Australian Government
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APS Learning Experience & Technology Discovery Report

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Executive summary

Learning and development (L&D) technology has undergone a significant transformation, changing how learning is done. Technologies such as Artificial Intelligence (AI) and Machine Learning (ML) have introduced innovative ways to access and engage with learning. For the Australian Government, embracing learning technology is not just about keeping pace with change, but strategically aligning with business goals and shaping the workforce of the future.

The APS Learning and Development Strategy (2021) and the Action Plan identified the need to co-create an 'APS-wide Learning Technology Roadmap' (the Roadmap).This APS Learning Experience & Technology Discovery Report (the report) has been developed by the APSC, on behalf of agencies, to inform an APS-wide Learning Technology Roadmap (the roadmap).

The report is intended to provide learning and development practitioners, and decision makers of learning and development technology, insights into the:

- needs and experiences of APS learners and supervisors
- needs and experiences of people who enable learning in the APS including learning and development practitioners, learning designers, platform administrators
- strategic priorities and opportunity areas of interest to APS leaders
- technical landscape of learning and development in the APS, the private sector and international public services
- learning trends and what we know has the most impact on learning outcomes.

Through engagement with over 90 staff across the APS, and literature review, the report identifies a number of insights and opportunities for the APS. Insights and opportunities emerged across the end to end journey of learners and enablers of learning in the APS. Opportunities identified span across many areas including technology, service design, learning design, communication, funding, skills, policy and ICT security.

These insights and opportunities provide an evidence base to identify and prioritise problems and opportunity areas through a series of ideation sessions. The ideation sessions will canvas a range of actionable ideas from a broad multi-disciplinary audience. These ideas are then further narrowed down to specific solution ideas for further testing and development of the roadmap.

The following table provides a summary of the research insights and opportunities detailed in this report from speaking with APS staff.

Summary of research insights and opportunities

Insights	Opportunities
Finding relevant and trusted learning Research and initiative is needed to find a trusted, relevant and quality learning opportunity. Learners were unsure of what learning is available to them across the APS and where you can go to find it.	How might we… support learners to easily find relevant and trusted learning that is available to them across government?
Flexible learning Learners spoke about the need to access flexible learning that fits around their work schedules and interruptions. Finding time to learn is hard due to work pressures.	How might we… provide opportunities for short, fast learning on the job? How might we… support learners to access learning when, where and how they need it?
Choice and engagement Learners prefer different modes and structures of learning delivery, some prefer in-person while others online. Learners shared positive experiences when learning was interactive and they could choose how they could engage with the content.	How might we… provide learners with choice of how they engage with learning content? How might we… leverage emerging technology to design more engaging learning experiences?
Social learning Learners find value in social learning from both experts and peers. L&D staff shared community management is needed to get the most out of online social learning.	How might we… support learners to connect with expertise across government?
Online learning Online learning was poor experience when platforms were hard to navigate and use, when there were no opportunities to ask questions, when facilitators were not skilled in learning technology and when face to face learning was not redesigned for the needs of online learning.	How might we… design online learning that is easy to navigate and use? How might we… support learning designers and facilitators to feel confident to design engaging online learning?
Accessible and inclusive learning Online learning was not useable when learning was not designed for people with accessibility needs. L&D staff shared that they find accessibility hard. Accessibility is often assumed through system providers. However, when tested with real users of assistive technology, user experience is found to be poor.	How might we… make learning accessible and inclusive for everyone? How might we… support L&D staff to feel confident to design and test that learning is accessible to everyone?

Insights	Opportunities
Use of AI when learning Learners are going outside of government systems to use AI (tools like ChatGPT) to support their learning. There is skill needed to prompt AI and to critique and interpret the responses.	How might we… support learners to access and practice responsible use of AI in government? How might we… leverage work being done to test responsible and safe use of AI in government to support learning?
Applying learning Learners need safe opportunities to apply and practise their learning so that they can remember it. Learners seek genuine and respectful feedback to improve.	How might we… create safe opportunities for learners to practice new skills and receive feedback? How might we… encourage supervisors to support staff to apply learning?
Recognition of learning While learners do not anticipate acknowledgement of all their learning activities, many want to feel that their effort is recognised.	How might we… support learners to feel recognised and valued for their learning?
Learning technology decision making L&D staff feel there is a lack of visibility of what others are doing across government reduces the opportunities to learn from others experiences. There are several agencies looking to procure new learning systems to replace legacy technology.	How might we… make it easier for agencies to make informed decisions about learning technology? How might we… support L&D staff to share learnings and increase visibility of current initiatives?
Reusing and sharing learning There's a strong appetite among L&D staff and leaders to reuse existing learning. Leaders identified learning content that they are able to share with other agencies. The APS Learning Bank has not yet been widely promoted to L&D staff.	How might we… support reuse and sharing of learning content across government?
High administrative burden of learning systems Learning system platform limitations and lack of system integrations result in high administrative burden. L&D staff shared painful manual workarounds for systems limitations.	How might we… reduce administrative burden for common L&D tasks to improve efficiencies? How might we… explore opportunities to connect systems to reduce manual processes?

Insights	Opportunities
L&D capability is often outsourced rather than developed in house L&D teams are feeling under resourced across the APS. L&D staff shared they are often managing contracts rather than managing internal solutions. Lack of capability was expressed in areas ranging from learning design, evaluation and technical administration.	How might we… support agencies to grow the skills they need to support L&D technology and maximise business outcomes? How might we… reduce duplicated spend and effort on contracts with learning providers?
Dependency on vendors for changes and improvements Dependency on vendors has resulted in long wait times to fix issues and platforms not meeting the needs of APS. In some cases agencies have spent time and money to buy custom improvements which vendors profit from.	How might we… reduce dependency on vendors for improvements? How might we…coordinate our efforts to influence vendors to prioritise and meet APS needs?
Unused features Some agencies have access to features through their providers that are not being used. Reasons why included limitations of staff skills or resources, lack of awareness of the available features, lack of business need or priority or ICT security barriers.	How might we… maximise potential capabilities of our current learning ecosystem?
Technology L&D staff and leaders would like to explore L&D staff and leaders are keen to explore a range of technology features to better meet user and business needs. Examples areas of interest include ability to create pathways for learners, flexible learning on the job, immersive learning experiences, curating relevant learning, using generative AI and extended reality.	How might we… provide opportunities for L&D staff to grow experience with emerging learning technology?
Evaluating the impact of learning L&D staff feel there is limited time or capability to do evaluation of learning. When feedback is asked for, it may not be received. L&D staff would like to increase user feedback to drive improvements.	How might we… support L&D staff to easily and effectively evaluate the impact of learning? How might we… increase learner engagement with providing feedback?
Experiences using APS Academy and APSLearn Most learners expressed positive feedback on APS Academy. Some learners found it unclear how to log on to APSLearn and some learners found it hard to find relevant courses using search. Two users with visual impairment had a poor experiences using APSLearn.	How might we… make it clear and easy for learners to log in to APSLearn? How might we… improve findability of relevant learning content in APSLearn?

Insights	Opportunities
Other barriers to access include cost and availability of courses. L&D staff and leaders shared APS Academy does not have capacity to meet all their agency learning needs.	How might we… ensure learning experiences on APSLearn are accessible to everyone? How might we… ensure APSLearn adapts to latest version Web Content Accessibility Guidelines (WCAG) quickly? How might we… make APS Academy learning available to more learners?
Experiences using agency learning systems and mandatory training Some learners found their learning systems hard to use and find learning content. Many learners felt like mandatory training was a "tick the box" exercise rather than an engaged learning experience. We observed only 4 of 7 (57%) agency learning systems or intranets linked to APS Academy or other whole of government learning opportunities.	How might we… shift mandatory training from being something that just must be done to an engaging and meaningful learning experience? How might we… increase cross promotion of whole of government learning opportunities from agency systems to provide a more connected learning experience?

Key trends in learning technology

We explored online literature to understand key trends in learning technology across the public service and in the broader public and private sectors, including the broad range of technologies and features currently offered by providers.

Understanding the learning technology landscape can help inform solution ideas to the opportunity areas identified in the research.

Major themes in the learning tech trends

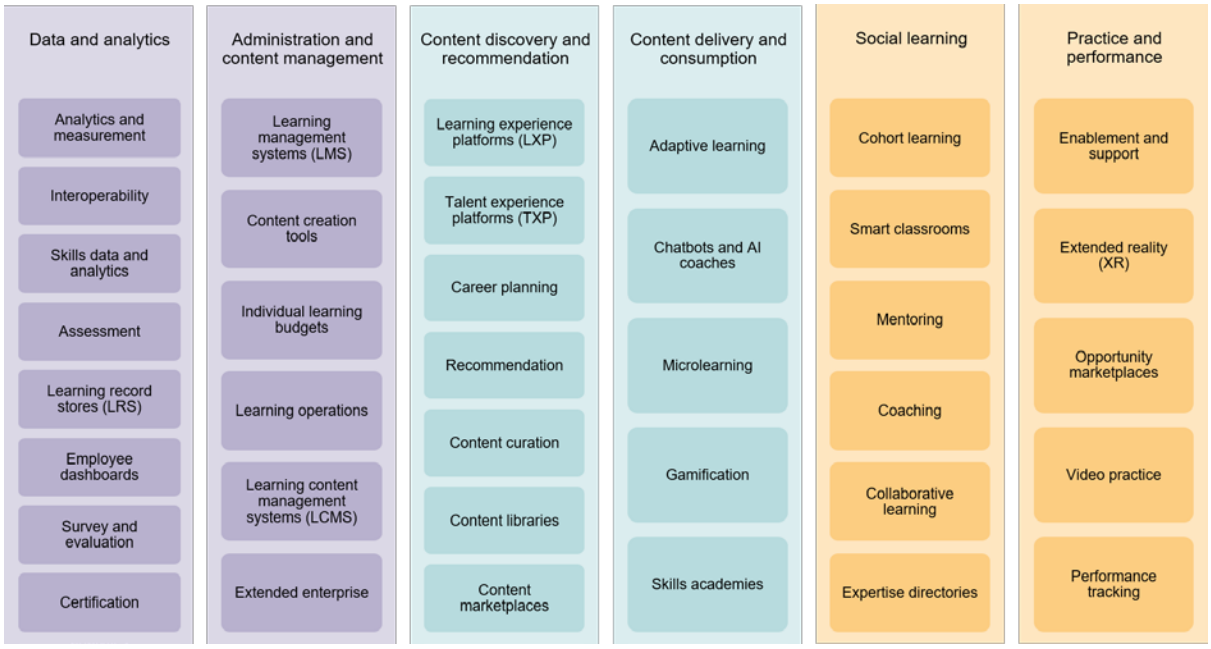
- Continuing **expansion, innovation and consolidation of the learning technology market**
- The **transformative impact of AI advancements** unfolding in all areas of learning technology
- The integral role of **increasingly sophisticated data functionalities** in new offerings
- The potential of **increasingly powerful automations** to reduce administrative burdens
- The rise of **'skills' as the organising principle of learning systems** and tools
- A growing emphasis on **flexibility in enterprise architecture solutions** and platforms

Learning technologies and features available

The research identified 37 distinct learning technologies and features, which are described and organised under 6 categories:

- **Data and analytics** (8 technologies and features)
- **Administration and learning content management** (6 technologies and features)
- **Content discovery and recommendation** (7 technologies and features)
- **Content delivery and consumption** (5 technologies and features)
- **Social learning** (6 technologies and features)
- **Practice and performance** (5 technologies and features)

List of learning technologies and features available grouped by category



Background

The APS Learning and Development Strategy (2021) outlines a set of pillars and principles to ensure the APS has the capabilities it needs to be high-performing, driven and trusted. Technology is one of four pillars of action seeking to: ***provide access for all to high quality learning experiences, performance support and knowledge sharing anywhere and anytime.***

The APS Learning Quality Framework and Design Standards published in 2022 outline standards and guidelines to identify, develop and deliver high-quality learning experiences. It reflects L&D technology advancements and argues for agencies to consider beyond formal learning such as classroom or eLearning.

The Framework and Standards encourage a culture of continuous individual and organisational investment in learning, sharing of learning resources, and partnering across the APS.

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The APS Learning and Development Action Plan (2021) identified significant opportunities exist to use technology to enable universal access to high quality learning experiences, resources and knowledge sharing. To realise the vision of the APS Learning and Development Strategy (2021) and to improve discoverability and access of learning, the Action Plan identified the need to co-create an '**APS-wide Learning Technology Roadmap**' (the Roadmap).

Learning eXperience Project

We are applying best practice approaches to develop the Roadmap and are following the Digital Service Standard 2.0 Service Design and Delivery Process. Following the Standard, we have completed a Discovery Stage. The purpose of Discovery is to build a deep understanding of the problems to be solved and identify opportunities.

We completed a review of existing research, conducted a literature review and spoke to over 90 APS staff including ***APS Learners***, ***L&D Practitioners***, ***System Administrators*** and ***Executive Leaders*** to understand their needs, behaviours and motivations and the context in which they complete their goals.

We completed a review of existing research, conducted a literature review and spoke to over 92 APS employees including ***APS Learners***, ***L&D Practitioners***, ***System Administrators*** and ***Executive Leaders*** to understand their needs, behaviours and motivations and the context in which they complete their goals.

We also explored the current state technical ecosystem of L&D in the APS and completed desktop research to understand current and emerging trends in L&D technology and what is having the most impact on learning outcomes.

This report aims to capture what we have learnt and identify opportunity areas. Opportunity areas will be used to generate ideas and hypotheses to test in future workshops with APS staff.

Research overview

Approach

We are applying the Digital Service Standard 2.0. This involves following the Service Design and Delivery Process from Discovery, Alpha, Beta and through to Live.

The Service Design and Delivery Process helps us to reduce risk and increase certainty that we are understanding the problems that need to be solved and solutions meet user and business needs.

The purpose of Discovery research is to build a deep understanding of the problems to be solved and identify opportunities. We aim to build a deep understanding of our users including their needs, behaviours and motivations and the context in which they complete their goals.

Discovery research is broad, and technology- or solution-agnostic. We do not assume solutions at this stage.

Discovery research objectives

Building on research that's already been done, we wanted to understand:

i. The current state needs and experiences of APS learners and supervisors.
ii. The current state needs and experiences of people who enable learning in the APS including learning and development practitioners, learning designers, platform administrators.
iii. The strategic priorities and opportunity areas of interest to APS leaders.
iv. The technical landscape of learning and development in the APS, the private sector and international government. This includes L&D technology trends and what has the most impact on learning outcomes.

We will use this as an evidence base to identify and prioritise problems and opportunity areas. This will inform generation of ideas and hypotheses to test. See Appendix A for our Research Questions and Appendix B for the Discussion Guide Questions for user interviews.

Out of scope

- User experience review of all APSC and whole of government learning products and services
- Exploration of how users move between whole of government learning systems

User research groups

Our target user groups were:

- **Learners** – APS staff
- **L&D staff** – enablers of learning including learning and development practitioners, learning designers, platform administrators
- **Leaders** – APS executive

Methods

We began by reviewing past research done. We identified gaps in the research on current state user learning experience including observational behavioural research of how people use learning systems today, research on the end to end learning experience and lack of recent research.

To complete our research, we used the following methods:

- Desktop research including reviewing online literature and past APS research
- Qualitative research interviews
- Observation of how people use learning systems
- Workshops
- Thematic analysis of the data

Considerations

We recruited participants through networks including the Whole of Government Learning eXperience Working Group and Co-Design Team, and by promoting the opportunity to take part in the research on the APS Academy website, L&D Community (GovTEAMS) and on the Data and Digital Professions Member Community Platform.

We followed processes to ensure free and informed consent. Participants were provided information about the research and completed consent forms. Results will be shared with participants.

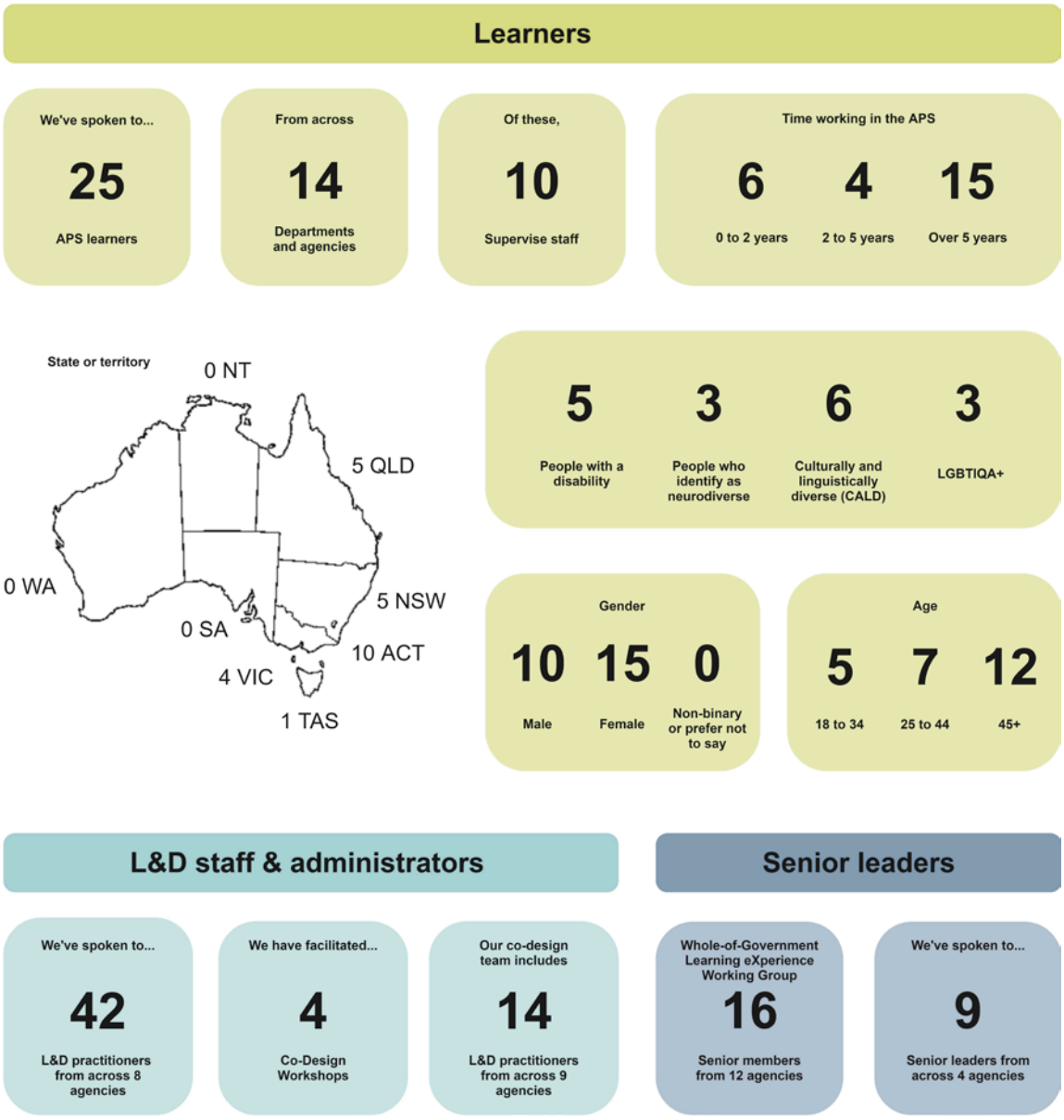
L&D staff interviews may elicit bias towards current state platforms. This will be addressed by seeking a range of views and testing hypotheses against current state.

We believe there was recruitment bias where people who signed up to take part in this research were more likely to be interested in learning. A limitation of our research is better understanding the experiences and needs of staff who are not interested in learning or motivated to learn.

Who we spoke to

To date, we have spoken to over 92 APS employees including 25 learners, 58 L&D staff and 9 executive leaders in over 114 engagements.

Statistical and demographic data for our research participants



We spoke to learners from across 14 agencies and 10 who supervised staff. There was diversity across their time in the APS, APS level, gender and age. We spoke learners who identified as having a disability, neurodiverse, culturally and linguistically diverse and LGBTIQA+.

We are grateful for the support from our Learning eXperience Working Group and to the learning and development practitioners who joined our co-design team to help us understand the current state of learning in the APS.

Research insights

This section includes themes that emerged from speaking with learners, supervisors and enablers of learning including L&D staff, system administrators and leaders. It includes key findings and relevant quotes from participants.

We used these findings to identify opportunity areas which are framed as *'how might we'* questions.

These help with creative problem solving and mitigate risk. They are broad questions that encourage generation of multiple possible solutions. This means we are less likely to limit the options too early, before we have tested ideas. This ensures only desirable, feasible and viable solutions are taken forward.

Snapshot of learner needs insights

Identifying the core needs of staff when learning in the APS allows us to design better learning experiences to achieve better learning outcomes.

Why I seek learning…

Solve a problem: I need to learn so that I can solve a problem in my work

Build skills: I need to build my skills so that I can perform my duties efficiently and effectively

Career growth: I need opportunities for professional development so that I can grow and advance my career

Comply: I need to make sure I comply with mandatory training requirements so that I don't get in trouble

Curiosity: I need opportunities to continuously learn so that I can stay intellectually active and engaged

When seeking learning…

Support: I need to feel I'm supported by my supervisor and agency to seek and complete learning so that I can make time to learn around work priorities

Findable: I need to find relevant, high quality learning quickly and easily

Relevant: I need access to learning that is trusted and relevant to my goals and interests so that I can build the skills I need to perform my current or future role

Trusted: I need to be able to identify the best learning content and know that I can trust them as an authority

Purpose: I need to understand the purpose and relevance of what I am learning so that I feel motivated to learn

Government context: I need learning that acknowledges government context so that I can apply what I have learnt in the constraints of my environment

When completing learning…

Flexible: I need access to flexible learning options so that I can learn without disrupting daily work routines

Choice: I need choice of how I can engage with learning content so that I can learn in the best ways that work for me

Engaging: I need learning to be engaging and interactive so that I feel encouraged to actively participate

Connect: I need opportunities to connect with peers and experts to share knowledge and skills

Ease: I need learning to be easy to navigate and use so that I can spend more energy on learning without needing to think about how to use it

Accessible: I need access learning that I can easily use that meets my diverse needs (e.g. ability to use with assistive technology) so that I can access the same opportunities as others to learn

Inclusive: I need learning to respect who I am and accommodate my diverse needs and preferences so that I feel safe and included when learning

Autonomy: I need autonomy and independence of my own learning so that I can set my own goals and control my pace and style of learning

Recognition: I need recognition for my achievements and efforts so that I feel valued

When actioning learning…

Application: I need opportunities to apply and practice what I've learnt in a real world context so that I can learn by doing

Safety: I need an environment where I feel safe to experiment and learn from mistakes so that I can practice and retain learning

Feedback: I need genuine and timely feedback so that I can improve

What we learned from learners and supervisors

Learning motivations

Many APS staff we spoke to identified as passionate learners and like to be aware of upcoming learning opportunities.

> "I am very committed to ongoing personal and professional development" (P09)
>
> "Always looking to upskill and stay current, it's just my nature" (P18)
>
> "Most of the roles I'm in stay interesting because there's always new things to learn to be able to do them better" (P15)

Learners seek learning that aligns to their interests and their career goals.

They seek learning opportunities that are relevant to their learning goals and needs and seek a purpose behind learning and want to understand why they are completing the learning. Learning may not be attached to an immediate work goal.

> "In the past, it's always been that I've sought out more challenging work opportunities so primarily looking for things that work on that will challenge and stretch my skillsets" (P06)
>
> "I like learning topics that aren't completely directed at work I do every day, I think it expands your mind" (P16)

Common triggers or motivations for learning included:

- Solve a problem or answer a question
- Progress towards career goals
- Compliance with mandatory training needs
- Work towards a goal set in a performance agreement
- Stay up to date in the field to keep up with pace of change
- Fill a skills gap in my team
- Directed to complete learning by supervisor or executive

Other motivations included:

- Build a profile or reputation
- Complete learning as a requirement for continued professional development
- Build skills to seek a promotion
- Validating or formally recognising my skills
- Pass probation

"Interested in learning different things to upskill and career change" (P22)

"In my current job I'm already starting to think "what's the next step? What's the bits and pieces I can take initiative or ask permission to train myself up in to make the most of my role?" The last thing I want to be is horrible at my job" (P19)

"Yes you have your deliverables, but you should still take some time out of your day to stay up-to-date in your field" (P12)

Finding relevant and trusted learning

Learners spoke positively about the wide access to learning opportunities in the APS.

"I was surprised at the amount and quality of learning available within the APS when I arrived, coming from private sector" (P21)

"This place is amazing in terms of the opportunities to learn things if you want to" (P09)

"My work in the private sector, I don't think it compares. Here I think the learning opportunity is better, higher" (P16)

Common starting points for finding learning:

- Searching Google, YouTube, Reddit etc.
- Finding an expert to speak to
- Agency intranets
- Agency internal communications
- Email newsletter subscriptions
- Subscriptions to Communities of Practice
- Through my agency learning system
- Academic literature
- Through private providers such as LinkedIn, Udemy

"For the most part I'll go to Google" (P15)

"With internet it's great, I see it as a ground floor of resources, you can do research on the topic and you can then select options that may be of interest to assist" (P16)

"YouTube is pretty good. Type in what I want, read the comments and see what it's like. If it is, I usually watch it" (P23)

Common factors learners use to decide whether learning is a good fit for them:

- Mode of delivery (online or face to face, facilitated or self-paced)

- How long it takes (short and fast to long term or in depth)
- Cost
- Trust of provider or source

Many learners shared that research and initiative is needed to find a trusted, relevant and quality learning opportunity.

Many people were unsure of what learning is available to them across the APS and where you can go to find it.

> "It's hard because it's so much info such a big org, so much going on, it's hard to catch people's attention with things. It's not like it comes to you, it's not like it's there on the front page or anything" (P09)
>
> "Navigating between so many different systems at work, it's a bit of information overload sometimes" (P20)
>
> "I don't know anything about this government bureaucracy, I've worked in the non-profit sector on and off for 20 years, so how do I know what's available and what's not available?" (P03)

Learners tend to trust reputable providers and seek recommendations from colleagues to find trusted learning.

> "It's a lot of researching to find the actual courses I want. I don't just want to do a course to do a course, I want it to provide value, be written by someone who is a leader in industry so I'm not getting wrong info. There is a trust issue in selecting the courses. I try to look for reputable organisations" (P13)
>
> "I'll often check in with colleagues or teammates or supervisors, just to say hey, 'have you done anything like this before? Do you know any good resources?'… I find a personal recommendation is useful rather than going in blind to something" (P20)

Learning opportunities are often discovered through internal communications and opt-in subscriptions.

This may be through internal communications or opt-in subscriptions such as Communities of Practice, APS Academy newsletter, private providers or non-government organisations.

Finding an expert to speak to was a common starting point. Learners mentioned it can be challenging to find an expert in the APS.

> "I'm a looker-upper of things and a talker to experts wherever possible. I love talking to an expert, once I know enough to ask sensible questions and not waste their time" (P04)

"In any of my [past] roles, the people above you were the leadership because they were the technical experts. What I found [working in the APS] is that I was in a sea of people and I don't know who to go to ask for advice" (P09)

Learners appreciated content that was relevant to public service context and real world scenarios.

"People need to know our business, what we do, what system we're using, what sort of limitations we have. What sort of tech we have or we don't" (P14)

Opportunities

- How might we… support learners to easily find relevant and trusted learning that is available to them across government?

Support and approval of learning

Many learners feel confident to seek out their own learning opportunities without needing to seek approval.

Most learners feel supported to learn if they balance their time around completing work. They often have a said or unsaid agreement with their supervisor that they manage their learning time around work commitments.

Many learners are free to manage their own learning and make decisions about the content or provider, and may only need to check the timing or if there is a cost.

"I don't need approval for seminars, etc., that's not how I learn. I'll tell her what I've been doing, this experience, what it involved, and she says 'that's interesting,' but I'm pretty much organised to work through my day, and as long as I'm available for meetings and deliver my outcomes on time, I can order my learning day as I like" (P12)

"I didn't ask permission for that stuff, the understanding was I had X amount of learning time, I managed my time myself, unless there was a cost to be approved" (P19)

"It's a very hands-off style of leadership, so as long as I'm getting things done that need to be done" (P09)

Some learners felt they needed to get buy-in to learn and, in some cases, write a business case.

