes, often focusing on key programmes with the largest enrolments and tapping into advanced analytics for insights to refine these experiences.

Finally, institutions tackle key enabling factors, such as teacher induction and online-teaching training, robust technology infrastructure, and advanced-analytics programmes that enable the institutions to understand which features of online education are performing well and generating exceptional learning experiences for their students.

Closer to Home

In New Zealand, Otago appears to be in a minority when it comes to the wider integration of various tools into a central portal. Many of the New Zealand universities have staff intranets, or staff portals, that likely house significant additional information and detail that is not accessible to the public. This is not necessarily a judgement of how well this integration has occurred but highlights that creating a secure space with access to multiple tools and platforms is a significant trend. Done well, this can be a significant benefit to both staff and students in their teaching and learning experiences.

The final point, which is reiterated in most examples cited in the Activity 5 report, is that communication is key to any successful programme of change. Any development of the digital space at Otago needs to be accompanied by clear communication which clearly sets out what is happening, when, and most importantly, why it is happening. In conjunction, communication also comes in the form of development programmes for staff to be able to successfully use whatever platform and tools are provided to ensure the best outcomes can be realised.

2.6 Activity 6: A synthesis of outcomes from across the Activity streams

The synthesis of staff and student current and recent experiences was the focus of Activity 6 and has resulted in the current report. Drawing upon the outcomes of each of the above Activities, the following themes were identified. These themes point to the areas of major concern, which simultaneously are also areas that are ripe for change. This point is especially important as this Review had a strong future focus:

a. communication and integration of fit-for-purpose policy and governance mechanisms;

b. policy, processes and practices of continuous improvement, quality enhancement, evaluation and review;

c. technical infrastructure that aligns with institutional learning goals, and with staff and student learning, teaching, administrative, support and service needs;

d. clarity and streamlining of roles, responsibilities and processes for the provision of staff and student support and training in the use of the digital learning environment;

e. comprehensive processes and structures that focus on current and future (online and offline) course design, development and teaching and the pedagogical impact of technology enhanced learning; and

f. processes, procedures and systems that facilitate ongoing responsive and proactive staff and student professional development, training and support.

These themes informed a series of Recommendations for action which are presented in the next section.

3 RECOMMENDATIONS

Seven Recommendations are made. There are interdependencies between and among the Recommendations and they should be viewed as components of a larger, integrated Programme of Work.

This section presents the Recommendations, in no particular order of importance.

In section 4 of this report, however, the interdependencies among the Recommendations are explored; leading to a set of **Priorities for action** which should be seen as part of a larger Programme of Work.

3.1 The Recommendations

In summary, the Recommendations of this Review are:

Rec 1: Develop a Strategic Plan that focusses on the digital learning environment.
Rec 2: Develop University-level governance policies and practices for the digital learning environment.
Rec 3: Create a new Teaching and Learning Unit to provide staff and student support that is well-resourced, structured, coordinated, and intentionally proactive and reactive.
Rec 4: Develop an IT integration layer to enable and manage the sharing of data between systems.
Rec 5: Introduce one Learning Management System for broad use across the institution.
Rec 6: Establish an explicit digital learning environment product consultation and evaluation process.
Rec 7: Formally recognise and acknowledge the workload demands placed on staff to create and support a high-quality digital learning environment.

Recommendation 1: *Develop a Strategic Plan that focusses on the digital learning environment.*

The Review recommends that this *Digital Learning Environment Strategic Plan* be separate from the University *Teaching and Learning Plan* yet be complementary to it, to inform the broader aspirations and direction that the *Teaching and Learning Plan* will contain. Keeping them separate would fit this moment in time, as in the short to medium term, the University community will need time to come to grips at all levels with the impact of an integrated digital environment within the wider educational environment. Having a separate *Digital Learning Environment Strategic Plan* that is complementary to the broader *Teaching and Learning Plan* will draw particular attention to the changes in conceptualisation and practices required for gaining the best of both the physical and digital contexts for learning and teaching purposes.

The *Digital Learning Environment Strategic Plan* should include the following aspects:

- concepts of flexible learning, teaching and course design, that make informed use of digital environments by design;
- specific direction about assessment including the increased use of non-exam-based assessment strategies and designs;
- guidance and application of on-campus-virtual principles and practices, partnered with quality criteria for such practices;
- concepts of the inevitability of cloud-based services and the issues and challenges of data sovereignty;
- concepts of continuous improvement, including of current and future states, setting controls and milestone points over periods of time to ensure that the changing needs and requirements of students, teachers, courses, and institution are being met by the digital learning environment.

In addition, while the focus would be on the digital environment, it should be clear that ideally, the experiences of the digital and the physical environments by students and teachers should be seen as closely integrated, and in some cases, completely seamless, depending on the type of course, nature of student groups and so on. This important point should be inherent and assumed explicitly within both the *Teaching and Learning Plan* and the *Digital Learning Strategic Plan*.

Recommendation 2: ***Develop University-level governance policies and practices for the digital learning environment.***

In simple terms, this Recommendation concerns the decision-making about all aspects of the digital learning environment: who makes the decisions and how that decision-making happens.

The range of areas that can/should be governed/guided by policies, processes and practices include, for example:

- the tools and technologies that the University supports, does not support or provides measured/limited support;
- priorities for educational development work;
- the standards, frameworks, criteria used for quality enhancement purposes; and
- where budget should be spent.

It is the recommendation of this Review therefore, that consultation with the University community is carried out with a view to developing policies and accompanying procedures, frameworks and standards criteria to guide and facilitate decision-making concerning a range of critical aspects of the (digital) learning environment, urgent ones being:

- *resourcing* – personnel, systems, hardware and software;
- *support models* – how support is organised, structured, managed, accessed and for staff and students;
- *systems of review of all aspects of the digital learning environment*, including the monitoring of progress towards achieving University goals for teaching, learning and student and staff experiences. Explicit "closing the loop" strategies and a future focus would be prominent to ensure principles of continual improvement govern the purpose of evaluation and review activity.
- *learning analytics*, to include the development of shared understandings about the meaning, purposes, worth, value and parameters and useful practices and procedures, set rules and guidelines for kinds of data to be made available, and most importantly, provision of guidance and advice about interpretation and use.

The implication of this Recommendation is that, rather than a DLE Review being a one-off project, such a review be undertaken on a regular basis, for example every two years.

Recommendation 3: ***Form a new Teaching and Learning Unit to provide staff and student support that is well-resourced and structured, intentionally proactive and reactive, and coordinated.***

This Review recommends the establishment of a new Teaching and Learning Unit (TLU) to provide the functional and pedagogical support needs of staff and students. Technical support, on the other hand, would come from ITS.

Structure: The TLU support mechanism should be structured in a way that provides central direction and coordination (reflecting the *Teaching and Learning Plan* and *Digital Learning Environment Strategic* Plan), engaging principally with departmental staff via locally based support personnel. In this way, a balance would be struck between central oversight, consistency and coordination, and local autonomy, individual and departmental flexibility.

Provision of support can come from both local and central TLU staff, each with different roles and responsibilities and scope of knowledge and influence. This provision should be deliberately coordinated, planned, structured and resourced, facilitate overarching continuous improvement and enhancement processes and approaches, balanced with, and informed by, local flexibility and autonomy. The TLU would attend to the pedagogic as well as functional needs of staff.

Most importantly, support provided through the TLU should come in a range of forms, be proactive, as well as timely and responsive to staff needs. Processes of engagement and interaction should ensure effective manaakitanga as well as tino rangitiratanga for staff and students.

Support activities should focus on the creation of high quality virtual and physical learning environments, because the primary location for student-teacher-institution connection and engagement is the paper/programme, and support and service activities that 'sit around' the student learning journey.

Depending on the expectations of a *Digital Learning Environment Strategic Plan*, and assuming that teaching and learning happens in both physical and virtual environments, this team would include and provide collaborative (with academic departments and programmes) support and input to the design and development of courses and of a variety of digital teaching media, such as video, animation, online and offline publications, mobile apps, etc. and the thoughtful and deliberate use of both physical and/or virtual spaces.

The TLU team should be seen as an academic team (at least partly), servicing pedagogic as well as functional technological needs. Staff working in the team would be a mix of academic and professional staff, according to the role-demands of the range of activities that this support mechanism will be responsible for. Members of this team should be active in departmental/programme learning and teaching advisory groups/committees, as well as product evaluations, learning design for curriculum development, training and support.

The Manager of this TLU should be recognised as the 'business owner' (as opposed to the 'technical owner', which would be ITS) of such things as the learning management system, video management system and other enterprise learning tools, for the purposes of making system decisions and allocating resources.

TLU vs ITS: The system of support described here would be different from the kind of support provided by ITS. ITS would provide technical support (i.e., to maintain the deeper layer technical workings of the systems), while the proposed TLU would provide pedagogical support (i.e., how the systems can be best integrated and used for enhancing and facilitating teaching and learning) and functional support (i.e., how to use the built-in workings and features of the applications and systems to undertake the jobs each system, tool or technology is designed to achieve).

ITS and the TLU team would work in a connected and collaborative way with a focus of the local, departmental/programme-based needs in mind, all under the unifying focus provided by the University's *Teaching and Learning Plan* and the *Digital Learning Environment Strategic Plan*.

Separating the kinds of support each group provides in the way described here would enable the two groups to focus their efforts: *ITS as enablers of the systems, and the new TLU team as facilitators of use-in-context of the systems.*

Recommendation 4*: Develop an IT integration layer to enable and manage the sharing of data between systems.*

This Review recommends that Otago's DLE systems need to be able to 'talk to' each other, as data flow among systems is fundamental to a well-functioning, modern digital learning ecology.

This 'integration layer' might be considered a data 'bus' that can accommodate and automate the flow of enrolment and grade data between the various learning tools/systems and the Student Management System (*eVision*).

User interfaces (dashboards) should be included to enable assigned personnel to access student enrolment data (incoming data about students in papers and programmes) as well as learning analytics data for the purposes of monitoring progress and provision of pastoral and learning support. They will also enable functions such as monitoring and planning, and tracking learning outcomes, and curriculum mapping across papers, across programmes and qualifications.

The implementation of this data integration will probably necessitate the development of a middleware interface that enables management of data flow by staff.

Recommendation 5*: Introduce one Learning Management System (LMS) for broad use across the institution.*

A full re-evaluation of the University's LMS situation is needed. The University currently has two main Learning Management Systems: Moodle for the Medical School and Blackboard Learn for most other papers. A handful of papers are using other products.

It is clear that Blackboard Learn is no longer fit for purpose and should be replaced. There are also concerns about the longevity of its customer base. Open-source products, such as Moodle, are very heavy on resources.

This Review therefore recommends developing a business case to propose the best available LMS option for Otago's future.

Reasons for this Recommendation, include:

- to provide a consistent experience for students who study across disciplines and currently need to be familiar with two LMS (this is also an issue for some staff);
- to reduce unnecessary complications and delays (and therefore level of resource required) to develop integrations between multiple systems (Recommendation 4), in particular, between an LMS and *eVision*;
- to remove the necessity to duplicate functional support and documentation;
- to provide equity of access to the tools available for teaching and learning.

This Recommendation should be acted on immediately because the business case preparation phase along with implementation and changeover will take some time to implement. Resultant changes may not reach our teaching cycle until at least 2025.

Recommendation 6: ***Establish an explicit digital learning environment product consultation and evaluation process.***

Establish a process whereby new technologies can be proposed by staff or students and evaluated for incorporation into the University's managed systems. Among other aspects that would support this process, evaluation should include security, data stability (i.e., the security of access to student work), population with student enrolments and other data integrations as required.

Priority should be given to those tools that provide the best cost-benefit, e.g., widest user base and uptake, most urgent discipline/curriculum need, etc. However, the process should also allow for proposals of niche tools and technologies for specialised activities.

This product evaluation process would have the goal of facilitating the exploration, piloting and introduction of new technologies into the digital learning environment. The process would be brokered by the proposed TLU support unit (Rec 3) in collaboration with ITS. In this way, a combination of pedagogical, functional and technical input and perspectives would be garnered, and enable proposals from a variety of sources (including staff and students) to be considered and evaluated for incorporation into the University's managed systems.

Some annual budget should be allocated to the establishment of pilots and systems of support for new tools as required. Where possible, new systems should replace and retire existing systems. Priorities should be established and made known to the University community to facilitate decision-making about the kinds of tools that would be given greater or lesser consideration each year.

Recommendation 7: ***Formally recognise and acknowledge the workload demands placed on staff to create and support a high-quality digital learning environment.***

This recognition could come in a variety of ways. However, two important ways should be:

a) *workload models* that include explicit elements within them to acknowledge and recognise formally the efforts of staff to engage in professional learning and development associated with the tools and technologies they use and the activities for which they use them (viz., course design, teaching practice, provision of support and service).

As an ongoing and taken-for-granted element, workload models for academic and professional staff need to incorporate explicit portions of time to be dedicated to the range of activities that contribute to the experience that students and staff have of the learning environment at Otago.

Designing, planning, creating, implementing and evaluating learning experiences and objects, are 'hidden' tasks that are essential and critical to the quality of the educational encounters that students experience. The deployment of online and mixed mode teaching requires skills and practices that are different from those required for in-person teaching. This means that not only do courses need to be (re)designed to suit the changes in context from in-person to online and mixed mode, so too do teaching practices.

Teacher professional development is a learning journey, and professional learning is personal, conceptual, and practical; it can be confronting and challenging. It takes personal time and effort, motivation, and dedication.

Teaching staff are not the only ones implicated by these professional learning demands. The support and service provision of an institution can be the critical 'make or break' factor for student success. The administrative and other service and support processes surrounding academic papers/programmes need to be accessible, seamless, integrated, fit-for-purpose, streamlined, consistent and comprehensive. Upskilling, (re)designing programmes of support and service, (re)designing, developing and implementing programmes of information and guidance for students and other users of the systems are ongoing activities.

b) *a teaching and learning accreditation/recognition system* that incorporates technology-enhanced learning. The system should be for both academic and professional staff, as both groups play critical roles in the quality of the (digital) learning environment that students and staff experience.

Otago's academic confirmation and promotion processes, and professional staff annual performance and development review system support and expect staff to engage in ongoing learning and development from and through experience via reflective practice. Alongside these more formal aspects of being employed at the University, regular activities that highlight current and new ideas about teaching, learning, and administrative support and service should be encouraged and be part of a regular professional learning activity programme.

The CALT Kōrero series introduced in 2023, is an example of such activity. This kind of venture could be further promoted by the organisation via an annual (or biannual?) Learning and Teaching 'showcase' for the University to cover not only academic matters but also administrative, support and service matters that pertain to the digital and wider learning environment.

In addition, with respect to recognition of the efforts of staff, there are local and international frameworks that could be drawn on to give direction and shape to professional development and learning programmes/experiences to promote reflection on the impact of practice on learning. Examples of frameworks include e.g., Advance HE Fellowships, CMALT Accreditation Framework, HERDSA Fellowships, Technology Enhanced Learning Accreditation Standards (TELAS) (course-based rather than individual) and ACODE Benchmarks (at the institutional level) or other localised variants. The Ako Aronui scheme developed at AUT may provide some guidance for this. These schemes and frameworks are suitable for use by those in academic and professional staff roles.

3.2 Implementation of the Recommendations

Although separate streams of work will emerge to implement these Recommendations, they should not be seen as separate and separated entities. Rather, the meaning and potential impact of the needed changes within the Recommendations will only make sense when viewed as facets of larger integrated activities.

The seven Recommendations and their embedded actions are thus interdependent, with progress of one being reliant upon progress being made in another. For example, aspects of Rec 2 concerning learning analytics would have a strong dependency upon associated policy and practice highlighted in Rec 1 and on IT systems integration and core LMS work in Recs 4 and 5.

The implication of this is that a larger Programme of Work would need to be established, in order to manage, schedule and evaluate the various project activities that will emanate from these Recommendations. This Programme of Work would have as its overall aim to ensure that each activity is contributing positively to a transformed digital learning environment that will take the University forward.

Core threads of work that would become foci of a Programme of Work are presented in the next section.

4 ACTING ON THE RECOMMENDATIONS

This section of presents a discussion of major integrated activities that would emanate from across the Recommendations.

The integration of actions within the discussion that follows thus also provides rationale for the kind of scheduling and timelines that would be needed for planning and implementing action. This is particularly critical because of the impact the Recommendations will have on resourcing, the management of University community expectations, and the capacity of individuals and groups to actively engage. This also means that responses to the Recommendations through the Programme of Work would need to be planned and executed over a number of years, in response to levels of urgency of each action and nature of the different layers of activity and change required.

The following discussion covers three areas:

- data and system integration (connecting primarily with Recommendations 2, 4, 5 and 6)
- the learning management system review and replacement (connecting primarily with Recommendations 1, 2, 3, 4, 5 and 6)
- digital learning support (connecting primarily with Recommendations 1, 3, 5, 6 and 7)

***Note that* the bulk of this section was written by the external consultant to the Review, Mark Northover, from his perspective.** Members of the SG made edits to ensure consistency with the Otago context. Refer to section 1.3 to be reminded of the roles, relationships and working approaches of those involved in driving this Review.

4.1 Digital learning support

4.1.1 Rationale

One of the widespread and recurring themes of frustration across the University in the use of technologies for learning is the disconnect and general lack of oversight of support for staff. During this Review, while there have been many positive and supportive comments about the individuals involved in providing support, there are clearly significant areas where the systems management and support services can be improved.

There is a clear indication of better support in the Medical School, leading to a perception that 'Moodle is better than Blackboard'. While that claim may well be true, I believe it is more indicative of better and more timely support. In fact, it is clear in many cases that this level of support is necessary at least in part because of the number of short-term, invited medical professionals who 'don't have time' to set up Moodle for themselves, thus requiring support staff to do this for them. Whatever the cause and validity of this claim, there is a widespread feeling of inequity of support services across the Divisions, as well as those services being inadequate and uncoordinated.

4.1.2 Leadership: Committee for the Advancement of Learning and Teaching (CALT) and the Digitally Enhanced Learning and Teaching group (DELT)

An explicit University-level *Digital Learning Environment Strategic Plan* needs to be developed and implemented (Rec 1).

Starting at the top levels of the University, it would seem that CALT would be best placed to take leadership of this activity by incorporating digital learning into/as part of the (future) University-level *Teaching and Learning Plan*. Current associated policy and practice statements, guidelines and frameworks that are related to teaching and learning should be checked and then modified to reflect the aspirations expressed in the *Strategy*. This includes providing input into workload models to give explicit recognition of staff effort required to engage effectively in the design, development and implementation of high-quality digital learning environments through (Rec 7).

DELT might be the best group to take on the work of driving and contributing to the development of the higher-level aspirations of a *Digital Learning Environment Strategic Plan* and the implications for policy and practice (thus advising CALT).

Minimum and threshold standards, and quality frameworks for online and digital learning environments are available and already in use in many universities across the Australasian region and beyond. As an aspect of the work of DELT, these standards and quality frameworks could be used as the bases for setting expectations suited to the Otago context. The consultation and development process would simultaneously facilitate and promote understanding and practice across the University community.

If CALT and DELT were to take this leadership role, there might be a need for the current terms of reference and membership of both groups to be revisited, so that the focus on evolving pedagogies and assessment strategies that make more effective use of digital tools and services is clear. Focussing on the transformative, constructive and integrated use of technology for education would be important, not simply traditional teaching and assessment that use technologies as a vehicle.

4.1.3 A mechanism for the support of Technology Enhanced Learning: A Teaching and Learning Unit (TLU)

The management and support services for technology enhanced learning (TEL) need to be comprehensively reorganised and re-energised. In this report, we refer to the need to establish a much-needed new mechanism for support, which we are referring to as a Teaching and Learning Unit (TLU).

The model of support that has been most frequently referred to in both the focus groups (Activity 2) and the survey (Activity 3), could simply be called the 'hub-and-spoke' model: that is, groups of (support) staff who are managed, coordinated and report to a central unit (and a single Manager), while being available and associated more directly with dispersed teaching areas. The structure of the 'spokes' in this model would be dependent on geographical locations, staff numbers, and specialist needs.

The TLU team should consist of the following roles (see more detail in Appendix 9: Teaching and Learning Unit support model):

- system administrators, who would manage the 'backend' of the major systems, including student enrolments, monitor performance, liaise with vendor support, etc. This is not the same as the deeper technical layer of support for the systems that ITS would provide;
- technical expertise to work with ITS to develop and maintain integrations (especially with *eVision*), test and supervise upgrades, test and evaluate proposed new tools, and develop configurations as required;
- Learning Designers who can work on longer-term, ongoing projects with staff and teaching teams to design and develop contemporary, engaging and visually appealing course content and learning activities for students (pedagogical and functional support);
- 'on the spot, just in time', support for troubleshooting and training in the use of digital tools. The intent of this support must be to build confidence and independence in the use of the tools, not to take over the work of academics (functional and pedagogical support);
- digital developers for other media as the University deems desirable. These media may include video, web conferencing, animation, web content, mobile apps, etc. (functional and pedagogical support).

To assist in the work of this team, it would be necessary to develop a triaging system that allows requests to be allocated, managed and tracked effectively and efficiently. Timeliness of support was

a major area of complaint about support that came through in our data gathering, so this must be a priority focus of the management of this team. For example, requests may be rapidly categorised as:

- rapid response: *'I need to sort this out right now'*
- short-term response: *'Show me how to … ', 'I need to understand …*'
- longer-term response: *'My team is doing a curriculum review'*, '*I need to create a short animation that demonstrates …*'
- etc.

The TLU should meet as a whole on a regular basis (weekly is probably too frequent and too disruptive, perhaps fortnightly, and no longer than monthly). This would be an opportunity to share and update everyone on key issues and concerns, major projects, tool updates and emerging plans. With a diverse team like this it is critical to keep everyone coordinated and updated to prevent developments that risk going off-track.

This new TLU team should incorporate and co-ordinate the current responsibilities of a number of key groups currently within the University. For example:

- HEDC is a well-established unit, already undertaking some aspects of the responsibilities of the new TLU as described above. Modifying and extending the role and responsibilities of HEDC, to enable a shift in focus, may be a pragmatic way to begin the introduction of this new support mechanism.

  HEDC, in its current form, could either remain as a separate entity or become part of this new unit, reporting to its Manager. If it stays as a separate entity, it should operate as a research centre only, and have no direct responsibility for support, training or evaluation of learning technologies; this should all come from the new TLU. The research aspect of the current work of HEDC would have an important connection or integration with the work of the TLU, though, specifically where scholarly investigation into the use and impact of technologies on teaching and learning is concerned.

- Aspects of Distance Learning (DL) could be absorbed into this new group. While the function and expertise of DL are key, it should be part of the whole, not separated as if it is an isolated undertaking. If the concept of DL is still seen as having some separate purpose, this should be strategic only. (Currently, Distance Learning is principally a strategic, rather than operational department.)

- Expertise currently set in a variety of other units around the institution should be pulled together to become integral to the TLU. This includes expertise in:

  - instructional/learning design - currently non-existent as a University-wide role. (However, there is expertise held by eLearning Facilitators in Health Sciences, a small number of HEDC staff, and in ad hoc, often short-term contractual roles, within some academic departments);

  - training, with a focus on the functional aspects of DLE tools and technologies (currently residing predominantly in HR Learning and Development); and

  - digital resource development, design and use of digital and physical learning spaces (currently residing in front-facing units, specifically Media Production, eConferencing, and AV Support).

