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LEVERAGING PARTNERSHIPS FOR MICROCREDENTIAL DESIGN IN DIGITAL HEALTH: KEY SUCCESS FACTORS

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ABSTRACT

AIM

This paper describes the collaborative approaches used to design microcredentials in digital health and cybersecurity. The project was initiated to design and deliver educational products to address specific skills shortages and align outcomes with Australian and International skills and professional competency frameworks.

APPROACH

The co-design process was guided by a proven model for educational design, involving interdisciplinary teams and emphasising rapid prototyping to ensure industry relevance and on time delivery. Partnerships with industry and professional associations were built to develop and deploy the microcredentials within a six-month timeframe.

MAIN FINDINGS AND CONCLUSION

Key success factors included trust, mutual respect, and effective communication among partners. The co-design process highlighted the benefits of collaboration, the importance of alignment with competency frameworks, and the lessons learned in creating educational products that satisfy learner, academic and industry needs. The paper concludes that co-designing microcredentials with industry and professional associations is an effective approach to delivering educational products that address workforce skills and professional knowledge gaps.

KEYWORDS

Partnership, Microcredential, Digital Health, Cybersecurity, Education.

INTRODUCTION

The importance of a skilled and knowledgeable workforce to support Australia's progress towards a consumer centric, digitally enabled health and social care system is documented in numerous competency frameworks and strategy documents. Workforce skills deficits in health information management, clinical informatics, cybersecurity, and digital health are well documented [1-4]. There is a recognised need for educational offerings to support current and future workforces to gain, update or expand essential qualifications and to support lifelong learning [5, 6].

The education system in Australia and globally is experiencing disruption characterised by a changing educational landscape, demand for flexibility and alternative delivery options, the funding impacts of reduced international students and new government policy initiatives [7-10]. The demand for flexibility has led to shorter learning products that are flexible and accessible, can be adapted to industry and the needs of the job market, cost effective, support lifelong learning for individuals wanting to learn at their own pace and time [7-10]. Microcredentials have been piloted in Australia, United Kingdom and Europe to test the relevance of the product and to support the education sector to align them with degree qualifications for those wanting to continue learning [5, 6, 11-13]. In Australia, a program called the Microcredential Pilot in Higher Education provided funding to assist higher education providers to design and deliver microcredentials in defined areas of skill shortage [14, 15]. Priority areas were identified by the government to address the skills needs of industry and increase access to life-long learning funding [14, 15]. Higher education providers were granted funding [14, 15] to deliver agreed microcredentials within a defined timeframe. The funding agreements stipulated that the microcredentials designed must be assessable for credit by the higher education provider, have clearly defined pathways to further study, and deliver immediate, valuable learning outcomes for both learners and industry [14]. Grant conditions specified that industry involvement in course design, delivery, and endorsement was imperative, and providers should issue digital badges based on skill descriptors, in this case, the Australian Skills Classification [14]. Further, the Commonwealth stated that microcredentials were to involve 3 to 6 months of learning and deliver employability outcomes equivalent to those of a higher education student [14]. For grant recipients, a co-design development process was central to meeting the requirements and to ensure learner needs were met.

The University of Tasmania received two small grants to co-design and develop microcredentials in digital health and cybersecurity. The two microcredentials focused on areas of identified skills shortages and a demand for flexible education products to address education and training as a barrier to adopting digital technologies in the workplace [1, 16].

Successful co-design of learning content requires strong partnerships with industry and professional associations. The effectiveness of these partnerships is shaped by a variety of factors. Rosendo-Ríos highlights the role of trust, commitment, and integration in university-industry collaborations [17]. Other authors stress the significance of relationship-building and collaboration, with the latter also noting the need for a change in the relative importance of these factors over time [18, 19]. Yee [20] emphasises the need for mutual trust, commitment, and open communication. Successful co-design of microcredentials in higher education is also influenced by several key factors with Heggart [21] and Salmon [22] highlighting the need for flexibility, linkage to employability, and industry relevance in the design of microcredentials.

Digital health and cybersecurity are dynamic ecosystems and subject to rapid advancement. Artificial intelligence and the rollout of the foundational electronic medical record systems are enabling the integration of digital solutions to provide new models of care and support innovative ways of working to deliver services. The involvement of industry views on skills shortages, format and type of learning provided the context for the co-design project. This paper will describe the approaches used by an Australian University to design a set of microcredentials in digital health and cybersecurity. The paper outlines the ways that the design team worked together in partnership with diverse representation from peak professional bodies, aged and primary care, state health department, rural and aged care industry experts. This paper details the design framework applied to develop and evaluate the microcredentials and outline the benefits of co-design and partnership to address workforce skills and professional knowledge gaps. The alignment of the micro-learning to the ACHSM Competency Framework, Skills for the Information Age (SFIA), the Australian Skills Classification and University credit requirements will be charted. Finally, we will reflect on key lessons learned about co-designing microcredentials, the evaluation of learning and achievement of skills and knowledge acquisition, and the effectiveness of internal and external partnerships.