Business cases were often linked to goals in their performance agreement. This could be needed for learning opportunities with and without a cost.

Often learners increase the value of their learning by sharing it with other team members.

> "I will always try and justify my learning and focus on sharing it and producing something of value from it" (P09)
>
> "I found it was supported when I reached out and asked for support. I had to ask. The support is there but you have to ask to know it's there. If you were new to the APS you might not know to ask" (P24)

Lack of budget was often mentioned as a barrier to learning while some learners spoke about having an individual budget set aside for learning.

> "They don't have a budget for training at the moment. So I end up paying for my own subscriptions and doing my own courses for myself" (P06)
>
> "The realities of the budget and the timing of what we need to deliver in our projects can get in the way… to realistically set aside time without then having a ridiculous amount of work to do" (P20)

Lengthy or convoluted approval processes can result in delays and missed opportunities to enrol and participate in learning.

Where there are waitlists for popular courses, lengthy approval processes can sometimes be a barrier to access.

> "Missed opportunity there, of waiting for the approval to go through and not being able to sign up" (P24)

Learners felt learning opportunities should be fairly distributed among a team.

Time taken out to learn can leave a gap in the team that others need to fill.

> "If someone is doing lots of learning activities, then everyone else is having to do more work. So we try to share it around, take turns" (P24)
>
> "If I'm going on training and learning, it means I'm away from my day-to-day duties, then someone else need to share that load" (P14)

Supervisors spoke about creating learning goals with their staff and aligning work and learning opportunities to their staff's interests.

Many spoke about regularly sharing learning opportunities with their staff as they come by them.

> "I ask 'What do you want to do?' and 'How do you learn best?'" (P04)

"What are the directions they want to develop their career and what skills would contribute to that" (P15)

Many supervisors spoke about the need to make time for learning to help build capability.

This may mean temporarily reducing capacity to deliver to invest in the future.

"Your job as a manager is to grow people… The more expertise and capability my team has, the better it is for me and the org, therefore as a manager I shine" (P10)

"I support them 100%, I shift things so they can do it" (P07)

Many supervisors spoke about the value of learning things beyond one's job role to bring in fresh thinking and prepare for the future.

"It's a disagreement in philosophy about whether staff should be trained specifically to perform the duties of their role or for broad capabilities of the role they should have in the future. I encourage staff… to train for the jobs that they want to have" (P10)

Enrolling in learning

Learners either self-enrol themselves through a learning platform, are automatically enrolled for mandatory training or are enrolled by others in learning opportunities.

Learners expect a calendar invite after enrolling. If the learning delivery is online, they expect a virtual link in their calendar invite.

Supervisors or leaders may enrol staff, teams or entire branches in training.

In service delivery agencies there are sometimes periods of mass onboarding of new staff. Learners are usually enrolled in a whole training program.

"The training group before us had 16 or 18 people in that, because they're onboarding this training all the time because of the 3000 that are getting rolled out… I'm not saying it's a sausage factory, but they know how to do it" (P03)

"There was an adaptive leadership [course] we were all put on, it was compulsory, we didn't get a say in it. I didn't even know it was coming, all of a sudden we had these 3 hour calendar blocks, I didn't even know how I was registered for it" (P07)

Flexible learning

Learners shared experiences learning that ranged from a few minutes (short videos) to training over months (e.g. in-depth courses).

"I think it took me an hour and a half" (P07)

"I'd say probably between 2 to 4 hours a week I would have spent on it at across the time and some of that would be my personal time in my lunch breaks, I did a lot of stuff on my lunch breaks" (P09)

It can be challenging for learners to find time for learning due to work pressures.

Learners make time in different ways for learning. Either blocking out specific days or time for learning, after hours learning or even taking leave for learning.

"The same person encourages you to do [learning] might actually be asking me to do something when it's on" (P07)

"So far, there hasn't been an opportunity to complete training as we've been way too busy" (P17)

"The biggest issue is not funding, it's time. People are overwhelmed, there's redundancy being made, there's teams are not being replaced, they just don't have time, they are so busy" (P08)

Many learners spoke about the need to access flexible learning that fits around their work schedules and interruptions.

Some described flexibility as a means of learning at their own pace where they could take their time to focus, think and process.

Many learners spoke about needing to learn for work in their personal time to fit it in.

"Having the option to do some of the work according to my own schedule is really important, the flexibility" (P20)

"I like to do it in my own time, sometimes week to week I may be full of beans or a bit flat or switch off, so I like the flexibility of going online or reading things in my own time" (P16)

"Normally I block about 1.5 hours on a Friday, sometimes I have to cancel, sometimes I make it a bit longer depending on what's going on in my workload" (P16)

"I tend to upskill myself outside of hours a lot… I took myself on Rec leave to do a 10-12 week full immersive [course]" (P18)

Opportunities

- How might we… provide opportunities for short, fast learning on the job?
- How might we… support learners to access learning when, where and how they need it?

Choice and engagement when learning

Learners prefer different modes and structures of learning delivery, some prefer in-person while others online.

Learners shared preferences for learning in a variety of modes and structures, both formal and informal, including:

- bite-sized microlearning
- live instructor-led sessions
- completing projects
- group learning experiences
- conferences and events
- speaking to experts
- being coached
- observing others
- reading books or papers

Learners shared positive experiences when learning was interactive and they could choose how they could engage with the content.

Learners valued when there were options to engage with content in their own way. For example, the ability to read or listen to content, to look at a diagram or to watch or listen to a video or read a transcript.

Learners appreciated an overview of all content to understand the bigger picture and for content to be broken into manageable 'chunks'.

Learners desired learning in a variety of modes and activities, including interactive experiences, self-paced reflection, and pre- and post-content for live sessions.

> "I'd want it to be a choose-your-own-adventure. I can read it, I can listen to it. I can watch it. I can watch it and then listen to it" (P05)
>
> "I want to read, I want to see and visualise, so for me it's about having the time set aside to focus on it and then having the opportunity to do a bit of a deep dive, have a goal, and then try it, and then get some feedback, talk to an expert, ask questions, get input" (P09)
>
> "I believe in the smorgasbord approach to learning, not the 'I'll deliver you three meals a day' approach to learning, and that's how you can work out what suits you well" (P12)

Almost all learners spoke about a preference to "learn by doing" so that they could practice and retain new skills.

Learners sought opportunities to learn by trial and error and practice in a safe environment for making mistakes.

Learners also described a range of ways in which they followed up and consolidated what they had learned, including copying information into notes, reviewing notes, drawing diagrams, testing themselves, seeking feedback, and especially applying the learning in real-world projects.

> "I really learn by doing, once I've done it, it sticks and stays" (P17)
>
> "Hands-on is great, implementing what you've learned in practice… being able to implement it on an actual project means we've got a real problem to solve using our new skills we're developing" (P18)
>
> "If it's a hands-on task then the ideal experience is to be doing it and getting feedback on how you're doing it and getting advice on how you're doing it" (P09)
>
> "Balance of being challenged and engaged. Not too challenged that you feel overwhelmed" (P23)

Many learners described reading regularly as an informal form of learning.

Some supervisors support their staff with recommendations and in one case building a "little library" for their team. One learner described going through physical textbooks with a highlighter and taking handwritten notes to consolidate learning from reading. Online learning did not allow him to work through material in an effective way.

> “I'm a big reader and that is something that I do a lot of and I didn't mention it cause it almost doesn't feel like learning in a sense, but yeah, that's it's something that I love to do" (P06)
>
> "It would have to be something tangible like a textbook with a highlighter… Online learning isn't like that because you get all the info there, you read, click the next slide, etc. then get a test" (P19)

Opportunities

- How might we… provide learners with choice of how they engage with learning content?
- How might we… leverage emerging technology to design more engaging learning experiences?

Social learning

Learners find value in social learning from both experts and peers.

Many learners shared experiences with social learning that ranged from learning in communities of practice, learning with others completing the same course, to regular sessions of peer instruction.

Learners often mentioned the desire to speak with an expert and to get help or ask questions when learning. Some learners also sought to be coached or mentored over time as they learned a new skill.

When completing courses, social learning experiences were positive when people were grouped with other engaged learners and negative when group members would not attend or participate as expected. One mentioned the feeling of social responsibility was a motivator to complete learning, while others described that learning experiences were not as effective when their peers did not participate fully.

> "I learn best when I'm learning with someone" (P02)
>
> "I'm always checking the Communities of Practice and learning from others, a lot of people ask questions and answer them a lot, see what other agencies are doing" (P08)
>
> "We have a 2-hour session on a Friday every week where we bring our skills to the table and upskill each other" (P18)
>
> "There's also social responsibility to the other people learning in the course, if a whole lot of people just don't turn up, then it really affects any collaborative learning for other people, so that's a motivator as well" (P20)

One learner described virtual live sessions as an opportunity to connect both with the expert speaker and their peers in the live chat, helping each other with questions.

> "I enjoy the online presentations that involve the opportunity to ask questions, or the chat, we can't have the back chat in a meeting – other people are saying 'they've used this word "data product" which I need to put in my glossary, anyone have a good definition?' and I think 'I don't call it that, I call it a data asset', so I ask if anyone can give a definition of the two and when they would use each – and I've got a whole lot of people there to draw on" (P12)

Opportunities

- How might we… support learners to connect with expertise across government?

Online learning

Learners shared mixed experiences learning online.

Some learners preferred online learning for its flexibility, convenience and the opportunity to complete it over distance.

"It's just like you can grab learning and you can hold it, and it's like 'today I can have an experience'" (P12)

"Online learning is one of the ways you can support people who are working remotely, it allows the APS to engage a greater range of people as employees" (P02)

Others found it a challenging learning format, particularly for learning practical skills.

"Certain things I like being in the same room, face-to-face things, if we need to interact, if it's a practical thing" (P16)

"I don't communicate well online, I don't express myself, I find it difficult" (P03)

"I like to learn by building things, tactile [experiences], and it's not just online being told information, because I don't absorb it. Part of it is I have a disability" (P03)

Online learning was a positive experience when:

- Information upfront on how the course works and sharing any relevant materials in advance
- The content was interactive
- Platform is easy to navigate and content is clear
- There was an ability to stop and start learning
- Facilitators engage with learners in forums

"So 100% online is not my preferred method, unless you have those online courses that are more interactive, broken into chunks, incremental learning that I seem to do a lot better at" (P19)

"I've had some really good experiences where everything was provided in advance, instruction and guidance beforehand, it was easier to learn, you were already learning before the course" (P24)

"Needs to be easy to navigate without having to ring up the help desk" (P07)

Online learning was a poor experience when:

- Learning was not designed for people with accessibility needs (e.g. visual impairment)
- The platform was hard to use or navigate
- There were not opportunities to ask questions
- Facilitators were not skilled in learning technology
- When a face to face learning experience hasn't been redesigned for the needs of online learning

"You've got to click here, you've got to do that, but finding the spot to click in the first place is difficult and then working out the mechanisms on how it all works or how it all flows" (P05)

"I got muted in my class for asking too many questions!" (P09)

"I'm a person who questions, so I found it frustrating doing online learning, my preference for inquiry learning doesn't get attended to as much as in face-to-face learning" (P02)

"The lecturers didn't know how to use Teams – in a classroom with a blackboard talking like he was still talking to us in the room" (P09)

"I prefer written sources, I don't use videos to learn [due to vision impairment]" (P04)

Opportunities

- How might we… design online learning that is easy to navigate and use?
- How might we… support learning designers and facilitators to feel confident to design engaging online learning?

Inclusive learning

Learning needs to be tailored to the needs of participants, including being inclusive, accessible and human-centred.

"The person doing the training was moving so quickly from topic to topic that I just felt my needs weren't being addressed. The guy was flashing his little pointer left, right and centre, he was going at a huge rate of knots, opening folders, closing folders, doing this, doing that… he would stop and say 'has anyone got any questions?' but there were maybe 60 people online" (P02)

Learners shared the importance of using inclusive language.

When insensitive language is used, it can be offensive, make the learning environment feel unsafe or make learners feel like they are not part of the target audience.

"So not breaking things into gender specifics and just referring to people as humans, I think is also a good way to get people on board, especially people in the LGBTI community… Not making assumptions as well that people are going to see things from a heterospective [heteronormative] point of view" (P05)

"He talked about us as 'the elderly', I said that 'I don't like being referred to as "the elderly", I'm happy to be called an older person, but I don't call you "the youngerly"'" (P12)

"I complained bitterly that one of the videos was a young woman giving an old man feedback about his performance and he reacted angrily, and 'what should she do' sort of stuff, and I thought that was the wrong trope completely, and it didn't deal with the fact there are four generations in the workforce" (P12)

Learning with ADHD and dyslexia

Interviewees with lived experiences of ADHD and dyslexia shared their experiences and learning accommodation needs.

They shared their needs with us including:

Building in time for breaks to enable learning.

"You're meant to have a screen break every 50 minutes, I get up and down, I go when I have to… do what I have to do to take care of myself" (P03)

"I need that break away so I can go, let my brain do its own thing, and then I can get back into the focus again" (P05)

Getting to a point of focusing is hard. They need to have more than one thing to focus on, for example, something to hold or learning while walking and reading.

"I doodle and I know that when you squeeze Play-Doh it activates a part of your brain that helps you listen, or if you eat an apple" (P03)

"I find when it comes to reading, it's easier for me to print it out and go for walk while I'm holding it and read it while I'm walking" (P05)

Ability to choose from a range of formats to learn.

"I might learn differently from the person next to me, but I want to and if you give me that freedom, then I can" (P05)

Breaking down information into small parts.

"If all of a sudden I see like 200 bits of text, that's a bit too much, but if you present it to me in 20 pieces, that's easier" (P05)

Allowing extra reading time. Timed assessments can be stressful.

> "So because of my dyslexia, for example, I take longer to read something… So we will give you 20 minutes compared to the 10 that you might previously" (P05)

It can be harder to comprehend negative sentences e.g. when the word "not" is used.

> "One of the things that I really dislike is if there's assessments and they use the word "not" in there, I will often accidentally skip the word "not" and then I will answer completely the wrong way" (P05)

Mnemonic patterns can be unreadable with dyslexia (e.g. acronyms, acrostics).

One shared that they wished there was a way to communicate learning needs without needing to say it again.

> "I find I found the hardest thing, especially with the disability at first, is saying what I needed because then it's like I'm saying there's something wrong with me. Having some sort form of mechanism so that I can go 'I'm just somebody that takes a little bit longer to read something'" (P05)

First Nations research

Insights from previous research report on the needs of First Nations people's learning. In 2022, First Nations people were engaged in interviews, focus groups, prototyping and testing in the design of the APSC Whole of Government Cultural Capability Hub available on APSLearn. Four percent of APS staff identified as Aboriginal or Torres Strait Islander in the 2023 APS Employee Census.

What we learnt from this research:

- Cultural capability is complex. It is an ongoing journey of continuous learning and agency improvement to ensure agencies are providing culturally safe and inclusive work spaces for Aboriginal and Torres Strait Islander employees.
- Recognising a preference for learning through storytelling, lived experience and first-hand accounts to communicate the importance of Aboriginal and Torres Strait Islander Cultures, individuals pain points, barriers and opportunities to improve and embed richer understandings in the workplace.
- Learners are time poor and need to be engaged with interactive learnings that include bite sized learning.
- Learners prefer case studies where they could see themselves as the user.
- Learners were unaware of what information and resources were readily available to them.

Opportunities

- How might we… make learning accessible and inclusive for everyone?

Use of technology such as AI when learning

Many learners spoke about using ChatGPT as a tool to support their learning.

Learners used ChatGPT to, understand the breadth of what they need to learn, ask questions about what they are learning and test their thinking.

Learners were generally confident in the responses from ChatGPT while also acknowledging they would need to test the information to make sure it is accurate before using it.

Learners spoke about using their personal devices to access ChatGPT and being cautious to not feed in any sensitive government information.

> "I was relying on ChatGPT a lot and I learned how to prompt it to get answers I wanted and resources to the right place" (P01)
>
> "Pretty confident in the responses it gives. More use it to query my own understanding of things. It tells me what I miss" (P23)

Some learners mentioned using OneNote as a tool to take and collate notes while learning.

> "I set up OneNote so I can take notes and cut and paste pictures and stuff, so I have my own big learning record" (P12)

Some learners wish they could access learning on their personal devices.

Some learners spoke about learning on their personal devices and not being able to access learning for work in their personal systems. Learners found that using their personal devices more convenient during a work day and experienced less distraction. When it was in regards to mandatory training, this access barrier was accepted and appreciated.

> "[Experience of learning on personal device?] Prefer it, and it's more compartmentalised. Less distracting of the workplace as well" (P09)
>
> "For LinkedIn Learning it's a bit more difficult because we can only access it through the department system, so it has to be at work or we have to take a laptop home" (P15)
>
> "There is the ability for me to do it in my own time on my own devices and things like that, but I don't want to do that. I'd rather do [mandatory training] while I'm in work time on the work system" (P07)

Opportunities

- How might we… support learners to access and practice responsible use of AI in government?

Applying learning

Learners seek opportunities to apply their learning so that they can remember it.

Supervisor support is valuable to create opportunities to apply learning on the job. When learning is directly applicable to their job, learners are more likely to be able to apply it straight away.

Learners have positive experiences when they can apply their learning in a practical setting. This included solving real life work problems and explaining new concepts to others to help identify gaps in knowledge.

Learners valued sharing learning with team members to upskill each other and to practice new skills and knowledge.

Some learners would like access to knowledge from learning when it's needed the most on the job.

> "Transferring that knowledge from my mind to my hand and going over it a few times… that's what'll make it stick for me" (P19)
>
> "Making sure that training's available to people when it's directly useful to them… have resources available to tap into when people actually need the knowledge immediately" (P15)

Learners are also looking for a safe space to apply what they have learnt in a low risk environment where it is safe to fail.

> "People actually get together and practice by doing in an environment that's safe… psychologically safe, organisationally safe, a place where it's safe to fail – because I don't think you can really learn without having the opportunity to fail" (P21)
>
> "I consider myself a very, very slow learner, I really need to practice and fail at things a lot before I start to get them right" (P26)

Learners seek genuine and respectful feedback so that they can improve.

> "Asking the right questions, reflecting, giving space, and just giving feedback that's critical, constructive, in a non-aggressive way, delivered well – not the sandwich way of giving feedback it's just genuine feedback when it's due" (P08)

Opportunities

- How might we… create safe opportunities for learners to practice new skills and receive feedback?
- How might we… encourage supervisors to support staff to apply learning?

Recognition of learning

While learners do not anticipate acknowledgement of all their learning activities, many want to feel that their effort is recognised.

> "It can be a bit "tick, tick, tick, done, done, done, very good, keep going" and when I did work very hard it would be nice to have some acknowledgement" (P16)
>
> "I don't have any expectations around it, it's not like doing a Cert III" (P03)

Learners were mostly concerned about certificates if they can help their future career prospects.

Most people do not see value in "badges" as a form of recognition for learning. However, there are some who would like to display qualifications in public-facing profiles.

> "If you're going to be doing more in depth study, having some degree of credentialing can be a big motivator for people to have something they can show in their resume at the end" (P15)
>
> "If there is some certificate attached to it, if there is a something which is relevant to me, I think always gonna be useful for me. I can use that qualification somewhere else" (P14)
>
> "I work in a public facing role… LinkedIn is also a promotional place as well. It adds substance to your profile as well" (P11)

Learners appreciated having certificates for their completed learning in one place. Certificates are a reminder of what they have completed and achieved, and some use this to support performance conversations.

> "If anybody ever asked me, I can say this is what I've done and this is when I did it" (P05)
>
> "Having something that other people can view, like a profile possibly… for reminding oneself of what one has done in the past year for Performance & Development conversations as well. Because a year can just fly by" (P20)

Opportunities

- How might we… support learners to feel recognised and valued for their learning?

Leaders as learners

Executive leaders shared similar learning behaviours to APS staff.

Leaders reported that they look for learning experiences by searching the internet, talking to peers, searching for topics of interest on APS Academy website and APSLearn platform. They also engage with professional social media networks and communities.

> "Generally in the work I do, I either reach out to a trusted peer I know is good at what I'm trying to learn" (P34)
>
> "I've used both Academy website and APSLearn, more out of curiosity than looking for anything specific" (P34)
>
> "I've got quite a big LinkedIn community that I follow and that follow me, so I often source interesting podcasts and ideas around L&D through social media" (P35)

Enrolling in learning behaviours were mixed. Some leaders self-enrol and some rely on others they trust to do it on their behalf.

> "As I've become more senior, I've become more needy. And so my wonderful EA generally does the enrolments for me. That's terrible, isn't it? [laughing]" (P38)
>
> "I can do it myself, yeah I've got an APSLearn account, it's not difficult to navigate, I find" (P36)

Leaders participated in various forms of learning such as learning from experience in a new role, learning in the flow of work, completing mandatory training, enrolling in programs and masterclasses and attending events off-site.

> "Being a relatively new Band 1 employee, am making sure I'm developing the skills expected of a Band 1 and I feel like the Academy are the experts to deliver that kind of opportunity or offering" (P34)
>
> "I'm very much about learning in the flow of work, so I try to keep up with any tech changes, make sure I'm across things" (P35)

Leaders described having generally positive experiences of learning, finding their learning systems easy to navigate, and participating in high quality programs. Some valued interactive learning whereas some found it difficult to find time for extended learning activities. Multiple leaders described some form of involvement in the development or delivery of their agency's learning offerings.

> "On executive course, Band 3, some I've done are good, they're usually residential in the sense that you're not at work, you go off somewhere and have several days" (P41)
>
> "I was involved in piloting the SES and the managers' programs to ensure that they were fit for purpose, and it was a fabulous experience for me as well as the head of HR" (P38)

"I probably pick up most of my learning by listening and hearing and learning about others' experiences and how they've navigated tricky situations like integrity, particularly at a level where understanding what type of learning medium to deliver it – an eLearning package is not going to cut it" (P37)

"It wasn't always easy to find the time to do all the pre-work" (P34)

Learners experiences with APS Professions

Learners appreciated the free, short and easy to access to events and resources.

"The learnings have been very relevant. In short bites like an hour, it's very digestible, and I can fit time in my schedule for that" (P13)

"If you miss something you can record it" (P12)

"Those lunchtime learning sessions – I'm on the Data and Digital Professions mailing list so I've got quite a lot of invitations sitting in my calendar" (P18)

Learners who identified in specialist skills shared positive experiences using the APS Professions to connect and learn.

"It's such a specialised area, there's no training available. You have to go to the Data and Digital Professions site, and there the learning is what's happening how" (P12)

"Most of my learning is informal, either through subscriptions or the Digital and Data Professions. I'm addicted to it, it's like heroin, because there's a whole lot of other people there who think like me, that data is important… If it got lost I would be absolutely devastated" (P12)

"I've reached out to the Digital Profession whenever I have a question or I'm seeking info on where to learn. Learning from other agencies and how they approached a certain situation and what the steps were and how they went through it and what the outcome was, it's very informative" (P13)

One emerging specialist felt there may be more value for them in the future.

"As [Digital] Trainees I have had to attend at least 10 events… sometimes it doesn't feel that relevant to where my understanding is right now. Remember it being above what I am doing right now a bit" (P23)

Learners experiences with APS Academy

Most learners expressed positive feedback on APS Academy.

They expected and experienced APS Academy courses as trusted, quality and relevant to the context of working in the public service. Some mentioned they shared and recommended APS Academy courses to their team.

> "APS Academy might feel a bit more trustworthy than just kind of going out and finding courses to do, which we aren't sure how good they are or how relevant to the public service. We've seen things like 'This looks great, but it's so geared to the private sector it might be inapplicable'" (P20)
>
> "I spend a reasonable amount of time on APS Academy, APSLearn, the resources that are there. There's so much stuff there and a lot of it is really high quality" (P21)
>
> "I have been on some very, very good APSC courses before so I do check there as well just to make sure that there's nothing that I've missed" (P07)

Some learners shared positive experiences with the APS Academy newsletter. One mentioned they wish there was a regular email communication from APS Academy as they were unaware of the opportunity to subscribe to the mailing list.

> "If I'd never gone to the webpage, I wouldn't have known about these upcoming events. I don't think I've ever seen an email from APS Learn or Academy to say 'oh, this is the schedule coming up for March/April'" (P22)

Some learners who had heard of APS Academy were unsure whether they had used it. One learner who was not aware of APS Academy and was surprised to see so much free learning content available.

> "This actually looks pretty good to be honest. I didn't really know it was here, but I think part of me assumed it all wasn't necessarily free" (P26)

Finding learning through APS Academy website

- Learners accessed APS Academy via Google or their intranet.
- When learners started on the APS Academy site, they would often go to "Explore 2024 calendar" or the "View courses" call to action to explore what learning is available
- Learners generally liked the PDF calendar display of courses to see learning available month by month.

> "I think the view of a month per page is easier to read than a whole year, divided into months, it was quite easy to read" (P20)

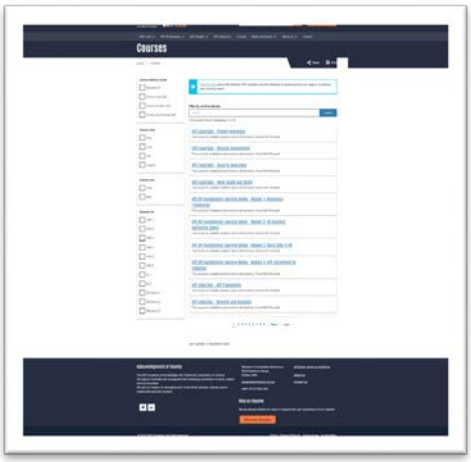
- A couple of learners mentioned they would expect to see dates on the PDF calendar so that they can plan their learning (there are no dates displayed).
- Learners would expect to be able to click on the course on the calendar for more information. To find out more about a course from the PDF calendar, learners needed to search for the course manually in another window.

> "My only thing would be, I would expect to be able to click on any of these headings and for it to take me – hover over it and tell me which date, or a hyperlink so I can go and have a look at that course" (P20)

- When using the site course search tool, learners responded positively to seeing upfront which delivery mode a course was presented in (e.g. face to face or online) so that they could find courses relevant to their needs.
- Learners generally found the detailed course information to be clear
- No participants shared past experiences using the resources on the APS Academy website (note participants were also not prompted about this).

APS Academy website

Course search page



Course information

Month by month calendar

Logging into APSLearn

- Some learners found it unclear how to log on for their agency. They were unsure what the acronyms for single sign on meant. A couple of learners tried to log in using single sign on but it did not work (they were not eligible to log in that way).