- AskOtago was designed to be a 'one stop shop' for all requests and inquiries about a wide range of areas, and the usefulness of that approach was well supported by many who contributed to the Review. However, one of the repeated criticisms we also heard during the focus group discussions (Activity 2) and through the survey (Activity 3), was that AskOtago has not been a helpful mechanism for getting issues solved and for finding help. This

perception is possibly a reflection of the challenges that have faced the support model since SSR.

The type and scope of request related to aspects of the digital learning environment is vast. Requests can span diverse issues, ranging from the straightforward and simple, to the very complex and complicated, and covering needs that are variously technical, functional and/or pedagogical. Serious consideration therefore must be given to whether the current AskOtago mechanism for finding support is fit-for-purpose.

One way of attending to this challenge could be to introduce a triaging system of the form mentioned above and link it directly into the central, 'one stop shop' model of AskOtago. Clarifying the different kinds of support required for different request types would be a first step towards enabling AskOtago to direct requests to the TLU (for functional and pedagogical support) or to ITS (for technical support). The triaging system could be part of the new TLU responsibilities but there would be collaborative partnership with AskOtago.

Because of the way the TLU might be structured and operates, this system would be more able to focus the expertise needed for providing timely and well-targeted reactive *and proactive* responses to requests.

Over time, as other actions from these Recommendations are gradually implemented, the effect should be that there will be an overall reduction in the number of requests coming through to AskOtago.

There are some key considerations for the creation and management of this new TLU support structure:

- There should be *one* core Learning Management System only (Rec 5). It is the view of this Review that there should still be an LMS as the core enterprise system; interoperability standards are not yet far enough established to confidently expect a range of toolsets to integrate stably and effectively without an enterprise core.
- *Product ownership* of the learning technology tools should rest with the new TLU so that decisions affecting the tools (such as support resources, timing of upgrades, staff communications, etc.) are made from a teaching and learning perspective, not an IT perspective. ITS would have *product management* responsibility.

  While relationships and communication with ITS will clearly be critical in collaborative work, the design and testing of this work should be driven by learning and teaching through the new support unit, not by ITS. Ideally also, all budgets for enterprise learning technology systems should be held by the learning and teaching group to ensure these funds don't get re-prioritised without consultation and academic consideration.
- The TLU would be the host for various (central and local) professional development events that are provided for staff. These might be training workshops and update presentations, but should also expect to include more comprehensive structured events and learning opportunities such as Symposia, Communities of Practice, cross-institutional events (e. g., with Otago Polytechnic/Te Pūkenga or University of Canterbury), invited speakers, etc.
- The TLU should also develop and manage a teaching (with technology) recognition scheme that promotes and celebrates the value of exceptional and innovative teaching. Internationally recognised schemes such as Advance HE Fellowships, HERDSA Fellowships, CMALT Accreditation Framework, etc are existing frameworks that can be picked up and perhaps modified to specifically suit Otago's needs. Technology Enhanced Learning Accreditation Standards (TELAS) (course-based rather than individual) and ACODE Benchmarks (at the institutional level) or other localised variants could also be drawn upon. In support of Otago's recent affirmation of being a tiriti-led University, a scheme such as Ako

Aronui (developed at AUT) as an evolution of the HEA (now Advance HE) Fellowship would seem particularly appropriate.

- The development and publicising of a clear process for evaluating and adding new technology tools to the University's DLE (Rec 6) would be an important activity that the TLU should drive, in collaboration with ITS.

There are existing models of such an evaluation process available online, including those used by the University of Wisconsin and Western Sydney University. This process should take into account aspects such as:

- Functional and pedagogical value ('*Is this already available in some form, and if not, how widely useful is it?*')
- Interoperability with the existing infrastructure.
- Data security (student information and student work).
- How readily the University can support this system.
- Budget: *'Will this replace an existing system and release existing budget?'* Consider total cost of ownership, for example, *'Is this cloud-based or locally installed, with additional internal costs?'*
- Is there a local (Australasian) user community for support and sharing of ideas?

Summary: Overall composition and general arrangement of the TLU

Expertise

In summary, the new TLU unit, would be comprised of expertise currently existing a range of our academic and service/support units, as shown in Figure 4.1. The TLU would provide functional and pedagogical support and have a close relationship with ITS which would provide technical support.

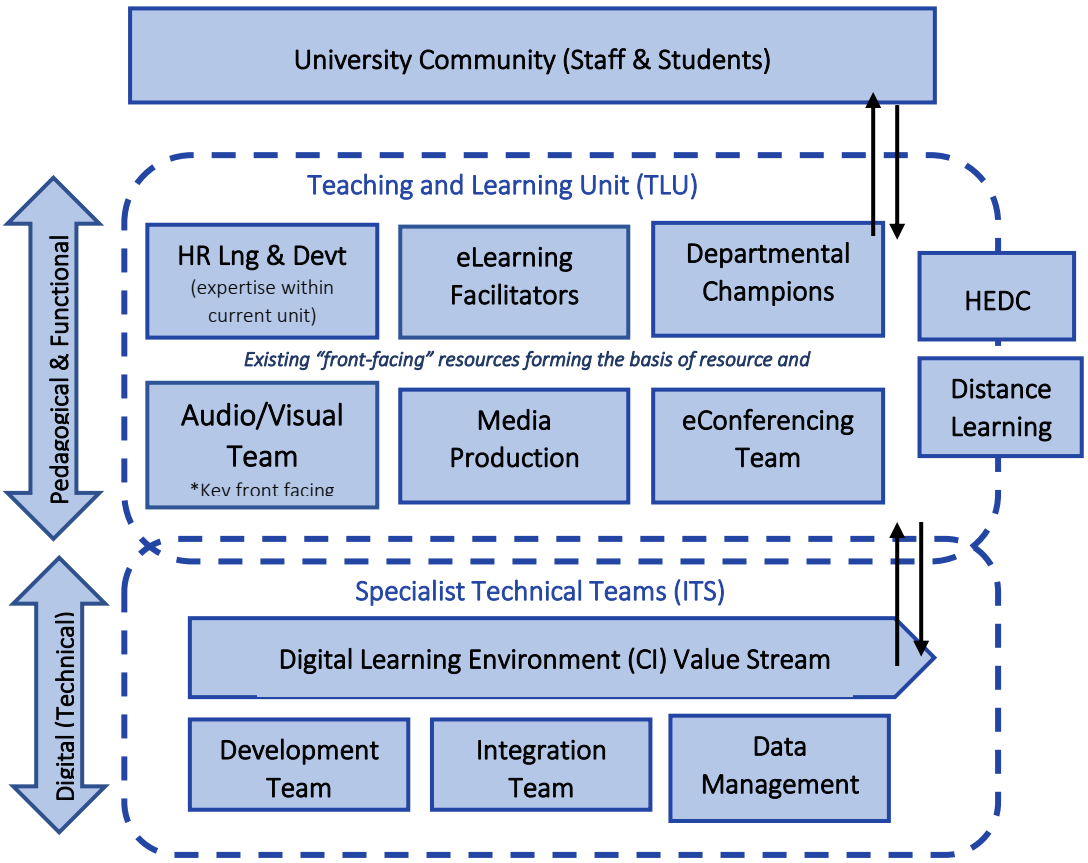


Figure 4.1: Expertise from existing units to form the TLU and relationship with ITS

As refinements are made to the composition and working arrangements of the TLU, there will be need to name and clarify roles and responsibilities. This will mean that the TLU cannot be formed by relying only on the number of staff already performing the roles indicated in in Fig 41. *To ensure ongoing equitable, sufficient and appropriate support, commitment to increasing the human, material and financial resource to support the TLU will be vital.*

Structure

The arrangements outlined here describe, very broadly, a mechanism that enables a balance between systems that are central, and local flexibilities. Importantly, the proposal is tangata-focussed, not impersonal.

The TLU as described here, would not be a centralised model, but could be described as 'hub-and-spoke', as illustrated in Figure 4.2, where the spokes (the boxes on the circle in the diagram) lie within the departments/ programmes/ schools/ faculties. As such, those 'belonging' to the TLU, based within departments/ schools/ faculties, act as embedded partners, able to be responsive to the needs of their local environment. Their central TLU connection (the boxes inside the circle) would ensure that lessons learnt in one local area and across the institution can be shared efficiently and effectively in other areas. It also enables central/University priorities to be translated appropriately for implementation at the local level.

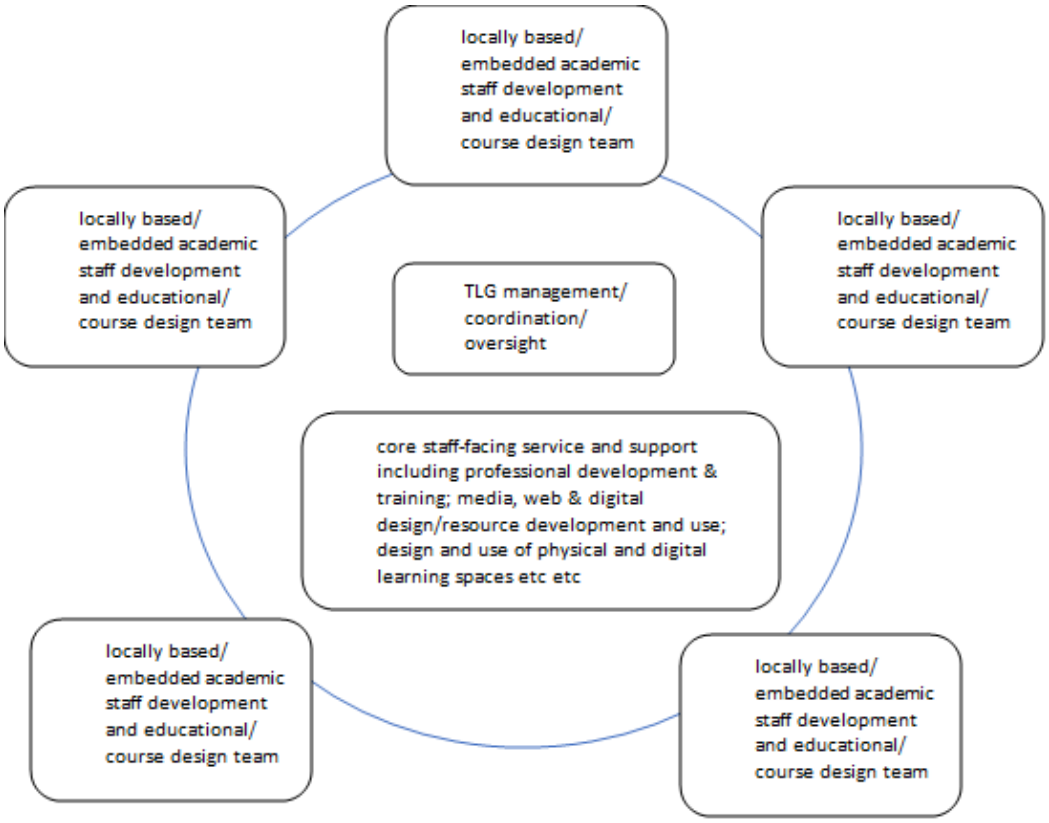


Figure 4.2: A simple model showing the suggested 'hub-and-spoke' arrangement.

See also Appendix 9: Teaching and Learning Unit support model for further information about how the TLU might operate and the focus of its activity.

4.1.4 Priorities for Action

The development of a *Digital Learning Environment Strategic Plan* is a high priority.

Work on this can be commenced immediately.

The need for the *Digital Learning Environment Strategic Plan* to align and be complementary to the University *Teaching and Learning Plan* is imperative, but work should not be delayed because of the current absence of an updated version of the *Teaching and Learning Plan*. Immediate consideration could be given to the appropriateness of Terms of Reference and membership of both CALT and DELT. This would be important foundational work for the development of the *Digital Learning Environment Strategic Plan* and initiate consultation about strategic direction and imperatives.

Along with this, and the establishment of layers of governance, the development of sets of standards and quality frameworks would set and guide expectations for teaching, learning and course design, development and implementation and be the foundations of continuous evaluation and improvement processes.

In these ways, contribution would also be made towards actions related to Recs 2, 3, 4, 5,and 7.

Establishing a Teaching and Learning Unit (TLU) is a high priority.

Creating a TLU should be commenced immediately. The work of this unit will have major impact upon changing and managing staff and student perspectives and perceptions of any changes that will occur as a result of this DLE Review. The key role that the TLU, as envisaged, will have on translating higher-level strategy into teaching and learning practice, and positive outcomes for staff and students cannot be underestimated.

One of the starting points for the work of establishing the unit would be identifying and learning from, the variety of academic and professional staff with a range of expertise, who are already within the institution. For example:

- the current Moodle eLearning Facilitators (ELF) team in Health Sciences, as that team is broadly based on a 'hub-and-spoke' model;
- the considerable experience and expertise that is housed in HEDC;
- e-learning and teaching 'champions' in various academic departments;
- formal role holders, often in fixed term contract arrangements, working on educational design and related activities within individual programmes or departments;
- current units providing staff-facing services such as media, web content development, video conferencing, and management of physical and digital spaces;
- personnel in HR Learning and Development, providing functional support and training.

Management of change processes will be needed to draw this expertise together, to initiate changes to groupings, reporting lines, clarification of roles and responsibilities, working principles between the TLU and academic departments, Divisions and central administrative support and service units. In addition, training will be required to upskill those brought together to enable them to perform the particular functions that this new TLU will provide (skills of instructional design, as one important example.)

It is inevitable that extensive *new* resource will have to be found to invest in extending the team of people providing long term, permanent support to ensure ongoing equitable, sufficient and appropriate support becomes part of the fabric of the TLU mechanism and of the University's approach to providing support for teaching and learning.

In addition, as part of the implementation of a new LMS (as in Rec 5), or any other major change, the team would have to swell for shorter periods, e.g., a couple of years, depending on the nature and extent of the project. This would be to cope with the intensity of work that will have to occur when larger changes are made to the digital learning environment.

4.2 Provide data and system integrations

4.2.1 Rationale

The current state of learning technologies at Otago is a wide range of disconnected tools. Many disparate systems are used in very sound and successful ways, but they do not talk to each other, and they do not talk to central systems.

The only automated data transaction is the provisioning of class lists of student enrolments into Blackboard from *eVision*. It appears that the second major LMS at Otago (Moodle) is currently manually provisioned with class lists for their courses.

A major cause of inefficiency and wasted time and effort is that grades from the Blackboard Grade Centre are not reported back to *eVision*. Across the University, many hours are spent by either academic or professional staff in manually re-entering grades into *eVision:* wasted time and increased potential for data entry error.

A key consideration of this report is to move Otago University as far as possible into what for many years (perhaps ten years now) has been termed the Next Generation Digital Learning Environment (NGDLE). To quote from a 2015 Educause report[1]:

> *We have adopted the term next generation digital learning environment (NGDLE) for what should come after the LMS [learning management system] era. The term pulls together several key themes. What comes next must be informed by the new learning-centered model that increasingly characterizes higher education practice (hence next generation). It must of course be digital, given that digital technology has become a component of virtually all teaching and learning practice. It must be about learning, since learning ties together learner and instructor. Finally, it must be an environment or ecosystem — a dynamic, interconnected, ever-evolving community of learners, instructors, tools, and content.*

The suggestions to follow and summarised in the schematic diagram in Figure 4.3, assume that Otago has decided to standardise on a single Learning Management System (LMS) (Rec 5).

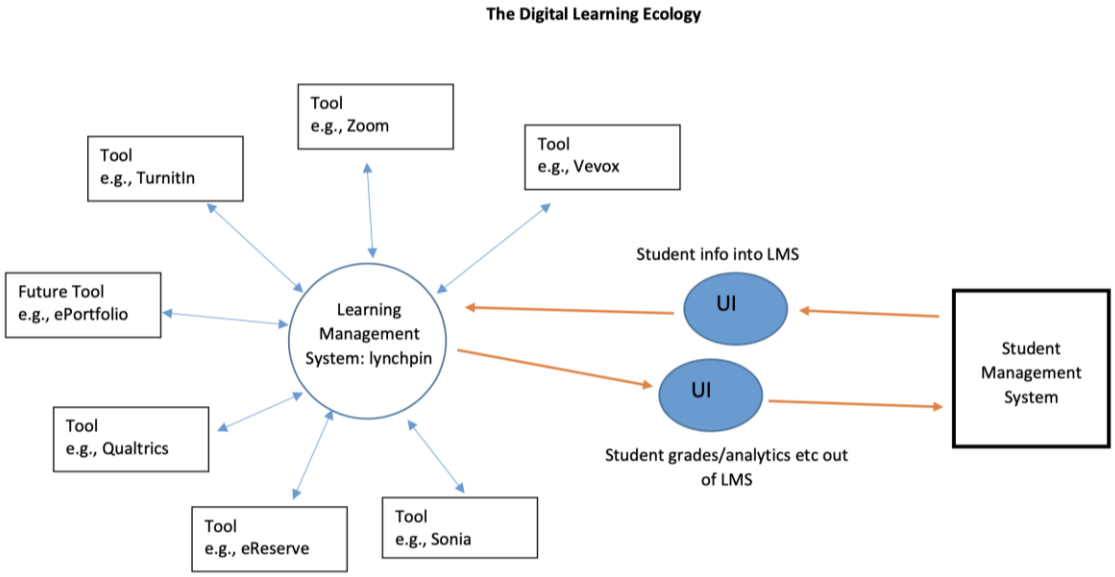


Figure 4.3: Simplified schematic of the integrations required for digital efficiency.

[1] Malcolm Brown, Joanne Dehoney, and Nancy Millichap, The Next Generation Digital Learning Environment: A Report on Research, an ELI white paper (April 2015). https://library.educause.edu/resources/2015/4/the-next-generation-digital-learning-environment-a-report-on-research.

To continue to support two LMSs as at present (Backboard and Moodle) should be unnecessary, and further complicate the integration development.

While it will be the role of the University to determine the detail of these integrations, the recommendation is for them to include the following:

1. An automated feed to populate courses in the LMS with those enrolled in *eVision* (the external consultant's experience at AUT was that the option to have the enrolment snapshot rerun manually at any time was extremely useful, especially at the start of semesters). There should be a user interface (integration management portal) to allow academics to set up LMS groups that are non-standard; for example, where it is desirable for two or more course groups in *eVision* to be taught using the online course in the LMS.
2. An automated grades feed from the LMS back to *eVision*. Set up as a user-friendly system, this will save thousands of hours of manual data entry at the end of each semester. Given the variability of assessment structure across courses (and the amount of formative assessment often stored in the LMS grade centre), there should be a management portal for this integration as well, along the lines of the diagram in Figure 4.4.

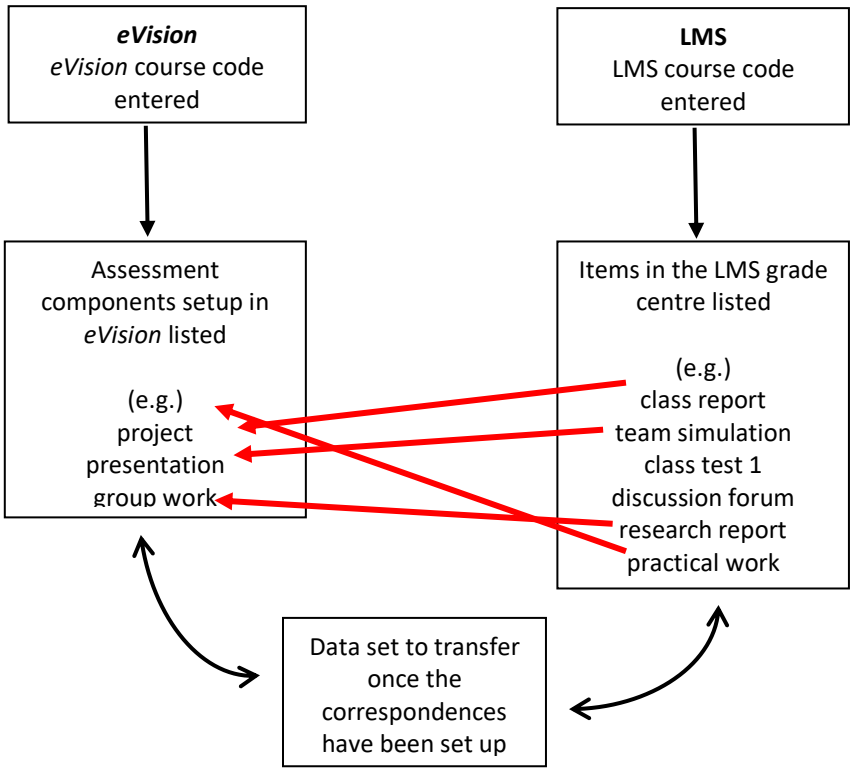


Figure 4.4: Automated feed between the LMS and *eVision*

3. Tools outside the LMS should be able to be linked back to the LMS and therefore also linked to *eVision*. This will enable provisioning for access from *eVision* enrolments, secure authentication, and ultimately, transfer of grades from the toolset to the LMS and hence to *eVision*.
4. Any toolsets used by the University to provide content or activities for students, and therefore store student data and student work, should be required to maintain a secure connection to University enterprise systems. The recommendation of this Review is that the connection should be managed through the LMS as the central digital vehicle for learning part of the student life cycle.

4.2.2 Implementing Learning analytics: Learning from data

Implementing the recommendations above (connecting all systems back to the core LMS) increases the opportunity to produce and provide more comprehensive pictures of students' activity, engagement and progress across their full course of study. Many comments in the focus groups (Activity 2) in particular, referred to a desire to access pastoral care information about students that is not isolated within a single (LMS) course. We also received a number of comments from staff about students needing to be able to access updated and centrally located timetables. The desire to be able to access accurate and frequently updated timetable information was echoed in the responses from students in the student feedback surveys (Activity 4).

When considering the currently available data tools, there was a mixed response during the focus group discussions (Activity 2) to the use of Business Objects. Some found the tool and dashboards useful, while others commented that creating dashboards and reports that met their needs was too time-consuming and required too much in-depth technical knowledge to achieve success. Similar sentiments were shared by staff in the survey (Activity 3). While it is not the intention of this report to recommend an alternate system that should be used for data dashboards, it is recommended that selecting, configuring and providing this system should be reconsidered, taking much more account of the needs and capabilities of (non-ITS) academic and professional staff.

In summary for data analytics, the following should be developed and made available:

- staff dashboards that allow staff (with appropriate permissions) to view student progress across their various courses of study;
- student dashboards that allow students to track their comparative engagement and progress within each course and across their full programme (degree);
- student timetables, both for their study commitments (lectures, labs, tutorials, etc.) and for due dates for assignment work, across all current courses/papers;
- flexible staff dashboards to allow reflection and research into student engagement and success of differing pedagogical strategies. It should be possible for academic staff to try a variety of evolving pedagogical and digital strategies, and to get some informed feedback on the success of these strategies.
- dashboards that provide details of all papers and programmes, to facilitate graduate attribute and learning outcome tracking and monitoring, and curriculum mapping, more broadly.

4.2.3 Priorities for Action

Developing the integration layer is a high priority.

Ensuring that systems 'talk' to each other is fundamental to achieving a state where data are accurate and safe, and the flow of incoming and outgoing student-related data happens efficiently and effectively (Rec 4).

Integration layer work has already begun by ITS (see Appendix 4: Activity 1 Digital Learning Ecosystem at Otago) and will be further informed as other actions from these Recommendations are implemented (e.g., Rec 5 concerning the review of the LMS).