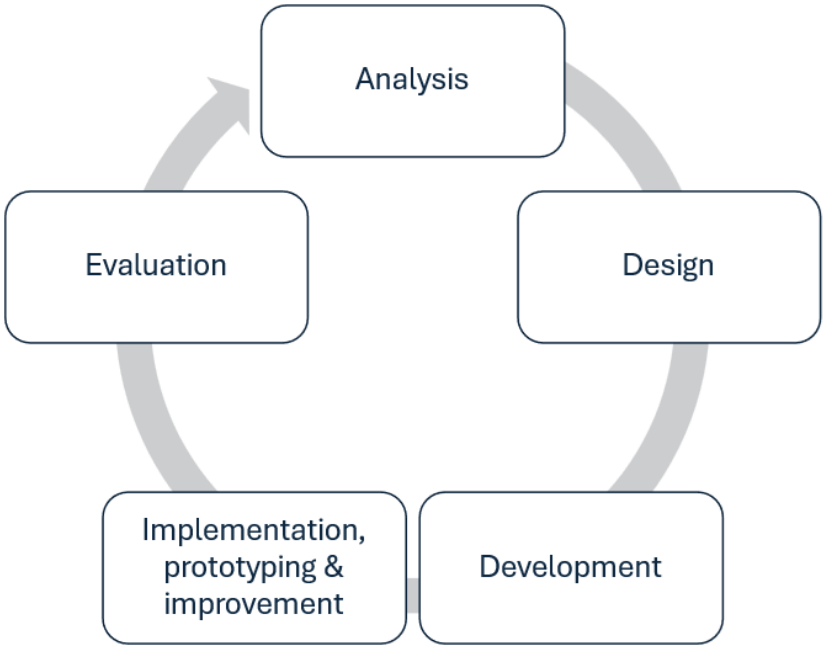
CO-DESIGN

The formulation of the design team was vital to ensure we had the appropriate expertise, had input from employers that required digital health and cyber security skills and members who understood both the academic and industry constraints. An interdisciplinary team was established and comprised of nursing, health information, information technology (IT), informatics and allied health professionals. The team also included representation from National

professional associations that have embedded digital management into competency frameworks. The formulation of the design team ensured that we had cross sectoral representation from aged care, primary care and indigenous led health services collaborating with us to design industry relevant microcredentials. Academics teaching digital health, University leadership from the Short Courses team and representatives from the educational technology team were also key members of the design team.

To structure the co-design process, the ADDIE model was utilised for its simplicity and logic and because it is a generic approach used by instructional designers and educators to design learning [23]. The model includes five phases—Analysis, Design, Development, Implementation, and Evaluation. To this structure one improvement was incorporated, the use of rapid prototyping. Prototyping in the development of educational products for higher education offers several benefits. It enhances skills in development, project management, and effort estimation, stimulates critical thinking and innovation [24] and promotes user engagement [25]. Prototyping is valuable to enable partner ideas to be captured and reflected in the course design, and facilitate the demonstration of the look and feel of learning modules, receiving feedback while instructional materials are being created [26]. The five stages of the ADDIE model involved the following steps shown in Figure 1.

FIGURE 1 MODIFIED ADDIE MODEL DIAGRAM ADAPTED FROM (19, 22)



These steps involved the following broad actions:

- Start up and engage: formulate with industry/professional partners the team (Expert Advisory Group) who will work with the University on design and delivery.
- Gather data and requirements: build understanding of the requirements for the microcredential based on industry partner and academic experience.
- Understand and create solutions: analyse and understand requirements and create learning material and activities in prototype format. Test learning activities with industry/professional body learners.
- Implement and improve: Seek feedback from pilot and adapt; implement and evaluate.

GOVERNANCE

The design, delivery, and deployment of the microcredentials were approached as a project with clear roles, responsibilities, scope, deliverables, and timelines articulated in a short plan. At the outset, a simple but clear approach to governance for the project was established. The first briefing meeting with the design team outlined what was involved, the rapid timeframes for design required to meet contractual requirements, what was expected from each party, overview of the tasks, respective roles and broadly discussed how we could work

together on the project. Meetings were chaired by an academic, agendas prepared, and slide decks were provided for all meetings. Regular meeting times and dates were agreed with partners at the outset.