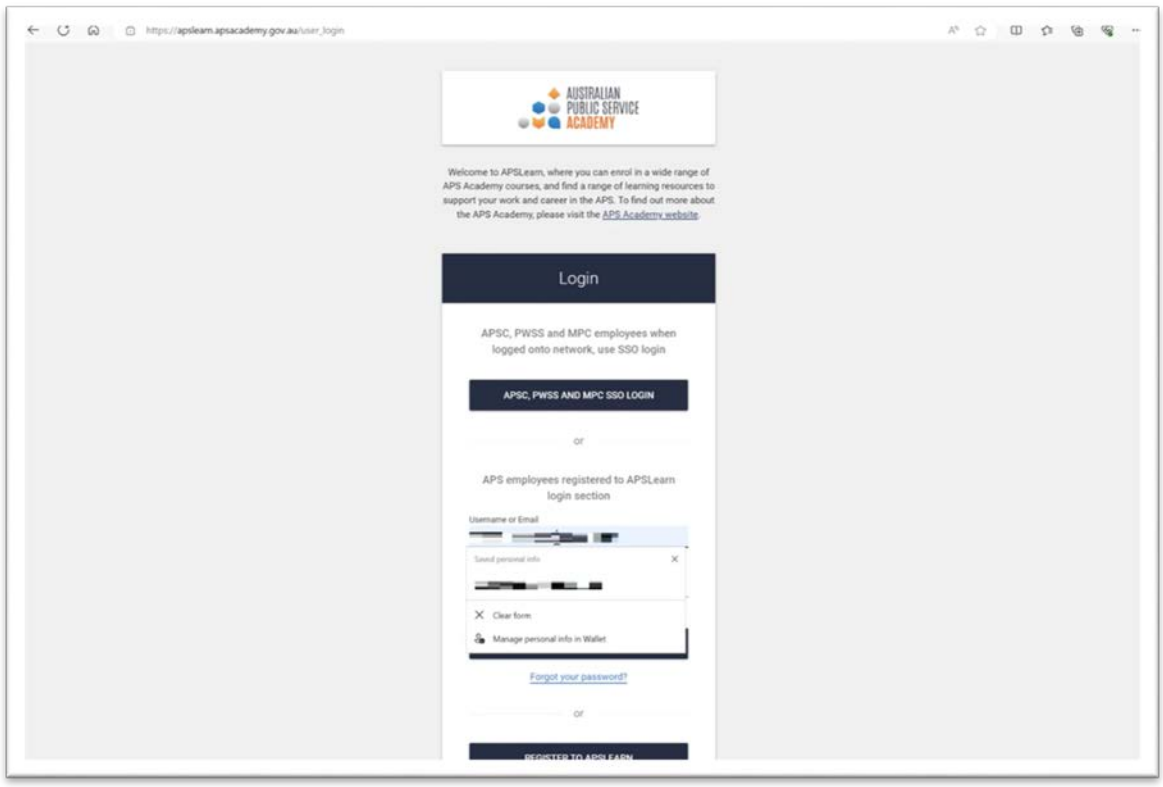
> "OK, no. "Sorry, we're having trouble signing you in". That's because I'm trying to use single sign on and I have the wrong organisational address… I couldn't get in it, it booted me out, so I'll try something else. But what I will probably try is I'll have to put in a password… so then I'm going to put in what I think is my password" (P10)

- Some learners are able to use single sign-on to log into APSLearn (either APSC employees or connected systems)
- Some learners needed to do password resets to log in and mentioned they often struggle to remember their passwords.
- Two participants had recently changed agencies. Both were unsure how to get back into their account and how to go about requesting to have their account details updated for their new agency. One participant assumed they needed to create a new account with their new government email instead.

"Should I try to recover my old address or just register for a new one? I don't know what APSLearn would want me to do, I would be very happy to register for a new one, but I don't know if that would be the right thing to do" (P19)

[How would you go about asking for the email to be changed over?] "No idea… I don't want to lose my learning history here" (P21)

APSLearn login



Opportunities

- How might we… make it clear and easy for learners to log in to APSLearn?

Finding learning in APSLearn

- Some people found it useful to bookmark APSLearn.
- Some learners found the experience of accessing the log in to APSLearn from the APS Academy site unclear with one person finding a solution by clicking "Enrol in a course" as a workaround.
- Learners experienced difficulty using the search / browse feature to find relevant courses on APSLearn. Additionally they were disappointed the keyword search suggestions were not the most relevant results first and they were not able to filter or sort the high volume results that came up.

"I went through the whole list. I feel like this page here is just showing everything. And then I couldn't find a way to do that like filter that search" (P24)

- Some learners found APS Academy courses were not relevant to them as they are looking for a specialised topic or advanced training (e.g. cyber security). For these learners, search did not produce any relevant results.
- Learners found that the search did not return results for search terms they expected would yield results, and were frustrated that the search did not interpret their queries better.

"I feel like the search is very verbal and it's not as predictive of what I'm trying to say" (P24)

"OK, so no results found for query 'information technology'. Now to me it's kind of like nothing for it" (P10)

- Learners responded positively to free learning opportunities and short learning opportunities.
- Cost is a major barrier to being able to access learning. This also means an internal approval process is needed to complete a course through APS Academy.

"So when I went to this, it said "Express your interest". And then when I express my interest, here we go, $14,000 per attendee". Sorry, and that sounds kind of unnecessarily grumpy, but what I mean is when people first started to out the APS Academy website, I thought it was a place that I could go and just get learning, like LinkedIn Learning. I didn't realise that it was a place that I would have to go and pay" (P10)

"While I love what's on offer, because a lot of courses are paid and you have to budget for and it's not an easy process to get approval" (P18)

- Learners mentioned the face to screen sessions are often booked out. They registered their expression of interest in the course for future places. One learner said in the past they would check out the site every few days to see if there is space.

"I looked for like 3 months or so before space opened up, and then I did that course" (P24)

"I would do the 'face-to-screen' one – I often find these sessions are booked out. I have to do [the virtual sessions] because I'm remote, based in Brisbane" (P21)

- One learner could not easily find the page to search or browse courses in to APSLearn. They had to try multiple places before getting there.

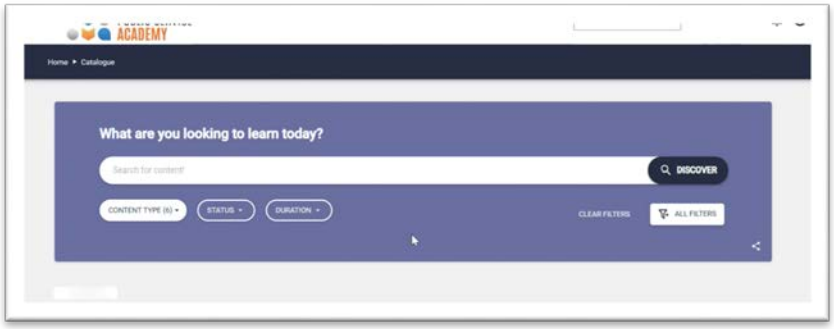
"I recall there being a place to search… I feel like there was a bigger list… I can't for the life of me remember where it is now [the full catalogue of courses]" (P17)

- One learner needed to cancel course due to being unwell. It took multiple communications to get a refund which was quite stressful for the learner before they were about to go on extended leave.

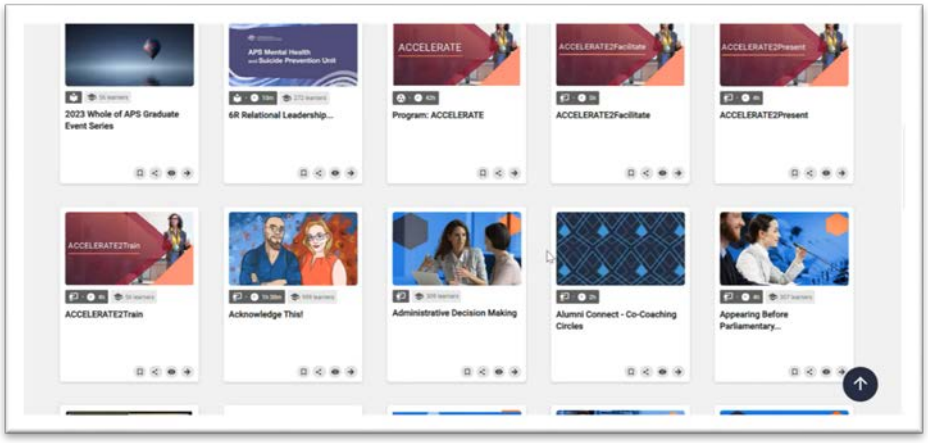
Opportunities

- How might we… improve findability of relevant learning content in APSLearn?
- How might we… make APS Academy learning available to more learners?

APSLearn catalogue search bar



APSLearn catalogue search results



Completing learning through APSLearn

Most learners shared a positive experience using APSLearn. Learners responded well to:

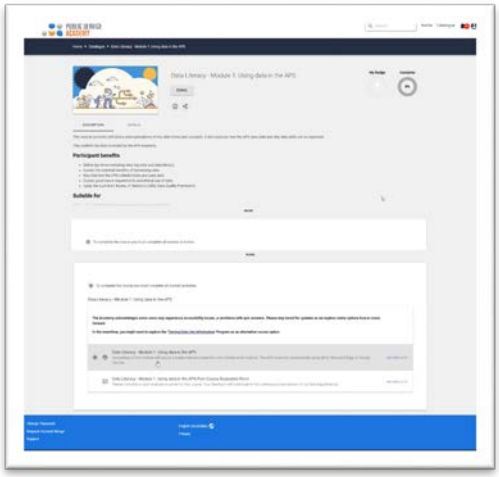
- Information about how to navigate the course upfront
- Expectation setting around sensitive content and links to support services
- Learning outcomes upfront
- Choice of content format (e.g. visual, text, video and transcript)
- Interactive activities to complete throughout the course
- Content broken down into chunks

"APS Academy is leaps and bounds better than [my previous agencies' learning system]" (P17)

"It's better than what I was expecting" (P26)

"My recollection is there's a nice mix of videos and graphics and text that I feel like keeps me engaged in the content" (P21)

Example: Data literacy module page



Example: Data literacy module

Using APSLearn with high zoom function due to visual impairment

Two learners shared their experiences using APSLearn with a high zoom function due to visual impairment.

Overall, their user experience was poor. They experienced problems with visibility of navigation and content including:

- Large banner obstructs visibility of other useful content
- Zoomed in screen makes navigation disappear
- No clear pathway to see what outstanding training is
- Unsure how to see whether an enrolled course was completed
- Horizontal scroll was not easily visible
- Scrollbar within fixed element on screen results in a small window to see content
- Issues with colour contrast of text

> "I'm a person with a lifetime of visual impairment and I've already had an argument with them [APSLearn] about 2 things – but when I have a problem I take it to the top, I don't wait for someone to fix it" (P12)
>
> "So I told them that they didn't make sure people with visual impairment could actually do the courses. If the pictures are important, they need to work well, because a zoomed in screen made the navigation arrows disappear" (P12)
>
> "It had things like white text on a fairly light coloured photograph, it had yellow text, it was based on PowerPoint which works dreadfully on a screen reader, so it was a complete struggle to access what was probably for a fully sighted person a really beautiful immersive experience" (P04)

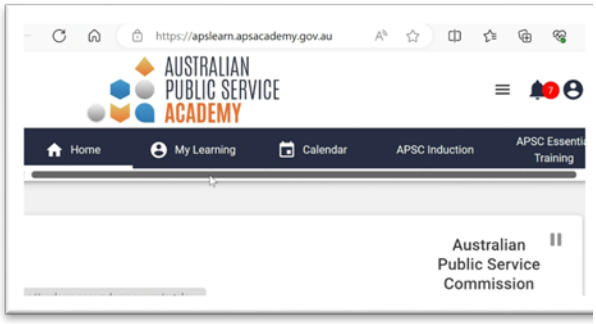
One learner showed us their experience using the "accessible version" of the course which was a PDF. When at a high zoom rate, the text was very hard to read and required frequent horizontal scrolling. There were visuals of buttons and tabs that are not usable. There were no interactive elements. The actions the learner was meant to take to complete the questions is unclear leaving the learner to assume their own workarounds to show completion (e.g. highlight text or add a comment on the PDF).

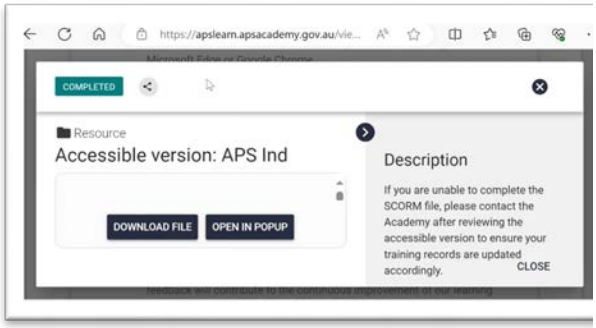
> "Sorry, it's just so hard to read, I'll make it readable [zooming]. That's what I need to be able to read it [200% zoom] and so now I've got the scintillating fun of scrolling backwards and forwards for every line" (P04)
>
> "None of the things listed as buttons are buttons. So there's been no attempt to tailor this in any way, it's just a long PDF" (P04)
>
> "I guess it's more, not so much what would be easier for me to use, but that what is provided is impossible for anyone to use – nobody can use that accessible version in a meaningful way" (P04)

"That's just insulting to say that something's an accessible version, and all it means is it's not the pretty interactive version, you're on your own, I was a bit cranky about that" (P04)

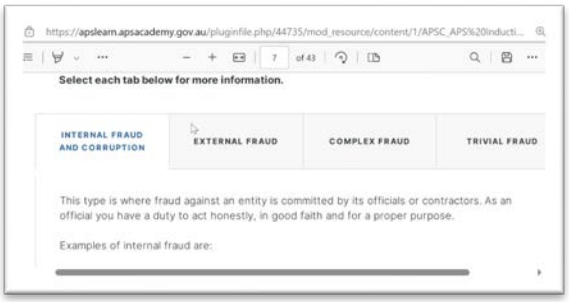
"Interesting it says here "completed" now – is it because I've scrolled to the end? I have no idea, because I didn't answer a single question. If scrolling to the end of the accessible version counts as doing it, then as someone who's done a reasonable amount of teaching that gives me the screaming heeby jeebies" (P04)

View of APSLearn home page with high zoom view





View of "Accessible version" PDF with high zoom



Opportunities

How might we… ensure learning experiences on APSLearn are accessible to everyone?

How might we… ensure APSLearn adapts to latest version Web Content Accessibility Guidelines (WCAG) quickly?

Viewing past learning through APSLearn

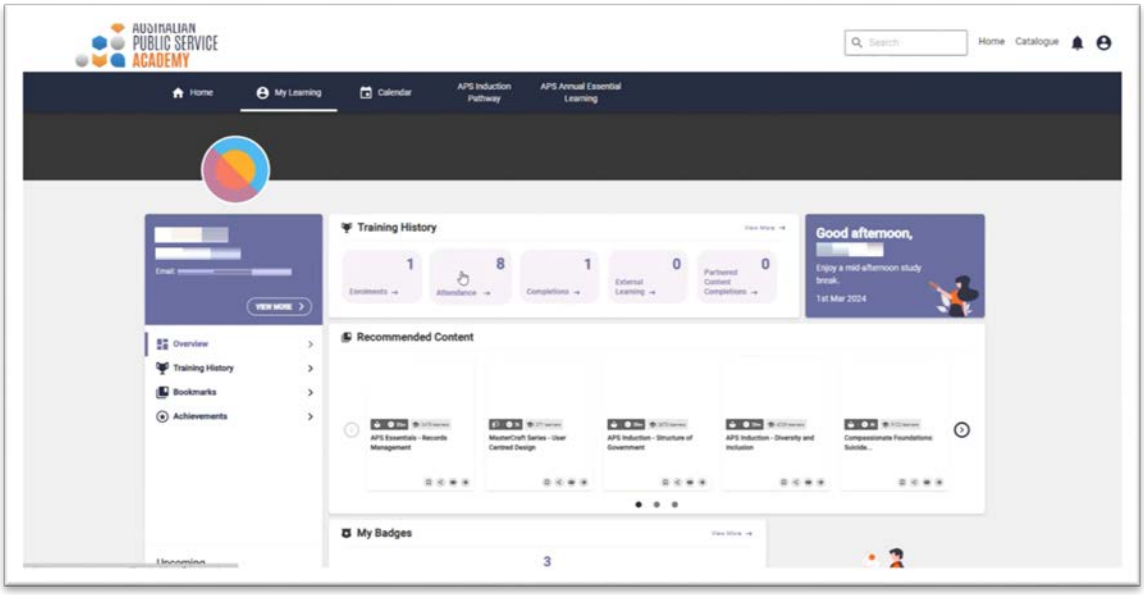
Most participants easily found their course completions in their APSLearn profile.

A couple of learners were unsure why learning they thought they had completed was not marked as completed.

"I don't know why this is just saying enrolled, it was definitely finished" (P17)

"That says attendance pending – interesting – because I've done it" (P20)

APSLearn user profile



Learners experience with agency intranets and learning management systems (LMS)

We observed 7 agencies intranets and LMS systems. Of these, 6 had clear links to some form of external learning such as LinkedIn Learning, CORE Cultural Learning, Go1, SBS Learning, TED Talks, ANU scholarships and Mind Tools. Only 4 of 7 agencies had clear links to APS Academy on a LMS or intranet learning home page.

Learners shared mixed experiences with their agency learning systems. Some only associated their agency learning systems with mandatory training. Others actively check their learning systems when they had a learning need.

> "I have access to Learnhub, my favourite app, so essentially I try on a regular basis, it depends on my workload, but on a Friday morning I would block some time to explore on Learnhub" (P16)
>
> "SuccessFactors hub has all mandatory learning, culturally sensitive, policy, leadership, but no HCD or job role skills" (P13)

Most learners we spoke to were able to automatically log in to their learning systems by going through their intranet.

> "It recognises my face because I have FaceID on and automatically logs me in based on my email" (P13)

Three learners needed to go through a bit more of a process to log in. Two needed to access the learning system through another agency, one had recently gone through a machinery of government change (MoG). One needed to access their learning systems by going through their HR and Finance systems.

Features of learning systems that were often mentioned by learners included:

- Email reminders to staff and supervisors that mandatory learning needs to be completed
- Notifications of upcoming training
- Visual training calendar

> "There's plenty of learning here, you can look at the calendar and see what's happening. This tells you when it's on, if it costs money, you can register for it and off you go" (P19)

- Ability to browse or search a learning catalogue
- Ability to see how far you are through the process of completing the training
- View a list of completed courses
- Download a certificate of a course completion
- Links to external learning such as APS Academy, LinkedIn Learning, Go1

"And then we do also have the LinkedIn learning platform. I think they do a reasonable job of promoting that. So I think that's pretty good to have that as an option, and again it's got a very wide range of different training opportunities on there" (P15)

- Accessible version of mandatory training in a PDF format.

Other features that were mentioned included:

- Supervisors can see their staff's completed and outstanding learning in the system.

"I can go in at any time and make sure that everyone on my team's done their training, so I'm pretty proactive about that" (P13)

"They should be able to view this page and be notified when for example I enrol in a course, whether it's internal or external, they should receive some notification and when I've attended it. I may value their input, they may have suggestions for what I could do instead or further, and inform them about other capabilities I have other than my regular role" (P16)

- Recommended learning.

"It would show the mandatory learning and suggestions of other learnings that may be relevant to my position. [Have you signed up for a recommended learning?] No, it's not really relevant to my job and enabling me to do my job better" (P13)

- Induction training was organised in a sequence according to the order in which they need to complete it ("Prior to joining", "First week", "First month", "Continuing the journey")

"They've laid it out really well, you've got four different levels of induction to go through. You just go through these self-paced modules and off you go" (P19)

- Ability to add in external learning completed to a learner's profile

"You can upload a certificate or whatever file, you can select 'in progress, completed, etc.'… I wanted to include it in my review documents, to be honest" (P16)

- Opportunity to provide feedback through a pre- and post-workshop survey

"The other great thing that they do as well is a pre-workshop survey and post as well to ensure that they're continuing to improve their delivery of which of yeah impressed with" (P18)

- Learning is connected to performance management plan

"It's all sort of connected to your performance management plan and your development plan, all bundled into one thing there… all uses the one bit of software" (P11)

Several learners had difficulties finding relevant learning using the search function in their learning system. Some learners could find what they were looking for by browsing instead.

"Search function is average on here" (P11)

"Oh, nothing comes up" (P19)

"What would be better is if you were looking on a topic, you search by topic" (P09)

Some learners shared that they found their learning systems hard to use. For one, they were using a legacy system where navigation was obscured. Another was using a new system with migrated content.

"See now, I don't really know how to start it… I can't tell if I can actually do the course, so this is what I mean, it's just kind of confusing – I don't really know" (P26)

"We have an internal learning system. They've tried to link it up with external training but it's not very good – it's called LXP. Every time I tried to use it, it doesn't work the way I expect it would, I try not to use it" (P24)

"Bit of a clunky system. Not a huge upgrade on what we use to have. Might still be in implementation phase… Might be functions not used and bundled with the system" (P11)

Some learners found the course content was not engaging or felt out of date, due to the static format or outdated presentation.

"For things that aren't structured, it's not very good. It feels like I'm watching a video from the 90s, audio and recording feels old, which makes me think maybe the content is out of date" (P24)

"Learning is hard – especially if you're learning something for your job. [The content] it's not very interactive, this to me is kind of more like memorising facts, memorising role descriptions and so on, so if the goal is to actually learn something, I don't think this is it because this is just reading and memorising. I think people retain info when… it's interesting or engaging in some sort of way" (P26)

Opportunities

- How might we… increase cross promotion of whole of government learning opportunities from agency systems to provide a more connected learning experience?

Learner experience with mandatory training

Many learners felt mandatory training was a "tick the box" exercise rather than an engaged learning experience.

Learners shared mixed experiences with mandatory training. Some found particular courses engaging and relevant to them. Many found it to be something they were doing just to comply with business needs.

All learners we spoke to could recall doing mandatory training for their agency. For some, completing mandatory training was linked to their performance agreement and annual pay progression.

> "I actually really valued that mandatory training because it was relevant [training on organisational behaviours]" (P07)
>
> "I find some of them too functional, you're not getting enough engagement with something, you feel you're just going over the surface with some of these online learning courses, surface-level understanding of issues" (P02)
>
> "Everything has shifted online in last 10 years… It cannot provide everything online, when you're sitting in a classroom style you can do networking as well, then you learn more" (P14)
>
> "I've done the mandatory training here, but I do find that is really boring" (P09)

Some learners shared frustration about needing to complete the same mandatory training each year or when they change agency. One learner wished they could do a test upfront to see whether or not they need to complete the course again.

> "I find it quite frustrating when we have those annual modules like the privacy act, read a screen and then click, read a screen and then click… why can't I just go to the end and sit a test? If I pass the test then I don't have to do the training" (P10)
>
> "Mandatory trainings are important, useful learning mostly, but you do get to the point after five times that you kind of skip to the end" (P15)
>
> "I've had to redo a number of mandatory training modules each time you come in you have to do them again, so you're basically skimming until the questions and then answering them" (P02)

Mandatory training is sometimes all learners can make time for or feel supported to do.

> "I'm only doing mandatory training at the moment. That's it really" (P07)
>
> "Learning is being undermined by mandatory learning. I think the problem is, people just stop once the compulsory stuff is done" (P12)

Opportunities

- How might we… shift mandatory training from being something that just must be done to an engaging and meaningful learning experience?

Literature review of adult learning research

To build on insights from APS learners and their supervisors, we reviewed academic literature and online resources to help us understand:

- How does learning happen?
- What makes learning effective?
- How can we evaluate whether learning occurred?

The insights from this review reinforce and extend opportunities identified by the primary qualitative research conducted with APS staff.

Principles of adult learning (andragogy)

Andragogy is a theory which distinguishes adult learning from that of children and teenagers. This approach considers the experiences, motivations and needs unique to adult learners. The central principles of andragogy include:

- **The need to know:** Adults expect learning to be justified, and need to see its utility.
- **Learner's self-concept:** Adults are self-directed and need to feel in control of their own learning.
- **Learner's experience:** Adults bring a wealth of prior knowledge and experiences to the learning environment.
- **Readiness to learn:** Adults engage more in learning when they perceive an immediate need for the knowledge or skills.
- **Orientation to learning:** Adults are more receptive to problem-based learning that is applied in real-world contexts.
- **Internal motivation:** Adults have their own goals and are more motivated by internal factors than external ones.[1]

[1] New England Institute of Technology (2021) 'Everything You Needed to Know About Adult Learning Theory', NEIT website, accessed 7 June 2024.

Myths and misconceptions

There are several myths around learning to dispel.

We passively receive knowledge. New knowledge must be constructed through active engagement to be integrated and retained.[2]

The best learning processes avoid confusion or strain. A lack of confusion or strain is not an indicator of effective learning. The most beneficial learning experiences challenge the learner beyond their area of familiarity, and therefore feel more effortful.[3]

We learn better when content is tailored to our individual 'learning styles'. 'Learning styles', according to the popular model, do not exist. While individuals can benefit from engaging in learning in their own ways, learning design should be based on the various learning principles which are evidence-based.[4]

It takes 10,000 hours to become an expert in something. It is unhelpful to attempt to quantify the amount of time to mastery, such as the '10,000 hours' misconception. What is more important than the quantity of study is the quality, that is, 'deliberate practice'.[5]

We inevitably lose the ability to learn new things as we get older. Findings in 'neuroplasticity' indicate that we can build and maintain our ability to learn into advanced age.[6]

You know you've learned something when you feel like you understand it. A subjective 'aha moment' does not indicate that something new has been understood or integrated. The learner's feelings about learning should be validated with objective measures.[7]

'This technology will revolutionise education'. No single technology can fundamentally revolutionise learning. New technological solutions should be considered critically in terms of their impact on the real process of learning.[8]

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[2] B Czekala (2018) 'Why passive learning is an ineffective learning method', Universe of Memory website, accessed 7 June 2024.

[3] SH Young (2022) 'Desirable Difficulties: When Harder is Better for Learning', Scott H. Young website, accessed 7 June 2024.
[4] L Fallin (2023) 'Debunking the Learning Styles Myth: A Call for Evidence-Based Educational Practices', Dr Lee Fallin website, accessed 7 June 2024.
[5] E Guglielman, 'The Ageing Brain: Neuroplasticity and Lifelong Learning', *eLearning Papers*, 2012, 29(29):1-7.
[6] M Miller (2022) 'The Great Practice Myth: Debunking the 10,000 Hour Rule', Six Seconds website, accessed 7 June 2024.
[7] RA Bjork et al., 'Self-Regulated Learning: Beliefs, Techniques, and Illusions', *Annual Review of Psychology*, 2013, 64:417-444, doi: 10.1146/annurev-psych-113011-143823.
[8] T Higgin (2024) 'It's Time to Ditch the Idea of Edtech Disruption. But What Comes Next?', *EdSurge*, accessed 7 June 2024.

Key takeaways for effective learning

Learning takes an active, deliberate effort.

Little learning is retained by passive consumption. Learners should reflect on their own learning in order to make the most of it ('metacognition'). A deliberate cycle of experience and reflection helps them to gain and solidify new understanding and skills.[9]

Learning sticks when it is put to use.

Knowledge is cemented by active recall, especially when applied in real contexts. The brain is quick to discard things which aren't accessed or used. Testing (by others or self-testing) is valuable for learning, and not just assessment. Being exposed to the learning material over time is ideal ('spaced repetition').[10]

Self-directed learning is particularly effective.

Learners naturally engage with content when they see how it is relevant to their context, goals and immediate needs. The common motivators for all learners are a sense of autonomy, sense of purpose or meaning, and pursuit of mastery, which can greatly enhance learning. Belief in one's ability to learn and grow are also important preconditions for learning ('self-efficacy' and 'growth mindset').[11]

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[9] B Czekala (2018) 'Why passive learning is an ineffective learning method', Universe of Memory website, accessed 7 June 2024; KA Nguyen et al., 'Instructor strategies to aid implementation of active learning: a systematic literature review', *International Journal of STEM Education*, 2021, 8(9), doi: 10.1186/s40594-021-00270-7; A Nelson and KL Eliasz, 'Desirable Difficulty: Theory and application of intentionally challenging learning', *Medical Education*, 2023, 57(2):123-130, doi: 10.1111/medu.14916; T Debatin et al., 'The meta-analyses of deliberate practice underestimate the effect size because they neglect the core characteristic of individualization—an analysis and empirical evidence', *Current Psychology*, 2021, 42:10815-10825, doi: 0.1007/s12144-021-02326-x; S Imel, 'Metacognitive Skills for Adult Learning', *Trends and Issues Alert*, ERIC Clearinghouse on Adult, Career, and Vocational Education, 2002.

[10] The Bok Center for Teaching and Learning (2018) 'How Memory Works', Harvard University website, accessed 7 June 2024; A Latimier et al., 'A Meta-Analytic Review of the Benefit of Spacing out Retrieval Practice Episodes on Retention', *Educational Psychology Review*, 2021, 33(3): 1-29, doi: 10.1007/s10648-020-09572-8; S Bertsch et al., 'The generation effect: A meta-analytic review', *Memory & Cognition*, 2007, 35(2):201-210, doi: 10.3758/BF03193441; OO Adesope et al., 'Rethinking the Use of Tests: A Meta-Analysis of Practice Testing', *The Review of Educational Research*, 2017, 87(3), doi: 10.3102/0034654316689306; JL Burnette et al., 'A systematic review and meta-analysis of growth mindset interventions: For whom, how, and why might such interventions work?', *Psychological Bulletin*, 2023, 149(3-4):174-205, doi: 10.1037/bul0000368.