Consultation towards establishing aspects of governance is a high priority.

This is another body of work that should be commenced immediately.

Specifically, this will include consultation to establish policy and procedures and guidelines about learning analytics, principles of need, place and worth, and access, use and interpretation (linked to Recs 1 and 2). This level of governance detail will feed directly into work that will be done on developing dashboards, as part of the integration layer work described above.

The consultation process will facilitate discussion and engagement with relevant ideas by the University community, and thereby also have a connection with implementation of a system of support (Rec 3). It should incorporate consultation of other layers of governance including levels of decision-making and strategy setting as they relate to the digital learning environment (Recs 1 and 2).

4.3 Review and replace the current LMS

4.3.1 Rationale

The current Learning Management System (Blackboard Learn 9.1) has served the University well for something approaching twenty years, but, as a software system, is now over 25 years old. Apart from a database overhaul (moving from single-byte to double-byte data) about fifteen years ago, there has been no significant updating of the code base over that 25 years.

Blackboard's focus and development shifted about ten years ago to the creation of a whole new product, Blackboard Ultra. While Bb Learn is still capable of performing very effectively (especially in the purpose-built technology of Bb's data centres), it will likely not continue to be developed and supported for much longer. Blackboard will shift its focus and support to Ultra, at the expense of an unsupported Bb Learn.

There will be many other reasons why the current Bb Learn is past its 'use-by' date, including:

- outdated user interface (UX);
- outdated interoperability standards (SCORM, LTI, xAPI, CMI5, etc);
- an increasingly 'old school' set of digital tools, lacking the integration with more contemporary third-party toolsets.

Another major consideration in this process is whether all University courses should be required to use the same LMS – that is, there shall be one LMS, not two as there are presently (Blackboard and Moodle), plus a handful of others. The strong recommendation of this Review is that there should be just one. There are many reasons for Rec 5, including:

- providing a consistent experience for students who study across disciplines and currently need to be familiar with both systems (this is also an issue for some staff);
- other Recommendations in this Review that concentrate on developing integrations between systems (Rec 4), in particular, between the LMS and *eVision*. Using two (and more) LMSs would unnecessarily complicate and delay this work;
- duplication of functional support and documentation;
- equity of access to the tools: who gets to use one versus the other, or is it a 'free-for-all'?

4.3.2 Options to be considered

In broad terms there are three options, with some advantages and disadvantages, listed below.

Option	Advantages	Disadvantages
1 Stay with Blackboard but upgrade to Bb Ultra (including moving those currently using Moodle to Bb)	• Current Blackboard users would be mostly happy. • Much of the local expertise in Blackboard support will be retained and reused. • Easier transition path for users. • Client support relations with Bb remain in place.	• 'Perception' of remaining with Blackboard after recent experiences. • Moving School of Medicine (Moodle) to Blackboard may be a very 'hard sell'.
2. Move everyone to Moodle	• Current Moodle users would mostly be happy. • Leverage the expertise built up in School of Medicine across the University (although specific needs of Medicine may not translate for other departments). • Local user community (Canterbury, Massey, Waikato). • Global user community.	• Need to build a Moodle development capability to get the best out of open source (however 1 or 2 FTE dedicated developers would cost less than annual license fee for Blackboard, so perhaps can be considered an advantage). • Cost of an external support contract (probably Catalyst IT, but may not be necessary, given ITS expertise hosting Blackboard Learn locally), although potentially considerably less than license costs of other vendor products. • Moving most staff (Blackboard) to Moodle may be a very 'hard sell'.
3. Do a full product comparison	• Due diligence to ensure the best fit product is selected (e.g., a number of recent product reviews across Australasia have selected Instructure Canvas). • Potentially more staff involved in the selection process (greater buy-in?).	• Time delay compared to the two previous options. • Potentially more staff involved in the selection process (selection by committee?)

If Option 3 is chosen, there are a few considerations for this process:

1. Develop a business case that clearly articulates a set of selection criteria.
2. Assess tool sets, but place significant emphasis on aspects of User Experience, visual design capabilities and flexibility, interoperability, openness to integrations with third-party tools.
3. Determine a well-reasoned evaluation process so that the final decision is defendable.
4. Ensure the evaluation group is heavily weighted to academics, and largely balanced between 'power users' and 'routine users'. Also include professional staff who have a role in supporting the LMS for academics.
5. Provide a set of sample scenarios for vendors to demonstrate. For example, *'How would I create and assess a group assignment?*'; '*How can students make appointments with their lecturer?*'; '*Can students post computer code assignments to the LMS?*'; '*Can a student keep track of their progress through my course, or through their programme of study?*', etc.
6. Be sure to consider like-for-like comparisons when evaluating costs. For example, do the systems include the same extended modules such as content management, analytics, video management, social media integrations, cloud-based storage capacity, etc. Determine a set of requirements and cost the comparisons in full.

For any of the above options chosen, consider the following aspects in relation to a transition from Bb Learn:

1. Budget, including the likelihood that the University might need to pay double licenses and/or increased development costs (e. g., for the current Blackboard Learn as well as for the chosen LMS if it is also proprietary) for probably two years during a switch-over.
2. Time to upskill support staff and develop support resources.
3. Time to transition courses. Consider the added (likely justified) time and cost to take the opportunity to redesign and rebuild online course experiences for students - consistency of learning experience if not (as well as?) consistency of visual design.
4. Rebuilding integrations, e. g., student enrolments and grades (*eVision*), SSO, links to third-party tools, etc.
5. Access to previous courses - can these be made available and what is the policy about access to prior learning content for students?

4.3.3 Priorities for Action

The process of evaluating and replacing the current LMS is a high priority.

Work on this should commence immediately.

Instigating a business case for finding an LMS suited to Otago's requirements will not only address a pragmatic issue concerning the need to decide the future of our LMS (related to the renewal of the license), but it will also demonstrate to staff and students that the University has heard their feedback about the challenges they have been facing. An LMS is a concrete and tangible tool with a direct link to teaching and learning practice and therefore has a big impact on perception and experience.

A systematic, well planned and implemented business case as described above will also have a positive impact on a response to Recs 3 (support provision), 6 (product consultation and evaluation process) and 2 (governance).

4.4 Programme of work – Managing the changes

Because of the multiple connections between and among the various streams of activity that the Recommendations will generate, it would be important to establish a Programme of Work.

This Programme would be comprised of a series of interlinked business cases, management of change projects and consultation processes and undertakings. This Programme of Work would manage, schedule, monitor and report progress on all developments and their multiple dependencies and interdependencies.

5 CONCLUDING REMARKS

This Review has highlighted that there is an urgent need to act on investing in teaching and learning and in the transformation of our digital learning environment into one that can ensure our survival, now and into the future.

The education the University offers is core to its existence and one of its raisons d'être. If the environment that nurtures learning and teaching is not capable, fit-for-purpose and lacking in comparison with other higher educational institutions, then inevitably, the lived learning experiences and perceptions of Otago among current and future students and the wider community will diminish.

There is a need to make some bold decisions that will attend to the challenges that the University is facing in attracting students and managing finances, while achieving the aspirations that we have expressed in *Vision 2040*.

The University must invest now, as the system cannot sustain itself for much longer and not seriously affect our student numbers and the overall learning and teaching experience. This Review has shown that our systems are cumbersome, poorly supported, and falling behind what is expected and available at other institutions.

Developing business cases can take more than 6 months. In the case of Rec 5 regarding seeking a new LMS, for example, with a business case taking that long, followed by a procurement process, implementation of the new system, and transfer for actual use by staff and students (including planning and implementation of a professional development and learning programme for staff), 2 or 3 years may be needed before we can start to see the beginnings of an impact on our digital learning environment.

There is so much positive work going on in the University, and so many resources already at hand. We have leading thinkers, researchers and practitioners and a wealth of experience that we can utilise directly in this venture towards transforming our digital learning environment. Currently, there is a great deal of wastage of time and effort and the ad hoc nature of what we do has increased our levels of inefficiency.

Granted, new money will have to be spent on investing in our systems and personnel, but finance is only one facet of 'efficiency'. There will be much that we can do for ourselves, by reallocating and reconfiguring some of our currently ad hoc and disparate activities and efforts and adding to them in a strategic way. A unified focus via a well-defined *Digital Learning Environment Strategic Plan*, and consistency and comprehensiveness of approach, will provide strong foundations and overarching quality enhancement guidance for local (Divisional and discipline) flexibility and variation.

Reputation can be lost in a moment, even if good things are happening. The risk of not transforming our digital learning environment now, is risking loss of reputation for the University.

6 APPENDICES

Appendix 1: Steering Group Membership

The Steering Group worked through DELT, which is representative of a wider range of voices, notably undergraduate and postgraduate students, Māori and Pasifika, as well as professional and academic staff from across Divisions. In this way, wider consultation was facilitated.

1. Alesha Smith (Health Sciences; CALT)
2. Anthony Robins (Science)
3. Daryl Clarkson (ITSS, DELT)
4. Fairleigh Gilmour (Humanities; DELT; CALT)
5. John Williams (Commerce; CALT)
6. Sarah Stein (Academic Division/Distance Learning; DELT; CALT)
7. Michael Swanson (Academic Division/DVC(A); CALT)
8. Tracy Perry (Health Sciences, CALT…)

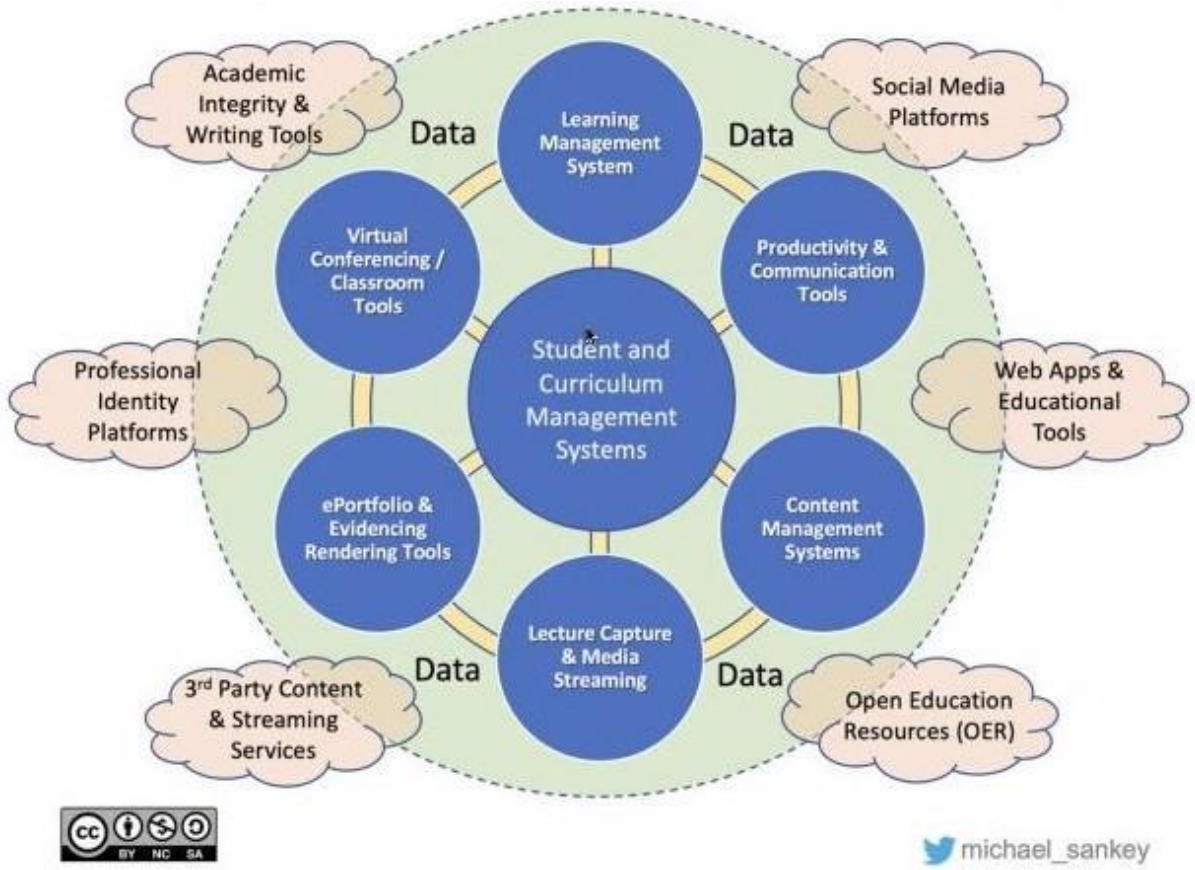
plus external consultant Mark Northover.

Appendix 2: 2022 ACODE Benchmarking Summit Report

This report can be found here.

2022 ACODE BM
Summit Report for D

Appendix 3: Contemporary TEL ecology



Sankey, M. (2020). Digital learning down-under. https://michaelsankey.com/2020/11/01/digital-learning-down-under/.

Appendix 4: Activity 1 Digital Learning Ecosystem at Otago

Current Tools, Support Models and Governance

Introduction

In this paper we discuss the current state of the digital learning environment at Otago. The environment is one that has come about from organic growth and components have been adopted to meet immediate or individual area needs. This has resulted in a collection of loosely coupled tools that could not be termed a designed digital ecosystem with student and staff experiences at the centre. The flow on results led to a fragmented support model across areas and different learning systems across divisions.

1. Current Tools

The following table represents a snapshot in time of systems that make up the current state digital learning ecosystem at Otago.

Product Name	Primary Function	LMS	Assessment	Video	Collaboration	Engagement	Analytics	Courseware	eResources	ePortfolio	Ancillary	Status	Available All	Student Usage	Potential	ITS Host	ITS Support
Blackboard Learn 9.1	Learning Management System	1	2		3							Deployed	Y	1	1	Y	Y
Moodle - Anatomy	Learning Management System	1	2									Deployed	N	2	?	Y	Y
Moodle - Health Sciences	Learning Management System	1	2									Deployed	N	2	?	Y	Y
Moodle - Med Moodle	Learning Management System	1	2									Deployed	N	2	?	Y	Y
Turnitin	Assessment and Integrity		1									Deployed	Y	1	2	N	Y
Annotate/SafeAssign	Assessment and Integrity		1		2							Deployed	Y	2	3	Y	Y
Blackboard Original Tests	Assessment and Integrity		1									Deployed	Y	2	2	Y	Y
Examsoft/Examplify	Assessment and Integrity		1									Deployed	N	2	1	N	N/Y
STACK	Assessment and Integrity		1			2		3				Pilot Pending	N	N/A	2	Y	N/A
Ruru	Assessment and Integrity		1									Deployed	N	3	2	N	N
Echo360	Video and Conferencing			1		2	3					Deployed	Y	1	1	N	Y
CLASS for Zoom	Video and Conferencing			1	2	3						Pilot Pending	N	N/A	1	N/A	N/A
Zoom	Video and Conferencing			1								Deployed	Y	1	2	N	N
Teams	Collaboration and Communication	3		2	1							Deployed	Y	2	2	Y	Y
Kahoot	Student Engagement					1						Deployed	Y	3	1	N	Y
Vevox	Student Engagement					1						Pilot in Progress	Y	3	1	N	Y
ChemTest	Student Engagement		2			1						Deployed	N	3	?	?	N
B-Line	Digital Courseware		3	2		3		1	3			Deployed	N	3	3	Y	Y
SCORM Engine	Digital Courseware					2		1				Deployed	Y	3	1	Y	Y
TONIQ Dispencery	Digital Courseware				3	2		1				Deployed	N	3	3	Y	Y
Cengage Mindtap	Digital Courseware							1	2			Suspended	N	N/A	2	N/A	N/A
OpenDSA	Digital Courseware							1				Pilot Pending	N	N/A	2	N	N/A
Bracken	Digital Courseware					2		1				Deployed	N	3	2	N	N
KuraCloud / Lt	Digital Courseware							1	2			Deployed	N	3	2	N	N
Stukent	Digital Courseware							1				Deployed	N	3	?	N	N
Otago Wiki	eResources				2				1			Deployed	Y	3	2	Y	Y
eReserve	eResources								1			Deployed	Y	1	3	N	N/Y
Pebblepad / ATLAS	ePortfolios System					2				1		Suspended	N	3	1	N	N/Y
Sona Systems	Ancillary System										1	Deployed	Y	2	1	N	Y
Creatrix	Ancillary System					3				2	1	Deployed	N	3	3	N	Y
BbAdmin	Ancillary System										1	Deployed	Y	N/A	2	Y	Y
BbStaff	Ancillary System										1	Deployed	Y	N/A	2	Y	Y
OCAA	Ancillary System										1	Deployed	Y	N/A	2	Y	Y
Echo360 System	Ancillary System										1	Deployed	N/A	N/A	2	N	N
InForm	Ancillary System										1	Deployed	Y	N/A	?	Y	Y
Qualtrics	Ancillary System										1	Deployed	Y	?	?	N	N
OLAF (Maths and Stats)	Assessment and Integrity	1	1					2			3	Deployed	N	1	0	N	N
Junior Mathmatics Competition	Assessment and Integrity		1						2			Deployed	N	2	0	N	N
Problem Challenge	Assessment and Integrity		1									Deployed	N	2	0	N	N
Mathercize	eResources								1			Deployed	N	1	1	N	N
Anatomy Wiki	Ancillary System		2								1	Deployed	N	N	0	N	N
x.otago	Digital Courseware	2	2					2	1		3	Deployed	n	1	0	Y	N
CMAP	Ancillary System		1				2				3	Deployed	N	N	3	Y	Y

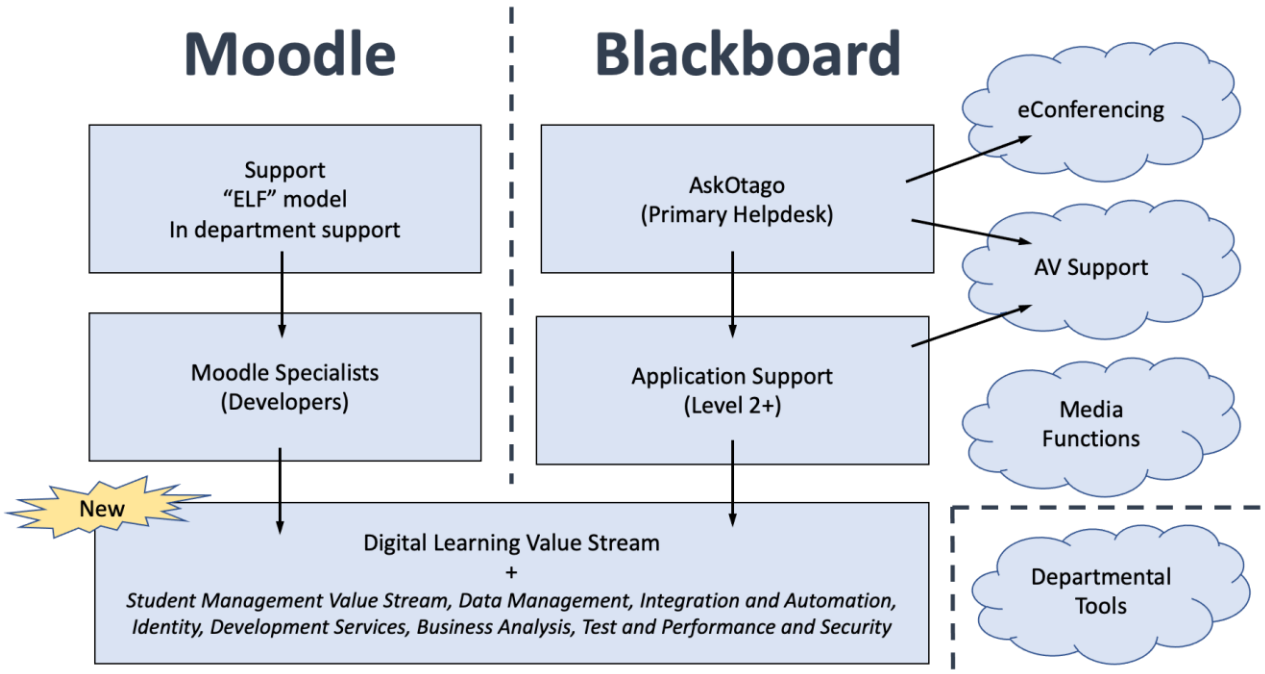
It should be noted that the digital learning ecosystem is just not about Learning Management Systems, but also the myriad of support systems that create a functional environment. This includes assessment and integrity tools, video, conference and collaboration or synchronous tools as they are known, engagement tools, digital courseware, and e-resources as well as ancillary systems to link systems together into a more coherent form.

2. Support Models

Taking the contemporary digital learning ecosystem, or technology enhanced learning ecology model of Michael Sankey (Appendix 3: Contemporary TEL ecology), there are a number of elements that are evident when considering Otago's learning technology state. It should be noted that this technology enhanced learning ecology model focuses on the technology ecology and does not cover the key higher-level elements that would be expected in the digital transformation of a learning environment, which include both Instructor and learner development, and wider requirements such as polices and planning, instructional modality, partnerships, and support (see Appendix 8: Transforming education in the digital realm. This latter model should be treated as the core technology enabling elements that enable wider digital transformation (Dx).

What is needed for Otago, is to look at the question "*what is needed for the decade*" of which technology is one component and only the enabler to creating a future "digital campus" environment.

The current Otago support model can be represented in the diagram below. It should be noted that this is not the model that was in operation prior to 2023; the bottom 'digital learning value steam' was missing and only recently added.



In considering the support models that underpin the technology ecology, the following are apparent:

- The model in Appendix 3 considers a "Learning Management System" whereas at Otago we have two major systems, with multiple instances and completely different support models for each main system.
- There are also a number of outliers being utilised at Otago as well, for example Teams being used as an LMS (note class lists are not fed into Teams) or OLAF in Maths and Statistics.

- The diagram of Otago's current ecology above is centred around student and curriculum management systems. The former is an area needing continuous improvement. The latter is mainly linked with bespoke work done in Health Sciences.
- Synchronous (streaming, conferencing and classroom tools) are supported by our transactional technology groups (ITSS) or not at all in some cases. There is a significant opportunity to align the functions needed for a coherent and integrated digital experience.
- There are a number of elements that are missing from Otago's current ecology, such as consistent e-portfolio technology across the organisation.
- There are a number of glue functions that are missing including content management system capability to link a coherent experience (noting that a new web platform is currently being adopted).
- Predominantly, on the right side of the Otago ecology diagram above, there are a number of toolsets which are in a state of fragmentation across social, productivity and communications.
- The thread of data running through all of the ecosystem has not been able to be leveraged as an asset at Otago, and will required some redesign to get to this point.

Requests, routed as tickets through AskOtago, are handed off to groups to handle higher level problems. It should be noted that much of this can be considered not deeply technical. We have seen other organisations look at how to better handle this area with learning developers, instructional designers, and other pedagogical expertise.

There is potential that bringing together these pedagogical functions into one area in a similar model to that of the eLearning Facilitators in Health Sciences, and focusing on a selected ecology that could deliver across the organisation, would add significant value to both staff and students without substantive increase in cost by the consolidation involved.

It should be noted that moving to a fully decentralised model that supports its own technology ecosystem will set the organisation back to how it operated for many years and which effectively created a level of technical debt that will not be quickly paid down. Where there is a need for focusing and strengthening of operational and pedagogical function, there is also the same need for specialist management of the technology and product services.