ANALYSIS AND DESIGN

It was decided to conduct four design specific meetings for the project due to the specified timeline for the pilot. Three meetings were held online using a videoconferencing tool and a face-to-face meeting held on site at the University. Design meetings were used to.

- Gather the requirements from industry and professional representatives.
- Define learning outcomes
- Document the skills and knowledge to be developed
- Align and map to Skills for the Information Age (SFIA), ACHSM and Australian Skills Classification (ASC)
- Describe what the learning content and activities would look like
- Share ideas about learning activities to engage learners. The output of the analysis and design phase was a report that outlined the learning outcomes, skills to be attained, mapping to competencies and structure for the learning [27, 28].

TRUST AND TEAM BUILDING

Bringing together a team who both lived and worked across a broad geographical spread whilst holding the necessary expertise to inform the microcredentials was necessary to ensure diversity. Most team members were not known to one another. Trust, mutual respect, and openness was essential [29-31].

To build trust and mutual respect, the University provided the team with regular updates, promoted open dialogue and clear communication and information sharing and ensured all partners were focused on the same outcomes. Delivering on agreed actions and being accountable for actions demonstrated reliability that further strengthened trust and reinforced the partnership. Involving all partners in the decision-making process fostered a sense of ownership and mutual respect, enhancing team cohesion. Recognition and appreciation through acknowledging the contributions of all team members sustained attention and reinforced the value of each team member and their expertise and experience. Regular virtual meetings, shared meals and the in-person design session consolidated the team and built cohesion and mutual understanding. There was also recognition of a peer network that developed among team members, and this helped forge an appreciation of shared respect and understanding aligned to sector requirements. Collectively, these actions created a strong foundation for an authentic and effective partnership.

The definition of learning outcomes for the microcredential and alignment with competency and skills frameworks was an important initial first step for this project.

MAPPING

Following the ADDIE (Assess, Design, Develop, Implement and Evaluate) process, the co-design team analysed objectives and needs, then proceeded to design content, activities, and assessments, and finally determined the optimal delivery of course content. A range of approaches and tools were applied to engage with the design team, gather information and support the rapid co-design process and shown in Table 1.

TABLE 1 TOOLS AND THEIR APPLICATION IN CODESIGN

Tools	Application
Microsoft Forms	Data collection (requirements, validation of learning outcomes)
Microsoft Teams	Communication (meetings)
PowerPoint	Communication (visualisation of microcredential design)
Microsoft Outlook	Communication and organisation of meetings
Microsoft Word	Documentation of requirements Production of design report
Padlet	Data collection in design phase in person meeting
Adobe	Communication (information packs, sharing of design report)

DEVELOPMENT

Development was informed by the design report, an output of design. Content experts then produced the learning materials. Partners identified that a range of learning opportunities should be embedded in the microcredentials such as short videos from industry experts, videos and podcasts from reputable sources, quizzes, reflections, and other self-testing exercises. These elements were designed into the microcredentials and deployed using H5P and other tools (e.g., YouTube). H5P is an open-source content collaboration framework that allows users to create, share, and reuse interactive HTML5 content in learning management systems and other platforms such as web pages [32].

IMPLEMENTATION AND IMPROVEMENT

Once modules were drafted, they were demonstrated to the co-design team and feedback sought. This kind of prototyping of the learning materials, including demonstrations of the look and feel of the learning management system (Shorthand) allowed partners to value-add suggestions and identify missing content or desirable features. Where realistic and able to be adopted the suggestions were incorporated. Prototyping allows for early testing and validation of ideas, reducing risks and improving the final product's quality [24-26].

Courses in the microcredentials can be bundled and unbundled with the option of a credit towards a higher education post graduate certificate. Table 2 shows the microcredential, the modules covered, total hours of study and the award unit for which credit is available. Credit is attained through the completion of all modules in the microcredential and passing quizzes, testing learning outcomes.