[11] NEIT, 'Everything You Needed to Know About Adult Learning Theory'; F Guay, 'Applying Self-Determination Theory to Education: Regulations Types, Psychological Needs, and Autonomy Supporting Behaviours', *Canadian Journal of School Psychology*, 2021, 37(1), doi: 10.1177/08295735211055355; RM Ryan and EL Deci, 'Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being', *American Psychologist*, 2000, 55(1):68-79, doi: 10.1037/0003-066X.55.1.68; Burnette, 'A systematic review and meta-analysis of growth mindset interventions'; CS Dweck, *Mindset: The New Psychology of Success*, Random House, 2006; LB Limeri et al., 'Growing a growth mindset: characterizing how and why undergraduate students' mindsets change', *International Journal of STEM Education*, 2020, 7, 35, doi: 10.1186/s40594-020-00227-2.

Learning should be matched to the learner's current ability.

Learners should be challenged and supported to reach the next level of understanding or skill, with learning experiences at the edge of what they know and can do. Matching challenge to current skill supports deep immersion ('flow') that can engage deep learning. Importantly, learning is enhanced by deliberate effort and mental exertion, whereas easy tasks are less effective, and so some 'desirable difficulty' can optimise learning activities for maximum effect.[12]

There are many benefits unique to social learning.

Peer instruction and tutoring can be benefit the tutor as much as the pupil, or even more so. Learners should be encouraged to create learning content or share their knowledge. Small-group collaboration in learning activities can make learning deeper and more enjoyable, and learners also benefit from participating in 'communities of practice'.[13]

Reliable evaluation is a complex and extended undertaking.

Participation and satisfaction do not reliably indicate the impact of learning activities. The best indicator of impact is observing 'learning transfer' in the work context, where learners demonstrate that they can make decisions and apply the knowledge and skills appropriately. This should be observed over time (i.e. retained). One of the strongest determinants of learning transfer is support from a supervisor to apply the learning at work.[14]

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[12] AI Podolskij, 'Zone of Proximal Development', *Encyclopedia of the Sciences of Learning*, 2012, Springer, Boston, doi: 10.1007/978-1-4419-1428-6_316; Bjork et al., 'Self-Regulated Learning'; Czekala, 'Why passive learning is an ineffective learning method'; Debatin et al., 'The meta-analyses of deliberate practice underestimate the effect size'; M Csikszentmihalyi, *Applications of Flow in Human Development and Education: The Collected Works of Mihaly Csikszentmihalyi*, 2014Springer Dordrecht, doi: 10.1007/978-94-017-9094-9.

[13] PA Cohen et al., 'Educational Outcomes of Tutoring: A Meta-analysis of Findings', *American Educational Research Journal*, 1982, 19(2), doi: 10.3102/00028312019002237; L Springer et al., 'Effects of small-group learning on undergraduates in science, mathematics, engineering, and technology: A meta-analysis', *Review of Educational Research*, 1999, 69(1):21-51, doi: 10.3102/00346543069001021; C Hoadley, 'What is a Community of Practice and How Can We Support It?' in D Jonassen and S Lund (eds) *Theoretical Foundations of Learning Environments* (2nd ed., 286-300), Routledge, New York, 2012.

[14] RO Brinkerhoff (2017) 'Promote Learning Transfer, Accelerate Strategy Execution', Chief Learning Officer website, accessed 7 June 2024; W Thalheimer (2020), 'Factors That Support Training Transfer: A Brief Synopsis of the Transfer Research', Work-Learning Research website, accessed 7 June 2024.

What we learned from enablers of learning including L&D staff and leaders

In this section we explore themes that emerged from speaking to APS enablers of learning including L&D staff, platform administrators and leadership.

Learning and development teams support a wide range of functions within agencies

L&D teams differed greatly in size and hierarchy depending on the size of the agency.

Business as usual tasks fell into themes of learning strategy and culture, design and deliver learning, systems administration and support and a range of other L&D functions to support the business.

Strategy and culture:

- Learning strategy and framework
- Promote continuous learning culture
- Understand what skills we have and what are the gaps
- Develop initiatives to build capability

Curate, design and deliver learning:

- Prioritise learning needs
- Curate learning
- Manage new requests for learning
- Work with subject experts and/or external providers to design learning content
- Transfer learning content to tech solution
- Ensure learning meets business standards including accessibility standards
- Promote learning to staff
- Deliver online self-paced learning
- Support and run facilitated learning (online and face to face)
- Learning evaluation and improvement

"We do a bit consultancy / advisory as well. We'll have people come to us who want an e learning developed. We'll do analysis to see if it's a learning need… if it's decided an eLearning's required we'll design and develop that" (P27)

"Liaising with internal stakeholders in relation to what content we want in the course, what priorities need to be incorporated, covering off the core capabilities, craft, APS reform, the core objectives" (P29)

"Implementation of learning contract arrangements… So there's contracts with suppliers, also with agencies themselves, depending on which facilitators are used" (P28)

"If I reflect on how much work it takes… incorporating the post-event survey, analysis behind it and feedback to presenters etc." (P26)

"We run the events, brief the speakers, get the venue, if it's online have preproduction prep for them to understand what their role will be and what they need to speak about, facilitating that and wrapping it up" (P28)

Systems administration and support:

- Platform administration including updates and maintenance
- Complete quality assurance
- Create content and update content on the platform
- Security assessments and improvements
- Manage queries from industry partners and access of industry partners to the platform
- Engage with system providers
- Manage and deliver data reports from the platform
- Respond to support requests
- Manage cyber security, privacy and data integrity

"System enhancements and functionality testing… Quality of solutions that get onboarded, random spot checks, data analysis, improving the data integrity in the systems" (P33)

"We also manage the LMS system and everything to do with that…So we manage two very, very, very busy mailboxes" (P31)

Other tasks:

- Review study assistance applications
- Performance management
- Support graduate programs
- Support communities of practice
- Promote learning opportunities e.g. internal newsletters
- Manage coaches and facilitators
- Manage mandatory learning and induction
- Manage specialist training programs
- Finance and budgeting (including cost recovery)
- Procurement
- Supervising staff
- Stakeholder engagement

- International engagement
- Reporting and data collection
- Ad hoc projects

"Responsible for foundational all-staff applicable learning – mandatory, induction" (P31)

"Build the communities and support for those communities" (P26)

Key users of learning services identified by L&D staff

While key users identified were internal agency APS learners and their supervisors, there were many cases where there were other learners are able to access and use agency systems.

Learners and their supervisors:

- Internal agency staff
- Other staff across the APS
- Staff engaged through service providers
- State and territory government staff
- Government business enterprises

"We've got the whole APS, 170,000 of them, which incorporates from graduates through to SES 3" (P28)

"We also have a large portion of external learners as well. So we have industry staff such as our prop monitors who need to do certain training in certain commodities in order to remain accredited or be able to do certain activities… They're people who work for a company, for example, almost like a service provider" (P32)

"14,000 staff in the agency – 10,000 in the agency and 4,000 are our partners in the community… they're not agency staff but paid by agency to do agency work, they're companies we pay and they need to interact with the systems" (P27)

Enabling staff who use learning systems:

- L&D practitioners
- Content creators / Subject matter experts / business areas
- Industry partners / vendors
- System administrators
- Digital Services/Cyber Security

"I see [stakeholders, SMEs, business areas] as my customers as well, so to make sure that what's actually being put together works for them" (P31)

Learning culture and investment

Some L&D staff felt there needed to be a shift from thinking about L&D as a cost to thinking about it as an investment.

> "L&D is either seen as a cost or a quick fix when the budget has excess money… It takes time and money to design courses" (Workshop participant)
>
> "There's a big difference from agency to agency learning culture and investment" (Workshop participant)
>
> "Everyone says "Go and do training" – but you need a culture of learning" (Workshop participant)

Leaders mentioned various ways in which the public service is a good environment for opportunities to improve learning with technology.

One described L&D as a high investment priority in the APS, relative to other organisations.

> "The APS invest more in L&D more than any other org on the planet – probably not everyone's experience but I think that's the biggest opportunity, is it's a key element of our EVP. Particularly with the government focus on building, rebuilding APS capability as well, there is a lot of there's a strong authorising environment for investment" (P34)

Leaders described the need for new thinking about how learning can take place in the APS, with digital solutions important for a workforce that is more remote and geographically dispersed than ever.

> "There really is a much more immersive electronic form of thinking about learning that we're probably a long way off from still. So thinking about what the state-of-the-art is in terms of digital enabled delivery would be a great thing for us to do" (P36)
>
> "If we didn't acknowledge just how critical technology is in developing a learning culture, for example, I think we're really missing the opportunity, because we are so heavily reliant upon technology to be able to do what we do" (P38)
>
> "With flexible work and things like that and having a stronger national presence, again capitalising on the technology platforms rather than traditional face-to-face have only ever increased" (P40B)

Two leaders highlighted in particular the need to shift focus from formal learning towards informal learning.

> "So what's commonly used is the old '70/20/10' methodology, and we invest a lot in the '10', the formal, the formal learning and the formal development. I don't think we look a lot at the value of the remaining '90', so coaching and on the-job-interactions and learning, and I think in a

working from home setting that we're currently working in, that will become increasingly challenging" (P37)

"So some of the things I've been exploring is a difference between education and learning. And education is more about feeding the information, whereas what we do is more about providing an environment… It's not about completion, it's about the impact the learning has" (P35)

One leader spoke about their agency's positive culture of teaching and learning as a current strength to build on.

"As a technical agency, there's understanding that technical skills are really important and I think there's a culture of kind of teaching each other things, whether that's part of our formal program, or whether it's kind of more informal I'm not sure, but I do think there's a kind of pride in in expertise in the organisation, which is something that's really very valuable and is key to us doing a good job" (P41)

Other leaders raised resourcing issues, particularly regarding funding and time investment.

"We always seem to hit either a financial barrier or a security or an ICT barrier" (P40A)

"As we know, if we're in a resource-constrained environment or we're experiencing budgetary pressures, often it's capability building that is the first thing that is then reduced" (P38)

"Giving people permission to dedicate time to learning is a real challenge" (P38)

"We have a limited L&D budget… it's certainly something that we regard as important for our staff, but the budget that's allocated to it is limited because of all the other demands on our resources" [P41]

Learning technology decision making

L&D staff noted lack of visibility of what others are doing across government reduces the opportunities to learn from others experiences.

L&D staff shared key drivers of learning technology decisions include:

- Changes in technology and platforms not fit for purpose
- Organisational and whole of government learning strategies
- Policy remit
- Budget
- Business requirements
- Timing
- Skills and capabilities
- Security considerations and risk appetites

There is duplicated spend and effort on learning systems and content.

Some L&D staff felt that learning is spread across too many systems both in their agency and across government. This results in duplication of effort and resources.

There is duplicate spend on providers with individual contracts for learning systems and content. We heard examples where suppliers charge the APS multiple times for duplicate build of functionality. Suppliers may benefit from being able to sell features funded by government to other customers.

There are currently several agencies looking to procure new learning systems to replace legacy technology.

L&D staff described legacy systems with many limitations that do not support the future of learning.

Some agencies are actively approaching the market for LMS solutions. Some L&D staff are curious to see whether whole of government solutions are proposed as a result of the Defence and IP Australia LXP pilot endorsed by the COO Committee.

Some L&D staff expressed views that it would be easier for them to procure new technology if there was a whole of government approach.

> "Ultimate goal would be an LMS used by all agencies… I think there are way better products out there. If we have a whole-of-government approach it'd be easier to approve because it'd meet requirements for all agencies, privacy principles… I think there's potential that we could share resources easily" (P27)

One leader highlighted how various platforms reaching end-of-life and licenses expiring across agencies.

> "There's a bunch of kind of legacy systems coming out of license or coming out of operation in different ways" (P36)

Four leaders brought up the issue of working with existing and ageing systems as a major issue they and other agencies were dealing with.

> "We have a learning management system, it is a very aged learning management system, it is not intuitive… I think that's a challenge under many agencies, the current platforms that they use" (P37)
>
> "It's also an aging platform, it's not a contemporary, fit for purpose. We're making advances, but very slowly, and I think that places fairly significant limitations on us as it stands at the moment" (P38)

Two leaders discussed this as a challenge for how new technologies are implemented.

> "We also have significant legacy IT that is cropping up a lot of our organisations, and so the ability to adopt new tech while maintaining old tech is a big issue" (P34)
>
> "There's a bunch of kind of legacy systems coming out of license or coming out of operation in different ways… if there's going to be any upgrade in functionality, capability, it's got to surf the wave of these current systems coming off, in some way" (P36)

ICT security is seen as a barrier to procuring new learning systems, accessing applications to support learning and implementing features.

Learning systems are security assessed both holistically and on a feature by feature level. If a system is approved, some features may be disabled or not accessible due to security reasons. ICT security risk appetite varies across agencies. Sometimes security concerns result in using sub-optimal solutions as workarounds because they are felt to be safe.

Ensuring ICT security takes a long time when procuring and implementing new learning systems. One staff member described a "copious amount of security" that delayed deployment of their pilot learning system by months.

Some collaboration tools (e.g. Miro, Mural) are blocked by agencies meaning learners have inconsistent access to learning opportunities.

> "There's always functionality that systems can have, but depending on your IT security's risk appetite is, you can't access it" (P33)
>
> "If we could stream it off a video site, a video like that would be instant. And we could store and do a lot more video work. The problem is most of them cost money and there's always cybersecurity concerns. Our cybersecurity is really tight and risk-averse" (P31)

Leaders expressed low to moderate confidence in having the information they needed to make decisions about learning technology.

Comments included that decision-making processes needs to be more systematic and long-term, that decisions about technology have not been a main focus, that they are growing in confidence over time, that they rely on advice from technical experts, and that a lot of agencies are awaiting whole-of-government decisions about technology.

> "We're always learning, and as technology develops and as our own maturity improves, then I think we would be in a better position. I don't think we're there" (P38)
>
> "I think we're too short-term reactive and we don't think enough about where we're trying to go and we don't construct pathways that allow us to get there" (P36)
>
> "But as a collective, as a section, again, somewhere in the middle, I think it's not necessarily been as big a focus" (P40B)

"I'm not a technology person, so how confident am I to make a decision alone? Not confident. How confident am I to make a decision with others and with good advice from others? Yeah, more moderately" (P39)

"A lot of agencies are awaiting more whole-of-government decisions, digital marketplace panels and things like that, and the outcomes of those, to be able to leverage different providers, different software, different opportunities… we're in a bit of a pause until we can have a look at what is possible, what's out there and most importantly the effectiveness and the value for money of those products" (P37)

One leader spoke about how we can embrace change versus finding comfort in what we know.

"Often in the APS we'll fall back to old ways of doing things, like getting everyone into a classroom, or fall back to ways we know, so whatever we did in the past, we'll use that solution now, and it may not be right" (P35)

Leaders shared that technology is just one option and does not solve all problems. Technology should be considered in the context of the broader ecosystem it sits within.

"It's a first-order question, 'what do we need?' and the second-order question is like 'what's the best way of doing that?' and technology is only one option for those" (P39)

"I used to think 'Oh yeah, we need a big, sophisticated thing'. And I thought, well, actually we probably need to develop the skills and the mindset and the know-how before we go with one product or something because no matter how good your learning experience platform is, if you haven't got the people with the right skills to use it, it's not going to help" (P35)

"The other thing which I'm going to be reviewing is just around user experience, so that's not so much a technology barrier, but how we think about how we engage with our users" (P40B)

Opportunities

- How might we… reduce duplicated spend and effort on contracts with learning providers?
- How might we… make it easier for agencies to make informed decisions about learning technology?
- How might we… support L&D staff to share learnings and increase visibility of current initiatives?

High administrative burden of learning systems

Learning system limitations and lack of system integrations result in a high administrative burden for L&D staff.

L&D staff shared painful manual workarounds for a variety of systems limitations such as:

- Live event support needed as workaround for problems with user access to event links in calendar invites
- Manual upload of new starter profiles needed due to lack of integration with HR system. This leads to delays in access to induction learning for new starters.
- Manual data reporting processes.
- Exports from authoring applications are not supported by all hosting platforms (file compatibility issues)

Some staff spoke about the opportunity to automate manual processes with the right skills and resources.

> "We start off with that sticking point of frustration to it [data upload issue] and that's just the start of our day" (P32)
>
> "It's a lot of admin to do [with the LMS], and fixing any issues for them" (P27)
>
> "[LMS] doesn't speak to our HR system so we have to manually upload 14,000 people twice a week in case they switch roles… We could save 1-2 staff members full time jobs between reporting team and us, if you had an LMS that talked to an HR system" (P27)

Learning and development teams are feeling under resourced across the APS.

Staff spoke about skills gaps and lack of ASL in their team which makes it a challenge to adequately support L&D. Some staff feel too busy bogged down in administrative tasks to focus on strategic thinking and improvements.

L&D staff are often managing competing priorities across business areas in their agency. Managing expectations of SES across different business areas is a big challenge.

> "People spend all their time getting things through the system and not enough time to stop and think" (Workshop participant)
>
> "At point where having to say no to work – we're completely flooded" (Workshop participant)
>
> "We're at risk of burnout. We've got a very small team and doing more than ever before and being asked to do more" (Workshop participant)

Opportunities

- How might we… reduce administrative burden for common L&D tasks to improve efficiencies?
- How might we… explore opportunities to connect systems to reduce manual processes?

L&D capability is often outsourced rather than developed in house

L&D staff shared they are often managing contracts rather than managing internal solutions.

Lack of capability was expressed in key areas ranging from learning design, evaluation and technical administration.

Technical capability and capacity varies across agencies. This impacts opportunities to maximise the systems we have to support learning.

> "Pain points is… people knowing how to use the authoring applications, Articulate, etc… to create and edit videos for example. Our L&D teams don't have that video editing skillset, we have to outsource" (P33)
>
> "Not a large focus on L&D internally here… hit a brick wall between the mechanics with a bad car. Good at helping others just not ourselves" (Workshop participant)
>
> "No emphasis on building capability… We hire the capability we need, not grow it" (Workshop participant)
>
> "We don't design in house, we manage contracts with external providers. We liaise with internal subject experts and external providers… we are the bridge between the two" (Workshop participant)

Attraction and retention of L&D staff is a challenge in some agencies. Staff turnover of key skills can impact ability to maintain and improve technical platforms and content.

> "We did a bulk recruitment last year and apparently there was not many suitable people in it that applied… We definitely approached a number of people and they'd taken up other offers" (P29)
>
> "I genuinely feel guilty that I can't provide a good service for our members in each one of these areas – but I feel like we're just treading water, and sometimes it's like smoke and mirrors, but it's the best we can do under the conditions" (P26)

There is a lack of support felt for L&D specialists.

One staff member mentioned that a generalist public service which lacks L&D specialist skills is challenged when making informed decisions about learning.

"Senior understanding of technical specialist skills is limited… Specialist tools are hard get and experiment with" (Workshop participant)

"The ways in which decisions are made don't always come through the people who are best placed to make the decisions… Hard to experiment and innovate – we don't have time, budget or tools" (Workshop participant)

Three leaders spoke about the importance of building talent internally.

"A lot of our learning investment and learning effort really needs to consider the APS workforce of now, and then where we want them to be in the future… in line with the government's position and the Strategic Commissioning Framework, it's a piece of work looking at the APS's use of external specialised talent, how we can grow that internally" (P37)

"The real challenge is that L&D capability in the public service, how do we build it up? How do we build up the technology skills?" (P35)

"How do you get the right capability internally to be able to really oversight a build, if that's where we end up" (P36)

Skill gaps were named as a significant issue by most leaders including L&D capability and technology capability.

"From my experience over the years, the outsourcing of the profession, so the APS employees have lost their capabilities and become contract managers, and probably lost touch with L&D capability, lost a lot of that capability" (P35)

"Our ICT area is quite small, and so the skills we would probably would require if we owned the platform ourselves and the ability then to be able to diversify, strengthen, update and maintain that contemporary thing, I think it's pretty limited" (P38)

"We don't have people in our teams equipped to deal with digital technology implementations" (P34)

Half of the leaders interviewed described having particular confidence in their team's general mindset and capability when it came to technology and innovation, some feeling that this is growing in several agencies.

"In my team, I think we've got great skills and – not so much the skill, but that mindset – 'don't know how to do it, gonna learn how to do it'. So it's that continuous learning mindset and that lack of fear around technology" (P35)

"Internally we've got a really strong team of committed people with the right tech and skills. I think the challenge is about where do we go, what do we look at?" (P37)

"Our focus on data and digital is strengthening. And I don't think that's unique to us, I think that that's quite a similar experience for a number of agencies, and I think that does provide us with better opportunity for us to think about building capability internally to be able to maintain the technology we need" (P38)

Opportunities

- How might we… support agencies to grow the skills they need to support L&D technology and maximise business outcomes?

Dependency on vendors for changes and improvements

L&D staff spoke about the dependency on vendors to make changes to their learning systems.

This has resulted in:

- Long wait times for changes to fix issues.
- Issues not being fixed and needing to accept platform limitations which may result in poorer user experience.
- Spending lots of time and money working with vendors on product enhancements. The vendor now benefits from having these solutions as part of their out-of-the-box offering.

Vendor responsibilities are different depending on the contract and how the system operates. An example of this is Platform as a Service (PaaS) vs Software as a Service (SaaS). For PaaS, upgrades are often individually funded and rolled out. For SaaS, there are usually regular automatic upgrades, bug fixes and system enhancements.

One staff member spoke positively about fortnightly automated system updates by the vendor that result in constant improvements without any downtime for users.

"So we've spent a lot of money over time and enhancements… We paid for those enhancements – there's probably at least half a dozen to a dozen enhancements that we paid for that's just base features out-the-box with [LMS provider] now" (P32)

"We are completely limited by how we can build the site where people interact with it. People say 'ugh, this is really annoying and really un-useful' we can't get rid of it" (P26)

One leader expressed concern that external providers are not the best-equipped to meet the needs of government with their products.

"They're not particularly good, in my view, at servicing government and understanding how to meet our needs, because we are quite different to the private sector. It's a bit square peg, round hole, with some of that technology, and there are some limitations we just simply couldn't overcome with that technology. That's definitely a challenge in us leveraging technology as well, is providers who can't necessarily cater for government" (P40B)

In contrast, one leader observed that they have learned a lot from the provider who manages their platform.

"We have learned a lot from [provider], how to do things. So often I hear my boss would say well, there will come a time when we will use our own platform and we will be expert enough to manage that platform and do it and offer that service APS-wide too" (P35)

Two leaders spoke about their reliance on an external providers and outsourcing of ICT skills.

"For example our LMS, it's actually – we buy services, essentially. So we are required to have some level of technical skill, but it's not extremely deep… if we were to change that business model, then we probably wouldn't have the skills" (P39)

"Because we don't actually own our platform, our ICT area is quite small, and so the skills we would probably would require if we owned the platform ourselves and the ability then to be able to diversify, strengthen, update and maintain that contemporary thing, I think it's pretty limited" (P38)

Opportunities

- How might we… reduce dependency on vendors for improvements?
- How might we…coordinate our efforts to influence vendors to prioritise and meet APS needs?

Control over administration of learning

Leaders highlighted the importance of efficient and effective administration and learning system management, on both a single-agency and potentially a cross-agency basis.

"A really state-of-the-art learning management system is essential because it's really the administrative underpinning for everything else" (P36)

"We really need technology to have our hand on the pulse, how our learners are engaging" (P35)

"We all need to be owners and drivers of the learning management system, whatever it is" (P35)

Ability to customise access for enabling staff to different parts of learning systems was valued.

Learning systems can be set up with different tenancy models and administration permissions.

Staff shared different benefits for customising access to staff including:

- Reduce risk of errors
- Improve user experience and reduce confusion for staff
- Create consistency of user experience
- Reduce content duplication
- Privacy of user data
- Ability to create custom reports

One agency shared that some of their business areas create their own learning outside of agency learning systems (e.g. in SharePoint) as a workaround from working with in-house L&D. L&D staff are concerned this results in duplication of content and lack of quality control of learning.

"We also don't like anyone else to create courses, so if there's a business area we will give them admin for it, but because it's tricky and can cause issues, we'll set up the course and then give them the admin rights to go and report on who's done the course and things like that" (P27)

"They can create resources in their catalogue, but they can't create courses or live learnings… that helps create consistency – also because a number of our staff do those courses as well, we don't want duplication" (P32)

"Not because we don't trust them, but to reduce confusion so they can perform their task without having all the extra on top as well, that we can co-ordinate centrally for them" (P32)

Reusing and sharing learning

There’s strong appetite to reuse and share learning content across agencies where available.

Opportunities to reuse existing learning were frequently brought up by L&D staff seeking to supplement their agency offerings.

It was acknowledged that learning content still needs to be tested against internal standards when it is reused in agency learning systems.

One staff member mentioned there is also opportunity to leverage capability of the university sector.

"So we've got 170,000 people who've got lots of information and lots of learning. How does that get shared? Are there ways that we can access and harness that?" (P28)

"I do URL links in our catalogue to APSLearn content as well. Which will point to some of the stuff that you guys have [APS Academy] that's free, eLearning or resource space, that people can jump on and do as well" (P32)

"We reached out to someone at APSC and we signed a contract and he sent the source files via GovTEAMS… I love that we can share resources, to not have to reinvent the wheel but give staff what they need" (P27)

"There's too much duplication across the APS as a whole, especially that core foundational learning, I would love to see that all scooped up essentially and have those functions – a bit like you do at the moment with APS Learn but more so" (P31)

Several leaders spoke about the duplication of effort that can be reduced across agencies when designing learning content.

"The fact that we are all running off and doing all those things separately, clearly there's some economies to be found there with regard to that" (P40B)

"I also am a big believer in 'why would we invest in something when there is something else out there that is fit to purpose for our organisation'" (P38)

Leaders identified learning content that they are able to share with other agencies.

"When you look at some of our corporate functions and some of our data and digital, there's obviously opportunities to leverage there through Professional streams. And also being able to leverage through things such as entry level programs and associated learning and qualifications that come with those as well" (P37)

"The vast majority of learning that we have is more widely available, or has been designed external to the Department of Social Services" (P38)

One leader described how his agency is using AI to make it easier to edit and share learning content more widely.

"From the whole-of-government, if we're looking to share some of that content, that makes it a lot more shareable because it's a matter of someone editing a text script and they're just producing the audio, rather than having someone doing voice-overs for something – you find you want to change one thing and you've got to rerecord a whole voiceover" (P40B)

The APS Learning Bank has not yet been widely promoted to L&D staff due to team capacity.

Many L&D staff were not aware of the APS Learning Bank and some that were aware were unsure how to use it.

Drivers for agencies to share their learning content include agency mandates and being on the hook to uplift capability across government in a certain capability.

> "I know that the APSC was exploring starting to put in place a learning bank… I haven't heard anything further on that and where it got to. I was hoping the APSC learning bank could be a central point where you could go and access a list of products, and then basically track them back to whichever agency owned those products" (P31)

Opportunities

- How might we… support reuse and sharing of learning content across government?

Evaluating the impact of learning

The impact of learning was considered from both a learner and business perspective.

Success was described by L&D staff in terms of learner engagement and capability uplift including:

- Creating engaging, accessible learning opportunities
- User feedback of positive learning experiences
- Ability to apply learning
- Uplifting capability of staff and filling skills gaps
- Influencing learning culture

Other success factors mentioned by L&D staff included:

- Meeting business requirements and strategy
- Compliance with security, privacy and data integrity
- Reducing duplication of effort across the APS
- Efficient service and issue resolution
- Mature data collection and evaluation

The strongest response was wide-scale capability uplift, mentioned by several L&D staff in interviews and workshops.

> "Overall expectation – a cost neutral delivered series of programs that are lifting capability as a vision that we have a highly capable future-ready workforce and a vision for the APS wide culture of learning that builds on public sector capabilities" (P28)

Evaluating the impact of learning is challenging.

Some L&D staff spoke about there being limited time or capability to do evaluation of learning.

L&D staff would like the opportunity to get more user feedback to drive improvements. Often when feedback is asked for, it may not be received. Lack of evaluation data means a lack of evidence to inform decision making.

When learning providers are engaged, they usually evaluate up until the teaching stops. However, the impact of learning comes further down the pipeline when learning is applied and there are business benefits.