3. Structure Changes

There has been recent work done within Information Technology Services to better align the structure of the information systems department with the goal of better enabling a digital future for the organisation. This includes several capabilities that have been established where there were none before, noting that this is only one part of the wider ecosystem.

As it relates to the Digital Learning Environment, this includes specifically recognising that application support at the repeatable and standard support level is not the same skillset required to enhance an ecosystem, whether it be off the shelf software and focussing on integration or be direct open-source development as is the case with Moodle.

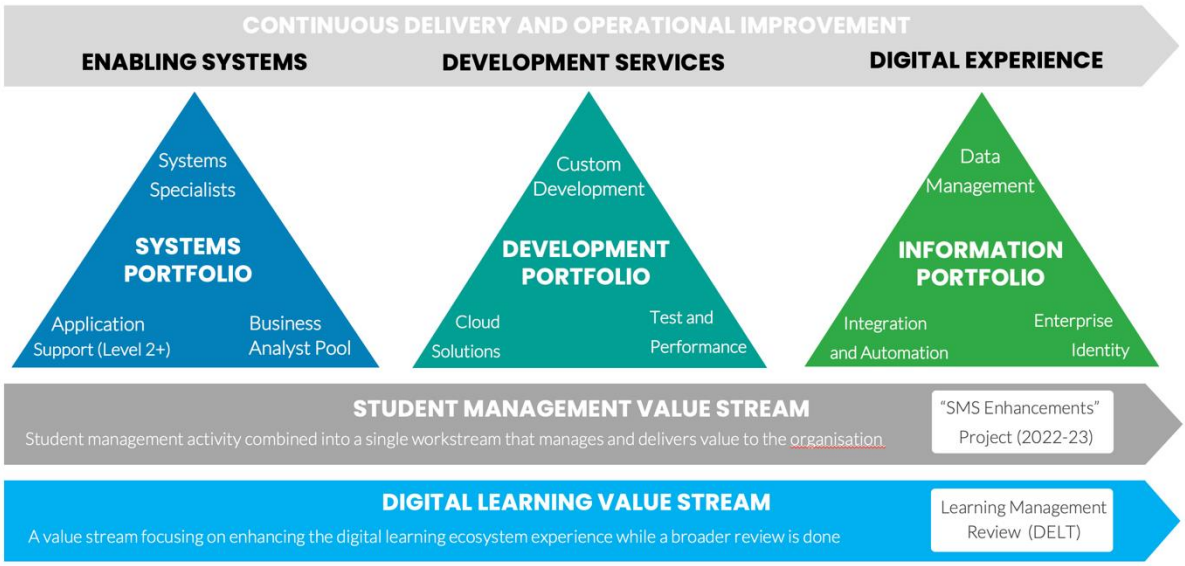
To this end, these functions have been split, creating a new digital learning value stream (shown as the *new* box at the bottom of the Otago current ecology diagram above) to focus on the complex technology enhancements and better integrating systems to improve overall digital experience. This is also designed to essentially keep pace with change as none of the products in the wider ecosystem are standing still.

It should be noted that requests coming through AskOtago and to wider support teams across the scope of ITS and ITSS are typically transactional. The organisation has not operated a well

maintained and articulated and value driven backlog. This has resulted in ideas not progressing, with nothing to effectively roadmap or govern. This is being addressed with this *new* addition to the model, noting that in the redistribution of FTE in this restructure a modest team has been dedicated to product leadership in this area. The biggest challenge will be the fragmented state of the ecosystem, which is expected to come clear as the new group engages with defining the scope and state of the backlog of work.

Further, it was recognised in this review that there was no central focus for delivery of data enabled outcomes, with data skills spread across ITS units and no overarching capability to manage information, integration, automation, or identity. These are all key elements to a digital future.

The following diagram shows a new information systems conceptual structure.



As shown in this new information systems conceptual structure, on the right, a new information portfolio has been established to centralise data functions to increase maturity towards the principles laid out in the Data Management Body of Knowledge (DMBoK by DAMA).

This initial work it is not about delivering the end goals of knowledge or business intelligence, but more of ensuring the foundational data is managed such that it is available to be consumed to deliver the insights required by the organisation.

It should be noted when reviewing the Sankey model (Appendix 3) that student management is at the core of the digital learning ecology. This has also been recognised by breaking out a cross functional team to specifically move this area forward in an agile manner. This team can call on specialist development, data management and more importantly integration and automation resources.

The current state of systems at Otago has been one of holding operational a vast array of systems from a previously decentralised technology environment. This has created a fragmented application-centric organisation rather than a data centric and data driven capability.

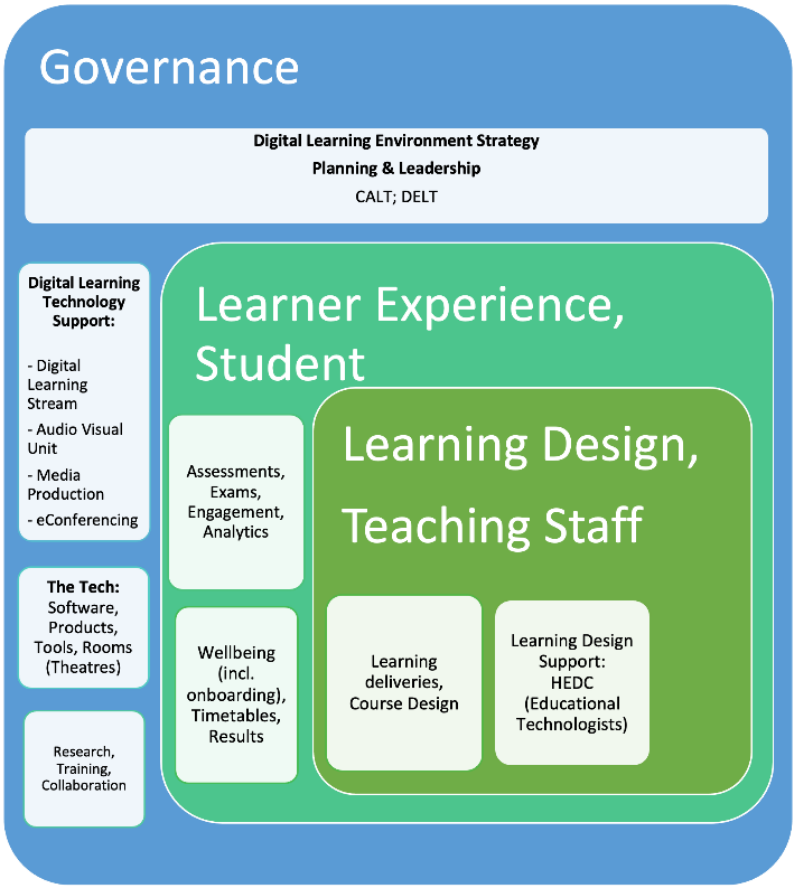
4. Governance

It is clear from the current state of the digital learning ecosystem that there has been little governance over a long period of time, resulting in multiple learning management systems, bespoke in-house department developed systems and fragmented tools across various divisions.

Refer to the additional background paper included in this tranche of work, but in summary there is little governance as any change is highly constrained by the current financial environment. Ultimately, for any major decisions it is the DVC Academic who we would need to provide approval in this area.

There are some new high-level elements of governance over software systems, including the IT governance approved mandatory systems list which seeks to guide current state to not become more fragmented.

The state of the wider ecosystem governance can broadly be represented as follows, but it needs to be noted that there is such a wide range of areas "doing their own thing", this is not considered a complete high-level view.



5. Sustainability

When considering sustainability in an increasingly digital world where the expectations of digital natives are high, some common characteristics need to be considered:

- There needs to be a robust and consistent pedagogical model supporting both instructors and learners. This consistency is missing from Otago's current model, and this is evident in the digital experiences for both staff and students alike.
- There should be one primary learning management system, noting we are better to do one well than provide several average and fragmented systems.
- Focusing technology activity into a support layer and centralising pedagogical functions to consume products and services has the potential to create a far more sustainable model and potentially with little cost.

- Enabling systems need to be nimble and flexible allowing development and innovation, but also need to be standardised to create the desired consistent digital experience.
- The cybersecurity landscape drives cloud-based models which also carry better business continuity, the burden of onsite management and upgrades of systems is problematic and costly.

7. Additional Material

Martin, F. & Xei, K. (2022). Digital transformation in higher education: 7 areas for enhancing digital learning. *Educause Review*, https://er.educause.edu/articles/2022/9/digital-transformation-in-higher-education-7-areas-for-enhancing-digital-learning

Appendix 5: Activity 2 Focus Group Summaries

During November and early December 2022, thirteen workshop sessions were held for staff to prompt discussion about the future digital learning environment (DLE) at Otago. The sessions were facilitated by Mark Northover, our external consultant to the DLE Review project. Eight sessions were held in Dunedin, two in Christchurch and one in Wellington. Two sessions were held via Zoom. A mix of just under 150 academic and professional staff participated.

The overarching questions the workshop groups were asked to consider were:

- *How do we see Otago's future teaching and learning environment?*
- *What should Otago's future digital learning environment be like in order to support that future?*

To prompt thought about these complex and future-focussed questions, six critical areas that form core components of an efficient and effective digital learning environment, were posed. These were:

1. *INFORMATION FLOW* - For example, how do student details get into the supported systems and how do assessment grades get back into *eVision*/SMS?
2. *DIGITAL PEDAGOGIES & ASSESSMENT* - What is required for professional development programmes to get the best out of the technology?
3. *DLE FLEXIBILITY* - How do current and emerging tools get evaluated for further support and integration?
4. *ANALYTICS* - What can the University learn from activity and achievement data to improve student outcomes?
5. *SUPPORT MODELS* - Where do support services for using tools and technologies come from, and what level of technical, operational, pedagogic support do they need to provide?
6. *GOVERNANCE STRUCTURES* - Who gets to make all these decisions and how does information flow to decision-makers?

The workshop process, facilitated by Mark, resulted in a wealth of reflections and ideas being generated by the participants.

Summaries of comments from staff

Below, for each of the six critical areas, are summaries of the ideas from across the sessions. The ideas have been clustered into broad themes. The themes suggest areas of significance that, from the perspectives of the participants, are crucial to a future digital learning environment at Otago that is effective, efficient and fit for purpose.

Information Flow/Data Integration: For example, how do student details get into the supported systems and how do assessment grades get back into *eVision*/SMS?

Seamless for students across the student lifecycle

Examples of comments:

- data across departments + colleges for pastoral care.
- seamless integration across the student data life cycle
- one stop shopping to be aware of "whole" student.
- support for students in the process
- students want to see marks - consistently (same way)
- timetables that are accurate, and not available until finalised

Connected systems, single portal

Examples of comments:

- one stop shopping to be aware of "whole" student.
- unified system across Uni; connected systems - currently they feel unconnected (BB, *eVision*, Turnitin, Business Objects). blackboard + *eVision* need to speak to each other.
- key interface rather than 3 or 4
- reduce engagement platforms

Common language/terminology for interoperability

Examples of comments:

- common identifiers between systems, please!
- common format, e.g., direct link from Blackboard *eVision* to decrease double loading of data and room for error

Plain language, equity of access

Examples of comments:

- connection w/ Disabilities/Health to get proper support to student
- longitudinal student data to identify 'at risk" students
- user friendly
- diversity of usage levels
- want Bb to look same for all papers
- student app should be two-way
- students and staff need to see same thing

Automation for seamless flow

Examples of comments:

- need strong, linked, easy to find student communication
- proliferation of systems prevents efficient data flow
- ideally seamlessly: assessments that are done digitally flow-through; automatic transfer of data
- information flow to students - timely, easy to administer
- real time engagement
- automatic process vs stage/steps/approval
- accessibility (fast) to resources

Security/privacy

Examples of comments:

- data sovereignty
- need to keep security in mind - only required information shared
- concerns about corporate control and our dependency on their systems
- tensions: ease of use vs security
- be cautious re: privacy issues

Workload and efficiency

Examples of comments:

- reduce confusion, redundancy, admin and errors →increase consistency, streamline, automation
- enrolments need to be effective
- greater efficiency -admissions for example.
- communicate changes - e.g., academic misconduct
- clarity of structure of support, where to go, who does what, time frames.
- user friendly or simplified data input. Specialists for inputting data.
- Supported by *mandated* process for use. (But flexibility needed).

Other

Examples of comments:

- duplication of info and effort
- not enough support
- peer visibility (Blackboard)
- does not have room for uploading video
- not enough functionalities for exams
- manual entry -easier to run spreadsheets
- Echo360 lecture upload is too slow, other software can be fast, and Blackboard.
- admin support needed: for marking and for content upload
- intranet -dashboard
- More dedicated support staff - ITS, *eVision*, Ask Otago.
- chat bot! To assist students
- customer relationship
- reminders

Digital Pedagogies & Assessment: What is required for professional development programmes to get the best out of the technology?

Vision, Strategy, Principles

- overall teaching and learning vision and direction are important foundations (vision, purpose, direction);
- users (staff & students are important (user-focussed);
- processes should flow, integration and seamlessness of data and systems (operational and functional flow);
- room for flexibility (flexibility, simplicity, choice);
- tools, technologies and processes need to be fit for purpose (fit for purpose)

Examples of comments:

- how do these fit into the Uni's view of where we are & where we are going? [Strategy 2030.]
- Pedagogy first - systems should follow
- standardised student experience vs diversity of approaches
- platforms fit for purpose (technology must meet University goals)
- Everything should integrate seamlessly across platforms. E.g. Blackboard and *eVision* need to talk to each other and have the same lists, And should be able to link graduate attributes
- minimise system hopping (emphasised)

Synthesis: Professional learning and development for digitised pedagogies and assessment should be founded on a higher level UO education strategy and vision, and principles that underpin and reflect the way the DLE is shaped and functions, and how people (staff and students) need to use and interact with it.

Approaches to Professional Learning and Development (PLD)

- incorporate a variety of approaches (variety of methods, practical, flexibility)
- educational (online learning) specialists are essential (education specialists);
- community learning important (community/peer learning)
- for staff and students (user-focussed)
- targetted towards people, needs, local context expectations/demands (fit for purpose; local decision-making/choice)
- timely (on-demand, in-person)
- acknowledges levels of knowledge and skill (personalised)
- institutional direction/vision with local expectation/need (central coordination, local flexibility)
- founded on appropriate PLD processes

Examples of comments:

- Training that's timely and relevant to staff and students
- departmental decisions - flexibility - shared Dep. Statement of purpose
- clear instructions on where to get help (i. e., Not Ask Otago)
- more advisors. ELF model - expand this model to all depts; instructional designers/skills
- online learning specialist - digital specialist - departmental champion
- forum for sharing Qs and As - don't reinvent the wheel
- in-person; specific to department
- Communities of Practice/synchronous/asynchronous
- Deciding who needs to have what skillsets – at what stage do we have to adapt our teaching skillset to learning to use the tools/utilizing them.

Synthesis: PD programmes should take a variety of forms, coordinated centrally and customised to individual and group needs, be founded on sound principles of professional development and cover 'content' of a technical, operational and pedagogical nature.

Workload

- staff need time to modify their teaching and associated teaching support practices;
- PLD is often more complicated than simply adding a few technological elements;
- need purpose, goals and recognition and reward – PDR/promotion processes and criteria

Examples of comments:

- Time – building learning design time into workload models.
- more recognition of the extra work + TIME necessary for online or hybrid teaching. - - > Promotion process should compensate such efforts.
- Training should be formalised

Synthesis: Acknowledgement & recognition of professional development learning should be factored explicitly into workloads

Content of Professional Learning and Development Programmes

- balancing possibilities and potential of introducing new or enhanced teaching and learning theory, thinking and practice, while not undermining or losing the positives of the current practice and experience;
- impact, potential, positive and negatives of technologies in teaching and learning processes, and practices
- new ideas need exploration, and investigation for worth in the UoO and specific departmental context
- specific areas of interest and concern, e.g., plagiarism, teaching approaches (e.g., flipped, blended), course design, student engagement, assessment
- appropriate training for administrative systems and processes (consistency)

Examples of comments:

- Assessment – not replicating what is done now (in person) to a digital space
- Academic Integrity.
- concerns – student engagement/plagiarism
- how we blend & why we blend - flipped with support development
- how do students learn online? Online assessment? Risk mitigation.
- Data requirements of software – is it suitable for students with low data connections?; Are exams online a good thing RE data connectivity + device quality?
- training for academics this would help unify systems across the University

Synthesis: Content of PLD programmes should include all aspects of the principles and practices of teaching, learning and assessment in the digital space, including associated operational and functional areas and the integral part played by the DLE.

DLE Flexibility: How do current and emerging tools get evaluated for further support and integration?

Ownership/budget

For example

- who does buy the current/upcoming tools? Not transparent.
- centralised support for implementation
- cost; support

Processes for choosing new learning tools

For example

- formal process for piloting; Clear process; goals-driven; staff support/resources for pilots
- people dedicated to researching tools prior to pilots
- needs to be consultation/info flow academics resourcing
- what happens when staff find alternatives?

Responsiveness to changing needs

For example

- start with finding out people want + starting with these needs
- evaluated by the users - staff and students AND this needs to be an ongoing process
- tapping into specialist opinions/advice from various divisions (targeted feedback eg clinical staff, distance students, languages)

Consistency vs specificity and customisation

For example

- different needs across departments
- open standards, interoperability
- consistency across university for students

Student involvement and engagement

For example

- consistency across university for students
- students having ability to see current rank in class
- Student Experience
- be open to input from users i.e., user groups perhaps incl. students

Collaboration, democratic decision making

For example

- there is a difference between general and specialist support - and we need both.
- department champion - create a conduit across uni.
- key role is to bring ideas "in" and "out"; sharing what is use/available University wide
- interdepartmental collaboration
- more customization based on one's teaching

Support models

For example

- bigger eLearning team + more accessible expert help
- technical support for developing *learning*/*assessment* approaches teaching development focused on using *tech tools*
- including tech development/skills in workload
- formalising service roles/teach develop in relation to tech tools
- needs to be answered by people with expertise (not in the academic skill set for the majority)
- allocation of resources (budget, tech support, etc) to use good online tools

Analytics: What can the University learn from activity and achievement data to improve student outcomes?

Themes:

- Pastoral/Engagement
- Integration/Automation
- Data governance
- Discovery/Visibility
- Software fit for purpose
- New capabilities
- Pastoral care
- Standard but customisable
- Student-oriented
- Teaching effectiveness
- Decolonisation
- Support
- Timeliness

Expansion:

- How do users know what's available and can they access and manipulate it easily?
- Engagement can be about other things than pastoral care, e.g., teaching effectiveness
- Many manual processes can be automated, e.g., producing and disseminating reports from disparate data sources
- Learning analytics should benefit and be visible to students
- Integrating and analysing disparate data for holistic picture and risk management
- Do current and proposed analytics serve Māori and Pacifica

Examples of comments:

- Have to know what data is out there before we can comment on what we can learn from it!
- purpose driven - what do we want to do with data.
- the how/why - safeguards to prevent misuse; understand purpose
- more personalised data
- identify @ risk students early: watching data; activity data; support to understand this; really help us to understand value - what its useful for
- data must be *useful* + *accessible*.
- data in one place - and it is shared directly with staff rather than trying to *find* data especially around disengagement
- data specifically for distance students especially around engagement
- analysis of what students are struggling with in the learning environment
- there is student resistance - feel it invades privacy
- consideration of what metrics of teaching are actually capturing - how am I sharing the effectiveness of my teaching?

Support Models: Where do support services for using tools and technologies come from, and what level of technical, operational, pedagogic support do they need to provide?

Theme: **Base the Support Model on Well-Founded Principles/Broad Approaches**

Examples of comments:

- on-demand technical support
- collaboration needs to be recognised.
- value specialised knowledges [discipline, local context]
- teach the way you wish within the framework provided
- easy to find, accessible, timely
- up to date
- accessibility
- mandate training (drivers license) for some tech.
- consistent [support] staff

Synthesis: Support needs to be founded upon some core principles related to context, need, access, engagement, the range and scope of the 'content' of the support and the roles, relationships and responsibilities of those who provide and access the support.

Theme: Who provides the support?

Examples of comments:

- Planned departmental champions (pedagogical support) - Not necessarily high-level, but also
- "what others have done" (practical)
- A dedicated team who can work with you + support your needs
- need to match technical with pedagogy → skilled specialist support
- peer support
- more people - outward focused - high visibility
- pedagogical support at University level
- champion in department → knowledge shared + word of mouth

Synthesis: Provision of support can come from both local and central groups, each with different roles and responsibilities and scope of knowledge and influence. This provision should be deliberately coordinated, planned, structured and resourced.

Theme: Support methods

Examples of comments:

- Personal support
- exemplars shared of good practice (University innovation day?)
- larger knowledge base (HEDC workshops, enforced targeted. E.G. Marking workshops during exams, setup test workshop before mid-sem break.
- department-embedded support for technical and operational
- support to be in-person esp. During first few weeks of each semester

Synthesis: Support in a range of forms is needed, from static and interactive courses to in-person, on-demand help, and on-going sharing of practice. Training and professional development should be structured, timely and provided in response to needs of staff.

Theme: Concerning structures/models

Examples of comments:

- The “hub-and-spoke” approach – people who work together + go out and discuss/learn, then come back in.
- Embedded – a group of people embedded with departments physically who communicate often (virtually centralised)
- standardised framework/suite of supported tools. How to do this? Through: curriculum design teams + IT support teams
- R+D team → for development of programmes and papers
- dedicated person/people in each dept (dependent on student/academic needs) - but these people have tight connection with each other/constant communication (with techs)
- support structures? - careful they don't become entities in themselves
- communities of practice + building common understanding
- user working group – collaboration
- Giving the support staff access to internal assessment result so that they can help those who are struggling

Synthesis: A structure that encompasses a balance between local, contextually based in-person support with direct connection and central ‘oversight/coordination’, that makes use of a variety of methods, is focussed on central/standardised framework but with flexibility to facilitate local discipline/departmental requirements. Integrated and collaborative links needed among the technical, operational and the pedagogical.

Governance Structures: Who gets to make all these decisions and how does information flow to decision-makers?