> "[The problem is] low quality of data around evaluation… How do we drive business insights when we don't understand what's going on?" (Workshop participant)
>
> "How do we measure if what we are doing is working?" (Workshop participant)
>
> "There hasn't been enough time put into getting to know our users and getting enough feedback from them" (P31)
>
> "[Return on investment] ROI, evaluating and sharing stories. We're so busy in the BAU we're not getting the capacity to do this but it is such a fundamental component of L&D" (Workshop participant)
>
> "Evaluation is relatively new function… It's a big beast to take on, but maybe we're putting it into a different direction. Limited resources and whatnot, we're probably going to skim it down and make it easier to review some of our training programs" (P30)
>
> "Does anyone have any feedback? No one says anything. But might come back a week later with a thought" (Workshop participant)

Some learning programs are testing evaluation frameworks.

L&D staff shared evaluation needs to be considered upfront when designing learning and training.

> "We do pre-course capabilities and post-course capability surveys, we use that as a measure of success" (P29)
>
> "We have a responsibility for capability uplift. The challenge is how do we measure this?" (Workshop participant)

Leaders described measures for success that were important for business.

Two leaders identified value-for-money as one of the most important challenges for learning and development, highlighting the difficulty of evaluating the quality and impact of learning.

> "For many agencies… [understanding] what's out there and most importantly the effectiveness and the value for money of those products" (P37]

"People are generally happy to provide opportunities for learning, but being able to distinguish between a good learning experience or not is very difficult" (P34)

Several leaders mentioned rich performance agreement conversations as an important element of a healthy learning culture, in which learners and people managers discuss:

- current but especially future development needs
- long-term strategic rather than tactical conversations about development
- learning opportunities beyond traditional formal learning
- development goals
- links between the performance agreement, development goals and learning opportunities

"I look for what are people talking about in their performance/career conversations. That the learning that's being thought about/discussed is less about what you tactically need right now, and more about what are you going to need into the future" (P34)

"I don't see a link at the moment [at our agency] between the performance agreement and development goals agreed to by a manager and a person, and how that translates to a learning opportunity" (P37)

"I definitely expect to see it as embedded in the performance management system and that it's a genuine performance and development system so that people are talking about where they are now, but they're talking about things that they want to improve and that they are talking about those things that they want to improve through a wide range of instruments. As we talked about, not just formal learning" (P36)

Improved performance was suggested as a measure of effective learning.

"At an employee level, with their manager, sort of being able to see the differences that learning investment has made for them and their practice in the workplace, whether that's leading to increased awareness or it's a compliance activity or it's a behavioural change or it's more confidence. So that actual tangible performance and confidence and leadership layer" (P37)

One leader mentioned the opportunity for technology to integrate performance management with development.

"Now a lot of our learning is sort of looking at business developed applications, so that we call BDAs, they're patches, they're not holistic end-to-end and integrated solutions. I think that's a big opportunity for us to look at" (P37)

More generally, one leader identified the connection between individual learning pathways and organisational workforce planning as a key priority.

"From a business line level, I would look for some basic learning governance. So do we have an agreed learning investment and learning strategy plan for business that is aligned to workforce planning? … How do we connect learning with career pathways and with the performance system, how do we make learning a lot more focused, to connect the person to the workforce strategy, right down to the individual… So I think it's probably those two layers, and how they can come together" (P37)

Leaders described other measures for success focussed on learners.

These included their engagement, their attitudes toward learning, and what they're saying about it.

"We want to know that what we're providing is landing, we want to know the graduates are getting something out of it and they came to engage with it. So I guess engagement is probably a really good measure of whether it's eventually going to have impact, because if the graduates don't engage with it at all, it's not going to change any behaviours" (P35)

"Probably the biggest signal for me is that people are interested and curious about learning. I'm not really fussed about what they're learning, to be honest. And in some ways their interest in learning might be quite different to even the strategic direction of the branch. But if they're not interested and curious in doing, extending themselves, I think that is foundationally problematic" (P39)

"It's [NPS] not considered a good tool for learning, but I love it – because it tells me instantly if they're delighted with an event. Otherwise you'll just get a very neutral score, but if it's something that they really think is relevant and they'll talk about it to others, we'll get a high Net Promoter Score and they're quite rare to get a high NPS. Very rare" (P35)

Multiple leaders described feedback from learners as a high priority measure for the success of learning programs.

"We work closely with the grad coordinators too, and we're constantly seeking feedback from them to see what they're hearing about it. If they're not hearing anything at all, that's not good. We like graduates to be talking about it, and talking about it with their supervisors" (P35)

"A lot of resources go into learning and development and having good feedback from a significant proportion of the people who do the courses is valuable" (P41)

One leader described significant difficulty gaining feedback from learners, which attributed in part to the difficulty they have doing so.

"People don't find it sufficiently easy. And despite being chased, they don't do it" (P41)

This leader was overseeing development of a "TripAdvisor" style tool to collect feedback. This leader also expressed interest in exploring other evaluation metrics, although was unsure what form this could take.

"Evaluation strikes me as tricky and we're all in favour of it. It's just how can we actually make it happen. So yes, to the extent that you can think of other ways that actually give useful information about whether things are being used, absolutely" (P41)

Opportunities

- How might we… support L&D staff to easily and effectively evaluate the impact of learning?
- How might we… increase learner engagement with providing feedback?

Accessible and inclusive learning design

Many L&D staff felt that accessibility is hard and is not considered as much as it should be.

Accessibility is considered from both a content design and a platform implementation perspective.

There is strong awareness of the need to make learning accessible. L&D staff shared that knowledge and skills have improved compared to what they used to be.

Learning content is often created by subject experts throughout an agency and there are varying levels of skill with designing for accessibility. L&D staff tend to review learning content against standards and checklists. One L&D staff member mentioned using an APSC checklist.

Accessible versions of training are often offered as workarounds. However, often these versions are PDFs that may not be accessible to everyone.

The Digital Service Standard 2.0 now mandates compliance with the latest version of Web Content Accessibility Guidelines (WCAG) for staff-facing systems including learning management systems.

"Not many people have that skill to do [accessible design] well" (P30)

"The understanding of WCAG has dramatically increased in last few years – before people weren't aware of WCAG and what needs to consider" (P33)

"We work with the internal learning creation area to ensure we align with the standards met" (Workshop participant)

"QA [quality assurance] processes include accessibility but plan to strengthen this" (Workshop participant)

"Accessibility is always a stumbling block" (P31)

"Little to no consideration for accessibility" (Workshop participant)

"We're using programs that traditionally don't lean towards making hugely accessible content… some of our baseline programs aren't very good at helping prompt compliance with accessibility requirements" (P32)

Accessibility is often assumed through an external provider.

L&D staff shared that learning was often assured to be accessible by an external provider. However, when tested with real users with accessibility needs, there are often problems identified.

One L&D staff member is exploring how to tighten up accessibility standards in procurement contracts so that accessibility is considered from the start. They would also like to access plain text versions of learning as a backup solution.

> "Providers do the instructional design, so we have little control if we go out and buy an eLearning from them, other than getting a user of AT [assistive technology] to check it once we've got it, and by then you're almost getting to the too late stage" (P31)
>
> "Provided through… third party provider – each page is a template with a few design tiles that you can design what you've got there… so we're kind of stuck with what we've got. Whether there has been accessibility testing or not I'm not aware" (P26)

Some L&D staff are testing learning with people with accessibility needs throughout the learning design process.

The best way to understand whether learning works for people with accessibility needs is by designing and testing it with people who have diverse accessibility or inclusivity needs (e.g. neurodiverse, people who use assistive technology).

> "You really need to test these things with someone who uses JAWS on daily basis or Dragon or whatever the program is – not you as a non-user because you'll not pick up on half of it" (P31)
>
> "So some of the feedback, we've got a graduate that's using JAWS technology on the platform and that's actually proving to be pretty good… so we've got a graduate coming on board who'll be using Dragon" (P29)

Some L&D staff mentioned the importance of designing physical learning spaces to be accessible and inclusive.

Physical spaces need to be designed to meet accessibility needs. Assistive technologies can support people with accessibility needs to participate fully in classroom activities.

L&D staff are also considering how to cater for people with neurodiversity at in-person events such as quiet rooms.

> "Learning spaces are obviously equipped for all comers in that regard, even the design of the building or retrofitting… as part of [training or event] registration we're inquiring as to what specific needs a particular learner may have attending the course they've signed up for" (P28)
>
> "And the ability to take in new info or even instructions while they're in that space [conference event] is really hard" (P29)

One L&D staff member mentioned the need for UI to be as simple and direct as possible, to meet the needs of users who spanned a very wide range of digital literacy.

> "We have farmers, an ageing workforce… people who don't even know how to turn on a computer, all the way up to our cybersecurity staff who look at the system and say 'this is so clunky I could improve it in 2 seconds flat', so we need to take a very, very broad lens in terms of making sure we have different modes or different ways of accessing that's easy to use" (P22)

Some leaders shared that opportunities for technology to support greater accessibility for learners were front of mind.

One leader discussed how technology can provide broader access to learning regardless of location.

> "Access to quality learning can be more equitable. In the past, learning experiences have not been equitable in the public service. People had to travel to capital city, used to go and face to face training all of that sort of stuff" (P34)

Another highlighted the opportunity to address the needs of diverse cohorts, including First Nations, CALD and neurodiverse employees.

> "An opportunity is that there are some cultural or some diverse considerations in learning we really need to tap into. And that includes layering learning to understand how it meets the needs. For example, of cultural safety for an Aboriginal Torres Strait Islander person, how it meets the needs of a person with disability, including our neurodivergent cohorts…. We have got to consider it's not one-size-fits-all, but there's multiple parts to it" (P37)

Another mentioned that accessibility for those with disability is a primary concern for learning in their agency.

> "Making sure that accessibility is front of mind for any design that we do – and that's not just in learning and development, that's in essentially everything that [our agency] does – we're not great at it, but we're definitely getting better" (P38)

Opportunities

- How might we… support L&D staff to feel confident to design and test that learning is accessible to everyone?

Case study – NDIS accessibility and inclusion

The National Disability Insurance Scheme (NDIS) focus on designing learning that works for everyone.

We spoke to Leanne Robinson, Assistant Director of Learning and Development at the NDIS, about her experiences ensuring learning is accessible.

At the NDIS, the L&D team engage with people with a disability through their Employee Disability Network and are continually learning how to improve. The team aims for a higher standard than the required Web Content Accessibility Guidelines (WCAG) Level 2.1.

> "Our target is to have 19% of employees with disability, so accessibility is at the forefront of our mind" (P27)

All eLearning modules are tested by users of assistive technology from their Office of Accessibility.

> "We just got a copy of Compassionate Foundations learning from APSC. We put the file in the LMS. We enrolled assistive tech users in that course, one fully vision impaired and one semi-vision impaired and they will see if they can navigate the modules. If they can't, we know we can't roll that out until we get that fixed. We have a zoom text user as well… making sure we have alt text on images, an explanation of how to move forward in the module etc." (P27)

Accessibility is hard.

> "The more you learn about it the harder it is, because there are so many different disability types you need to cater for… we're always learning, always changing our processes to make them more accessible all the time" (P27)

Designing learning that works for everyone rather than versions for different groups.

> "We like to make the whole thing accessible instead of 'click on this button', or if you don't need it, 'click on that button' – we don't want to discriminate against users who need assistive technology. Why can't you set it up right [for everyone] in the first place?" (P27)

Social learning

Community management is needed to get the most out of online social learning.

L&D staff shared that social learning often benefits from facilitation or guidance to keep discussions on track, ensure everyone's participation, and resolve conflicts if they arise.

We heard one story using a social learning platform where the provider also delivers expertise in community support.

"What's worked well [in the Digital Profession] is all the volunteers across the APS. Without them we wouldn't be able to exist. They're on-the-ground stewards, they're not being paid to be community leads, they represent their discipline, their agency, and stewardship in general, and we would not be successful without them" (P26)

Access to unused learning features

Some agencies have access to features in a learning management system through their providers but for business reasons they are not being used.

Reasons why features may not be activated included limitations of staff skills or resources, lack of awareness of the available features, lack of business need or priority or ICT security barriers.

Some examples we heard:

- Payments feature not needed as agency does not charge for access
- Skills capability assessment not activated as there is not a skills capability framework to enable the feature to full potential
- MS Teams and Zoom integration is blocked by department approval
- Multi-language learning display is not currently needed

Some L&D staff were not aware of features they could have access to as part of their current learning systems.

When platforms are bought through providers, there are features that are standard and features that are ad-on. Awareness of the availability and prices of these features is mixed across L&D staff in agencies.

One leader shared their thoughts on the choices that are made:

"We make choices at all junctures about what we can take on… there are options available to do things that we have not made the choice to do for strategic reasons, for resource-based questions, for issues, yes, of course" (P39)

Leaders raised that the value of a learning system is constrained by the skills of the team responsible for it and other business requirements such as privacy and security.

"We probably need to develop the skills and the mindset and the know-how before we go with one product or something because no matter how good your learning experience platform is, if you haven't got the people with the right skills to use it, it's not going to help" (P35)

"What pulls us back is some of those constraints around – in some cases not real constraints – but imposed constraints from the security or ICT perspective. I find if I challenge those, I just get told, 'well, because we have to'. So getting some flexibility there would to help us" (P40A)

"Obviously we do have to be careful about IT security, there's a lot of nervousness and risk around that, also around privacy concerns" (P35)

Opportunities

- How might we… maximise potential features of our current learning ecosystem?

Technology L&D staff and leaders would like to explore

L&D staff and leaders raised a range of features and technology they would be interested in exploring to better meet user and business needs.

Features L&D staff would like to explore included:

- Ability to create pathways for learners.
- HR system integration to support learners with individualised journeys and managers with targeted development solutions.
- More opportunities for flexible learning on the job (rather than going through training modules).
- Access to collaborative tools to support online learning
- Whole of government secure video hosting platform to enable fast and stable video streaming access.
- Ability for learners and supervisors to personalise their learning dashboard.

"The video files from Microsoft Teams are huge, huge files – where do you store them? We can't store them in [LMS], they're too big for that. They need to link from somewhere and at the moment we've got them in a records management system… and it takes 15 minutes to open because it's so large. That's not a good learning experience" (P31)

"We've got a data breach, where was that resource I needed? Rather than trawling through a whole training module, getting the info they need" (Workshop participant)

Leaders shared a range of technology they are interested in exploring including:

- Generative AI
- Learning pathways
- Immersive learning experiences
- Curation of learning
- Flexible delivery of learning
- Extended reality

Many leaders described how their area is already experimenting with AI or that there is an appetite for further experimentation.

"Really keen to see how we're going to use AI going forward and feel we need a sandpit to start playing in that as well" (P35)

"There's definitely a role for AI in terms of what we're trying to achieve" (P35)

"We haven't landed anything, certainly in our space, but there's an appetite for us to consider it and look at it" (P40A)

"My guess is that AI is going to make a big difference. I just think it's likely that some of the powerful uses of AI will be in L&D" (P41)

Leaders were aware of various applications of AI being explored in their area, including:

- AI-generated voices in eLearning production
- Writing learning objectives
- Coaching support ("follow-up nudging" based on goals set, etc.)

As well as one application being explored further in the near future (providing learners AI-generated feedback throughout cohort learning).

Two leaders described how these applications are already creating new efficiencies in L&D workflows, including applications that could make it easier to adapt and share content across agencies.

"It's really giving us a boost to doing things more efficiently" (P35)

One leader acknowledged the limitations of the technologies being used, but observed that they are continuing to improve.

"They still sound a bit clunky, the AI voices and things like that, but I think they are getting increasingly better" (P40B)

Some agencies have access to AI features in their existing products, which only need to be enabled.

"In the SuccessFactors, they already have that capability, we just need to turn bits of it on" (P40A)

One leader expressed a reservation that had been discussed, concerning reasonable limitations on AI use.

> “It's not just about thinking that everything can be done through some of these things like AI or bots. So I think all those things have a place, but I know that with some of the work that was done, I think around the Learning Board and one of the papers I saw when I first came into this role, it talked about the issues around dehumanising learning as well" (P40B)

Learning pathways to guide skills development

Multiple L&D staff mentioned the desire to create learning pathways, expressed by both staff and learners.

> "[Our LMS] has no flexibility to create learning pathways, when a new starter comes with us we dump 19 modules into their learning profile… I think it does come down to having a pathway, you're new to the agency, here's a nice pathway for you to go through and learn some bits and pieces along the way that you need for your job" (P27)
>
> "People are still grappling with how AI would be implemented in L&D, obvious one is using AI in two different areas – creating customised pathways for a learner, AI you put what type of learning you want and it comes up with a suggested pathway for that individual" (P30)
>
> "If I want to do this job, what kind of training do we have on the LMS to do that?… that requires a number of frameworks and structures that we as a department need to put into any kind of system that we're using for that… That sort of need for development to be shown, to be visible, etc. is came up a lot – a lot" (P22)

One leader mentioned the opportunity for technology to connect learning, skills and career planning.

> "A good electronic platform should be able to match skills to career trajectory in a much better way. And so we've got a product called Career Pathfinder through the Digital Profession, which is neat, and I think some more thinking in that kind of way would be would be really helpful, would be really, really interesting and beneficial" (P36)

Another leader suggested that micro credentialing could help to connect piecemeal learning into more substantial learning pathways, to get more value from microlearning.

> "A thing that's come up a bit is around credentialing, so micro-credentialing and all that sort of stuff. I think having that pathway between what might be bite-sized pieces of eLearning and things like that, or learning that you're doing that don't necessarily connect as such" (P40 B)
>
> "We're increasingly time poor, and making sure those offerings are fit for purpose, and micro-credentialing is a really good way to do that" (P40B)

Immersive learning experiences

One L&D staff member discussed the potential value of immersive learning experiences.

> "If you have a team given a little bit of freedom, you can make immersive training really, really good… Services Australia I think did gamification. They did some stuff on their induction program, basically you immerse yourself into a game, they're replicated the actual building like with numerous floors, so you go in, you create an avatar of yourself, which is fun. That's such an under-utilised thing in government" (P30)

Curation of learning

One leader was interested in the potential for learning technology to bring the most relevant learning opportunities to learners, and help them navigate a sea of content.

> "We offer a lot of learning, and often by offering a lot, it's not clear to the learner what they need to be effective in their job, or to progress to the next level. So I think there's an opportunity to curate our learning a lot better, to make it more accessible and more visible to the learner. There's so much… It can be a lot for people to work through" (P37)

Flexible delivery of learning

All leaders interviewed were interested in how technology can improve delivery of learning in general, and flexibly meet the needs of learners though:

- A variety of formats
- Modular content and experiences
- On-demand access to content and experiences
- Flexible participation in cohort-based learning
- Access from mobile devices and in personal time

> "It's real diversity of learning experiences and the way they're delivered, is a genuine opportunity for people" (P38)
>
> "It can support people undertaking learning at times where it's discretionary, so people who are self-motivated and self-directed to learn outside of work hours that that could be enabled, and available in the flow of work" (P34)
>
> "I mean that it's something that that technology can enable things to happen alongside you in as opposed to something that you set aside some time to log into an LMS for" (P39)

"How do we do more semi synchronous? We call it semi synchronous where people engage in the learning in a time-bound situation. So we call them learning sprints. They have two weeks to do to complete a learning sprint with a whole lot of activities on the platform and they must be engaging with their peers as well. So they're all having the same conversation at the same time and seeing the resources that are at a similar time so that they can learn that way" (P35)

"Definitely interested in more desegregated, modular learning in different ways… I think there's no doubt that sort of taking it apart, thinking about the constituent elements and thinking about how you want to put it all back together is interesting. So I still think we're too beholden to large blocks in different ways, and I think a good revamp platform would allow us to be much more flexible in that regard" (P36)

Two leaders discussed the opportunities being explored for scaling and enhancing cohort-based learning.

"Being much more creative in digital learning experiences – one of the things we experiment with at the APS Academy is cohort learning at scale, we use platforms for that which are really neat in terms of how they curate learning resources and curate a cohort-based learning experience" (P36)

"Huge opportunity with the way we're delivering our programs, the cohort-based social learning… and then how do we use technology to enhance that experience – whether it's AI or other technologies" (P35)

One leader suggested that there is a need for more bite-sized APS-relevant eLearning courses, where there are currently a lot more extensive facilitator-led courses.

"They're the sorts of things that would be great for us, from an ability to actually scale that and then go – then if people need to learn more, then they can do the more sort of premium offerings which might be face-to-face facilitator-led" (P40B)

Extended reality

One leader raised the topic of immersive technologies or extended reality [XR], sharing that they expect these to play a role in the future:

"What does that look like in terms of technology? I'm really not sure, but I think learning in the classroom probably not going to cut it. You'd probably learn in a more immersive experience somewhere, some place, the place would be of importance" (P35)

Opportunities

- How might we… provide opportunities for L&D staff to grow experience with emerging learning technology?
- How might we… leverage work being done to test responsible and safe use of AI in government to support learning?

Whole of government learning opportunities

All leaders spoke about the potential to leverage the scale of the public service as a whole with a one-APS approach.

"The other biggest opportunity is being such a large organisation, if you think of us as one cluster of many organisations, opportunities to learn from each other and peer network is bigger than any organisation in the country" (P34)

"As one-APS, we could really leverage that ability that we're large, we're connected, we all take a piece of the responsibility and we have a large footprint" (P40A)

"My sense is that there are L&D programs all over the place, and they're not well joined up" (P41)

Leaders had several suggestions for how agencies could combine their efforts and talents.

These included:

- Sharing responsibilities for whole-of-government initiatives between different agencies
- Coordinating procurement approaches and learning from each other's approaches
- Tapping into talent across agencies through micro assignments

"Being one-APS… we can share accountabilities and responsibilities… If we can lead this bit, and we know Defence leads on this bit, and we know Services Australia leads on this bit, that would be great because we could really leverage our size from a contract perspective, but also we could leverage our diverse location footprint as well" (P40A)

"There could be an opportunity for us to leverage together collectively on successful products and learn from that. So I think there's some siloed approaches. There's some great practice in some areas" (P37)

"Stop investing in expensive providers who don't have our context, and probably just harnessing the capabilities across the service that we do have. We've been doing some great work around micro assignments… we've got a lot of people across the service who we can tap into for this" (P35)

Opportunities to use shared platforms

Some leaders mentioned APS Academy and the Professions as potential opportunities to build on.

> "We have Professional streams. You know, we have a HR Profession, we have a Data and a Digital Profession, but I think there's probably not a lot of visibility about the core offerings that are in that space and how it all fits together. So I think that's an opportunity to really focus on that" (P37)
>
> "There's definitely a lot of low-hanging fruit in my view around the APSC, centrally building out some of those things, from a digital perspective, that could be shared out to government agencies. You know, if you said 'here is our digital administrative decision-making eLearning package, it's 3 modules, it's a 2 hour course, we'll send it to you, you can put it in your LMS'" (P40B)

One problem identified was the lack of standardised tools across the public service.

> "We're using Teams more and more to do our webinars and things and there's this lack of consistency across agencies and even across our devices and you can never be sure what the experience is like for the participant – you can't have a standardised approach" (P35)

Some leaders expressed some openness to possibilities for whole-of-government solutions, including learning platforms.

> "Is our desire to have some sort of cross-APS new LXP, in which case, what does that look like in terms of scale and how practical is that and who would come on board, like I'm open to that. Or is it to have something that is primarily based in the Academy and is so fantastic that people come to us over time anyway because it's so fantastic, I don't know" (P36)

One leader expressed reservations about committing to one large whole-of-government solution, and the opportunity cost.

> "I did at one stage have an opinion that to have a whole-of-government learning experience platform could be useful, could be good. But now I'm kind of thinking hmm, it in real innovation, there's new ideas popping up all the time around technology. It'd be good to have the freedom to jump onto new tools and things as they're developed" (P35)

Another leader described the issue of buy-in from agencies, especially large agencies, as crucial to the success of any cross-agency solution.

> "There's no serious answer without thinking about what the likely implementation path is, particularly for the large agencies, and to what extent they're on board versus not, right. So in this kind of narrow characterisation, this is an agency political problem, first and foremost, it's not a technology problem. It doesn't matter which technology solution we have, if we don't have support, then we're wasting our time" (P36)

One leader was concerned that requirements can be overlooked when shared services are arranged. They relayed an example of a shared solution in which some of their employees had joined another agency's live training only to find that they were unable to register themselves or record the training on their own system. This created a lot of manual work for booking and record-keeping.

> "When the government's looking more broadly shared services, a lot of those dependencies seem to get ignored" (P40B)

Two leaders discussed resourcing as a particular challenge for scaled cross-agency solutions.

> "It seems to be that the thing that always undoes shared services, is the fact that it starts to get a lot of zeroes on the end of the number to actually make the systems work and integrate, to the tune of maybe billions" (P40B)

L&D staff experiences with APS Academy

L&D staff expressed positive feedback on the learning offerings through APS Academy. However, APS Academy does not have capacity to meet all agency learning needs.

L&D staff shared a strong appetite to supplement their agency learning offerings with APS Academy courses.

However, we heard that APS Academy has limitations of how much it can service agency needs. This ranges from individual courses being regularly booked out to capacity to request facilitated in-house single agency training.

> "Academy, doing as much as possible with them but they've hit capacity" (Workshop participant)

We heard that one large agency is using the same providers as APS Academy to meet the scale of their training needs and they have found this to be more cost effective and timely.

One leader raised several concerns for using a shared service across agencies that they had experienced with APS Academy.

First, this solution could not offer the human resources at the same scale that they could source for themselves.

> "We've got this kind of paradox where if we have in-house facilitators and we were replicating a lot of the training that the APS Academy author, which arguably doesn't make sense, but the APS Academy couldn't necessarily meet our need at scale" (P40B)

They expressed concern that larger agencies like themselves are often better able to meet their own needs more cost-effectively.

> "Government Writing – the APS Academy used Ethos for that, which is a third party provider. We can go directly to Ethos and get it cheaper and faster than going through the Academy. Now that is a benefit we have as a big agency, being able to do that" (P40B)

Limitations of whole of government APS Academy learning hosting system

APSC L&D staff shared several business limitations of the APS Academy learning hosting system:

- There is no one consolidated user record for learning across systems. This would be valuable for L&D staff to be able to more easily track and understand what their learners are doing across the APS learning ecosystem.
- There is no self-serve ability for agencies to create and pay for group bookings. As a workaround, this is done by a request to the APS Academy team who complete the process manually. It is a complex problem due to limitations of financial application integrations. Note that this is a problem that is being worked on.
- Facilitators need to manually confirm learner attendance for live events. For IT security reasons, the MS Teams integration blocked. Note that some other agencies enable this feature.
- Convoluted process for invoice management. When large payments cannot be made by an agency credit card, they need to ask for an invoice (e.g. payment for in-house agency training, SES courses). The APS Academy team need to collect the information needed and the request goes to the Finance team to raise the invoice, give it to the agency and make sure it is paid.

Learning technology ecosystem

We explored online literature to understand key trends in learning technology across the public service and in the broader public and private sectors.

Understanding the learning technology ecosystem can help inform solution ideas to the opportunity areas and the user and business needs identified in the research.

Overview of the learning technology landscape

The Learning and Development (L&D) sector is undergoing major shifts, driven by the needs to adapt to an evolving business landscape and to meet learner expectations. More learners now seek learning through online channels.

The COVID-19 pandemic accelerated this change, prompting government agencies to increase their investment in digital and online learning platforms to accommodate remote and hybrid workforces.

Breakthroughs in artificial intelligence technologies including machine learning, natural language processing and generative AI are introducing innovative ways to access and engage with learning.

The L&D technology landscape is extensive and complex. Leading research from RedThread in 2023 identified and analysed 426 learning technology providers spanning 35 different L&D technologies. The research highlighted trends including that the rate of providers offering 'assessment', 'career planning' and 'skills assessments' have more than quadrupled since 2021 (e.g. similar to APSC Career Pathfinder tool).

Providing integration into third-party content libraries (e.g. Go1, Udemy and LinkedIn Learning) has also more than doubled since 2021. The way learning content is consumed has also seen shifts since 2021, with growth in gamification, microlearning and Learning Experience Platforms (LXPs).[15] Many organisations today deploy one or more learning platforms to meet needs (vs. one system that does everything), with the average of 11 different L&D platforms provided to employees.

The number and variety of platforms used also reflects how APS employees seek learning through different digital platforms and channels. An APSC workshop conducted in 2022 exploring learning technology identified 91 different learning platforms used by APS staff. These tools spanned from using APSLearn, through to LinkedIn Learning to podcasts, YouTube and many more.

Our research within this report highlights that APS employees access learning from a variety sources, with many using alternative approaches to traditional internal Learning Management Systems (LMS). One example highlighted earlier in this report is that some APS employees are using Generative AI, such as Microsoft CoPilot or ChatGPT to support their work through their personal devices.

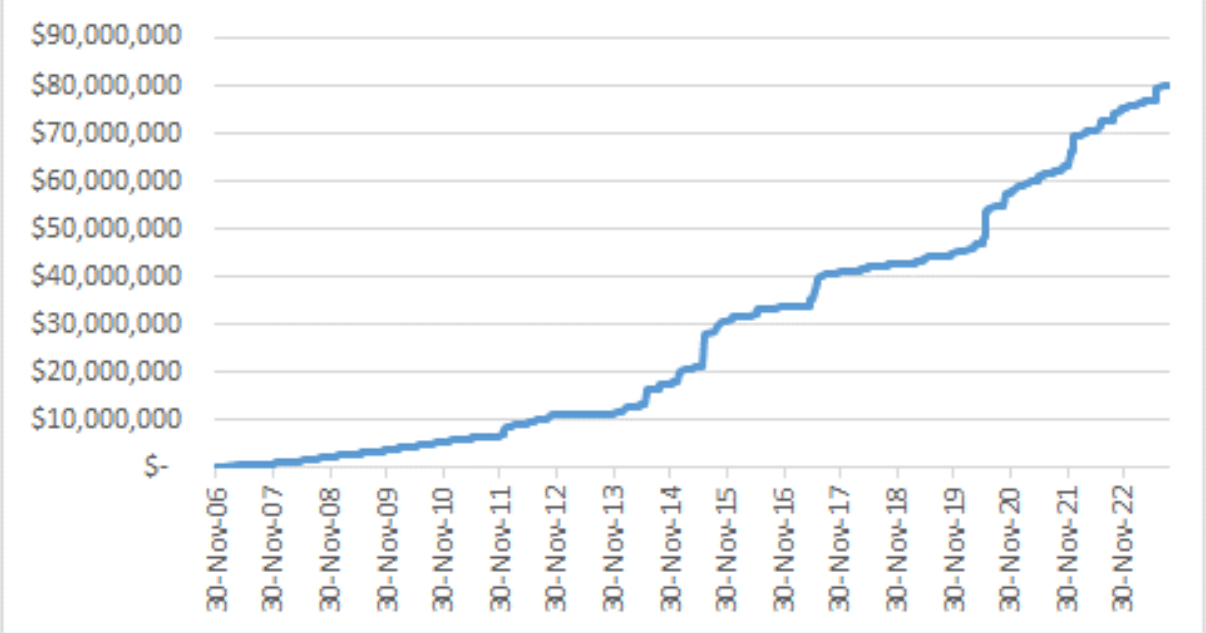
[15] D Johnson (2023) 'Final Report: The Learning Tech Provider Landscape', *RedThread Research*, retrieved from RedThread Community Hub website, accessed 1 May 2024.

The current state APS learning technology ecosystem

Today we have a disconnected and decentralised L&D technology environment. Most agencies manage their own learning systems which are used for mandatory training and bespoke agency training. Some agencies do not own their own learning systems and access systems through shared services arrangements.

A number of different platforms are used to deliver learning services across the APS. The indicative total value of learning platforms is estimated to be well above $80m (AusTender Data, 2023).

AusTender data of the accumulative value of learning platform contracts across the APS (2023)



As highlighted in Attachment C: Indicative APS Learning and Development Spend today the majority of learning platforms are managed by other agencies, with only 2.9% of the total spend being spent by APSC.

The most used learning technology in Government is the Acorn platform from Pursuit Technology Pty Ltd, with 115 separate contracts with agencies (AusTender 2023). Please note that the below values are anticipated to be much higher, as amendments to contract values are not factored in.

AusTender learning and development spend data (2023)

Company	Value	Products
Pursuit Technology Pty Ltd	$ 21,141,148	Acorn
Androgogic Pty Ltd	$ 8,249,010	Totara / Moodle
Cahoot Learning	$ 5,833,433	Cahoot
LIQUID INTERACTIVE	$ 4,116,050	Online Learning
SAP Australia Pty Ltd	$ 3,819,602	SAP LMS
Catalyst IT Australia Pty Ltd	$ 3,695,130	Moodle

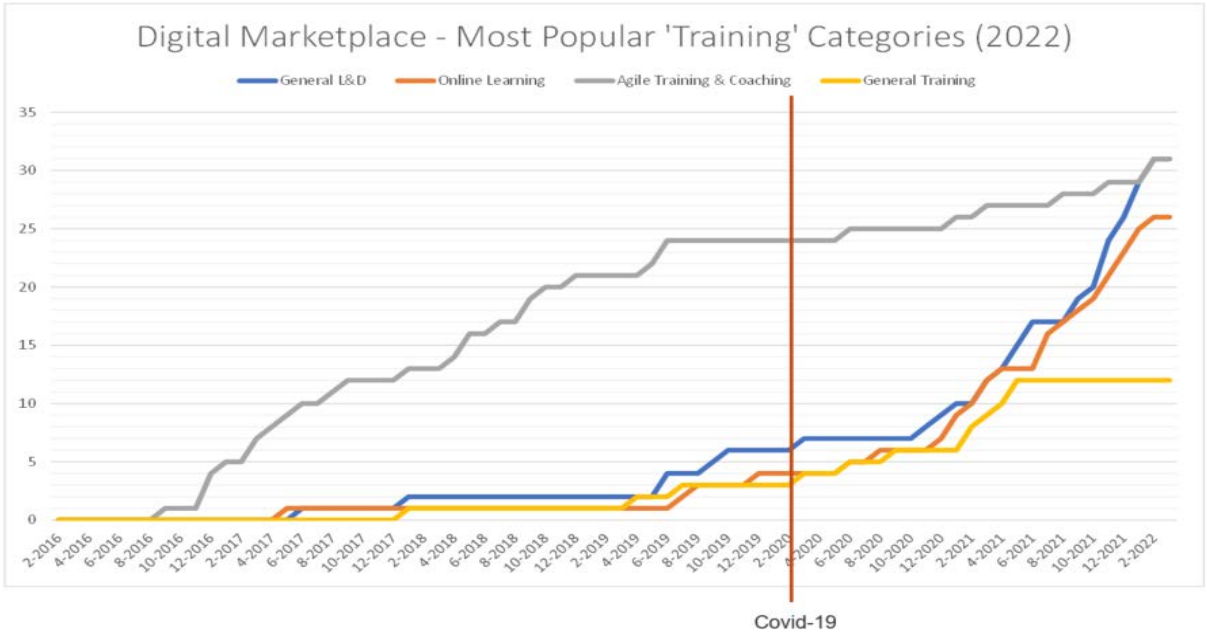
The majority of learning platforms today are Learning Management Systems (LMS), however an increased number of agencies seek additional features, including Learning eXperience Platforms

(LXPs). For example, Defence and IP Australia have recently launched new Learning Management Systems with Learning eXperience Platform (LXP) features (refer to Attachment D: Defence / IP Australia LXP Strategic Requirements Placemat) which combines a number of learning technology capabilities onto a single integrated platform.

ATO have also recently piloted the use of Microsoft Viva Learning which uses AI to provide intelligent learning recommendations, and offers learning close to the flow of work (embedded in Microsoft Teams).

The increasing importance of online learning is reflected in a 400% increase in 'Online Training' procurement on the Digital Marketplace since COVID began, and a slowdown in more traditional face-to-face or instructor-led training courses.

Digital Marketplace most popular training categories (2022)



Access to learning however can be a challenge for APS learners. In the APS L&D survey of 2020 (unpublished) it identified that 37% of APS employees can't access learning resources and courses anytime, anywhere. Top barriers identified from agencies in providing digital learning to staff included:

- ICT security policy (20%)
- L&D team capability (18%)
- Access to technology (17%)
- Budget (17%)

For agencies who do provide digital learning, from AusTender data (2023) many of these agencies are creating separate contractual relationships with similar digital learning content providers (e.g. LinkedIn Learning, Go1, O'Reilly Media, etc.).

Agencies are also creating their own custom online learning content on these platforms. As per the APS L&D review in 2020, it was found that only 25% of agencies share internally-developed learning material. Opportunities exist in both contractual arrangements with third-party content providers and the reuse and sharing of APS developed learning material. This requires learning content to be considered as APS-learning assets.

Complexity of the learning technology ecosystem

The following diagram highlights the complexity of the APS learning technology ecosystem, including the variety of platforms accessible to APS employees. It illustrates the whole-of-government services provided by APSC (e.g. APSLearn), services provided by agencies, and externally accessible services used by APS learners.

APS Learning Technology Ecosystem

Whole of government learning opportunities offered through the APSC

The Australian Public Service Commission (APSC) plays a central role in APS L&D, including providing a number of whole-of-government digital platforms accessible to APS including some systems to other state/territory/local governments.

Its statutory functions outlined in the Public Service Act 1999 includes: *"to foster, and contribute to, leadership, high quality learning and development and career management in the APS"*. This is further detailed in Public Service Regulations of 2023 which highlights: *"… function of the Australian Public Service Commissioner to deliver learning and development programs to any of the following on request:*

- *A Commonwealth entity (within the meaning of the Public Governance, Performance and Accountability Act 2013);*
- *A State or Territory;*
- *A Department of State, or an authority or body, of a State or Territory."*

The APSC manages a number of whole-of-government platforms including:

- **APS Academy website** (GovCMS): Hosting training events, guides, resources, links and tools
- **APSLearn** (Acorn): eLearning, events, badges and reporting
- **APS Professions** (Higher Logic): Community groups, sharing resources, chat, member directory, mentoring, coaching.
- **APS Academy Cahoot Learning** (Cahoot): Used for social learning and interactive courses, reporting, course badges,

- **APS Career Pathfinder** (Bespoke software): Digital & ICT only. Skills assessments, career pathways, learning pathways and learning resources.

APS Academy services

APS Academy supports whole of government learning where all APS staff can access learning experiences that are self-serve or facilitated. The APS Academy primarily supports building Craft capability. The APS Academy partners with agencies across the APS to identify, build and connect the highest quality learning experiences to increase APS capabilities for all employees.

The APS Academy supports the reuse and sharing of learning experiences via the APS Learning Bank however this is yet to be actively promoted.

Whole of government learning opportunities offered through agencies

Many other Government agencies also provide learning platforms accessible to their staff and the broader APS. There are a range of formal and informal learning opportunities supported by agencies ranging from online learning and face to face training to communities and networks.

Examples of agencies that support whole of government learning opportunities include:

- Diplomatic Academy, Department of Foreign Affairs
- Office of National Intelligence
- Comcare
- Department of Finance
- Behavioural Economics Team, Prime Minister and Cabinet

The APS Learning Technology Ecosystem diagram highlights the vast number of other platforms provided by third-party providers which have been identified to be accessed by APS employees, including ChatGPT, LinkedIn Learning and various others.

Current learning system features

Learning system stack features vary considerably across agencies. In general most agencies will have access to authoring applications to create learning experiences and hosting applications for learners to access learning experiences. Communities and networks were generally limited to agencies who manage specific streams.

Many agencies spoke about using common authoring tools such as Vyond and Articulate to design learning content that feeds into learning management systems.

Common capabilities of authoring tools included:

- User profiles
- Content authoring
- Content sharing
- Content exporting

Common features for learners using learning systems included:

- Access user profile

- Search or browse for learning
- Calendar view of learning available
- Enrol in a learning experience (self-pace, facilitated or event)
- Receive automated emails and calendar invites for learning
- Complete self-paced online learning
- Complete feedback on learning
- View upcoming and completed learning
- Forums for discussing and sharing learning

Common features for administrators and L&D staff using learning management systems included:

- Create user profiles and user role control
- Publishing learning experiences
- Analytics and reporting
- Performance tracking
- Automation features including sending emails, scheduling mandatory training etc.
- Integrations with other systems such as SSO
- Ability to merge user profiles
- Tenant, cohort and/or community control

Other features we heard about included:

- Test environments
- Customise multiple audiences
- Ability to create learning paths
- Quiz support
- Document upload/grading
- Connect with a coach or mentor

Recent developments in learning technology

Trends were identified in a broader literature review of the learning technology landscape.

The learning technology market continues to expand, innovate and consolidate.

The learning technology industry saw massive growth as a result of the pandemic. This growth continues as organisations seek new and improved ways to support L&D with technology.

> 'With more than 420 providers in this space, the learning tech provider landscape is loud, varied, and somewhat confusing.'[16]

Providers increasingly combine functionalities in their products, in part due to the trend of larger providers acquiring more and more of the small providers.[17]

It can be difficult to evaluate vendors, as they tend to use similar messaging that focuses on the topics of skills, data, integration and overall learner experience. Researchers note that they often use the same marketing language to describe different things.[18]

Emerging applications of machine learning and generative AI have the potential to enhance all forms of learning technology.

Ground-breaking advances in AI technologies are driving rapid innovation from learning tech providers, who are using it to enhance more and more software applications, especially to personalise individual learning experiences.[19]

The power of AI features depends on the level of access to data. For example, access to self-assessments from employees, or to organisational skills data, can allow AI to optimise learning content recommendations.

Advancements in natural language processing (NLP) are making it more feasible to turn text written by and for humans ('unstructured text') into data that AI can analyse.[20]

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[16] Johnson, 'The Learning Tech Provider Landscape'.
[17] Johnson, 'The Learning Tech Provider Landscape'.
[18] D Johnson (2023) 'Final Report: The Learning Technology Market: Growth, Optimism, and Innovation', *RedThread Research*, retrieved from RedThread Community Hub website, accessed 1 May 2024.
[19] Johnson, 'The Learning Technology Market'; Johnson, 'The Learning Tech Provider Landscape'; Foreman S (2022) 'What is a Learning Experience Platform?', *eLearning Industry*, accessed 7 May 2024.
[20] L Goff (2023) 'Learning Experience Platform (LXP): Explained', *Learnexus*, accessed 7 May 2024; S Grajek (2022) 'Top 10 IT Issues, 2023: Foundation Models', *EDUCAUSE Review*, accessed 2 May 2024; D Groombridge (2022) 'Gartner Top 10 Strategic Technology Trends for 2023', *Gartner*, accessed 1 May 2024; C Hashemi-Pour (2023) 'What is a learning experience platform (LXP) and how is it used?', *Workplace Learning: A complete guide for businesses*, TechTarget website, accessed 7 May 2024.

Some of the most advanced learning platforms available make use of powerful generative AI. These platforms can feed existing learning content into a large language model (LLM) AI which can then interact with learners as an expert or tutor in the subject matter. Some can dynamically create learning content in the form of courses, videos, quizzes and simulations, and may even generate virtual reality content in the future. Some systems can also personalise content for users, not only by tailoring recommendations, but by adapting the courses themselves.[21]

> 'These platforms are not "LMSs with Gen AI added," they are AI at the core.'[22]

This means that vast amounts of existing content can be repurposed in the form of dynamic knowledge management systems and on-the-job support. AI can also streamline instructional design and video creation, so that more staff are able to create content without specialised training or a large time commitment.[23]

Researchers have already found that many employees are using generative AI such as ChatGPT on a regular basis to enhance their own learning. As reflected in our research into APS learners, they are checking and deepening their understanding and seeking real-time help this way. These uses can help to 'enable critical thinking'.[24]

Data collection and analysis are the most widely offered functionalities across learning tech providers and are key to the most advanced offerings.

Organisational systems now produce more data than ever, which presents both significant opportunities and complex challenges. Learning data has long been limited to isolated participation statistics and feedback. However, learning analytics can now offer valuable insights into business objectives, with the potential to shape the future of organisations.[25]

89% of learning tech providers now offer data analytics, which jumped up from 36% in the space of a year, making it the most common feature offered. This is partly in response to strong and growing demand for sophisticated data collection and analysis, beyond simple reporting. This capability is key to other major learning tech advances, including personalisation and interoperability. Roughly half of learning technology providers offer each of these two functionalities.[26]

AI can now help L&D teams to make sense of data they can then put to use. Simple conversational interfaces can also support L&D staff to continuously experiment, learn and improve their practice.[27]

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[21] J Bersin (2024) 'Autonomous Corporate Learning Platforms: Arriving Now, Powered by AI', *The Josh Bersin Company*, accessed 18 June 2024.
[22] Bersin, 'Autonomous Corporate Learning Platforms'.
[23] Bersin, 'Autonomous Corporate Learning Platforms'.
[24] L Overton (2024) 'How L&D can create value: Leveraging technologies to organisational advantage', *The Chartered Institute of Personnel and Development (CIPD)*, accessed 19 June 2024.
[25] D Johnson (2024) 'Final Report: Learning Analytics: Then and Now', *RedThread Research*, retrieved from RedThread Community Hub website, accessed 2 May 2024.
[26] Grajek, 'Top 10 IT Issues, 2023'; Johnson, 'The Learning Tech Provider Landscape'.
[27] Overton, 'How L&D can create value'.

Providers are offering increasingly powerful automations with the potential to reduce the administrative burden on L&D teams.

Automation has significantly advanced in the last few years and is a key component of many innovations and enhancements in the learning technology landscape. The core benefit is to eliminate repetitive and time-consuming routine work.[28]

Automation can combine with sophisticated data integrations to trigger actions in systems. For example, to deliver real-time insights to employees, or to allow stakeholders to communicate via automated dashboards and reports, including full data visualisation.[29]

At the frontier of these technologies, 'hyper-automation' links up technologies to automate entire end-to-end processes. This can include simple automations, optical character recognition, AI and machine learning, robotic process automation (RPA) and even biometrics. Enterprise-level and education-specific market offerings are already available to higher education institutions.[30]

Skills data and skills frameworks are central to the current wave of learning programs, systems and products.

Over the last few years, skills have become the organising principle of learning and development. This trend has grown as skills technologies have become easier to use and more powerful, and as industry experts recommend a skills-based framework for learning and development. As a result, learning content is increasingly organised around a skills taxonomy, and related skills data can be shared between learning and HR systems.[31]

Various skills data functionalities allow organisations to structure their skills frameworks, verify employees' skills, analyse skills data, and share it across systems.[32]

Enterprise architecture trends favour more and more flexibility for both enterprises and employees themselves.

The norm for enterprise resource planning is steadily shifting to 'composable ERPs' which offer systems that are easy to change and adapt in response to rapidly changing needs, with minimal coding. These can help organisations to be more agile, and are already streamlining operations across the private sector and in higher education.[33]

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[28] Gilmartin Adams H (2021) 'Learning methods: What to use, how to choose, and when to cut them loose', *RedThread Research*, accessed 1 May 2024.
[29] Johnson, 'Final Report: Learning Analytics'.
[30] P Riley et al. (2023) 'Top Technology Trends in Higher Education for 2023', *Gartner*, accessed 7 May 2024.
[31] J Bersin (2024) 'Autonomous Corporate Learning Platforms: Arriving Now, Powered by AI', *The Josh Bersin Company*, accessed 19 June 2024; WD Eggers and A Datar (2022) 'The future of learning in government', *Deloitte Insights*, accessed 3 May 2024; Johnson, 'The Learning Tech Provider Landscape'; H Gilmartin Adams and D Johnson (2024) 'Final Report: Skills Tech 2024: Expansion & Evolution', *RedThread Research*, retrieved from RedThread Community Hub website, accessed 1 May 2024; Johnson, 'The Learning Tech Provider Landscape'.
[32] Gilmartin Adams and Johnson, 'Skills Tech 2024'.
[33] Grajek, 'Top 10 IT Issues, 2023'; Riley et al., 'Top Technology Trends in Higher Education for 2023'.

Successful practices for implementing learning systems

The literature review shed light on how both the private and public sectors are successfully leveraging technologies in their learning ecosystems to enhance L&D staff operations and the learner experience. Many of the highlighted principles align to Digital Service Standard 2.0 criteria (DSS), and to the Design Standards from the APS Learning Quality Framework (LQF).

Six recurring elements of success stood out in these reports and case studies, each further discussed below:

- A well-defined problem
- A holistic approach
- Simplicity as far as possible
- Metrics that guide iterative improvement
- Long-term planning
- Use of existing resources

Learning technology, as any technological solution, must address specific needs and objectives.

Learning systems should be purpose-built to meet specific organisational and learner needs. Research suggests that organisations gaining the most benefit from sophisticated learning technology have carefully aligned it to well-defined organisational goals and taken a proactive approach to identifying performance issue before 'jumping to a conclusion'.[34]

This is in line with the first criterion defined in the Digital Service Standard, 'Have a clear intent', which states that a 'clear, high-level definition of the user problem you are solving' is necessary to balance user needs with those of government.[35] Additionally, the Learning Quality Framework requires that learning be both 'purposeful' and 'user-centric', including being informed by capability needs and business needs, and aligned to organisational strategies.[36]

No learning technology has value in itself, but must meet a specific existing need to provide value.[37] This is explained in DSS criterion 8 'Innovate with purpose', which warns to 'avoid new for new's sake' and ask how a new technology will provide real benefit.[38]

[34] Johnson, 'The Learning Tech Provider Landscape'.
[35] Digital Transformation Agency (DTA), *Digital Service Standard v2.0 guides and tools*, Australian Government Architecture website, 2023, accessed 21 June 2024.
[36] APS Academy, *APS Learning Quality Framework and Design Standards*, APSC website, 2022, accessed 21 June 2024.
[37] Gilmartin Adams H (2021) 'Building Learning Tech Ecosystems: What the Literature Says 2 Years Later', *RedThread Research*, accessed 1 May 2024; Gilmartin Adams H (2021) 'Learning methods: What to use, how to choose, and when to cut them loose', *RedThread Research*, accessed 1 May 2024; OECD (2023) 'Shaping Digital Education: Enabling Factors for Quality, Equity and Efficiency', OECD website, accessed 2 May 2024, doi: 10.1787/bac4dc9f-en; Overton, 'How L&D can create value'; B Willemsen (2023) 'Top Strategic Technology Trends 2024', *Gartner*, Gartner website, accessed 1 May 2024.
[38] DTA, *Digital Service Standard v2.0 guides and tools*.

> ‘Just because you can doesn’t mean you should: don’t be distracted by shiny things.’[39]

All stakeholders need to be aligned on how a proposed learning technology solution will meet their needs, and on what impacts they can measure to determine this, before committing to new technology investments.[40] Criterion 1 of the DSS similarly advises that stakeholders need to be aligned to a vision with a clear rationale and expectations.[41]

For the best outcomes, L&D departments must work with senior leadership, people managers, key IT representatives and employees themselves to realise the needs of learners, administration and business. Rich features such as advanced analytics will have little to no impact without buy-in at all levels.[42]

Learning technology vendors themselves can be approached as potential partners in designing and implementing a larger learning solution, and it is important to know how they will work with the organisation’s IT team, or with other tech vendors.[43]

> ‘Pull vendors into the same room to solve problems together.’[44]

All aspects of the learning experience and elements of the wider technology ecosystem are best considered holistically.

Learning technology solutions should be designed with every stage of the learning process in mind to offer a comprehensive experience of learning.[45]

> ‘The tools themselves do not create impact. It is how they are applied to the learning challenge at hand that matters. This means going back to the basic foundations of how people learn.’[46]

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[39] Johnson D (2019) ‘Final report: The Art and Science of Designing a Learning Technology Ecosystem’, *RedThread Research*, retrieved from RedThread Community Hub website, accessed 1 May 2024.
[40] C Brasca et al. (2022) ‘How technology is shaping learning in higher education*’*, *McKinsey & Company*, accessed 29 April 2024.
[41] DTA, *Digital Service Standard v2.0 guides and tools*.
[42] Brasca et al., ‘How technology is shaping learning in higher education’; Grajek, ‘Top 10 IT Issues, 2023’; LinkedIn Learning, ‘LinkedIn Workplace Learning Report 2021’.
[43] Johnson, ‘The Learning Tech Provider Landscape’.
[44] Johnson, ‘The Art and Science of Designing a Learning Technology Ecosystem’.
[45] Eggers and Datar, ‘The future of learning in government’; H Gilmartin Adams (2021) ‘Learning methods: What to use, how to choose, and when to cut them loose’*, RedThread Research*, accessed 1 May 2024; LinkedIn Learning (2021) ‘LinkedIn Workplace Learning Report 2021: Your Guide to Skill Building in the New World of Work’, LinkedIn Learning website, accessed 1 May 2024; Overton, ‘How L&D can create value’.
[46] Overton, ‘How L&D can create value’.

While most organisational learning systems are primarily focused on creating and delivering learning content, industry analysts point to world-class examples in which learning solutions that consider the interplay of the many factors that make up a learning experience, including:

- Determining or being assigned a learning goal
- Becoming familiar with basic concepts
- Preparing for live sessions
- Practicing on a real problems
- Engaging with peers within and beyond a course
- Continuing to update knowledge
- Helping to instruct others in the skill

All these factors can be supported by various learning technology products and features.[47]

> 'Organisational L&D can be structured to reflect and complement natural learning behaviours.'[48]

Learning technology can guide and scaffold learning, allow the learner to experiment, support the learner to apply what they have learned, and help reinforce learning for long-term impact.[49] This is in line with the LQF design standard of 'Impactful' learning design, which describes learning experiences that include learning in the flow of work and that support application and continuous reinforcement.[50]

To meet these needs, learning solutions must exist within a wider ecosystem, which should extend to HR and talent management with interoperability.[51] This is in line with Criterion 4 of the DSS, 'Connect Services', which advises to 'design for interoperability' and 'join up services'.[52] Integration is also a characteristic of 'User-centric' learning, as defined in the LQF design standard.[53]

> 'Organisations should think in terms of technology ecosystems, rather than platforms, to promote learning.'[54]

Systems should not be more complex than necessary to meet needs, and multipurpose solutions can serve to keep a system simple and coherent.

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[47] Eggars and Datar, 'The future of learning in government'; Johnson, 'The Art and Science of Developing a Learning Technology Ecosystem'; Overton, 'How L&D can create value'.
[48] Eggars and Datar, 'The future of learning in government'.
[49] Overton, 'How L&D can create value'.
[50] APS Academy, *APS Learning Quality Framework and Design Standards*.
[51] J Bersin (2019) 'The Talent Experience Market is Real: and HR Tech Vendors Are Scrambling', *The Josh Bersin Company*, accessed 7 June 2024; Gilmartin Adams and Johnson, 'Skills Tech 2024'; Grajek, 'Top 10 IT Issues, 2023'; Johnson, 'Learning Analytics'; Johnson, 'The Learning Tech Provider Landscape'.
[52] DTA, *Digital Service Standard v2.0 guides and tools*.
[53] APS Academy, *APS Learning Quality Framework and Design Standards*.
[54] Johnson, 'The Art and Science of Developing a Learning Technology Ecosystem'.

Highly complex systems are prone to redundancies, fragmented data, convoluted workflows and poor user experiences. For this reason, many organisations that are aware of the many advanced technologies available prefer to implement minimalistic learning ecosystems.[55] Criterion 4 of the Design Service Standard, 'Connect services', similarly states that digital services should create a 'simple, seamless experience' for users.[56]

While this simplicity is ideal, the best system structure depends on the needs of the organisation. Learning ecosystems can fall within a spectrum from a single-platform solution for all learning programs, to a network of platforms without a clear hierarchy. Most organisations land somewhere in the middle, with a central platform that acts as a portal to several linked and integrated learning tools.[57]

In general, organisations with low risk tolerance and whose employees have uniform learning needs benefit the most from highly centralised systems, while networked or 'decentralised' ecosystems suit those with a higher risk tolerance or more diverse learning needs.[58]

The Learning Quality Framework Design Standard favours multipurpose solutions where possible, stating that 'Adaptable' learning design should 'harness existing learning experiences'. It should also be able to be 'shared, repurposed, scaled up' and 'leverage technology to create efficiencies'.[59]

Specific metrics for success need to be defined at the outset, and used to guide experimentation and ongoing improvement.