Major points:

- Standardised and mandated systems are helpful, but need to allow academic freedom and innovation
- We can't have everything, but how do we make tradeoffs?
- How do decision-makers know what's going on in the classrooms?
- Need for a DLE strategy
- Privacy act., etc. concerns/importance

End-user voice

Examples of comments:

- governance needs representation from teaching staff and students and support staff.
- Don’t know who currently makes the decisions. BUT *users* need to have input (under a specialist governance board). But there needs to be clear criteria around what is going to be achieved.
- should have input into operational decisions: stakeholder, academics, students, support staff, systems experts (affordances)
- Making decisions - senior leadership + academics
- Better consultation with *all* staff

Transparency

Examples of comments:

- who decides what we need?
- info doesn’t flow if you don't know who's in charge.
- transparency around how decisions are made - who makes the decisions and who have they consulted?
- transparency; things that cover general as well as options for extremes

Student-Focused

Examples of comments:

- student input/oversight
- what do our customers/student care about?
- student focus groups? Representative sample
- It would be great if data around how students were doing was at our fingertips

Autonomy/standardisation

Examples of comments:

- grass roots ability to trial systems and inform back
- should allow for academic freedom
- Staff autonomy

Cost-benefit analysis

Examples of comments:

- finance needs to be considered but not only consideration
- can't have (support) everything

Strategy

Examples of comments:

- need a strategic direction on what we offer than we can plan for an appropriate evaluation team. Less ad-hoc ness
- need a road map

Support

Examples of comments:

- any SLT decisions should come with implementation-support.
- some tech expertise as low down as possible- embedded admins in depts know more about dept wants & needs

Compliance

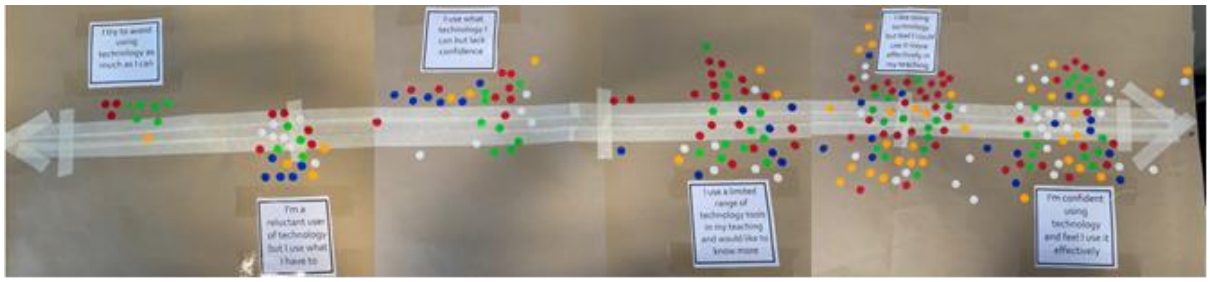
Examples of comments:

- legal process must be reinforced

Staff Capability (written by Mark Northover, as facilitator)

"As part of the thirteen focus groups held in all three main campuses, staff were asked to rate their own sense of confidence and capability in using digital tools for learning.

It was stressed that this was very much an anonymous self-assessment, measured on a somewhat arbitrary combination of functional and pedagogical capability. The intent of this exercise was to attempt to build an overall picture (a heat-map perhaps) of staff capability. Attendees were asked to place a coloured dot (the colour indicating their Faculty/Division) that best reflected their level of confidence and engagement with technology, from '*I try to avoid technology as much as I can*' to '*I'm confident using technology and feel I use it effectively*'. Attendees were explicitly allowed to not engage with this exercise if they felt uncomfortable about it. They were also asked - if they felt comfortable about it - to place more coloured dots indicating the positions on the continuum of their colleagues.



The overall snapshot of the continuum shown in the photograph above suggests that the majority of staff sit on the engaged/confident end of their use of digital tools. Remember that this is self-assessment, and not in any way validated. It also probably skewed by the self-selection nature of those whose committed their time to attend the focus groups. But what I, as facilitator, believe this shows is that the majority of staff have accepted that digital tools are now a key part of the tools of their teaching 'trade' and indicates the importance and value of supporting this appropriately.

From an external perspective it was highly encouraging to see this level of endeavour and positivity, suggesting there is much to be gained by a more informed and cohesive support structure for the University."

Appendix 6: Activity 4 Internal Reports and Surveys

Summary of thematic issues from surveys, reports and projects within the University of Otago

This report covers a range of perspectives from staff and students concerning the technology used for learning and teaching at the University of Otago, and provides viewpoints of issues with the digital learning environments and ways it could be improved.

The key findings across all of the reports, surveys and projects covers issues including:

- Integration with other tools,
- User-friendly interface,
- Accessibility,
- Customisable and Interactive,
- Effective Communication,
- Reliability and Technical support, and
- Analytics and Assessment Tools.

Through a wide range of surveys, we have an extensive picture of student perspectives regarding the technology we use and how it impacts the learning experience for our students. Students have provided extensive commentary regarding both frustrations with technology, and suggestions for improvement across the following areas:

- Platform Integration and Coordination
- Blackboard/Moodle
- Lecture recordings
- Consistency
- Confusion
- Lecturer Training and Lecturer support
- Engagement

In 2020 a Lessons Learned Project was undertaken to gain insight into the way the University managed the rapid shift to online learning, particularly from a learning and teaching perspective.

Staff feedback through various research, projects and reports gave a clear picture of some of the major issues with our current digital learning environment. These have been organised into the following categories:

- Technical Difficulties and Adequate Support
- User-unfriendly Systems and Interfaces
- Lack of Integration
- Limited Customisation
- Inadequate Assessment and Feedback Tools

Staff also gave extensive feedback on areas they want their digital learning platform to do for them. This feedback can be divided into five key areas:

- Moving Beyond Basic Content Delivery
- Assessment and Tracking
- Communication and Collaboration
- Accessibility and Usability
- Security and Data Management

Overall, feedback suggests that while the digital learning environment has been increasingly embraced as a convenient and flexible tool over the past few years, there are still a range of concerns about our technical platforms, their capability, equal access and the limitations of online interactions.

1. Introduction

The report outlines the opinions and perspectives of both staff and students at the University of Otago on the current digital learning environment, particularly how it was utilised during the Covid pandemic. It highlights the benefits and challenges perceived by each group, as well as the impact it has had on teaching and learning processes.

This summary report provides an overview of projects undertaken to understand the perspectives of staff, and an overview of survey information of student opinions and perceptions from both during the pandemic, and more generally around our digital learning environment. We now have a strong bank of information regarding student perspectives over the past few years, which allows us to see which issues have persisted, and how other issues have evolved as we moved through the pandemic.

Key Takeaways

There is significant overlap between the views of students, and the outcomes from projects and research undertaken internally with staff regarding what is needed from a good digital learning environment.

- **Integration with other tools**: The platform should easily integrate with other tools and systems used by the University, such as learning management systems (LMS) and student information systems.
- **User-friendly interface**: A platform that is easy to navigate and use for both students and teachers, and has an intuitive design that allows for the clear presentation of information.
- **Accessibility**: The platform should be accessible to all students, including those with disabilities, and be available on multiple devices, be compatible with assistive technologies, and provide the ability to download course material.
- **Customisable and Interactive**: Staff require the ability to easily upload and organise course materials, assignments, and assessments. Likewise, students note they want the ability to participate in discussions, collaborate with peers, and receive feedback from academic staff.
- **Effective Communication**: regular and prompt feedback from instructors, access to virtual office hours, and clear announcement systems
- **Reliability and Technical support**: The platform should be reliable, with minimal downtime, and ensure the security and privacy of student data, while also having proper support to provide quick resolution of technical issues, and responsive customer service.
- **Analytics and Assessment Tools**: Staff often refer to the desire to have better data to make decisions, particularly in the ability to track student progress and provide the right support at the right time. Students also note the need to receive timely feedback on assessments.

It is important to remember these are broad general areas and there are a wide range of individual views that don't necessarily align with these areas. However, these areas provide an overview of the general areas highlighted.

2. The Student Perspective

The views from students regarding the digital learning environment have come from a collection of several surveys over the past few years. These views have been collated and summarised below by the Quality Advancement Unit (QAU) and provides an extensive overview of the issues highlighted by students in the COVID-19 effect on student learning experiences survey, Student Opinion Surveys, and

the Graduate Opinion Surveys. Greater information about the surveys themselves, how they were collected, response rates, and other survey logistics can be obtained from the QAU directly.

The summary of these views has been organised under overarching topics that saw a wide range of responses received. The feedback broadly falls into seven areas:

- Platform Integration and Coordination
- Blackboard/Moodle
- Lecture recordings
- Consistency
- Confusion
- Lecturer Training and Lecturer support
- Engagement

Platform Integration and Coordination

Some students identified issues they experienced were caused by platforms not integrating with each other. If systems could 'talk' to each other, then a change in one system to, for example a student's timetable and room location, would be reflected everywhere in real time. A number of students identified their LMS did not have an accurate timetable, and this cause frustration and affected their learning experience.

For students, the existence of multiple learning, communication and administrative systems (especially Moodle/ Blackboard/*eVision*/ email) presents problems. For example, by needing to be familiar with every LMS reduces efficiency, and increases the potential for confusion and frustration. Students are unsure which ones they should pay attention to. They suggested stream-lining the multiple systems that do the same thing.

Blackboard/Moodle

Students have expressed difficulty gaining access to Blackboard if wifi is poor or if they are using a mobile phone. It is also apparently 'buggy' and 'glitchy' perhaps causing it to be 'down' for large periods of time, which obviously also causes inconvenience. Some students (in particular first years) requested the provision a tutorial demonstrating how to use it at the start of the year.

Quite a number of students have difficulty navigating Blackboard, they say the layout is not user friendly and could do with an upgrade of the User Interface. Some respondents who've used Canvas (used by Auckland University) rate it higher than Blackboard.

Students would appreciate having their timetable integrated into it. Its use for exams and tests was criticised often due to uploading answers / assignments (even losing content), and there are difficulties accessing grades. Some don't get the notifications when they should, which causes issues if teaching staff think the updates have been sent.

In addition to difficulties accessing and using Blackboard, students express frustrations at how lecturers use the platform and note low levels of training amongst staff. For example, lectures or resources are not uploaded in a timely fashion, and content is organised inconsistently. Many of the same issues are expressed in relation to Moodle, in particular the difficulty finding resources and navigating it (even when compared to Blackboard).

Lecture recordings

Many students felt aggrieved lectures were not recorded at all, or not uploaded to Echo360 by lecturers, there was a significant delay (3 weeks) before the lecture became available as a recording, or the process for obtaining access was convoluted. Students indicated this resulted in them falling

behind in their studies and caused frustrations. The most common improvement to online learning nominated by students was for recordings to be available straight away.

Students relied on lecture recordings to catch up with lectures they missed through being sick, either COVID or another illness. Some students did not feel comfortable returning to in person lectures due to the risk of catching and transmitting infections, or they had to comply with self-isolation rules. In some cases if students had back-to-back Zoom lecture and In-person lectures which didn't synchronise well, or were affected by poor wifi, students would use recordings to fill in the gaps. Students were also impacted by poor wifi via the University network and within their private accommodation, limiting their ability to watch live lectures and load recordings.

Students expressed several types of frustration with quality of lecture recordings. They had difficulty accessing Echo360 using certain browsers, and navigating it to locate the archived recordings, better labelling of the recordings was suggested. Concerningly, a common issue identified by students was poor sound quality, or the fact no audio was recorded at all. They also reported the recording didn't capture practical demonstrations, whiteboard content, videos played, and PowerPoint slides were not shared or became unavailable. Another problem reported by students was the fact lectures were cut off before they had finished, likely caused by lecturers going over-time. They also requested the 'captions' feature is used when recording. A more engaging online lecture would result if lecturers also recorded themselves.

The use of previous year's recordings was criticised by students, they felt 'short-changed' by this learning experience. Instead, more live lectures should be provided via Zoom which would allow more student engagement and be a more interactive experience. Furthermore, where a lecturer recorded several lectures at one time, then only released them at the scheduled time slot, students felt a better process would have been to release all the recordings to students ahead of time and use the time slot to ask questions and collaboratively interact with the material.

Consistency

Students wish to see their online learning experiences become more consistent. They identify significant differences between lecturers, papers, departments and schools which causes confusion, uncertainty, irritation, wasted time due to adjustment and unwanted, additional stress and anxiety.

Consistency of online learning manifests itself in various ways within students' comments. For example, they want to be able to access resources and tools required for learning (e.g., Zoom links, lecture slides, recordings) in the same place and at same time. They prefer consistent platforms are used, live lectures rather previous year's pre-recorded lectures are delivered, camera/audio on/off parameters are more consistently applied, and like to be able to see the lecturer.

Students would like exams and tests to be untaken consistently online or in-person within a department. They also suggest they are delivered vis the same learning environment as the course itself.

Students advocate for a consistent academic strategy with respect to being completely online or in-person. This causes issues when students need to be on campus early in the day to participate in an online live lecture if this was immediately followed by an in-person class, and vice versa. One of the issues this caused was finding a suitable space for the live lecture, and it likely meant reduced ability to participate.

Confusion

Students were confused by several aspects of an administrative nature during the first semester. For example, when online resources were posted in different Learning Management systems.

Inconsistency between papers caused confusion, for example, when lectures were delivered in an inconsistent way, online resources were posted in different Learning Management systems, or in different areas of the same LMS.

When lecture Zoom links changed, when lectures and links were mixed up, or changes were not communicated, confusion resulted. Students also reported turning up to labs at the incorrect times/locations as a result of changes not being reflected on *eVision*. It was also noted when some papers switched to in-person some students felt overwhelmed by the level of email traffic and struggled to keep up.

It is worth noting students were also complimentary about areas with a lack of confusion, particularly when everything was online under Red settings in the first half of semester one (2022). There were few changes during this time. Other reasons for a lack of confusion included fast, and clear communication. In addition, access to learning resources was easy.

Lecturer training and lecturer support

Students identified some lecturers would benefit from more training and support in the use of tools such as Blackboard and Zoom to provide better online teaching. This could be more effectively achieved if the number of platforms were streamlined. They identified several areas for improvement: fostering online forum communication; recording and uploading lectures; preparing and distributing lecture slides in advance of the lecture so more effective notes could be taken; optimising the use of software to make lectures more engaging; adjusting the camera so students could see the whiteboard; and, receiving more support from technical staff particularly after hours.

Students also reinforced the positive lecturer/tutor and university support they received. This took the form of online communication to answer questions on assignments via, for example, Blackboard threads. Students also appreciated lecturers who were willing to be flexible, seeking feedback and adapting their lecturing styles, and adjusting course schedules and assignments.

Engagement

Students felt overwhelmingly improvements could be made to the level of engagement in online lectures and tutorials, as well as more generally. Although some students felt this was something they only could get via face-to-face learning, others identified ways this could be achieved online. First, through activities that encouraged greater student participation such as quizzes, increased discussions with classmates, and, Q&A sessions. Second, more engagement would be achieved simply by students turning on their camera. Third, through including more breaks during the lecture. Fourth, by being able to see a lecturer's face, hear them more effectively, and using a green screen to broadcast slide images behind a lecturer so the lecture appeared to be located in a lecture theatre. Some students felt providing more opportunities to academically engage online with students but outside the lecture environment would have improved their level of engagement, and others felt this was something they only could get via face-to-face learning.

3. The Staff Perspective

The staff perspective in this report largely comes from ongoing projects, feedback from particular sectors of the University, and from information collected during the pandemic regarding how staff interacted with online platforms and our digital learning environment.

Lessons Learned from 2020

In 2020 the University undertook significant collection of information and feedback from staff (and students) regarding the rapid shift to online learning as a result of the Covid-19 situation. This work was undertaken through the Committee for the Advancement of Learning and Teaching, and saw working groups formed to investigate a wide range of actions and activities undertaken in 2020 and gain insight into how the University could learn from this for the future.

This work concluded that overall, the University was well prepared and coped with the Covid-19 situation from an IT support of teaching and learning perspective, in a much better way than comparable institutions. Forward planning by ITSS and ITS was commended as it prepared the University well for disruption. In addition, the capability and performance of ITS and ITSS staff was exceptional given the situation faced.

While the University of Otago maintained a strong emphasis on the campus experience, the discussion internationally concerned the impact of Covid-19 on online approaches to learning and teaching. Many areas of the University already made moves to increase the blended nature of their course delivery through the use of podcasting, web-forums, and improved and enhanced use of Learning Management Systems and Microsoft 365 (eg: Teams).

The project found the range of tools and technology used across the University was significant. Variation across Divisions, Departments/Schools/Academic Units means the level of support available can be varied, but ITSS and ITS worked to provide as much support as able. Tools used across the University for learning, teaching and assessing included:

- Blackboard
- Moodle (primarily but not exclusively in Health Sciences)
- ExamSoft
- LON-CAPA (Physics)
- Kuracloud (Health Sciences and Zoology)
- Otago Capture (Echo360)
- Kahoot!
- Quizzlet
- Padlet
- Office 365 Apps (including MS Teams and Outlook)

Blackboard was the primary teaching and learning tool during this period and manifested few problems. Overall, ITS noted Blackboard functioned as expected. Students had very few problems, however some staff needed upskilling with ITS observing that enhanced training and induction for staff on using Blackboard could be beneficial. Zoom was the second-most used tool - most staff and students were unfamiliar with it but learned very quickly. The University was able to maximise Zoom use thanks to forward planning from ITSS which meant the University had adopted Zoom early, was a site licence holder, and used cloud management of Zoom which minimised disruptions.

ITSS undertook significant work and pre-planning to ensure staff and students had access to the hardware required to transition online. Pre-planning allowed for the stockpiling of items such as webcams, microphones, keyboards, mice, and laptops. This pre-planning was also made possible through the use of ITS as the single purchaser of required equipment, which reduced competition

between divisions/departments, and ensured better buying power for the University. Without this planning the University would not have had the hardware to ensure the transition.

Data analysed, and feedback received from period of the recent lockdowns indicates we cannot assume all staff and students have the IT equipment to cope with videoconferencing, or even an Internet connection, at their homes. There was a clear disparity amongst staff in the capability to utilise technology, resulting in a disparity in terms of delivery to students. A large majority of students were well prepared to learn online, while a smaller proportion of students were not; overall staff were less well prepared to teach online. Furthermore, staff engagement with training prior to the first lockdown was sporadic, meaning support requests increased dramatically and unsustainably given the significantly lower workload prior to lockdown. The ITS eLearning team provided outstanding support during lockdown.

A significant area highlighted is digital poverty. While most staff and students had appropriate technology, a number either had sub-standard technology to support learning online or did not have access to appropriate technology at all. Student feedback highlighted the importance of knowing what technology they needed, and how to obtain support in instances where they could get, or afford, the required technology. The University will need to take a wider approach to managing the issue of digital poverty, including being more transparent regarding the standard of technology required, and available support. During lockdown, ITS provided wireless broadband and devices to a number of students to allow them to continue to study.

Digital poverty also extends to a lack of adequate skills to use the technology provided. This deficit became evident as some staff and students struggled to use particular tools and technologies during the shift online. In particular, there was an assumption made that staff would make the transition online relatively seamlessly and this was not the case in many instances.

Digital Strategy and Digital Work Project

The Otago University Digital Workspace (OUDW) project aims at creating a transformational shift in the current management practices and approach to managing IT workstations at the University of Otago. The term "IT workstation" covers devices using commoditised hardware and software typical of most computers on campus. Although out of the DLE Review project's scope, the need for a minority of staff to use specialised hardware and/or software is acknowledged and will be actively supported and managed.

The investment aims at achieving the following:

- Centralise IT workstations procurement and budget ownership.
- Create a standard managed IT workstation environment.
- Create a new operating model for desktop support including new policies, procedures, and processes to ensure the ongoing management and support of the new standard environment.
- Form a specialised desktop engineering team, including the required organisational structure and HR changes.
- Conduct full assessment and labelling exercise for 10,000 IT workstations.
- Replace all high-risk end-of-life IT workstations using the new standard managed environment.
- Deploy the standard managed environment to approximately 4,500 IT workstations during project delivery, with the remaining devices updated and replaced as part of the new refresh cycle developed in this project.
- Package and repackaging of all commonly used software.
- Improve IT desktop support productivity and efficiency.
- Key drivers for the investment

The transformation journey to create efficient, high-quality IT support services for the whole University started with the SSR business case in 2018. Since then, the IT support functions have been centralised, but other operational and service support functions have only evolved in response to current needs. To enable the second stage of the journey to occur efficiently, the key drivers behind this investment are:

- ITSS desktop support unit focused on responding to the end users' needs rather than planning for growth.
- Inability to run IT workstation procurement processes centrally.
- Inability to provide remote support to 90% of the IT workstations in the University.
- Alignment with the cybersecurity framework.
- Inability to identify and replace the high-risk, end of service life IT workstations in departments that might not have access to the budget poses a considerable security risk to the University.

Other Staff Perspectives

Feedback from Departments, various projects and benchmarking activities has indicated there are a wide range of areas causing problems for staff and have also highlighted some aspects focused on to provide a suitable digital learning environment for the future of the University. Some of the major areas where staff say they face issues are (with some specific examples also noted):

(a) Technical Difficulties and Adequate Support: One of the most prevalent problems with LMS is they often report having technical difficulties, such as slow loading times, crashes, or compatibility issues with different devices, browsers and operating systems. This can be frustrating for students and instructors who are trying to access or upload content, leading to lost time and decreased productivity. Experiences reported by staff include:

- Both technical and educational support is limited; no clear pathways for support from the institution in-house, potentially due to the move to a shared services model (a few years ago), the effects of which are still being felt. Pātaka is the online knowledgebase for staff where staff can search for answers to questions they may have.
- Educational support is a little less limited but again there appears to be no clear pathways. Static information is available about the technical aspects of using the core technologies.
- ITS have thorough procedures in place for analysing staff needs, undertaking feasibility studies, exploring the pragmatics of incorporating new solutions that will also include staff training during adoption. But long-term support after adoption is lacking/limited, so new staff or those wishing to explore, and innovate are left without systematic support options.
- Finding more specific support is not easy - if you need support, you have to be aware you need it and what you need. Then go looking for it. There is a central contact point – AskOtago – through which queries/requests are channelled, but again, that system relies on the request being passed on to the right person. Added to that, the small team who are providing IT technical support has been made even smaller in the last couple of years.
- With the move to a shared services model, some units have retained some semblance of local support or created procedures for themselves to identify and address support needs of staff – for example, the Library, and some academic departments. Often professional/academic colleagues' expertise and willingness to support each other is the way support needs are identified and met or at least clarified.
- Lack of support for Blackboard compared with the past, and support that remains is over-stretched. Moodle support services are better resourced but very overstretched and only

available to a small part of the University. Some departments have set up their own support mechanisms in-house, and ad hoc and reliant upon willing staff with expertise.

- When something goes wrong with Blackboard, quite often no-one can help with the query or it takes weeks for someone to figure it out. For example, there was an issue in semester two 2022 where some Turnitin grades were not transferring to the Blackboard grade centre – it took several weeks for it to be addressed.
- In the Turnitin assessment area of Blackboard, student names are entered together into the same column whereas in different systems first and last names are separate. You cannot sort students based on their last name and no student number is available to sort by therefore you must manually search across screens to undertake a task such as checking/monitoring overall grades/results across the class.

(b) User-unfriendly Systems and Interfaces: Another common problem reported by staff is that Blackboard and other tools currently used by the University can be confusing and difficult to navigate for some users. This can make it challenging for students to find and access the resources they need, leading to decreased engagement and motivation.

- Others noted Blackboard is really slow when it is being used for large classes.
- Gradebook has extremely low functionality, is difficult to navigate and has lost marks – this has resulted in errors in communication to students.

(c) Lack of Integration: There is regular feedback that our systems are often disconnected from each other, notably *eVision* and Blackboard, making it difficult for teachers to manage all aspects of the course from one central location. This can lead to increased administrative workload and decreased efficiency.

- No formal arrangements are in place to ensure co-ordination takes place across the institution. When it does occur, it is because individuals in areas go out of their way to make it happen. Who to go to for what, remains unclear. Different support service areas may in fact be providing support for the same thing.
- 'Information overload' for students because information appears in several places, given the inherent structural issues with Blackboard.

(d) Limited Customisation: Many LMS have limited customization options, which can make it difficult for instructors to tailor the platform to meet their specific needs and teaching styles. This can lead to a lack of engagement among students and a lack of flexibility in the delivery of course content.

- The functionality of Blackboard has been described as not 'fit for purpose'. Feedback from staff notes that we need to devise alternate and complex routes (with information sheets for students) to be able to have groups submit a recorded video assessment.
- Staff note they cannot see what the student side looks like – so if they want to see if something has worked (e.g., the instruction for the submission of group videos), they need to either set up a fake student account or ask a student if we can look via their Blackboard access.