For the greatest impact, learning technology must be mapped to specific business objectives with metrics that can be tracked and drive iterative improvement.[60]

This is echoed in DSS criterion 9, 'Monitor your service', which requires planning for how a system will be monitored and optimised from the start. The LQF's Design Standards for 'Purposeful' and 'Impactful' learning design similarly address the need for an explicit evaluation strategy and measurable outcomes for individuals, teams and business.

Data should provide insights that can inform specific action plans for continual improvement of the user experience.[61] Building on criterion 9, DSS criterion 10 'Keep it relevant' instructs that the metrics collected should serve as an ongoing evidence base for the priority areas to improve.[62]

[55] Grajek, 'Top 10 IT Issues, 2023'; Johnson, 'The Learning Tech Provider Landscape'; Riley et al., 'Top Technology Trends in Higher Education for 2023'.
[56] DTA, *Digital Service Standard v2.0 guides and tools*.
[57] Johnson, 'The Art and Science of Developing a Learning Technology Ecosystem'.
[58] Johnson, 'The Art and Science of Developing a Learning Technology Ecosystem'.
[59] APS Academy, *APS Learning Quality Framework and Design Standards*.
[60] Brasca et al., 'How technology is shaping learning in higher education'; Johnson, 'Learning Analytics'.
[61] Eggars and Datar, 'The future of learning in government'; Grajek, 'Top 10 IT Issues, 2023'; Johnson, 'The Learning Tech Provider Landscape'.
[62] DTA, *Digital Service Standard v2.0 guides and tools*.

> ‘Use your data to understand what is working and what should be modified or sunset.’[63]

This iterative approach to implementation should begin with trials and tests to check and validate solutions prior to any full-scale commitments. Ideally, experimentation and adaptation should continue once a system is fully established so that it may continue to evolve.[64]

> ‘Just like a natural ecosystem, learning technology ecosystems should continually change and adapt to their environments.’[65]

Rapidly ideating, testing, assessing and refining learning solutions can help organisations to be agile and respond to rapidly evolving needs, and foster a risk-tolerant culture.[66]

A modular approach to design, allowing different components to be switched in and out, can help create this agility. Organisations are recommended to seek solutions with modular elements that can easily be combined, switched and removed as needed.[67]

> ‘Sandboxes, pilots, free versions, get in and get your hands dirty. Plug stuff into your ecosystem and see how it sits with your stakeholders. And if it doesn’t resonate, don’t be afraid to pull the plug.’[68]

Sustainability and disposability should be considered upfront.

It should be easy to retire underperforming systems and adopt better solutions as they emerge. This means building an exit strategy into any tech implementation, so that it can be cleanly removed from the ecosystem. All integrations and shared data need to be considered. Otherwise, the risk is to become locked into a system that is no longer fit-for-purpose or could otherwise easily be improved.[69]

All technology ecosystems should be built with sustainability in mind. This means that vendors need to be viable in the long-term, and there must be strong buy-in from internal stakeholders.[70]

Other factors for the lifespan of a technology include, particularly:

[63] Johnson, ‘The Art and Science of Developing a Learning Technology Ecosystem’.
[64] Johnson, ‘The Learning Tech Provider Landscape’.
[65] Johnson, ‘The Art and Science of Developing a Learning Technology Ecosystem’.
[66] Eggers and Datar, ‘The future of learning in government’; Johnson, ‘The Art and Science of Developing a Learning Technology Ecosystem’; Johnson, ‘Learning Analytics’.
[67] Eggers and Datar, ‘The future of learning in government’; Gilmartin Adams, ‘Learning methods’; Johnson, ‘The Learning Tech Provider Landscape’.
[68] Johnson, ‘The Learning Tech Provider Landscape’.
[69] Gilmartin Adams, ‘Learning methods’; Johnson, ‘The Art and Science of Developing a Learning Technology Ecosystem’.
[70] Johnson, ‘The Art and Science of Developing a Learning Technology Ecosystem’.

- Whether the learning need can be anticipated to change over time
- Whether it may be advisable to adopt new technologies as they become available

In these cases, it may be best to negotiate shorter contracts with vendors.[71]

Build on existing systems.

Researchers note that many L&D teams successfully leverage what already exists in their learning ecosystems, including:

- How learning is already occurring
- What learning content is already available
- What existing technology can be repurposed to support and enhance learning[72]

In some cases, these can provide more suitable and cost-effective alternatives to implementing entirely new learning tech. For example, one organisation found that the messaging platform where their employees already socialised at work was a more effective virtual setting for collaborative learning than the purpose-built social learning platform they acquired for the purpose.[73]

There is no need to build something new if what already exists can be enhanced or repurposed for the desired result. This can reduce the investment required to purchase and develop new learning solutions, and minimise the burden on employees to change their behaviour and learn their way around new systems.[74]

This precaution is reflected in the DSS criterion 8, 'Innovate with purpose', as well as criterion 6, 'Don't reinvent the wheel', which advises to consider existing 'platforms, patterns and standards' that can be reused, and any alternatives to building from scratch.[75]

Additionally, the DSS criterion 6 'Don't reinvent the wheel' suggests to consider how anything new to be developed can be designed with future reuse in mind.[76]

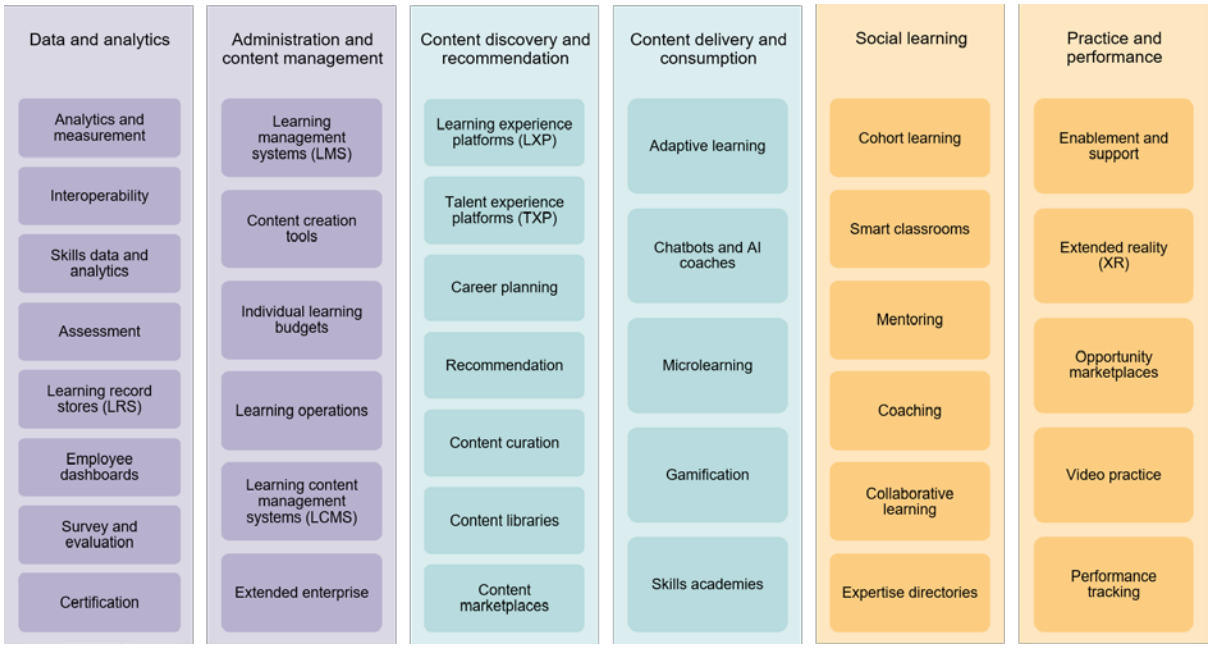
[71] Gilmartin Adams, 'Learning methods'; Johnson, 'The Art and Science of Developing a Learning Technology Ecosystem'.
[72] Gilmartin Adams, 'Learning methods'; LinkedIn Learning, 'LinkedIn Workplace Learning Report 2021'.
[73] LinkedIn Learning, 'LinkedIn Workplace Learning Report 2021'.
[74] Eggers and Datar, 'The future of learning in government; Gilmartin Adams, 'Learning methods'; Johnson, 'The Art and Science of Developing a Learning Technology Ecosystem'; LinkedIn Learning (2023) 'LinkedIn Workplace Learning Report 2023: Building the agile future', LinkedIn Learning website, accessed 1 May 2024.
[75] DTA, *Digital Service Standard v2.0 guides and tools*.
[76] DTA, *Digital Service Standard v2.0 guides and tools*.

Learning technologies and feature capabilities available

Drawing on RedThread's research along with additional sources, the literature review identified 37 distinct technologies and features now offered in the learning technology market, here organised into six categories:

- **Data and analytics** (8 technologies and features)
- **Administration and content management** (6 technologies and features)
- **Content discovery and recommendation** (7 technologies and features)
- **Content delivery and consumption** (5 technologies and features)
- **Social learning** (6 technologies and features)
- **Practice and performance** (5 technologies and features)

Learning technologies available



Note this is not a list of standalone products, but a list of features and functionalities which are often packaged together or interconnected in various combinations.

Data and analytics technologies

Analytics and measurement

Analytics and measurement technologies facilitate data collection, analysis, reporting and export.

These are the most widely offered functionalities across learning technology providers, in combination with other features.[77]

[77] Johnson, 'The Learning Tech Provider Landscape'.

Interoperability

Interoperability technologies can connect other learning and work technologies together for a cohesive user experience.

The ability to connect systems together to exchange data and create a seamless user interface is currently an area of rapid innovation. Integrations are anticipated to become more and more powerful as they become easier for providers to develop and implement.[78]

Reportedly, more and more providers say they are willing to work within a larger data ecosystem. AI can now also help 'harmonise' and 'normalise' data to make it consistent and compatible across systems.[79]

Interoperability can take several forms. It can be 'embedded', as some providers integrate other products and even rebrand them for a seamless appearance, for example adding third-party analytics or an AI coach to their own learning platform. Other providers offer 'webhooks' which allow one system to notify another of events or user behaviours, triggering responses such as content recommendations. Some platforms are built to integrate with other applications, such as text messaging and calendars, to offer a 'one-stop-shop' on any device.[80]

Skills data and analytics

Skills data and analytics technologies enable administrators to track, analyse and structure employees' skills and related data.

Skills data is a rapidly evolving area of learning technology, with providers offering products that can function within a larger and more coherent data ecosystem than ever before. These offer increasingly sophisticated, custom outputs including frameworks, descriptions and recommendations.[81]

One study has subcategorised these technologies into five key functions: structuring, verification, analysis, recommendation and integration.[82]

Structuring functionality helps to construct and update large-scale capability frameworks and map skills to jobs. AI enhancements can enable this at a large scale and high levels of complexity and detail.[83]

Verification functionality can validate skills data through self-identification, assessment, observation, or inference from HR and work data and from external benchmarks. With AI enhancements, multiple sources can be combined and weighted for higher accuracy.[84]

[78] Johnson, 'The Learning Tech Provider Landscape'; Gilmartin Adams and Johnson, 'Skills Tech 2024'.
[79] Gilmartin Adams and Johnson, 'Skills Tech 2024'.
[80] Johnson, 'The Learning Tech Provider Landscape'.
[81] Johnson, 'The Learning Tech Provider Landscape'.
[82] Johnson, 'The Learning Tech Provider Landscape'.
[83] Johnson, 'The Learning Tech Provider Landscape'.
[84] Johnson, 'The Learning Tech Provider Landscape'.

Analytics functionality can give insight into future needs for strategic planning by analysing the labour market, industry benchmarks and trends. Some offer these insights through a simple conversational AI interface.[85]

Recommendation functionality can match employees with suitable roles, work assignments and learning opportunities based on skills, interests and needs. These technologies can now draw on contextual data about employees for significantly improved accuracy and relevance.[86]

Finally, integration functionality can connect systems, for example sharing skills data between HR profiles, development opportunity calendars and internal opportunity boards. Providers also increasingly 'harmonise' and 'normalise' their skills and proficiency levels for compatibility with frameworks from other providers.[87]

Assessment

Assessment technologies assist in measuring employees' knowledge, skills, aptitudes and potential.

Thorough and precise assessment is sought for its high potential impact when scaled across an organisation. In response to this demand, and following recent advancements in analytics, automation and AI, provider offers have recently quadrupled. Their products are more advanced, interactive and personalised than ever before.[88]

Offers include different kinds of questions beyond multiple choice, projects, simulations, sandboxes and labs. AI products provide personalised feedback on submitted responses and automatic scoring.[89]

New features offer to 'passively assess' skills and performance based on an employee's work data.[90]

Learning record stores (LRS)

Learning record stores are servers that host all data pertaining to learning activities, achievements and job performance, required for the xAPI learning data standard.

LRS systems have remained largely unchanged in the time that other learning tech innovations have been occurring. Organisations now have several alternative options for storing learning data, either in large data warehouses or using analytics software, which can both make it easier to connect different kinds of data.[91]

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[85] Johnson, 'The Learning Tech Provider Landscape'.
[86] Johnson, 'The Learning Tech Provider Landscape'.
[87] Johnson, 'The Learning Tech Provider Landscape'.
[88] Johnson, 'The Learning Tech Provider Landscape'; H Gilmartin Adams and D Johnson (2024) 'Final Report: Skills Verification: An Overview', *RedThread Research*, retrieved from RedThread Community Hub website, accessed 3 May 2024; Gilmartin Adams and Johnson, 'Skills Tech 2024'.
[89] Gilmartin Adams and Johnson, 'Skills Tech 2024'.
[90] Goff, 'Learning Experience Platform (LXP): Explained'; Johnson, 'The Learning Tech Provider Landscape'.
[91] Johnson, 'The Learning Tech Provider Landscape'.

Many LMS and LXP platforms incorporate a built-in LRS.[92]

Employee dashboards

Employee dashboards provide employees information about their learning, skills and progress.

Research suggests that more and more organisations want to provide employees and direct mangers with learning and performance data, as those in the best position to act on it. As such, more providers now offer that data directly to employees in various forms.[93]

Survey and evaluation

Survey and evaluation technologies collect feedback from employees about their learning experiences.

Certification

Certification technologies help to create, issue, verify and track certification, badges and credentials of all employees.

Administration and content management technologies

Learning management systems (LMS)

Learning management systems track and organise all learning content and activities for employees.

As a core learning technology system, LMS platforms increasingly incorporate functionalities of other kinds of platforms, including:

- Learning content management systems (LCMS)
- Learning experience platforms (LXPs)
- Talent management systems and talent experience platforms (TXPs)
- Social learning platforms
- Extended enterprise platforms[94]

The LMS itself can be a functionality within a larger learning platform. The adoption of standalone LMS platforms as a primary learning solution appears to have levelled off, while platforms with LXP features continue to grow in popularity.[95]

Content creation tools

Content creation tools allow L&D teams and instructional designers to create learning content for employees, including eLearning modules, audio, video and interactive content.

[92] Johnson, 'The Learning Tech Provider Landscape'.
[93] Johnson, 'The Learning Tech Provider Landscape'.
[94] Johnson, 'The Learning Tech Provider Landscape'.
[95] Johnson, 'The Learning Tech Provider Landscape'.

Developments in generative AI are rapidly transforming the content creation tools available. Products can generate course ideas, outlines, microlearning content, assessments, translation and subtitles. They can also streamline other processes, including supporting subject matter experts to turn their expertise into learning content with directions and approvals.[96]

Individual learning budget

Individual learning budget technologies allow organisations to assign individual budgets for employees to spend on external learning opportunities, supporting self-determined learning.

Researchers in 2023 identified this as a new functionality being offered on some platforms. These features allow learners to purchase learning opportunities within the learning system via a digital wallet, and streamline approval and invoicing processes for administrators.[97]

Learning operations (learning ops)

Learning operations technologies support administrators to organise learning resources including people, tools, budgets and spaces, especially for managing live learning experiences.

Learning content management systems (LCMS)

Learning content management systems manage and host learning content, including tools for administrators to collaboratively author, review and repurpose learning materials and resources.

Extended enterprise

Extended enterprise technologies provide separate platform instances to different groups of learners, especially to manage trainings for external partners, contractors, vendors, suppliers, customers or other stakeholders, without giving them the same access as employees.

Content discovery and recommendation technologies

Learning experience platforms (LXPs)

Learning experience platforms aggregate internal and external content for employees in the form of highly user-friendly learning portals with various additional features.

Note that the definition of a 'learning experience platform' has evolved over time, as the core features of LXPs did not previously include the full functionality of a traditional LMS. However, as providers increasingly combine the features of different kinds of learning platforms in their products, LMS features are now typically included in LXP products.[98]

[96] Johnson, 'The Learning Tech Provider Landscape'.
[97] Johnson, 'The Learning Tech Provider Landscape'.
[98] Goff, 'Learning Experience Platform (LXP): Explained'; Johnson, 'The Learning Tech Provider Landscape'.

> ‘The game changer for enabling employees to consume learning is not so much about the functionalities we’re seeing; instead, it’s about the functionalities being consolidated.’[99]

LXPs are designed with the learner in mind, offering an experience tailored to each individual and an intuitive and user-friendly user interface. They can gather and present content from both internal and external sources, including LMS platforms, knowledge bases, digital libraries, document management systems, blogs, social media platforms and third-party providers, with content in the form of courses, videos, podcasts, articles, documents and other formats.[100]

Additional features can include:

- User ratings and comments
- ‘Followed’ content
- ‘Trending’ content
- Personalised learning paths
- Tools to support self-directed learning
- Content authoring tools
- User-generated content[101]

Content is recommended based on factors such as user profile information, identified interests, self-assessments, other content consumed, search history, and similarity with other users. The quality of these personalised recommendations depends on how thoroughly content is sorted by an AI-powered tagging process, and on the quality of the tagging taxonomy.[102]

Talent experience platforms (TXPs)

Talent experience platforms provide employees a comprehensive experience of career and performance management.

Recently, providers have begun offering comprehensive HR suites that consider the holistic employee experience. These platforms often combine career planning and performance management functionalities with learning and development as an integrated solution, including LMS and LXP features.[103]

[99] Johnson, ‘The Learning Tech Provider Landscape’.
[100] S Foreman (2022) ‘What is a Learning Experience Platform?’, *eLearning Industry*, accessed 7 May 2024; Hashemi-Pour, ‘What is a learning experience platform (LXP) and how is it used?’
[101] Foreman, ‘What is a Learning Experience Platform?’; Goff, ‘Learning Experience Platform (LXP): Explained’; Hashemi-Pour, ‘What is a learning experience platform (LXP) and how is it used?’
[102] Foreman, ‘What is a Learning Experience Platform?’
[103] Bersin, ‘The Talent Experience Market is Real’.

> ‘New vendors focused on employee career management… are challenging the LMS and LXP market, with a focus on the career experience at work.’[104]

Learning content recommendation can be incorporated as part of an employee journey-based experience with nudges and suggestions to guide employees through their development. Integrated features can include:

- Career planning
- Performance discussion management
- Internal social networks
- Feedback mechanisms
- Opportunity marketplaces
- Internal mobility features
- Features for talent acquisition
- Features for workforce planning[105]

Career planning

Career planning technologies provide learning pathways to employees based on their knowledge and skills.

More and more learning tech providers are offering development planning and suggested career pathways using sophisticated AI, data analytics and integration to support employees in self-directed learning and development.[106]

> ‘Self-directed learning journeys hand power to the learners, channelling intrinsic motivation.’[107]

The task of creating ‘pathways’ through learning can now be supported or fully automated by AI-powered tools that tag content and courses and sequence them for learners. This can supplement or enhance manual creation of learning.[108]

Some tools can generate a custom career pathway tailored to an employee’s profile of skills and interests, which can adapt as the profile is updated, while some can also draw on organisational data to generate a map to a desired internal position. Adaptive learning technologies can further personalise these pathways to the individual.[109]

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[104] Bersin, ‘The Talent Experience Market is Real’.
[105] Bersin, ‘The Talent Experience Market is Real’.
[106] Gilmartin Adams and Johnson, ‘Skills Tech 2024’.
[107] Eggars and Datar, ‘The future of learning in government’.
[108] Johnson, ‘The Learning Tech Provider Landscape’.
[109] Gilmartin Adams and Johnson, ‘Skills Tech 2024’; Johnson, ‘The Learning Tech Provider Landscape’.

Recommendation

Recommendation technologies use AI to deliver the most relevant learning content for each employee according to company data, ratings and rankings.

Reports indicate that almost all L&D teams rely on 'push' communications to make employees aware of current learning opportunities. Recommendation methods, including user rating and review functionalities, are suggested as alternatives or supplements to 'push' communications that instead allow learners to 'pull' from recommended content, encouraging self-directed learning.[110]

Content curation

Content curation technologies help administrators to find, organise and personalise learning content to package for employees.

The number of providers offering content curation features has more than doubled with recent advancements in identifying content for specific purposes. Vast amounts of information, such as course descriptions, which can now be analysed and sorted by AI in the absence of keywords or tags, while some products are able to parse and tag audio and video content.[111]

Content libraries

Content libraries host external learning content in many forms including courses, videos, podcasts, graphics and tools.

Through what is sometimes called the 'Netflix of Learning' approach, employees navigate content libraries by searching and browsing, which requires them to know what they are looking for and how it will help them. Content libraries are now offered by more than half of learning tech providers.[112]

Content marketplaces

Content marketplaces provide a space where creators, publishers and consumers can buy, sell and license various forms of learning content.

Content delivery and consumption technologies

Adaptive learning

Adaptive learning technologies can personalise learning journeys over time based on individual goals, strengths, weaknesses and behaviour.

[110] Gilmartin Adams, 'Learning methods'.
[111] Gilmartin Adams and Johnson, 'Skills Tech 2024'; Gilmartin Adams, 'Learning methods'; Johnson, 'The Learning Tech Provider Landscape'.
[112] Gilmartin Adams, 'Learning methods'; Johnson, 'The Learning Tech Provider Landscape'.

These have been found to be some of the most effective applications of learning technology in the higher education sector, through cloud-based courses that use AI to adapt the content to the learner's level of knowledge and ability as they progress.[113]

Chatbots and AI coaches

Chatbots and AI coaches offer real-time conversations to support and tutor employees in their learning.

AI has rapidly expanded the breadth and sophistication of coaching bots available. Some providers offer them as a built-in feature of their learning platforms.[114]

Some solutions combine AI with human coaches, eliminating the need for human coaches in simple applications, such as guidance for standard processes and prompts for reflection.[115]

Some providers offer AI chatbots in the form of 3D avatars that can serve as interactive course guides or act out role-playing scenarios and offer feedback.[116]

Microlearning

Microlearning technologies provide bite-sized on-demand learning to be consumed at the point of need.

Gamification

Gamification technologies enhance learning activities with gameplay elements such as badges, point systems and competition.

Skills academies

Skills academies are dedicated virtual spaces where employees focus on developing specific skillsets.

Social learning technologies

Cohort learning

Cohort learning technologies provide an online space for extended group-based learning experiences.

Group-based or 'cohort' learning technologies have grown both in the number of providers and the depth of the solutions offered. These come with various features to support both live and self-paced group learning activities.[117]

[113] Brasca et al., 'How technology is shaping learning in higher education'.
[114] Johnson, 'The Learning Tech Provider Landscape'.
[115] Johnson, 'The Learning Tech Provider Landscape'.
[116] Johnson, 'The Learning Tech Provider Landscape'.
[117] Johnson, 'The Learning Tech Provider Landscape'.

Cohort learning technologies can provide an online environment or 'virtual classroom' for learners and instructors to interact through video conferencing, text chat and other collaboration tools which can help to connect a 'community of learners'.[118]

Smart classrooms

Smart classrooms are technologically enhanced physical learning spaces equipped with tools including video conferencing equipment, interactive displays and internet connectivity that can support hybrid and blended learning.

Technologies that allow real-time interaction between physically present and remote learners have been some of the most successful applications of learning tech in higher education institutions. Smart classrooms require a combination of virtual features and physical devices.[119]

Virtual features for smart classrooms include comments, polls and breakout discussions. Physical technologies include lecture capture, video streaming, digital whiteboards, document cameras, fix-focused cameras and beam-forming microphones that can follow instructors and capture participation for live streaming to remote learners.[120]

Mentoring

Mentoring technologies connect employees with mentors and offer platforms for these relationships.

Many technologies are now available to facilitate the matching process between mentor and mentee, and to support these relationships over time.[121]

Coaching

Coaching technologies provide employees direct feedback and data for improvement, either from humans or AI.

Learning tech providers are offering more and more solutions to scale coaching, from basic matching algorithms to advanced data-driven systems.[122]

This coaching can also take the form of peer coaching, group coaching and self-coaching, and can be integrated into other forms of social learning, such as cohort learning programs.[123]

Coaching functions include matching employees to experts in the organisation, providing prompts and questions, providing extension activities for the coachee, and drawing insights from coaching sessions.[124]

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[118] A Sam (2020) 'What is a Virtual Classroom and Why Is It the Future of Online Learning?', *eLearning Industry*, accessed 13 June 2024; Brasca et al., 'How technology is shaping learning in higher education'.
[119] Brasca et al., 'How technology is shaping learning in higher education'.
[120] Brasca et al., 'How technology is shaping learning in higher education'.
[121] Johnson, 'The Learning Tech Provider Landscape'.
[122] Johnson, 'The Learning Tech Provider Landscape'.
[123] Johnson, 'The Learning Tech Provider Landscape'.
[124] Johnson, 'The Learning Tech Provider Landscape'.

Collaborative learning

Collaborative learning technologies provide tools and resources to help employees to learn from each other.

Technologies that support collaboration for learning include:

- Chat platforms
- File sharing tools
- Collaborative editing tools
- Repositories and wikis[125]

Expertise directories

Expertise directories track subject matter experts across the organisation, connecting employees to expertise and helping them to learn from each other.

Practice and performance technologies

Enablement and support

Enablement and support technologies reduce the need for formal training by providing on-the-job guidance, facilitating learning in the flow of work through means including digital instructions, knowledge repositories, listening tools, digital adoption platforms (DAPs) and on-the-job nudging.

Researchers anticipate innovations in enablement technology to continue, given the current advances in generative AI and data.[126]

There has been a lot of growth in applications that support frontline workers, as their tasks are easier to quantify to track and improve. Some tools are offered as comprehensive training platforms to connect workers, roll out new procedures and automatically assign trainings.[127]

Digital adoption platforms (DAPs) are standalone tools or integrated features that offer real-time contextual assistance for other platforms, guiding users with suggestions and highlighted steps to reduce the need for instruction.[128]

Knowledge repositories are databases that help to capture, organise and access knowledge-based information. These organisational knowledge management tools support informal and just-in-time learning. Some dynamic new solutions offer advanced search functions and collaboration features.[129]

[125] Johnson, 'The Learning Tech Provider Landscape'.
[126] Johnson, 'The Learning Tech Provider Landscape'.
[127] Johnson, 'The Learning Tech Provider Landscape'.
[128] Johnson, 'The Learning Tech Provider Landscape'.
[129] Johnson, 'The Learning Tech Provider Landscape'.

Extended reality (XR)

Extended reality provides a live virtual learning experience in which computer-generated views either fully immerse the learner in a virtual environment (virtual reality), or are superimposed over their real-world environment (augmented reality).

There has been significant excitement and speculation around potential learning applications for virtual reality (VR) and augmented reality (VR), which are already being offered by some higher education institutions and private training providers.[130]

XR experiences can offer a means of learning through experimentation in areas otherwise prohibitively expensive, hazardous or sensitive, and can help to build experience with unusual or dangerous situations.[131]

Some organisations are implementing extended reality technologies enhanced with AI and machine vision to create large-scale 'augmented connected workforces' in industrial and technical settings, for remote training and collaboration and real-time assistance. These use tools such as VR headsets and AR glasses to provide virtual environments or overlay instructions and diagrams over the real environment, for standardisation and continuous improvement.[132]

Opportunity marketplaces

Opportunity marketplaces can match employees to suitable opportunities and roles based on their skills, interests and preferences.