(e) Inadequate Assessment and Feedback Tools: LMS often have limited assessment and feedback tools, making it difficult for instructors to accurately assess student learning and provide meaningful feedback. This can result in a lack of accountability and motivation among students and can make it challenging for instructors to track student progress and adjust their teaching methods accordingly.

Staff from a number of areas have also been forthcoming with what matters to them in a digital learning environment, particularly when focused on what a future LMS might do for them and their students. There are five core areas they saw as important (with specific comments noted):

Moving Beyond Basic Content Delivery: The LMS should offer an easy-to-use interface for instructors to upload and organize course materials, including text, multimedia, and assessments. This should also allow for seamless integration with other tools, such as quizzes, discussion boards, and videos, to provide a comprehensive learning experience for students.

- A more user friendly and easily navigable system as a whole but, in particular, the home page.
- Easy to embed (not link to) externally hosted videos (YouTube) and also Echo360 without having to navigate through multiple systems, which can be off-putting to the student and create a barrier to learning.
- Ability to embed live lectures straight into the site modules creating opportunities for asynchronous and synchronous learning to co-exist.
- Subtitle functions can easily be switched on and off instructor videos and other resources to enhance learning.

(f) Assessment and Tracking: A good LMS should enable instructors to assess student performance through quizzes, exams, and assignments, and provide students with instant feedback. The system should also track student progress over time, allowing instructors to identify areas where additional support may be needed.

- Ability to have a progress bar linked to tasks and assessments that colour-codes your progress through the activities relative to due dates and your peers.
- Ability to have students mark activities as complete (and the associated learning analytics such information generates).
- Ability to easily and effectively create Turnitin assessments, self-marked learning quizzes and other common assessment types.
- Allow items of assessment to be submitted by one individual on behalf of a group and then allow the feedback to be provided automatically to the group.
- Ability to determine student engagement easily and accurately with the LMS (i.e., analytics) to see time spent, activities undertaken, and also to identify 'at risk' students who can be supported to re-engage in learning.

(g) Communication and Collaboration: The LMS should facilitate communication between students and instructors, enabling them to exchange messages, ask questions, and collaborate on projects. The system should also allow instructors to share feedback with students, providing them with an opportunity to learn from their mistakes and improve their performance.

- At a simple level, a modern tool which reflects, to at least some extent, the technologies students are using in life, as opposed to an outdated system.
- A central location to find promotional information is useful (e.g., HEDC's workshop webpage - https://corpapp.otago.ac.nz/training/hedc/course/search/list/ and IT Training and Development - https://www.otago.ac.nz/humanresources/training/information-technology/index.html).
- Student engagement tools, including ability to add welcome videos and text/images easily to personalise the learning site.
- Peer review system built in for group assessments, to easily and effectively address feedback found in the Student Opinion Survey about group work marks.
- Ability to 'release' material to learners based on timing or completion of activities.

- An app for both students and staff to make communication timely and relevant.
- A useful discussion board which is more integrative and user friendly, something akin to a social media feed.

(h) Accessibility and Usability: The LMS should be easy to use and accessible from any device, allowing students to participate in their coursework from anywhere, at any time. The system should be designed with usability in mind, providing a user-friendly interface which enables students to find the information and resources they need quickly and easily.

- Online course outlines integrated into the system, rather than uploaded word documents, which automatically prompt designers (staff) to include learning outcomes and so on against assessments and graduate attributes. This will create consistency for students.
- Calendar function that is based on "i-calendar" technology which enables users to integrate with institutional calendar and/or view on synced devices (smartphones, tablets etc.), for example, for assessment deadlines.
- Ability to 'talk' with *eVision* and upload grades from LMS to *eVision* in a simplified way, to remove the errors which can occur when multiple different systems are being used to communicate the same data, as well as the administrative burden.
- Real-time updates of class lists etc. between the LMS and *eVision* so we have accurate data at the beginning of session about who is in the class and which study mode they are in (i.e., blended etc.).
- Students be able to click out of the LMS to view webpages etc without the LMS 'closing' (i.e., open in new window functions etc.).

(i) Security and Data Management: The LMS should have robust security measures in place to protect sensitive student and university data. The system should also have tools for managing data and analytics, allowing instructors and administrators to track student performance and make informed decisions about the delivery of educational content.

4. Conclusion

Surveys, reports, projects and feedback from across staff and students highlight a raft of common issues the University faces with the current digital learning environment. As noted, these include lack of unified planning and implementation, insufficient support and resources, technical challenges, and a lack of ongoing development and integration of the various systems in use. These issues, if not addressed properly, can significantly impact the effectiveness and success of these systems in enhancing the learning experience of students.

Overall, the feedback suggests that while the digital learning environment has been increasingly embraced as a convenient and flexible tool over the past few years, there are also concerns around equal access and the limitations of online interactions. Feedback from students, and work undertaken by staff highlight a range of ways these problems can be addressed given their experiences with using various systems and tools. In particular, better integration of systems, and providing suitable support and training will see greater ability to maximise the strengths of these systems, while making them more user-friendly and accessible

Sources

Surveys:

- COVID-19 at the University of Otago in 2020
- COVID-19 effect on student learning experiences 2021
- COVID-19 effect on student learning experiences 2022
- Student Opinion Survey 2020
- Student Opinion Survey 2021
- Student Opinion Survey 2022
- Graduate Opinion Survey 2021
- Graduate Opinion Survey 2022
- Semester 2, 2021 Online Learning questionnaire

Reports:

- ACODE Self-Assessment – Benchmark 6
- ACODE Self-Assessment – Benchmark 8
- University of Otago Digital Strategy (June 2022)
- Lessons Learned from the Rapid Shift to Online Learning and Teaching - Full Report
- OU IT Roadmap 2020-2024
- OU Digital Workspace Project Business Case (March 2022)
- Quick guide to teaching online-distance
- LMS & Blackboard Feedback from Department of Management
- Experiences and perceptions of New Zealand dental students' rapid move to online learning (COVID-19's Lessons Learned Symposium Presentation)
- Effects of Covid-19 lockdown and restricted settings on medical student motivation, engagement and memory during 2020 and 2021 (COVID-19's Lessons Learned Symposium Presentation)
- What is online dexterity for COVID and beyond: Perspectives of Otago teachers and students (COVID-19's Lessons Learned Symposium Presentation)
- Digital Teaching and Learning Spaces: The Present and the Future (COVID-19's Lessons Learned Symposium Presentation)

Projects:

- Intra-formal language learning with Netflix (2020 CALT Grant Project)
- Development of an eLearning environment for understanding statistical concepts and skills (2020 CALT Grant Project)
- Transforming pedagogy for uncertain times: Blended learning and the First-Year experience (2021 CALT Grant Project)
- Being ready: Developing best practice for teaching and learning in a 'hybrid' class (2021 CALT Grant Project)
- Motivation to learn, and to attend, during a pandemic and later (2021 CAL

Appendix 7: Activity 5 External Environmental Scan of DLEs and Ecologies

INTRODUCTION

This report considers approaches by other Universities in comparable systems to the development of digital learning environments (DLEs). This report provides an overview of some of the approaches within New Zealand, examples of DLE development in Australia, and examples and research from further afield.

This report provides some brief comments around trends and issues being faced, then provides case studies of institutions which have undertaken significant work to innovate or greatly enhance their DLEs, and show some of the principles and tools that are used to enhance their digital spaces.

DLEs in New Zealand Universities

This section is slightly different to the subsequent sections as it takes a more "current state" view over some of the digital activity of New Zealand universities. This section will therefore look at some of the tools used (admittedly only part of the wider DLE) and the similarities and differences in this space.

At a glance, New Zealand Universities appear to use a relatively ad hoc collection of digital tools and systems to power their online capabilities. Much of what is utilised appears to solve particular problems, rather than be part of a wider strategic view of what is needed to maintain a healthy digital teaching and learning ecosystem.

What is clear is that all the New Zealand Universities seem to have a wide collection of tools, some of which talk to each other better than others, with no University appearing to have a seamless ecosystem of online tools and systems.

Same but Different – Tools Used in New Zealand Universities

One thing is clear, the variation in tools used by New Zealand universities is not great with many similar tools and platforms used across the system. While there may be a number of highly specific software programmes and tools, the major tools used at universities are highly similar, for the most part.

One area of high levels of similarity is around "content creation" tools. Content creation tools in this sense refers to the creation of objects like word documents, spreadsheets, slide-shows, and other types of presentations. Overwhelmingly, all the universities use Office365, Google Suite, or a combination of both. This is primarily due to market domination by both Google and Microsoft, but does have benefits when it comes to areas of shared work. This shared workspace is best shown through the CUAP process (the approval of New Zealand University programmes and qualifications), which now uses SharePoint for document sharing and interaction, and the use of Teams to share various viewpoints on submissions between the Universities.

Another area of minimal variation is in the video-conferencing/online presentation and interaction space. All the universities appear to have wide usage of Zoom which became the dominant web-presentation programme during the pandemic. Beyond Zoom, Microsoft Teams also has strong use for online presentations and interactions.

The one area where there is some variation is in the Learning Management System (LMS) used. Despite there only being eight Universities, there are five different LMS is use. More to the point, often multiple LMS are used in the same institution, often for good reason, but this does add multiple layers to the systems in use. The following is a list of the Universities across New Zealand and the primary LMS they use:

- University of Auckland – Canvas
- AUT – Canvas

- University of Waikato – Moodle
- Massey University – Stream (Massey's brand/skin of Moodle)
- Victoria University of Wellington – Blackboard (recently moved to Canvas)
- University of Canterbury – Learn (UOC's brand/skin of Moodle)
- Lincoln University – Learn (Lincoln's brand/skin of Moodle)
- University of Otago – Blackboard

Beyond the LMS differences, there is considerable similarity in the tools used, focused primarily around a core set of video-conferencing, file-sharing, and content development suites of software and tools.

The Integration of Systems

From a user perspective (rather than a technical one) the integration and interoperability of tools and systems varies greatly between the New Zealand universities. As has been well covered, Otago does not have an intranet, which is something other Universities have implemented. Many other Universities appear to have a single access portal for both staff and students which provides secure access to a range of online tools including their SMS, LMS, and document management tools.

DLE Lessons from Australia

In response to COVID-19, Australian universities rapidly shifted to online models of learning and teaching. Some argue that this shift was long overdue, but even before the pandemic online learning was rapidly growing in popularity in Australian tertiary education institutions. Recent data collected by the Australian Department of Education and Training show that the number of students enrolling in online and blended offerings in the higher education sector is rising faster than the number of students studying on campus.

The Australian Association for Research in Education (AARE) argue that online and blended education allows universities to expand course offerings to an increasingly wider number of students. They add that online education offers increasing opportunities to students from historically marginalised groups who may have previously been excluded from higher education, including students from regional areas, indigenous peoples, students from lower socio-economic backgrounds, students with disability, and students who are the first in their family to study at university.

Managing Challenges with Online or Blended Learning

The AARE also note that online learning presents new challenges, adding that media reports and student surveys during the COVID-19 pandemic have suggested that online learning might not be meeting the needs of all students. Several Australian-based studies have included the student voice to identify challenges associated with participation in online education. The AARE have outlined five challenges that students might experience when participating in online or blended learning, and potential and practical solutions. These challenges and solutions are not necessarily directives on how to develop a future-focused DLE, but they do provide directions regarding the types of issues to be cognisant of when developing a DLE, and highlights areas that need to be considered so that the appropriate digital tools are available to teachers. The proposed solutions may help university educators to rethink the design and delivery of online learning post-COVID, to ensure that it meets the needs of diverse learners:

Challenge	Solution(s)
Students have reported that they have difficulty navigating the online learning environment, or they don't know what they are supposed to be doing each week.	1. Create a 'Welcome to the Unit' video and make it the first activity that students see and complete when they log in to the LMS. Welcome the students to the unit, and provide a video tour of the online site. Show the students where they can find the assessment information, the unit calendar and due dates, weekly learning materials, and any other important content. 2. Keep the navigation of your LMS simple and intuitive. Use clear section headers to organise weekly content or topics. 3. Provide students with a printable checklist with a list of activities they should be working on each week, and key due dates.
Students have reported that they need help learning to use course technologies and cannot find information about where to access institutional support, such as tech support or enrolment support	In a clearly marked section on your LMS, provide links to: • Disability support services • Technology support services • Student advisor services • Any academic supports available to students • The online library In the first synchronous class with the students, review the different supports and services that the university provides, and show students where to access the links. Also consider including this information in a FAQ document for students, which can be posted as an announcement early in the semester.
Students have reported that the course content lacks purpose or is not pitched at the right level	1. Create clear and measurable course-level and topic-level learning objectives. Course-level learning objectives should appear at the very top of the LMS and should tell the students what they will be able to *say* and *do* at the end. The assessment tasks should be designed to allow students to demonstrate the course-learning objectives. 2. The topic-level learning objectives should be more specific and aligned to the weekly content. 3. Provide multiple ways for students to learn and engage with the content. This provides students with different ways to engage with material, that vary in complexity and form.
Students have reported that online education does not provide them with opportunities to build personal relationships with lecturers	1. Set up an online 'Introduce Yourself' forum and ask students to introduce themselves and answer a fun question. Personally respond and welcome each student when they post an introduction. 2. Supplement the asynchronous (or self-paced) online study activities with some synchronous real-time activities, such as discussion groups, tutorials, or drop-in sessions. 3. Use discussion forums, wikis, or other tools to create collaborative learning activities. To maximise student engagement, provide clear instructions about the task and the expected contribution.

Challenge	Solution(s)
	4. Be present in the forum or the collaborative space by providing encouragement, praise, and scaffolding in response to contributions.
Students have reported that course technologies and content are inaccessible	Provide an accessibility statement for any course technologies used. An accessibility statement provides users with information about how the technology or software meets basic guidelines for accessibility. Include alternative text for any images and ensure videos include captioning or a transcript.

The Perspective of Educators

It is important to note that university educators have also expressed concern about online education. University staff have reported feeling like they lack institutional support to design high quality online learning experiences. Staff have reported that they do not have enough time or resources to design engaging online content, and others reported that the sector lacks quality standards for online education. Staff have raised concerns about the degree to which online education is designed with accessibility and inclusion in mind, with some feeling that the accessibility of online learning environments was an afterthought, rather than a priority.

The ACODE (Australasian Council on Open, Distance and eLearning) Learning Modalities whitepaper (September 2022) also provides an excellent perspective of some of the issues highlighted across Australasia. Respondents to this research noted that there is currently widespread reviews ongoing into online learning, at a range of levels, but all appear to highlight a range of similar issues. In summary, this report shows there are changes occurring in the mode teaching and learning is now delivered at higher education institutions in Australasia, thanks largely to the significant disruption to in-person delivery. The report also notes that there is an opportunity to continue the conversation on how educational institutions are re-conceptualising these new delivery modes. This can also include what evolving pedagogies look like and impact on diversity, access and inclusion in the student experience. With more robust research in this space, ACODE members can inform their policy and practice that can evolve the sector forward to a contemporary and meaningful student experience by accessing learning in various ways.

Australian institutions, like New Zealand institutions, have noted the pressure to develop digital capability for teaching and learning, but continue to reiterate the need to do this for the right reasons. A range of issues with the move towards greater digital teaching and learning have been highlighted by Australian research which notes that university administrators must ensure that educators have the time, resources, and support to design high quality online and blended learning experiences for students. They add that online education is not simply a cheaper and easier option for universities. Online education can make higher education more accessible, equitable, and inclusive, but it must be done well.

Case Study – Deakin University

Deakin University (Deakin) has for many years been focused on providing more than just an on-campus learning environment. Deakin has provided quality off-campus learning since 1974 and note that given we now live in a digital world, they have moved to develop and evolve their digital learning tools and the overall student experience online.

All Deakin students undertake some form of online learning, whether it be part of face-to-face learning or studying part or all of their course at Deakin's Cloud Campus. Students have access to innovative digital tools that support their learning and offer flexibility in today's world.

Core Values Driving Deakin

What is clear from Deakin's technological innovation and direction is that it is driven by a top down strategic direction that encourages digital innovation, and empowers change that sets them up to be a digital leader in higher education in Australia (and further afield). Deakin's strategic plan sets out an optimistic future powered by ideas to enhance social, cultural, economic and environmental wellbeing. Through innovation and excellence in education, Deakin aims to bring the opportunities of the digital age into the real world. As a conclusion, it is worth noting the values that Deakin has pinned their strategic direction to, which highlights why they have taken a lead in digital innovation in higher education. The Deakin values are:

- *Brave*: We make bold decisions, demonstrate courage and ambition, and we support personal responsibility and accountability.
- *Dynamic*: We are innovative and entrepreneurial, solving problems with creativity and flexibility.
- *Sustainable*: We care about our shared future, integrating economic, environmental and social dimensions of sustainability in all we do.
- *Ethical*: We conduct our business with the highest standards of professional behaviour and integrity.
- *Excellent*: We strive for excellence in all aspects of our work.
- *Inclusive*: We value diversity, embrace difference, respect and welcome all.

The Digital World at Deakin

Deakin have made significant efforts to develop an all-in-one digital space that is cohesive and future focused. From a single-entry portal, to an interconnected system of digital tools, Deakin have developed a system that is focused on 21st century learning and development. Below is a short summary of some of the aspects, drivers and tools developed by Deakin that form their digital learning environment.

DeakinSync

DeakinSync is an adaptive, all-in-one digital space that makes staying connected on a smartphone or tablet easy. Students can keep up with University news and events, campus maps, transport information and other important information for their learning experience.

DeakinSync is where students access relevant units, learning resources, the Library, timetables, portfolio and collaborate with others to stay connected to all aspects of their studies.

Cloud Campus

Deakin's Cloud Campus is where students go to study online units and courses. Students have access to the same teachers and resources as on-campus students, and enjoy the flexibility of online study, which they can do anywhere at any time. The cloud enables students to:

- choose from hundreds of online undergraduate and postgraduate courses
- use their classroom in the cloud to watch lectures, submit assessments and participate in discussions
- use their meeting room in the cloud to work together in real time with students and staff, including sharing videos and delivering presentations
- download and stream lectures and presentations at any time of the day.

The Cloud Campus is Deakin's fastest-growing campus, and is ideal for students who choose to study wholly online. Your classroom in the cloud is where you'll take classes, submit assessments and participate in discussions.

Students who study in the cloud:

- are taught by the same teachers as students attending classes at one of our Victorian campuses
- join a community of like-minded students and are connected through digital communication tools and forums
- get remote access to all of Deakin's student support services and activities, including dedicated orientation sessions
- connect to specialist careers advisors, and language and learning advisors, who can help with course direction, study skills and techniques
- have 24/7 access to the Library's resources and services. It's a vibrant and technology-rich facility providing a supportive online presence.

Flexible study

Deakin's Cloud Campus allows students to study in your own time and in any location. Everything is available online, whenever and from wherever they need it. Take classes while they're on the go, log in and ask questions and contribute to discussions in the forums.

Full university experience

Courses and units via the Cloud Campus are taught by the same teachers as at other campuses. Classes are recorded and posted online and students collaborate in real time with other students and staff using innovative digital tools.

Cloud Campus students are also encouraged to come to Deakin's physical campuses and learning centres and use the facilities, including libraries, printers and fast wi-fi for downloading or connecting to help and support.

Digital tools and resources

Students are fully supported with a range of online resources. Through your personalised dashboard, DeakinSync, you connect with students, learning and assessment experiences, teaching and support staff and potential employers.

Case Study – University of Adelaide

The University of Adelaide Technology Strategy – Digital Future

The University of Adelaide have developed an extensive digital strategy providing direction for the future of technology at their University, particular in the learning and teaching space. This strategy, called *Digital Future*, provides a range of strategic pillars, enablers, and overarching principles that inform and future technology and innovation at the University of Adelaide. For more information, and in depth views regarding the technology strategy at the University of Adelaide, you can find the full suite of information here.

Adelaide note that technology and information are fundamental to what the University does each day in fostering learning and increasing knowledge about the world. The digital domain and its new technologies will help deliver the twenty-first century education that is both expected and needed for our growing community of learners.

The Eight Enablers of Adelaide's Digital Future

As part of their technology strategy (*Digital Future*), Adelaide have developed eight enablers that form the basis for any future development and innovation in the digital learning environment for their university. The eight enablers are outlined below, with a short comment on Adelaide's perspective on each. These enablers provide an excellent example of how to provide strategic direction over how a digital learning environment is developed.

Digital Experience • Seamless digital interaction between all members of the University community, including current and future students, all staff, researchers, industry partners, alumni, titleholders and donors • Easy access to intuitive, personalised technology through a consistent and engaging experience platform • A technology-enhanced experience that smoothly encapsulates the full student lifecycle, from entering the University, studying, leaving and becoming an alumni, and returning as a lifelong learner, as well as the associated activities and experiences of academic and professional staff, external partners and the community.	***Learning, Teaching & Assessment*** • On-demand access to innovative digital course content and materials with high-quality online alternatives to the campus-based experience • Preparing students for the workplaces of tomorrow through technology-supported, collaborative and inquiry-based approaches • Digitally enhanced on and off-campus learning environments, with virtual classrooms and offerings supporting our culturally diverse student body to be located anywhere globally • Leveraging technology to support offering our students and academics greater flexibility and personal choice through curriculum design and delivery, digital and micro-credentials, authentic and meaningful assessments, and flexible timetabling and academic calendars
Research Technology • Technologies and services which support recruiting, supporting and retaining top-talent researchers in key academic domains • Technologies and services that support the management and delivery of world-class research, including enhancing the researcher experience and research collaboration, as well as administration optimisation • High performance and specialised research computing, research data management and secure research facilities • Technologies and tools to support and enhance research business development, industry engagement in line with Industry Engagement Priorities, and acquisition of research funding	***Data, Analytics & Insight*** • Providing reliable, accurate, timely and easily accessible data and insights to better inform evidence-based decision making across the University, driving early intervention and responsiveness in student mental health and wellbeing, as part of the pastoral support • Data governance, analytics and insights platforms and capabilities to enable a 'single view' of stakeholders, enabling tailored digital marketing capabilities and decision making • Enabling our learning, teaching and research activities through curriculum and learning analytics, retention interventions, research reporting, and research delivery performance insights.
Relationship Management & Community Engagement • Enhancing the ability to effectively manage relationships and engage with the community	***Smart Campus*** • Physical spaces where people and technology-enabled infrastructure interact to create more immersive experiences for the University community, acknowledging

• Providing a single view of student information across their lifecycle at and beyond the University, improving our understanding of different cohorts across all their educational stages, and when they become alumni • New technology capabilities to support campaign management, business development, and opportunity identification, and targeted marketing to attract and recruit talent for the University.	connection to the Kaurna people as custodians of the land • Wider public use of buildings, campus spaces and online environments for learning, engaging and connecting with each other, and the wider national and global community • Campuses are showcases for the 'smart city' community, addressing sustainability and social considerations and expectations, and leveraging innovative technology.
Digitally-Enabled Workforce • Technologies that enable us to actively engage and manage talent, making it easier for staff to work, collaborate and connect via streamlined processes, linked systems and data • Improving staff experience by enabling a flexible and mobile workforce, as well as enhanced and easier collaboration, freeing up more time for higher-value tasks • Modernising the University governance, risk and compliance systems.	***Technology Foundations*** • The core technologies and platforms that provide stable, secure and flexible foundations onto which we can build innovative solutions – such as the digital experience and relationship management platforms – to deliver world-class and engaging technologies and experiences for our students, researchers, academics, staff and external partners.

University of Adelaide Technology Principles

At its core, Adelaide have developed a set of overarching principles for any technology used at their University. They note that technology is an enabler and supporter of their University and the future of their institution. Below are the three core principles, and how Adelaide views each of them.

People

The people who use technology are more important than the technology itself – Adelaide embeds design thinking in their approach to gathering requirements and designing solutions to meet the needs of their University community

- Prioritise the human side of technology
- User-centric, not technology-centric
- Connectedness with our wider university community, including alumni and industry

Innovation and Operational Excellence

Adelaide leverages new technologies and ideas, sustainably, in order to continuously improve. Their technology environment nurtures creativity and fosters innovation to support ideas through to realisation of outcomes that have practical and real-world benefits

- Innovative, intuitive and digitally integrated
- Drive efficiency and effectiveness, reduce complexity
- Continually provide value for the University

Foundations

Ensuring Adelaide has a secure, stable, efficient and well-managed digital ecosystem on which to build their new digital capabilities

- Reuse before buy, buy before build

- Preference cloud as a strategic advantage
- Well-defined governance
- Treat data as a crucial university asset, and ensure it is accurate, up to date and easily accessible.

Looking Forward

The University of Adelaide note that the challenges and opportunities of the future require both foundational technology elements that we need to function, and transformative technology initiatives to help support the University to achieve its goals to increase international student numbers, optimise domestic student numbers, increase research income and performance, acquire, and retain top talent, enhance alumni engagement, and provide a welcoming and engaging campus.

Building on these foundations, Adelaide notes they are looking to provide solutions to support and enable the delivery of new and innovative learning, teaching and research business models. Adelaide adds they are continually enhancing the digital experience across the University for students, researchers, staff, industry partners and wider stakeholder communities.

Looking Globally – DLE Trends and Examples

The global education sector was among the hardest hit by the COVID-19 pandemic. Schools across the globe were forced to shut their campuses and rapidly shift to online instruction. For many higher education institutions, this meant delivering standard courses and the "traditional" classroom experience through videoconferencing and various connectivity tools. The approach worked to support students through a period of acute crisis but stands in contrast to the offerings of leaders in online education.

The EDUCAUSE Horizons Report notes that the pandemic has catapulted the world into a digital age of remote professional and social interactions and a thriving online economy. EDUCAUSE add that the normalisation of hybrid and online learning models is well suited for a parallel growth in more personalised learning experiences and has also contributed to growth in digital data, which institutions can more effectively use through increasingly advanced and equitable AI technologies.

Key Technologies and Practices

The Horizon Report highlighted key technologies and practices the report contributors believe will have a significant impact on the future of postsecondary teaching and learning, with a focus on those that are new or for which there appear to be substantial new developments. The following six items rose to the top of a long list of potential technologies and practices:

- AI for Learning Analytics
- AI for Learning Tools
- Hybrid Learning Spaces
- Mainstreaming Hybrid/Remote Learning Modes
- Microcredentialing
- Professional Development for Hybrid/Remote Teaching

In addition, the following table outlines the broader trends impacting higher education institutions that impact their ability to develop and innovate. The Horizon Report highlighted the following macro-issues that are being faced by institutions:

Social • Hybrid and Online Learning • Skills-Based Learning • Remote Work	**Technological** • Learning Analytics and Big Data • (Re)Defining Instructional Modalities • Cybersecurity
Economic • Cost and Value of College Degrees • Digital Economy • Financial Deficits	**Environmental** • Physical Campus Structures • Increase in Sustainable Development Goals • Planetary Health
Political • Political Instability Driving Uncertainty in Higher Education • Political Ideology Impacting Pedagogy • Decrease in Public Funding	

Developing a Digital University – Global Insights

Universities can take a cue from the early adopters of online education, those who have been refining their online teaching models for more than a decade, as well as the edtechs that have entered the sector more recently. The latter organisations use educational technology to deliver online education services. To better understand what these institutions are doing well, McKinsey & Co. surveyed academic research as well as the reported practices of more than 30 institutions, including both regulated degree-granting universities and nonregulated lifelong education providers.

McKinsey also conducted ethnographic market research, during which they followed the learning journeys of a group students in the United States and in Brazil. The research from McKinsey found that, to engage most effectively with students, the leading online higher education institutions focus on eight dimensions of the learning experience. These dimensions were then organised these into three overarching principles: create a seamless journey for students, adopt an engaging approach to teaching, and build a caring network (exhibit). In this research, they talk about these principles in the context of programs that are fully online, but they may be just as effective within hybrid programs in which students complete some courses online and some in person. The full article can be found here, but below is a table taken from that research that outlines the eight dimensions, and provides some examples from US and Brazilian institutes showing how they put that activity into action:

Key Consideration	***Example(s)***
1. Build the education road map In McKinsey's conversations with students and experts, they learned that students in online programs need more direction, motivation, and discipline than students in in-person programs. The online higher education programs that they looked at help students build their	**Cogna Educação** Brazil's Cogna Educação encourages students to assess their baseline knowledge at the start of the course. Up-front diagnostics are helpful in highlighting knowledge gaps and pointing students to tools and resources and may be especially helpful to students who have had unequal educational opportunities.

Key Consideration	*Example(s)*
own education road map using standardised tests, digital alerts, and time-management tools to regularly reinforce students' progress and remind them of their goals.	A web-based knowledge assessment allows Cogna students to confirm their mastery of certain parts of a course, which, can potentially boost their confidence and allow them to move faster through the course material. **University of Michigan** The University of Michigan's online Atlas platform, gives students detailed information about courses and curricula, including profiles of past students, sample reports and evaluations, and grade distributions, so they can make informed decisions about their studies. Meanwhile, some of the online doctoral students McKinsey interviewed have access to an interactive timeline and graduation calculator for each course, which help students understand each of the milestones and requirements for completing their dissertations. Breaking up the education process into manageable tasks this way can potentially ease anxiety, according to our interviews with education experts.
2. Enable seamless connections Students may struggle to learn if they aren't able to connect to learning platforms. Online higher education pioneers provide a single sign-on through which students can interact with professors and classmates and gain access to critical support services. Traditional institutions considering a similar model should remember that because high-speed and reliable internet are not always available, courses and program content should be structured so they can be accessed even in low-bandwidth situations or downloaded for offline use. Adopt an engaging approach to teaching The pioneers in online higher education pair the "right" course content with the "right" formats to capture students' attention. They incorporate real-world applications into their lesson plans, use adaptive learning tools to personalise courses, and offer easily accessible platforms for group learning.	**Coursera** Coursera invites students to log into a personalised home page where they can review the status of their coursework, complete unfinished lessons, and access recommended "next content to learn" units. The technology is just one element of creating seamless connections. Since remote students may face a range of distractions, online-course content could benefit them by being more engaging than in-person courses. Online higher education pioneers allow students to study at their own pace through a range of channels and media, anytime and anywhere.

Key Consideration	*Example(s)*
3. Offer a range of learning formats The online higher education programs reviewed incorporate group activities and collaboration with classmates into their mix of course formats, offering both live classes and self-guided, on-demand lessons. The element of personalisation is another area in which online programs can consider upping their ante, even in large student groups. Institutions could offer customised ways of learning online, whether via digital textbook, podcast, or video, ensuring that these materials are high quality and that the cost of their production is spread among large student populations.	**Georgia Institute of Technology** The Georgia Institute of Technology augments live lessons from faculty members in its online graduate program in data analytics with a collaboration platform where students can interact outside of class. Instructors can provide immediate answers to students' questions via the platform or endorse students' responses to questions from their peers. **University of Michigan** The University of Michigan's Center for Academic Innovation embeds custom-designed software into its courses to enhance the experience for both students and professors. The school's eCoach platform helps students in large classes navigate content when one-on-one interaction with instructors is difficult because of the sheer number of students. It also sends students reminders, motivational tips, performance reviews, and exam-preparation materials.
4. Ensure captivating experiences Delivering education on digital platforms opens the potential to turn curricula into engaging and interactive journeys, and online education leaders are investing in content whose quality is on a par with high-end entertainment. Other educators are attracting students not only with high-production values but influential personalities. Outlier provides courses in the form of high-quality videos that feature charismatic Ivy League professors and are shot in a format that reduces eye strain. The course content follows a storyline, and each course is presented as a crucial piece in an overall learning journey.	**Strayer University** Strayer University recruited Emmy Award–winning film producers and established an in-house production unit to create multimedia lessons. The university's initial findings show that this investment is paying off in increased student engagement, with 85 percent of learners reporting that they watch lessons from beginning to end, and also shows a 10 percent reduction in the student dropout rate.
5. Utilize adaptive learning tools Online higher education pioneers deliver adaptive learning using AI and analytics to detect and address individual students' needs and offer real-time feedback and support. They can also predict students' requirements, based on individuals' past	**Cogna Educação** Cogna Educação developed a system that delivers real-time, personalized tutoring to more than 500,000 online students, paired with exercises customized to address specific knowledge gaps. **Minerva University**

Key Consideration	*Example(s)*
searches and questions, and respond with relevant content. This should be conducted according to the applicable personal data privacy regulations of the country where the institution is operating.	Minerva University use analytics to devise a highly personalised feedback model, which allows instructors to comment and provide feedback on students' online learning assignments and provide access to test scores during one-on-one feedback sessions. Instructors can also access recorded lessons during one-on-one sessions and provide feedback on student participation during class.
6. Include real-world application of skills The online higher education pioneers use virtual reality (VR) laboratories, simulations, and games for students to practice skills in real-world scenarios within controlled virtual environments. Establishing interpersonal connections is more difficult in online settings. Leading online education programs provide dedicated channels to help students with academic, personal, technological, administrative, and financial challenges and to provide a means for students to connect for peer-to-peer support. Such programs also use technologies to recognise signs of student distress and to extend just-in-time support.	**Arizona State University** Arizona State has partnered with several companies to develop a biology degree that can be obtained completely online. The program leverages VR technology that gives online students in its biological-sciences program access to a state-of-the-art lab. Students can zoom in to molecules and repeat experiments as many times as needed—all from the comfort of wherever they happen to be. **Columbia University** Columbia University's Virtual Internship Program was developed in partnership with employers across the United States and offers skills workshops and resources, as well as one-on-one career counseling.
7. Provide academic and non-academic support Online education pioneers combine automation and analytics with one-on-one personal interactions to give students the support they need. Many of these pioneer institutions augment that digital assistance with human support.	**Strayer University** Strayer has a virtual assistant named Irving that is accessible from every page of the university's online campus and offers 24/7 administrative support, from recommending courses to making personalised graduation projections. **Southern New Hampshire University** Southern New Hampshire University (SNHU) uses a system of alerts and communication nudges when its digital platform detects low student engagement. AI-powered chatbots provide quick responses to common student requests and questions. This system of alerts enables SNHU to match students in distress with personal coaches and tutors who can follow the students' progress and provide regular check-ins. They help students navigate the program and help cultivate a sense of belonging.

Key Consideration	*Example(s)*
8. Foster a strong community The majority of students we interviewed have a strong sense of belonging to their academic community. Building a strong network of peers and professors, however, may be challenging in online settings. To alleviate this challenge, leading online programs often combine virtual social events with optional in-person gatherings.	**Minerva University** Minerva hosts exclusive online events that promote school traditions for online students and encourages online students to visit its various locations for in-person gatherings where they can meet members of its diverse, dispersed student population. **SNHU** SNHU's Connect social gateway gives online-activity access to more than 15,000 members and helps them interact within an exclusive university social network. Students can also join student organizations and affinity clubs virtually.

EDUCAUSE have noted that the form and function of higher education have been reimagined to better fit the demands of professional industries and the needs of the workforce of the future. The traditional four-year and graduate school models of degree attainment have been all but abandoned in favour of more practical, customisable, and lifelong models of cross-cutting skills attainment and credentialing. Both microcredentialing and online/ hybrid education are well suited to fit these new models of education, offering students more personalized and flexible options for acquiring the knowledge and skills they need.

The Horizon Report also adds that institutional practices and decision-making are increasingly being organised around the central purposes of improving and sustaining planetary health. Institutions' physical footprints are shrinking, as many are choosing to invest in more online capabilities and design eco-friendly facilities in an effort to minimise resource consumption and waste. Institutions are feeling the financial implications of these constraints as well, as funding agencies increasingly include sustainability goals and impacts as project requirements and as industry partners navigate new government regulations and taxes tied to sustainability.

Case Study – British Columbia

In Spring 2020, British Columbia's Post-Secondary System (PSS) pivoted towards online services in response to the COVID-19 pandemic, initiating a transition that has impacted the operations of the entire post-secondary system.

This initial shift to emergency online learning was anticipated to be short-lived, however the nearly universal use of online learning throughout repeated pandemic waves has reinforced the use of digital models for learning and services. It now appears that a much larger portion of post-secondary education will remain available online, occurring in parallel with on-campus options. The information outlined below comes from the consultation draft document, the full version can be found here.

In 2021, the Ministry of Advanced Education and Skills Training ('the Ministry' or AEST) engaged the post-secondary system to better understand and support the use of digital learning models in post-secondary education in British Columbia, both during and after the COVID-19 pandemic. This systematic review was split into four stages to engage with the post-secondary system in British Columbia to consider how their system needs to evolve in the digital learning space. The four stages are outlined below:

Stage 1	Engage the post-secondary system to learn about the role of digital learning technology and support the successful adaptation of the post-secondary system. **Digital Learning Advisory Committee initiated.**
Stage 2	Develop Recommendations regarding policies, practices, and initiatives that will enable digital learning models to support increased equity, access, and success in post-secondary education. **Draft Recommendations produced.**
Stage 3 (current stage)	Consult broadly with post-secondary institutions (PSIs) and organizations, learners, and Indigenous partners and organizations to collect feedback and solicit interest in participation in follow-up initiatives. **Consultations initiated and to take place through September 2022.**
Stage 4	Refine Recommendations and develop an implementation plan, including for pilots and further policy development.

The Digital Learning Advisory Committee (DLAC) in stage 1 was initiated to lead a collaborative process to enhance digital post-secondary experiences across the province by:

- Identifying the lessons learned from the widespread adoption of digital learning models in post-secondary education over the past two years,
- Incorporating these into existing knowledge and best practices regarding the application of digital learning models in post-secondary education, and
- Envisioning how human-centred digital learning environments can complement and enhance British Columbia's (BC) post-secondary system over the next 5-10 years.

DLAC consisted of three Working Groups: Quality Enhancement, Digital Literacy, and Technology, Finance, and Administration. Members of these Working Groups included a cross-section of experts from colleges, institutes, teaching- and research-intensive universities, and sector experts from BCCAT, the First Nations Technology Council, BCcampus, and BCNET. The collaborative efforts of the DLAC and Working Groups have resulted in this Digital Learning Strategy (DLS), which includes strategic priorities and recommended actions, the Guidelines for Technology-Enhanced Learning, a Post-Secondary Digital Literacy Framework, and an assessment of BC's post-secondary systems needs and capabilities.

Overview of the Review

The Digital Learning Strategy developed by the DLAC is intended to advance the post-secondary system's ability to navigate the rapidly growing and ever-changing digital landscape of BC's post-secondary education system. In order to accomplish this while respecting the diversity of BC's post-secondary system and communities, the recommendations aim to be high level while providing tools and approaches to support local adoption and implementation.

The collaborative efforts of the DLAC and Working Groups have resulted in:

- The Strategic Priorities and Recommended Actions,
- The Guidelines for Technology-Enhanced Learning,
- A Post-Secondary Digital Literacy Framework,
- A Technology Needs and Capabilities Summary, and
- A Consultation and Implementation Strategy.

These works are the product of extensive engagement and consultation with a broad range of individuals and organizations from across BC's public post-secondary system, along with experts from other jurisdictions within Canada and internationally.

Next Steps

The final stage of the process will look to refine and further develop the strategy in the wake of extensive rounds of consultation across higher learning entities and post-secondary institutions in BC. Consultations were initiated in April 2022 and will continue to take place throughout the Canadian summer, with the goal of implementation beginning in September 2022 and carrying on through to mid-2023.

Implementation will involve the initiation of further initiatives and pilot programs involving partnerships with post-secondary institutions and organisations.

Case Study – University of Wisconsin

DLE at University of Wisconsin
(https://www.wisconsin.edu/dle/strategy/)

Also see: https://er.educause.edu/articles/2019/7/designing-a-digital-learning-environment-for-the-university-of-wisconsin-system

Prior to COVID, the University of Wisconsin (UW) undertook a significant review and redevelopment of their digital learning environment. This redevelopment focused on creating a more holistic, integrated system that provided an elevated experience for their learners.

UW have a clear outline of their DLE on their website. They describe their DLE as not just an LMS, but a federated, online environment that includes services and tools purposefully brought together to support the needs of teaching and learning in all modes (i.e., face-to-face, blended/hybrid, and fully-online). Their DLE was designed to challenge the traditional role of a LMS as "the" platform for managing course documents, quizzes, videos, and the like.

UW highlight that by shifting from a focus on an LMS-based content platform, to a "digital environment" this creates information than can be more effectively utilised and provide an interoperable suite of services and tools that allow us to maximize student access and success.

UW note that their project centred around the work of Brown, Dehoney and Millichap, and their 2015 EDUCAUSE whitepaper on the Next Generation Digital Learning Environment (NGDLE). As a result, the UW DLE is based on five key characteristics:

- Accessibility and the principles of universal design are fundamental, so that all students, regardless of ability and learning preference, can succeed in all instructional modes.
- Provides a platform to support learning and administrative analytics, readiness and learning assessment, progress mapping, advising, and "early alerts" to trigger interventions to ensure student success.
- Collaboration is expected, encouraged, and supported among those within and outside the institution.
- Components are interoperable; meaning they are standards-based, and work together seamlessly, not stapled together to sit side-by-side.
- The environment is student-centered and allows for a personalized experience for the student with regard to both content and pathways.

UW undertook a significant needs analysis over a two-year period. The results of the analysis and requirements gathering projects aligned well with the concept of a NGLDE. UW System research

work uncovered that students sought a standardised way to access the tools and services they need for completing their coursework, as well as being able to move from course to course easily – regardless of which institution offered the course.

As part of the analysis process, teaching staff reported that tools were becoming too complicated and cumbersome, and that they require easier ways to interact with students online and provide feedback in various forms. Administrators were frustrated by the lack of usable data to help inform their work.

Outcome

DLE fosters the following improvements for our three stakeholder groups:

1. Instructors – increased collaboration and sharing of expertise and resources among instructors, thereby reducing redundancy and spurring innovation.
2. Students – a "one-stop" resource environment alleviates the disparate nature of accessing teaching and learning tools and services, thereby increasing retention rates and improving student learning outcomes.
3. Administration – reduces and standardizes infrastructure, improves support, and provides cross-institution opportunities for common practices, thereby freeing up resources for innovations in teaching and learning.

The UW System DLE is designed upon a fixed/flexible framework that provides fixed, consistent processes, student experience, and data management. The UW DLE allows flexibility to enable pedagogy (rather than technology) to drive the adoption of technology to support institutional needs for teaching and learning.

The fixed/flexible framework applies to all tools and services within the UW DLE, provides a means for reducing technology and access barriers and supports the ability to enrich and further develop cross-institution concepts. The UWS DLE framework's fixed aspect is complemented by its flexibility in allowing UW to adopt technologies and processes that support the unique aspects of teaching and learning.

Fixed features include standardised policies, processes, and technology architecture support a consistent approach to administrative functions such as technology integrations, data management, and procurement. The DLE's fixed aspects lower technology barriers, drive a consistent user experience, and support administrative efficiencies. These fixed features also allow the DLE to "move as a system," setting the stage for a DLE Community of Practice in which colleagues from UW institutions can better manage knowledge in finding, sharing, transferring, and documenting their expertise.

Flexibility is critical for the delivery of open, active, adaptive, and competency-based learning strategies and for allowing those strategies to evolve in the future. The model also includes a formal change management process that allows the DLE to transparently and continuously evolve and to nimbly meet ever-changing academic and administrative needs.

Managing Data to Support Success

With the fixed/flexible framework, UW is positioned to bring together data—information from myriad enterprise and institution technologies—and leverage the unique strengths of its many institutions to support student success.

In addition to providing a seamless, accessible student experience, the DLE also makes possible an effective, well-organized approach to managing digital learning interactions and information exchanges among students, instructors, institutions, and external stakeholders. Reliable access to data enables data analysis activities that can help us improve student experiences—from the point of inquiry about attending a UW institution through application to an institution, learning and

academic support activities throughout their student experience, and on into the postgraduation alumni years.

DLE as Amalgamator

The UW DLE challenges the traditional role of an LMS as "the" platform for managing content for teaching and learning. Shifting their perspective from a proprietary, one-stop vendor-controlled LMS that holds the keys to their data to an information-creating digital environment allows UW to realise the many benefits of an interoperable and agile suite of services and tools that maximizes student access and success. UW's DLE now boasts more than 50 external tool provider integrations that not only are standards-based but also ensure that the tools are accessible, secure, and maintain student data privacy. The DLE is ever-evolving; over time, UW note they may add, remove, or move tools and services among various layers of the environment.

Impact of the DLE

The DLE provides students and teachers with the digital services and tools needed for innovative practices in teaching and learning, as well as offering improved support of student learning outcomes. The DLE is easy to use, stable, secure, and standardized, yet it maintains flexibility. It also gives UWS a way to improve collaboration and sharing, thereby spurring innovation in teaching and learning and fostering student engagement. The DLE allows us to transform teaching and learning to a data-informed endeavour that supports instruction by enabling engaging, intuitive, interactive, and pedagogically sound learning experiences for students.

The DLE builds on instructors' expertise in student success by allowing UWS institutions to be nimble and adaptive in using data to support teaching and learning. We know, based on student feedback, that a seamless experience with institution-provided technology reduces barriers to access.

The DLE incorporates data generated in three key areas:

- student and teacher interactions with academic and administrative systems,
- the information that teachers generate as they recognize student performance levels and warning signs, and
- the insights students gain from reflecting on their learning.

The result is a structured, transformative pivot away from disaggregated indicators regarding the success of student pathways. Instead, the DLE takes advantage of the collaborations that result when data silos are broken down and data is combined and translated into meaningful actions to support student success; such actions include student performance "early alerts" and student visibility into peer performance benchmarks.

The DLE also offers administrative benefits, including the reporting capabilities required in higher education for accreditation, compliance, the delivery of academic services, and other administrative purposes. Furthermore, the DLE negates the need for UWS to predict and react to the future of technology, with varying degrees of success. Through data-informed decision-making, an adaptive DLE flips the traditional model of "predict and plan"—within a structure of closed, tight-knitted systems that we choose based on what we think will happen in five to ten years—to an open and adaptive process of technology adoption that directly impacts teaching and learning in near real-time.

Finally, the DLE lets UWS give its stakeholders—that is, students, instructors, and administrators—the technology environment they need to thrive, regardless of how the future evolves. UWS, rather than technology vendors of siloed products and services or exclusive associations, is the architect that is proactively building the DLE and planning its future.

Ongoing Lessons Learned by UW

UW noted that by using Information Technology Infrastructure Library (ITIL) as their IT Service Management (ITSM) approach for implementing the DLE enabled UW to promote a cultural mind-set of providing high-quality IT services. ITSM employs a blend of appropriate people, standardized practices and processes, and technology to drive value and continuous improvement while proactively addressing risks and managing costs.