Also called a 'talent marketplace' or 'gig marketplace', this is a less common but growing functionality offered by learning tech providers as a means of scaling hands-on learning. Some tools can help employees discover and understand their career options within the organisation, while some can help employees identify the skills they want to learn and then find work assignments to practise them.[133]

These experiences also offer organisations a valuable source of skills data for workforce planning.[134]

Video practice

*Video practice technologies enable employees to record themselves performing work tasks to gain fee*dback from peers, managers or AI.

Performance tracking

Performance tracking technologies rate employees, identify high performers, track goals and offer a platform for providing feedback.

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[130] Accessplanit (2024) 'State of the Training Industry Benchmark Report', Accessplanit website, accessed 3 May 2024; Brasca et al., 'How technology is shaping learning in higher education'; R Kimmons and JM Rosenberg (2022) 'Trends and Topics in Educational Technology, 2022 Edition', *TechTrends*, 66, 134–140, accessed 2 May 2024, doi: 10.1007/s11528-022-00713-0.
[131] Eggers and Datar, 'The future of learning in government'.
[132] Willemsen, 'Top Strategic Technology Trends 2024'.
[133] Johnson, 'The Learning Tech Provider Landscape'.
[134] Johnson, 'The Learning Tech Provider Landscape'.

Learning technology definitions

Architecture and tech ecosystem

Term	Definition
Architecture	Architecture refers to the design and organisational structure of a system in terms of hardware and software.
Tech stack	The combination of technologies used to develop and run an application or software solution, including programming languages, frameworks, libraries, databases and tools.
Instance	A single, independent occurrence of a software application running on a server.
Tenant	A user group sharing access to a software application within an instance.
Multi-tenant architecture	An architecture where a single instance of a software application has a master tenant which serves multiple clients or organisations (sub tenants) allowing them to share common resources and infrastructure while maintaining the privacy and security of their data.
Interoperability	The ability of different systems, devices or software applications to interact, exchange data, and function together.
Integration	The process of connecting different systems or software together to interact, exchange data and function together.
API (application programming interface)	A set of rules and protocols that allow different software applications to communicate with each other in order to access data or features.
API integration	The process of connecting systems and/or software applications through their APIs.
Embedded interoperability	Built-in compatibility between different software components within a system (another form of integration).
Webhooks	A mechanism that notifies or triggers an action within one system based on events in another system.

Term	Definition
SaaS (software as a service)	A third-party software application hosted and accessed online without being installed on a local system, typically on a subscription basis. The vendor is responsible for maintaining the software application and environment (e.g. performance optimisation, security, updates).
PaaS (platform as a service)	A third-party software application that enables customisation through development and deployment. The client is responsible for maintaining the software application and environment (e.g. performance optimisation, security, updates).
No-code	No-code development platforms allow users to build software applications without writing any code, through visual interfaces, drag-and-drop functionality, configuration tools, and pre-built templates and components.
Low-code	Low-code development platforms allow users to build software applications with minimal hand-coding by offering no-code tools that streamline development, while more advanced customisation and configuration will generally require some level of coding.

Platforms and systems

Term	Definition
Platform	Platforms are foundational systems or environments that enables various applications, services or users to operate and interact.
LMS (learning management system)	A platform designed for administering, tracking and delivering learning experiences by enabling administrators to plan, deliver, implement, track, record, assess and report on learning experiences and user engagement.
LXP (learning experience platform)	A platform designed to provide a personalised learning experience by leveraging AI and machine learning to deliver personalised learning experience recommendations tailored to individual learners' roles, interests, goals and preferences. An LXP is generally an add-on to an LMS.

Term	Definition
(PLMS) Performance Learning Management System	A subtype of LMS designed to integrate learning and workforce management practices by leveraging artificial intelligence (AI) and machine learning that aims to align organisational and learner needs and goals.
Social Learning Platform	A platform designed to facilitate and promote social learning experiences by enabling learners to interact, collaborate, share and learn from one another.
Learning aggregator	A software designed to collect and centralise learning experiences from a variety of sources (including platforms) into a single location for the learner to find and access relevant learning experiences based on their profile or search criteria.
TXP (talent experience platform)	A comprehensive employee platform designed to provide a personalised experience that encompasses the employee journey from onboarding and learning to career development and performance management, offering access to training and development programs, feedback mechanisms and career advancement pathways. A TXP can incorporate features of an LMS or LXP, or integrate with them as separate platforms.
LCMS (learning content management system)	A software application that combines the features of a content management system (CMS) with tools for creating and managing learning content, such as eLearning courses, training materials and assessments.
LRM (learning relationship management)	A software system designed to manage and facilitate personalised learning and learning pathways, and uses data to maximise engagement and track interventions to achieve learning outcomes.
LRS (learning record store)	A repository for storing, managing and accessing learning data generated from various digital learning activities including online courses, simulations and assessments.
HRIS (human resources information system)	An integrated software solution that streamlines the management of HR activities including employee records, payroll, benefits administration, recruitment, performance management and training.

Term	Definition
HCM (human capital management)	An HR software solution incorporating talent management and workforce planning features in addition to basic HRIS features.
ERP (enterprise resource planning)	An integrated software solution designed to automate and streamline core business processes across different functions and departments, typically including modules for finance, supply chain management, manufacturing, HR and customer relationship management.

Data and data management

Term	Definition
Data	Data encompasses all the information collected, processed and stored on digital systems, in the form of text, numbers, images and videos.
Metadata	Data that describes other data, for example a file's author, creation date and size, which may be embedded in the file or stored in a database.
Tagging	The process of adding labels or tags to data to categorise it for searching and retrieval.
Database	A collection of data arranged in tables for efficient management and retrieval.
Data warehouse	A central repository that stores large amounts of data from various sources, designed to facilitate data processing and analysis.

eLearning tools and standards

Term	Definition
SCORM (shareable content object reference model)	A file type that specifies standards for packaging, sharing and tracking eLearning across platforms and systems for interoperability.
xAPI (Experience API)	A protocol for tracking and analysing learning experiences across platforms and systems, allowing a comprehensive view of learners' interactions with learning content.

Term	Definition
Content authoring	The process of creating and editing digital content including text, images, video and interactive elements.
MOOC (massive open online course)	A large-scale course accessible to unlimited online participants via the web. As these courses do not have a gateway applied, there are not restrictions on where learners come from.

Learning technology features

Term	Definition
Assessment	Technologies that measure employees' knowledge, skills, aptitudes and potential.
Recommendation	Technologies that use AI to deliver the most relevant learning content for each employee according to company data, ratings and rankings.
Adaptive learning	Technologies that personalise learning journeys over time based on individual goals, strengths, weaknesses and behaviour.
Certification	Technologies to create, issue, verify and track certification, badges and credentials of all employees.
Gamification	Technologies designed to enhance learning activities with gameplay elements such as badges, point systems and competition.
XR, VR and AR (extended reality, virtual reality and augmented reality)	Technologies that provide a live virtual learning experience in which computer-generated views either fully immerse the learner in a virtual environment (virtual reality), or are superimposed over their real-world environment (augmented reality).
Career planning	Technologies that provide learning pathways to employees based on their knowledge and skills.
Employee dashboard	Technologies that provide employees information about their learning, skills and progress.
Skills academy	Dedicated virtual spaces where employees focus on developing specific skillsets, such as coding or leadership.

Term	Definition
Mentoring technologies	Technologies that connect employees with mentors and offer platforms for these relationships.
Coaching technologies	Technologies that provide employees direct feedback and data for improvement, either from humans or AI.
Chatbots, AI coaches and ITS (intelligent tutoring systems)	Technologies that offer real-time conversations to support and tutor employees in their learning with personalised instruction, prompts and feedback.
Surveys and feedback	Technologies that collect feedback from employees about their learning experiences.
Individual learning budget technologies	Technologies that allow organisations to assign individual budgets for employees to spend on external learning opportunities, supporting self-determined learning.
Content library	Technologies that host external learning content in many forms including courses, videos, podcasts, graphics and tools.
Content marketplace	Technologies that provide a space for creators, publishers and consumers to buy, sell and license various forms of learning content.
Expertise directory	Technologies that track subject matter experts across the organisation, connecting employees to expertise and helping them to learn from each other.
Knowledge repository	Technologies that collect, organise and manage documents, manuals, reports, best practices, expertise, insights and other forms of organisational in an accessible central hub.
Opportunity marketplace	Technologies that match employees to suitable opportunities and roles based on their skills, interests and preferences.
Video practice	Technologies that enable employees to record themselves performing work tasks to gain feedback from peers, managers or AI.

Social learning features

Term	Definition
Social learning	Social learning technologies facilitate learning through collaboration and interaction among peers, mentors and/or experts in the form of discussion boards, live chat, collaboration tools and community platforms.
Cohort learning	Technologies that provide an online space for extended shared learning experiences for groups of learners (‘cohorts’).
Collaborative learning	Tools and resources to support collaboration between learners, such as chat platforms, file sharing and collaborative editing tools, and repositories and wikis.
Virtual classroom	Online learning environments where learners and instructors interact in real-time through video conferencing, chat and other digital tools.
Smart classroom	Technologically enhanced physical learning spaces equipped with tools including video conferencing equipment, interactive displays and internet connectivity that can support hybrid and blended learning.
File sharing tools	Technologies that enable users to share digital files over a network or the internet for collaboration or distribution.
Collaborative editing tools	Technologies that allow multiple users to edit and review the same file together in real-time, such as documents, spreadsheets and presentations.

Artificial intelligence and machine learning

Term	Definition
AI (artificial intelligence)	Generally refers to technology that can perform tasks requiring human intelligence, such as understanding language, recognising patterns, making decisions and learning from experience. Key advancements are currently in generative AI, natural language processing and machine learning.
ML (machine learning)	A branch of AI that enables systems to learn and improve from experience without being programmed, and make predictions or decisions based on data. As a

Term	Definition
	subset of machine learning, ‘deep learning’ uses neural networks with many layers to model complex patterns in data.
Generative AI	AI systems that can create new content, whether in the form of text, images or audio, by learning patterns from existing data. Large language models (LLMs) are a specific type of generative AI within the field of natural language processing (NLP), designed to understand and generate text, powering conversational AI like ChatGPT.
NLP (natural language processing)	A branch of AI that enables systems to interpret and generate human language, with applications including chatbots, virtual assistants and translation services.

Other terms

Term	Definition
Authentication	The process of verifying the identity of a user or system attempting to access resources or services through passwords, biometric data or security tokens. ‘Multi-factor authentication’ requires two or more of these forms of verification.
Automation	The use of software tools to complete processes and tasks without human intervention. Software developed to automate tasks typically performed by humans is known as robotic process automation (RPA).
Capability framework	A structured outline or model identifying the skills, knowledge, behaviours and attributes required for success within a given role, profession or organisation and typically stored and maintained within HR systems.

Attachment A: Research questions

Objective	Questions
The current state needs and experiences of APS learners.	1. How do APS staff learn and what is the user journey for APS staff accessing learning in government? 2. What is the learner experience using APSC products and services? E.g. APS Academy, Professions 3. What is the learner experience using internal agency learning systems? 4. What are the top needs and pain points of learners? 5. What is the learner experience like for those with accessibility needs? 6. What are the core needs of adult learners based on academic literature? 7. How does learning happen? 8. What makes learning effective? 9. How can we evaluate whether learning occurred?
The current state needs and experiences of people who enable learning in the APS including learning and development practitioners, learning designers, platform administrators.	1. What does success look like? 2. What tasks are done, who does them and when, how long do they take? What connections do they have to other teams? 3. What barriers do they face? What enables them? 4. What interactions are there with policy and technology? 5. How is user feedback collected and considered? 6. How is accessibility and inclusivity considered? 7. What data is collected and shared? 8. What could a dream future look like? What role could emerging tech play?
The strategic priorities and opportunity areas of interest to APS leaders.	1. What are the strategic priorities of leaders of L&D in the APS? 2. What do leaders of L&D in the APS see as the top priority problems and opportunities in L&D and why? 3. How confident are they to make decisions about L&D technology and why? 4. What are their measures of success? 5. How do leaders learn?

Objective	Questions
The technical landscape of learning and development in the APS, the private sector and international government. This includes trends and what do we know has the most impact on learning outcomes.	1. What are the technology trends for learning across governments, internationally, in universities and in the private sector? 2. What can we learn from their experiences and the impact of technology on learning outcomes?

Attachment B: Discussion guide questions

Round 1: Learners in the APS

Round 1 participants were asked about their general experiences of learning in the APS.

About the participant

- *Can you tell us a bit about yourself and your current role?*
- *Would you be able to give an example of some tasks you complete day to day?*
- *Do you supervise any staff?*
  - *If so, how many?*
  - *As a supervisor, how do you support your team members when seeking and completing learning opportunities?*

Learning preferences and behaviours

- *In your personal or professional life, when you're seeking to learn something, can you talk us through what do you do?*
- *How do you like to learn? When do you learn at your best?*
- *Have you used online learning in the past? If so, how did you find your experience?*
- *When you're at work, where do you look for learning opportunities?*
- *How often do you look for learning opportunities?*
- *Have you used learning resources provided by your agency? If so, what were they?*

Support to learn

- *How supported do you feel to seek and complete learning in your agency?*
- *How supported do you feel by your supervisor? Why?*

Recent experience with learning

- *Could you talk us through or show us, step by step, your experiences a recent time you needed to or wanted to learn something for work?*
- *If you feel comfortable and it makes sense to, would you be able to share your screen with us and show us what you did?*

  Prompts included:

  - What were your goals and expectations?
  - How did you find out about the learning opportunity?
  - How did you enrol?
  - What was the time and/or effort commitment?
- *Did you need to seek approval? If so, what did this involve?*
- *How did you find the overall experience completing the learning?*
- *What worked well?*
- *What could be improved?*

- *If you needed help, where would you go to seek support?*
- *Were you able to apply what you learnt to your work? Why or why not?*
- *Did you receive any recognition of completing the learning? If so, what was it?*
- *Is recognition important to you? Why or why not?*
- *What would you share with others about your experience?*

Round 2: Learners in the APS

Round 2 participants were also asked about their general experiences of learning in the APS.

When asking Round 2 participants about a recent experience with learning, participants were asked specifically to talk through experiences with their agency's internal learning platform.

Recent experience with internal learning platform

- *We would like to better understand your experiences with your agencies' learning systems.*
- *Could you talk us through or show us, step by step, a recent time you completed learning through your internal learning platform?*
- *If you feel comfortable and it makes sense to, would you be able to share your screen with us and show us what you did?*

  Prompts included:

  – *How did you get to your learning system? What prompted you to come here?*
  – *How did you log in?*
  – *How do you know what learning you've done? How do you know what learning you need to do?*
  – *How did you enrol?*
  – *What was the time / effort commitment?*
  – *Did you need to seek approval? If so, what did this involve?*
  – *How did you find the overall experience completing the learning?*
  – *What worked well?*
  – *What could be improved?*
  – *If you needed help, where would you go to seek support?*
  – *Were you able to apply what you learnt to your work? Why or why not?*
  – *Did you receive any recognition of completing the learning? If so, what was it?*
  – *Is recognition important to you? Why or why not?*
  – *What would you share with others about your experience?*

Round 3: Learners in the APS

Round 3 participants were also asked about their general experiences of learning in the APS.

When asking Round 3 participants about a recent experience with learning, participants were asked specifically to talk through experiences with APS Academy.

Recent experience with APS Academy

- *We would like to deep dive into your experiences with APS Academy.*
- *Could you talk us through, step by step, your experiences with APS Academy?*
- *If you feel comfortable and it makes sense to, would you be able to share your screen with us and show us what you did?*

  Prompts included:

  – *How did you find out about the learning you completed?*
  – *How did you enrol?*
  – *What was the time / effort commitment?*
  – *Did you need to seek approval? If so, what did this involve?*
  – *What steps did you need to take to complete the learning?*
  – *How did you find the overall experience completing the learning?*
  – *What worked well?*
  – *What could be improved?*
  – *If you needed help, where would you go to seek support?*
  – *Were you able to apply what you learnt to your work? Why/ why not?*
  – *Did you receive any recognition of completing the learning? If so, what was it?*
  – *Is recognition important to you? Why or why not?*
  – *What would you share with others about your experience?*
  – *How do you know what learning you've done?*
  – *How do you know what learning you need to do?*

Round 4: Enablers of learning in the APS

Round 4 participants, as L&D staff, were asked about their experiences in their role as enablers of learning in the APS.

About the participant, their team and team's service offer

- *Can you tell us about yourself and your current role?*
- *What is your team responsible for? What is your service offer?*
- *Who is in your team? What roles do they play?*
- *What does success look like for your team?*
- *What are you on the hook for and why?*

Users and their experience

- *Who are your users?*
- *How do users interact with your service?*
- *What do you know about your users' needs and experiences? What do we know based on evidence, e.g. analytics, feedback, research?*

- *What assumptions do you have about your user's needs and experiences? What do we think we know?*
- *How is accessibility and inclusive design considered?*

Ideal service

- *If you could design your dream service, what would it look like?*
- *What role do you think emerging technology could play in supporting learning?*

Experiences supporting learning

- *We would like to deep dive into what you and your team do.*
- *Could you talk us through the tasks that your team does day to day?*
- *If you feel comfortable and it makes sense to, would you be able to share your screen with us and show us how you do some of these tasks?*

  Prompts included:

  – *What are repeat tasks and what are ad hoc tasks?*
  – *How is content created and shared?*
  – *What data is collected and shared?*
  – *How is privacy and security considered?*
  – *What interactions are there with policy and technology?*
  – *What works well for staff on your team?*
  – *What could be improved for staff on your team?*

Round 5: Leaders of learning in the APS

Round 5 participants, as senior leadership with strategic oversight of L&D, were asked about their experiences in their role as leaders of learning in the APS.

About the participant, their team and team's service offer

- *Can you tell us about yourself and your current role?*

- *Thinking back to the last time you needed to learn something for your work, could you talk us through what you did?*

  Prompts included:

  – *What were your goals?*
  – *What steps did you take?*
  – *How did you find your experience?*
  – *When enrolling in the learning, did you do it yourself or did someone do it for you?*

Participant's agency

- *What signals do you look for in your workforce that L&D is on the right track?*
- *How are you using technologies to improve your L&D practice?*
  – *How are you using technologies to support employees to learn through the flow of work?*
- *What role do you think emerging technology could play in supporting L&D?*
- *How confident do you feel you have the information you need to make decisions about L&D technology?*
- *Are you aware of any technology that your agency currently has access to that you have not implemented?*
  – *If so, do you know why?*
- *How confident are you that you have the skills in your agency to implement and maintain learning technology in your agency?*
  – *What are the skill gaps?*
- *How much learning is unique to your organisation versus how much learning could be shared across government?*

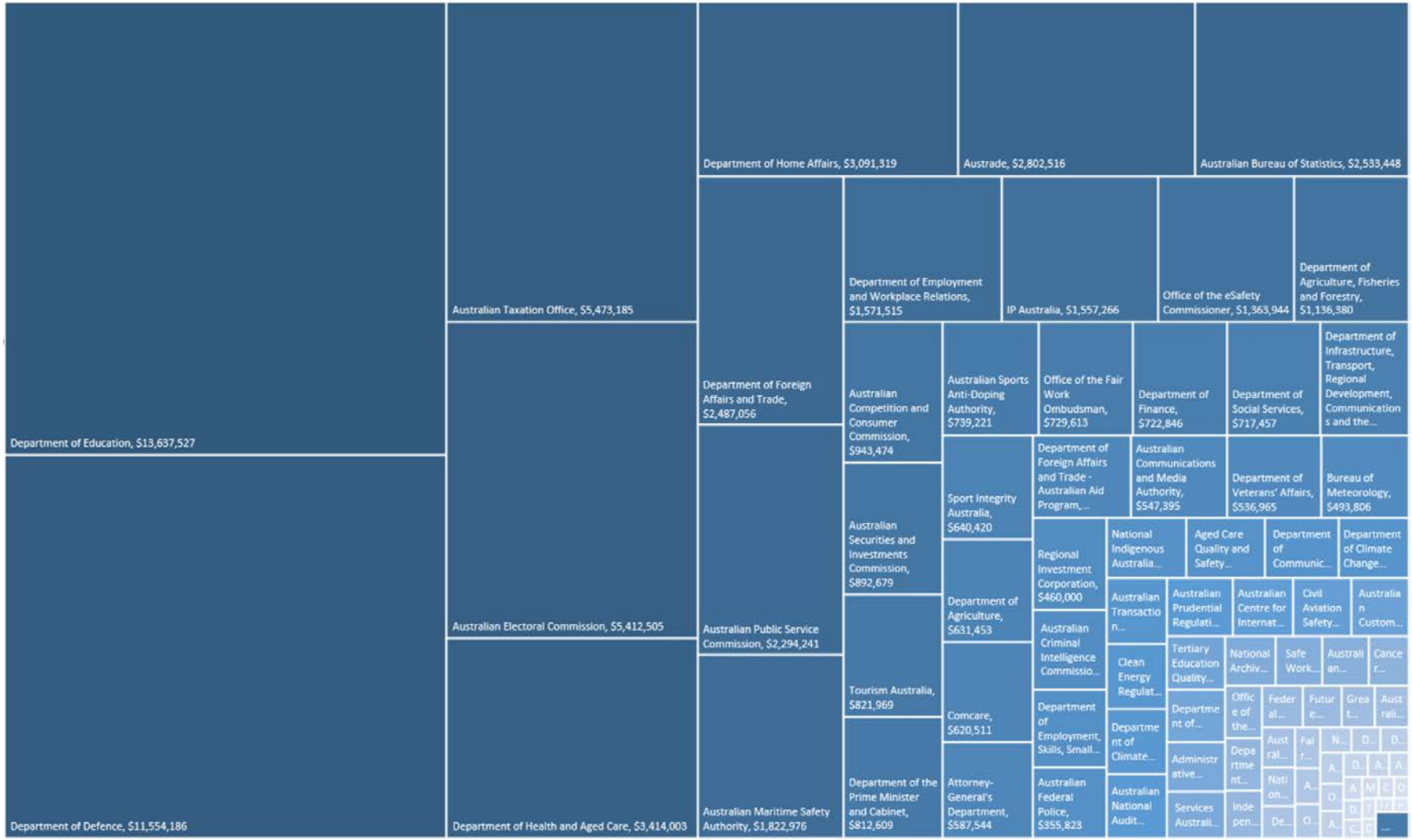
Strategic thinking on L&D

- *What do you believe are the biggest challenges in L&D and the APS today?*
- *What do you believe are the biggest opportunity areas in L&D in the APS today?*
  – What are the barriers to harnessing those opportunities?

Learning Technology Roadmap

- *What would a successful L&D Technology Roadmap look like for you, your people and across government?*
  – *What themes would it cover?*

Attachment C: Indicative APS L&D technology spend (AusTender 2023)



Attachment D: Defence / IP Australia LXP strategic requirements placemat

Learning Experience Platform (LXP) requirements placemat

LXP solution agreed to by COO Committee

The first LXP paper was submitted to COO Committee in April 2020. The paper proposed a more flexible, engaging and wide-reaching learning approach to respond to COVID19 and broader shifts in the APS learning ecosystem. It also proposed an approach to "explore a common LXP platform for the APS" that would investigate the capacity of an LXP to meet the need of the APS learning system. Once scoping was complete, a plan for a pilot was developed.

LXP Strategic Requirements compared against tender business requirements

In July 2020, COO Committee was provided the high-level *Strategic Level Requirements* as part of the plan for the LXP pilot (over the page). This document included a group of eight requirements that focused on Whole of Government (WoG) needs. COO Committee endorsed these requirements, which aligned with the elements proposed in the first LXP paper. The analysis below compares the Strategic Level WoG Requirements against the business requirements now included in the tender documentation pack to highlight the extent to which each strategic requirement has been covered in the tender.

WoG STRATEGIC REQUIREMENT	The ability understand workforce skills, both at an organisational and WoG level	The ability to rapidly build critical skills for anyone, anywhere, any time	Scalable license and sustainment models	Alignment with GovERP and Defence ERP programs	Access via a secure, unclassified internet based solution with privacy considerations	Rapid sharing of flexible learning solutions	Single platform that enables autonomous agency customisation	HR integration to be considered at agency level
BUSINESS-LEVEL REQUIREMENT	**Matched business requirements:** **1.1 - Enhanced user experience:** **- 1.1.06 - Abili**ty to capture external content completion status - 1.1.09 - Ability to update learner profile - 1.1.11 - Ability to download my learning profile as a doc/pdf **1.4 - Mobile learning record:** - 1.4.01 - Ability to create a mobile learning record that stores my learning profile - 1.4.02 - Ability to have a mobile learning record that is transferrable from one agency to another - 1.4.03 - Ability to make the mobile learning record and re-activate when required - 1.4.04 - Ability to download my mobile learning record as a file (doc/pdf) **2.1 - Workforce capability:** - 2.1.01 - Ability to search workforce database according to skills - 2.1.02 - Ability to pull aggregated workforce capability reports based on skills across agencies	**Matched business requirements:** **4. – Accessibility (all requirements), e.g.:** - Accessible learning for anyone, anywhere and anytime - Learning environment that is diverse, current and easy to navigate **4.1 – Mobility (all requirements, e.g.:** - Easy access to learning content - anywhere, anytime, anyone, and on any device - Achievement of flexible learning opportunities for all learners regardless of location - Ability to facilitate on-demand learning - Supporting the benchmark for accessibility for all users **4.2 – Virtual classrooms (all requirements), e.g.:** - Efficiencies through reduced related travel for face to face training - Increased flexibility in delivery - Facilitate cross government activities	**Matched business requirements:** **6.3 – Sustainment:** - 6.3.03 - Ability to dynamically scale and support peak loads without causing disruption to quality of service - 6.3.04 - Scalable license model	**Matched business requirements:** **2.2 - ERP Alignment:** - 2.2.01 - Ability to integrate with GovERP platform - 2.2.02 - Ability to integrate with SAP platform	**Matched business requirements:** **2.3 – Security:** - 2.3.03 - Ability to meet agency security controls to allow access to the LXP Solution from the agency network - 2.3.04 - Ability to control my [learner] privacy settings - 2.3.08 - Ability to prevent unauthorized sharing of content between agencies	**Matched business requirements:** **1.3 - Social Learning:** - 1.3.06 - Ability to upload media in social channels **2.4 - Resource Sharing:** - 2.4.01 - Ability to access common learning resources across agencies - 2.4.05 - Ability to support multi-agency attendance on instructor-led offerings	**Matched business requirements:** **2.5 Customisation and Branding:** - 2.5.01 - Ability to create customised landing pages per agency / user group - 2.5.02 - Ability to have an agency specific image library of approved resources that can be used in content profiles and broadcasts - 2.5.03 - Ability to customise look and feel according to agency style guides	**Matched business requirements:** **2.6 - HR Integration:** - 2.6.01 - Ability to import user information and org structure information from HR systems - 2.6.02 - Ability to import course completion information from HR system (historical and ongoing)

SUMMARY

Requirements

- There are business requirements that align to each of the strategic Whole of Government requirements endorsed by the COO Committee, however the level of detail and number of directly aligned business requirements varies for each strategic level requirement.
- The Ability to rapidly build critical skills for anyone, anywhere, anytime requirement is also well-covered in the business requirements, and aligns closely to the intent of the upcoming APS Learning and Development Strategy.
- There is less detail and alignment in some critical WoG strategic requirements such as alignment to GovERP and scalable license models. These requirements will need further attention and consultation with relevant agencies.
- The Department of Finance and the Digital Transformation Agency will be engaged throughout the pilot to ensure the platform is designed to meet these endorsed strategic requirements.

Alignment to the APS Workforce Strategy

- There is alignment between the LXP and the objectives and actions of the *APS Workforce Strategy, 2025* (the Strategy).
- It is critical that the LXP solution is tested and adopted by agencies outside of Defence and IP Australia for broader data collection to occur. This data collection will support the Strategy.
- As outlined in the Understanding workforce skills requirements above, the LXP will collect data on workforce skills and capability that can support the actions and interventions of the Strategy, and monitor their implementation.
- The LXP solution would enable the responsive workforce models outlined in the Strategy. Surge capacity and mobility will be key actions out of the Strategy and can be enabled through the data captured in LXP.
- Data from the LXP solution could also be used as an additional data source to support the measurement and evaluation of the Strategy.

Attachment E: Example learning technology stack