One of the most significant lessons noted by UW is that communication is critical to a project's success—and perhaps its biggest challenge. Communications are particularly important during the transition period where systems change over. UW candidly note that regardless of how much communication takes place, it may never be enough. The UW system of colleges is a very complex arrangement of locations, and academic divisions and schools, and given this complexity they acknowledge that it would have been extremely difficult to communicate with all stakeholders at the appropriate time and in the most effective manner.

To contend with this, UW chose a formal project management approach in which each institution had its own project manager with local executive sponsorship. Through these project managers, each institution used its own rollout and communication strategies. This allowed institutions to leverage standard template materials to customize messaging for their students, instructors, and administrators in a way that best fit their institution's culture.

Conclusion – Key Takeaways for Developing a DLE

Global Lessons

Building a distinctive online student experience requires significant time, effort, and investment. Most institutions whose practices we reviewed in this article took several years to understand student needs and refine their approaches to online education.

For those institutions in the early stages of rethinking their online offerings, the following three steps may be useful:

- *Assess your current online offerings*. An initial diagnosis could provide an understanding of how satisfied students are with the existing online experience, their expectations and preferences, and the competitive landscape.
    - The diagnosis could be performed through a combination of focus groups and quantitative surveys, for example. It's important that participants represent various student segments, which are likely to have different expectations, including young-adult full-time undergraduate students, working-adult part-time undergraduate students, and graduate students.
    - The eight key dimensions outlined above may be helpful for structuring groups and surveys, in addition to self-evaluation of institution performance and potential benchmarks.
- *Set a strategic vision for your online learning experience*. The vision should be student-centric and link tightly to the institution's overarching manifesto. The function leaders could evaluate the costs/benefits of each part of the online experience to ensure that the costs are realistic.
    - The online model may vary depending on each institution's core focus. An institution with high tuition, for example, is more likely to afford and provide one-on-one live coaching and student support, while an institution with lower tuition may need to rely more on automated tools and asynchronous interactions with students.

- *Design the transformation journey*. Institutions should expect a multiyear journey. Some may opt to outsource the program design and delivery to dedicated program-management companies. An increasing number of institutions are developing capabilities internally, especially as online learning moves further into the mainstream and becomes a source of long-term strategic advantage.

Leading organisations often begin with 'quick wins' that significantly raise student experiences, such as stronger student support, integrated technology platforms, and structured course road maps. In parallel, they begin the incremental redesign of courses and delivery models, often focusing on key programmes with the largest enrolments and tapping into advanced analytics for insights to refine these experiences.

Finally, institutions tackle key enabling factors, such as instructor induction and online-teaching training, robust technology infrastructure, and advanced-analytics programs that enable the institutions to understand which features of online education are performing well and generating exceptional learning experiences for their students.

Closer to Home

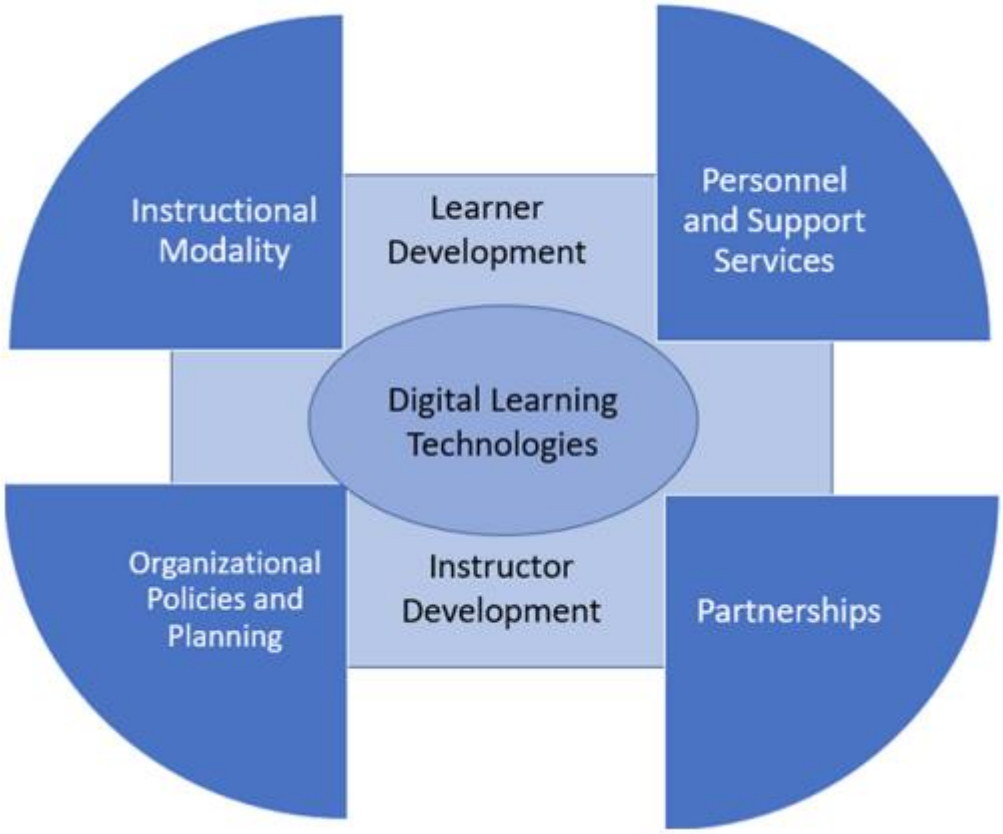
In New Zealand, Otago appears to be in a minority when it comes to the wider integration of various tools into a central portal. Many of the New Zealand universities have staff intranets, or staff portals, that likely house significant additional information and detail that is not accessible to the public. This is not necessarily a judgement of how well this integration has occurred but highlights that creating a secure space with access to multiple tools and platforms is a significant trend. Done well, this can be a significant benefit to both staff and students in their teaching and learning experience.

The final point, which is reiterated in most situations, is that communication is key to any successful programme of change. Any development of the digital space at Otago needs to be accompanied by clear communication which clearly sets out what is happening, when, and most importantly, why it is happening. In conjunction, communication also comes in the form of development programmes for staff to be able to successfully use whatever platform and tools are utilised to ensure the best outcomes can be realised.

Appendix 8: Transforming education in the digital realm

This DLE Review is focusing on providing direction about how the University can achieve its aim of transforming the digital learning experience for staff and students. The diagram below shows vital components to be considered when undertaking change to reach that goal and how those vital components sit in relation to one another.

According to Martin and Xei (2022), in transforming education in the digital realm involves contextual consideration being given to instructional modality, personnel and support services, organisational policies and planning, and partnerships, forged within and external to the institution. Associated learner and teacher development are essential, so that both teachers and students are able to navigate their way through the institution's digital and non-digital context and gain benefits form the potential it presents for a high quality learning and teaching experience.



Martin, F. & Xei, K. (2022). Digital transformation in higher education: 7 areas for enhancing digital learning. *Educause Review*, https://er.educause.edu/articles/2022/9/digital-transformation-in-higher-education-7-areas-for-enhancing-digital-learning

Appendix 9: Teaching and Learning Unit support model

Assuming that the virtual environment is an integral part of any modern higher educational setting, a Teaching and Learning Unit (TLU) would exist to provide support for users of the digital teaching and learning systems by:

- interpreting, translating and informing the functions of the systems in order to facilitate IT understanding and response to staff and student functional and pedagogical needs, and to facilitate staff and student understanding of system technical needs, requirements, provision, potential and capability;
- providing professional development opportunities in course design;
- initiating and supporting investigations into how the capabilities of educational technologies can be capitalised upon for teaching and learning purposes;
- development and implementation of sets of standards and criteria for course structure, design, development, implementation and evaluation, and minimum standards for online papers;
- provision of advice and guidance to departments about integration of educational technologies into course design;
- provision of a variety of staff support opportunities via an arrangement that is centrally coordinated while also department/disciple/programme-based;
- provide advice and guidance to departments about quality assurance matters for papers and programmes that are reflective of consistent, University-level criteria describing high quality papers and teaching.

In these ways, the TLU is envisaged to enable and facilitate comprehensive, streamlined, connected and coordinated workstreams to help the University achieve a goal of transforming the digital learning experience at Otago.

Focussing the core activities of the TLU

Because for the majority of students, it is the paper/programme that is the primary site through which they experience the University as an institution, encounter teachers and teaching, and gain access to opportunities for learning, it is imperative that papers and programmes are well-designed.

By mapping the component activities that are required for high quality courses to be produced, a core of activity and required expertise can become the threads that hold the activities of the TLU together. These naturally would be incorporated into practices that are reflective of the overarching principles, goals and imperative outlined above, to be

- comprehensive, connected and sequenced; grounded by values related to high quality learning and teaching experiences;
- focussed on (A) course design and development and (B) implementation (where “course” = paper, programme, qualification; single and linked units of study);
- mechanisms to manage and to facilitate the creation and implementation of courses. (How are the following enabled and facilitated through comprehensive, connected and coordinated work streams and activities?).

The following provides a brief overview of those component activities and necessary expertise. In terms of the way the TLU might undertake its responsibilities, implications can be seen for how different groups and individuals who have the necessary expertise might work in collaboration with each other and with academic departments to facilitate the development of high-quality papers and

programmes. The rationale for the suggested model for the work of the TLU is thereby also provided.

A. Component activities that contribute to course design and development

- Contribution from academic and professional staff, and students
  - individual
  - dual
  - single
  - group
- Content expert input (Internal and external to the institution)
- Monitoring and review of needs/demands
- Decision-making and approvals
- Professional development provision
- Quality enhancement direction, advice and guidance

B. Course design & development considerations

a. *Course design (the how)*
- Content specialists
- Instructional designers
- Graphic design
- Web production
- A/v producers
- Evaluators
- Oversight

b. *Ways and means of interacting and communicating*
- Media
  - written
  - sound
  - images
  - artefacts
- Technological
  - recorded (online/digital offline etc)
    - print
    - audio
    - video
- broadcast (internet, telephone, radio, TV)
  - audio
  - video
- interactive
  - Web conference
  - Audi conference
  - Satellite/cable
  - Desktop
  - Internet
  - WAN/LAN

C. Implementation

a. *Essential elements of teaching and learning environments*

- Teachers
- Administration staff
- Librarians
- Students
- AskOtago
- IT technical support
- Learning support, HEDC-SLD
- Disabilities Information and Support staff
- Māori Centre staff
- Pacific Islands Centre staff

b. *Learning environments (where students/staff are)*

- Workplaces
- Home
- Classrooms
- Off-site centres
- Travelling

Structures within the Teaching and Learning Unit (TLU)

The expertise required to undertake the activities above would come from the TLU, rather than from multiple, separate "services", as is the situation at Otago at the moment. This arrangement would serve to focus the efforts of all on the overall goals of the TLU and facilitate and contributions from the various expert sub-groups to be managed systematically and equitably. Currently, academic staff have to 'pull together' expertise they believe they need, whereas the TLU arrangement suggested here would facilitate collaborative, proactive and reactive responses to academic staff and course design needs.

The approach reflects the fact that teacher professional knowledge, teaching practice, course design, development and implementation are result of the incorporation of integrated sets of knowledge and expertise *within context*. Different kinds of expertise are needed at different points in the course design process and the 'hub-and-spoke'/'embedded partner' model in the diagram below would ensure the balance of central oversight and guidance with local flexibility and autonomy.

Expertise of different kinds would be part of a TLU.

- governed by the aim of achieving the goals of the *Teaching and Learning Plan* and *Digital Learning Environment Strategic Plan;*
- work in collaboration with Divisions, departments, programmes and disciplines in order to be responsive to local needs;
- to enable and facilitate translation and interpretation of needs, demands and expectations between 'the technical' (ITS) and 'the pedagogical and the functional' (academic departments, service/support units);
- through the component activities outlined above;
- reporting and management lines would need to be very clear, but flexible working practices would be needed to respond to the variety of local needs and evolving developments;
- TLU Teams/expertise:
    - specialists, who would most likely be:

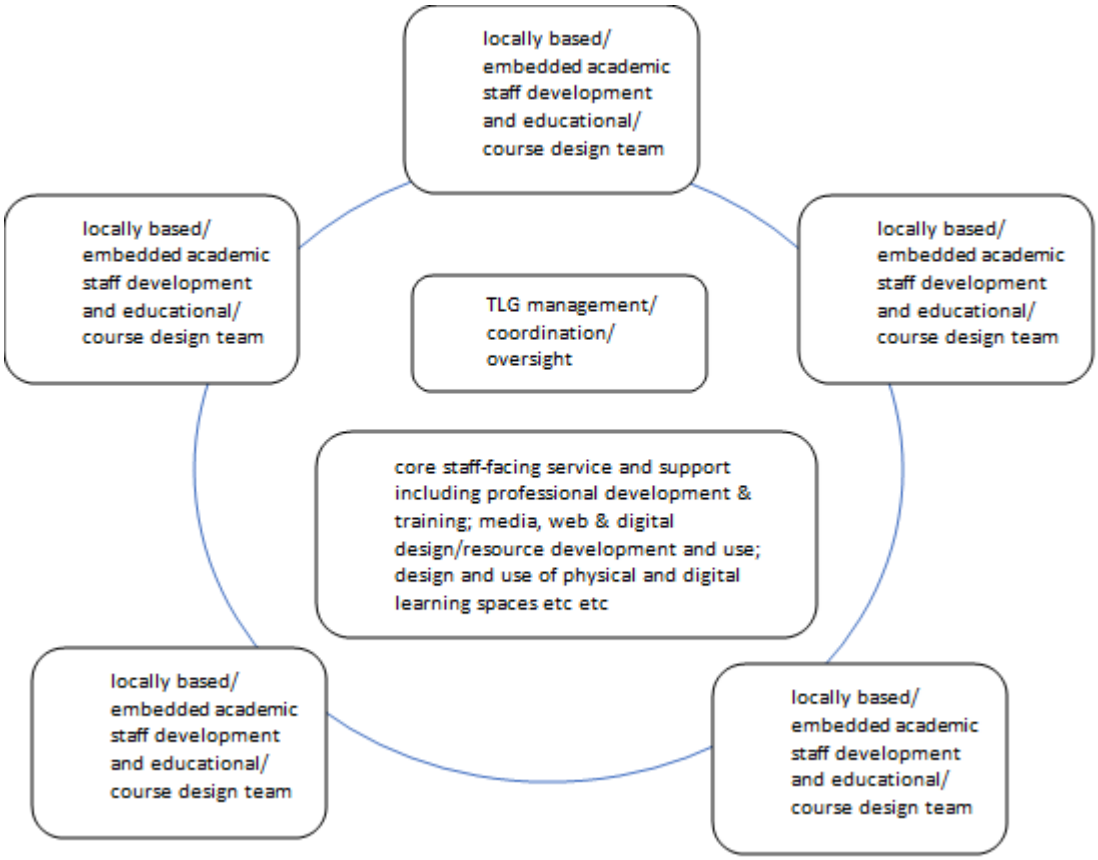
- academic staff developers – focussing principally on professional development through scholarly, practice-based activity; along with
- educational designers/technologists - working alongside academic developers on proactive and reactive course design and development projects; and
- based geographically in academic departments, and managed, coordinated and connected centrally (TLU).
- responsive - proactively and reactively - to needs for the (re)design, development, implementation and evaluation of papers and programmes;
- working in collaboration with academics in the local departments/disciplines;
- enabling and facilitating professional learning and development and the development of high quality papers and learning and teaching experience through a scholarly academic professional development approach.

A model for the work of the TLU

The arrangements outlined here describe very broadly a mechanism that enables a balance between systems that are central, and local flexibilities. It is tangata-focussed, not impersonal.

In this way, TLU is not a centralised model, but could be described as' hub-and-spoke' (see the diagram below), where the spokes lie within the departments/programmes/schools/faculties.

As such, those 'belonging' to the TLU, based within departments/schools/faculties act as embedded partners, able to be responsive to the needs of their local environment. Their central TLU connection ensures that lessons learnt in one local area and across the institution can be shared efficiently and effectively in other areas. It also enables central/University priorities to be translated appropriately for implementation at the local level.



Appendix 10: Staff Survey Questions

QUESTION	OPTIONS
Introductory Information	
1.Digital Tools	
Please indicate how frequently you personally use each of these tools for teaching or support/service-related purposes during semesters. Tools: • Blackboard • Moodle • Zoom • Otago Capture/Echo360 • *eVision* • eReserve • Business Objects • TurntItin • Audiovisual control panel and microphone in teaching rooms • Other (please specify; if no other tools used, please leave empty)	• Never or less than once a year • A few times per semester • A few times per month • A few times per week • Daily
Please rate the usability (ease of use) of each of these tools [linked to choice made in previous question].	• Very difficult to use • Somewhat difficult • Neither easy nor difficult • Somewhat easy • Very easy to use • Don't use
Please rate the degree to which you think the following tools are fit for purpose [linked to choice made in above question].	• Definitely not fit for purpose • Somewhat not fit for purpose • Neither fit nor not fit for purpose • Somewhat fit for purpose • Definitely fit for purpose
Do you think that the University's use of digital technologies for teaching and administration, and provision of services and support, matches student expectations?	• Far short of expectations • Short of expectations • Equals expectations • Exceeds expectations • Far exceeds expectations
If you have anything else you would like to add about the digital tools used for teaching and learning and associated support and service activities, please do so in the box provided.	[free text response]
2. Support	
Rate preferred means of learning/training and transition support for teaching & learning tools. Types: • scheduled training sessions • online documents • online videos • in-person, on demand support	• Strongly disagree • Disagree • Neutral • Agree • Strongly agree • Don't know

QUESTION	OPTIONS
Where should support be located or come from? (Select as many as you wish.)	• locally, making use of 'champions' and peers • dedicated support teams assigned to areas/technologies • communities of practice • central teams with sub-teams of local area specialists embedded within departments • no organised support is necessary
How much time does your workload model allow for professional development activities related to the digital learning environment (such as learning new tools and technologies and using them effectively for your role)?	• Far too little • Slightly too little • About right • Slightly too much • Far too much
What are your thoughts regarding whether Otago should provide support models that differ across divisions and departments, or have a standard model.	[free text response]
If you would like to add anything about support for engaging with and improving the digital learning environment, please do so here.	[free text response]
3. Data storage, control, use	
Most tools and systems making up modern digital learning environments involve data storage 'in the cloud'. Usually, but not always, this means that data is stored on servers in overseas locations'. Data sovereignty' and other concerns related to data security are given serious consideration when the University adopts cloud services for the various digital systems we use. For Māori, data sovereignty is of particular importance (https://www.temanararaunga.maori.nz). In your experience, regarding your understanding of data storage in the cloud, the University provides ... • …appropriate information and training for staff • …easily discoverable information and training for staff • …widely known information and training for staff	• Strongly disagree • Disagree • Neither agree nor disagree • Agree • Strongly agree
How concerned are you about issues of data storage, including data sovereignty, for teaching and learning-related data?	Unconcerned ← → Extremely concerned
Is there anything you would like to add in this section, about data (especially data sovereignty, security and storage)?	[free text response]

QUESTION	OPTIONS
4. Data Flow	
Please read the statements referring to your experience of the functions listed. • Class lists are automatically set up in a timely manner • Class lists are always accurate, i.e. synchronised with *eVision* • Students are automatically grouped, e.g. into tutorial streams, where required. • Assessment gradebook is pre-populated with assessment data from *eVision*. • Paper occurrences are archived, including grades, at the end of each teaching period with suitable access (for staff and students). • Paper occurrences are archived, including grades, at the end of each teaching period with suitable access (for staff only).	• Strongly disagree • Disagree • Neither agree nor disagree • Agree • Strongly agree • Don't know
Please read the statements referring to online tools and processes for student assessment (submission, grading, feedback and return). For each statement, indicate if you have no need for that functionality, if it currently works fine or if it could be better or improved. • Transfer of grades from [LMS] to *eVision*. • Approval of final grades after uploading to *eVision*. • Recording of partial or component grades in *eVision* • Access to programme-wide student progress data. • Accessing data relating to students across all the papers they are taking and over the years they have been enrolled.	• No need for this • Currently works fine • Could be better • Major improvements needed • Don't know or not applicable
What are your thoughts regarding whether Otago should standardise its delivery approach for consistency of student experience, allowing students to have the same consistent experience (e.g. knowing where to find the course outline) no matter which paper they take across the University?	• I am in favour that students should be given a consistent experience, and this should be locked down centrally • I would favour students be given a consistent experience but would still want to have the option to change colours, fonts, order of items in the sidebar etc. • I do not think it is important that there is a standardised delivery • Other (please specify)
If you wish to add something in this section about data flow and integration, please do so here.	[free text response]

QUESTION	OPTIONS
5. Learning Analytics	
Think about your role/s, and consider the following statements about purposes of and conditions of access to learning and other related analytics. I think that the appropriate student learning and related analytics should... • ...be available to me and to others with approved need to view them • ...be easily accessible from the tools the University provides me for the purposes of performing my role • ...be accessible in real time, on a regular, ongoing basis • ...include ways for students to see their own data • ...be sufficiently automated to minimise manual work in generating and disseminating reports	• Definitely not • Probably not • No opinion • Probably yes • Definitely yes
Think about your role/s, and consider the following statements about the content and format of student learning analytics and other related reports. I think that appropriate reports should... • ...be provided in easy-to-read forms (e,g, tables, graphs, individual vs group etc) to suit my needs • ...capture all or most of the most important metrics I need to identify at-risk students, enact pastoral care or provide service • ...provide information I need to assess my teaching or administration effectiveness and contribute to continuous improvement processes • ...reflect the concerns and serve the interests of Māori staff and students • ...reflect the concerns and serve the interests of Pasifika staff and students • ...include individual student and other data over time • ...include individual student data across papers, and across programmes and across multiple tools and/or resources	• Definitely not • Probably not • No opinion • Probably yes • Definitely yes
If you wish to add something in this section, about learning analytics, please do so in the textbox provided.	[free text response]

QUESTION	OPTIONS
6. Governance	
Please rate the degree to which currently, you feel your concerns are heard when decisions are made regarding: • which tools are available • level and location of support • data integration • enhancement requests • priorities and tradeoffs • the digital learning environment as a whole	• Not heard at all • Somewhat unheard • Not relevant to me • Somewhat heard • Fully heard
How much responsibility for making decisions about the digital learning environment should each of the following have? • University-level IT committees and boards • University-level teaching and learning committees and boards • Divisional and departmental committees and boards • programme and discipline teams/support and support activity teams • central support units, including HEDC, Disabilities Information & Support, Library	• None at all • A little • A moderate amount • A lot • A great deal
If you wish to add something in this section about governance, please do so in the text box provided.	[free text response]
7. 'Big Picture' thoughts	
In your view, what would the ideal digital learning environment at Otago look like?	[free text response]
Vision 2040 makes explicit and bold statements about the future, many of which have direct implications for our digital learning environment. Two examples, amongst many, are: • "streamlining systems and operations, by embracing digital technologies, and by ensuring that investments in facilities and infrastructure are adaptable to future changes in work and learning" (p. 19) • "leverage advances in digital technology to enhance on-campus learning, and to expand our engagement in distance and blended course delivery." (p. 14) What areas do you think Otago needs to focus on, in order to meet its 2040 learning and teaching aspirations and imperatives?	[free text response]
Demographic Questions	