TABLE 2 MICROCREDENTIAL, MODULES, HOURS OF STUDY AND CREDIT

Microcredential name	Modules	Total hours of study	Credit
Discovering the Potential of Digital Health	Digital Health Foundations	60	BAA632 Digital Health
	Frameworks for successful digital health implementation	65	
	Good practice in digital health management	40	BAA735 Health Information Analysis and Improvement
	Making sense of digital health data	45	
	Health information and data governance	40	
Cyber Fundamentals for Health	Introduction to Cybersecurity in Health	10	BAA548 Digital Health Privacy and Security Issues
	Healthcare Cyber Risks and Vulnerable Groups	25	
	Cyber Risk Management in Health Care	30	
	Securing Health Systems	20	
	Health Information and Data Governance	40	
	Digital Health Foundations	60	BAA632 Digital Health
	Frameworks for successful digital health implementation	65	

EVALUATION

We evaluated elements of the partnership and adapted a Partnership Pulse Check tool adapted from the Commission on Excellence and Innovation in Health, South Australia [33].

The survey was deployed using Microsoft Forms and all external partners invited to respond. One hundred percent, all 9 external partners responded to the survey. The results of the survey organised by dimensions are shown in Figures 2-4 with high levels of agreement as shown.

FIGURE 2 SURVEY RESULTS EXAMINING THE GOVERNANCE, TRANSPARENCY, AND MUTUAL RESPECT SECTIONS WITHIN THE EVALUATION TOOL!

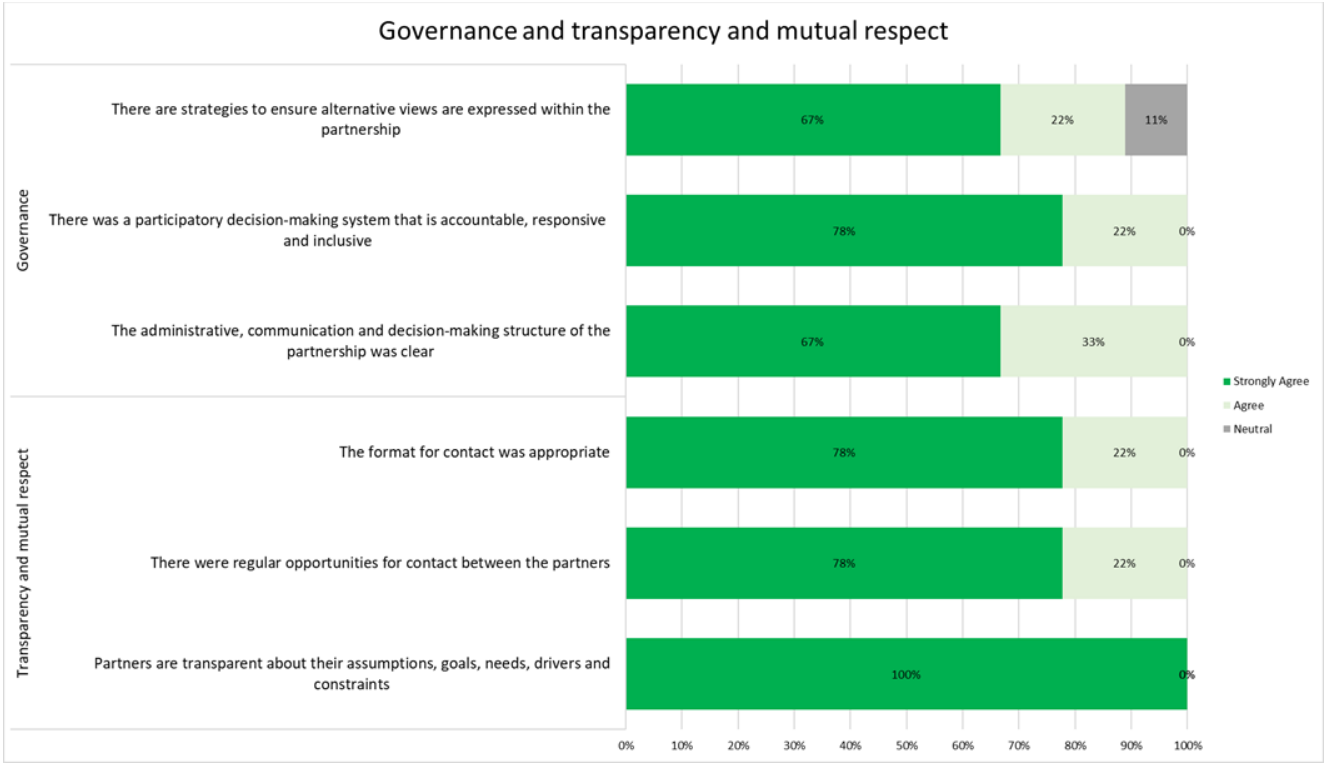


FIGURE 3 SURVEY RESULTS EXAMINING THE CONTEXT, VISION, AND PURPOSE WITHIN THE EVALUATION TOOL!

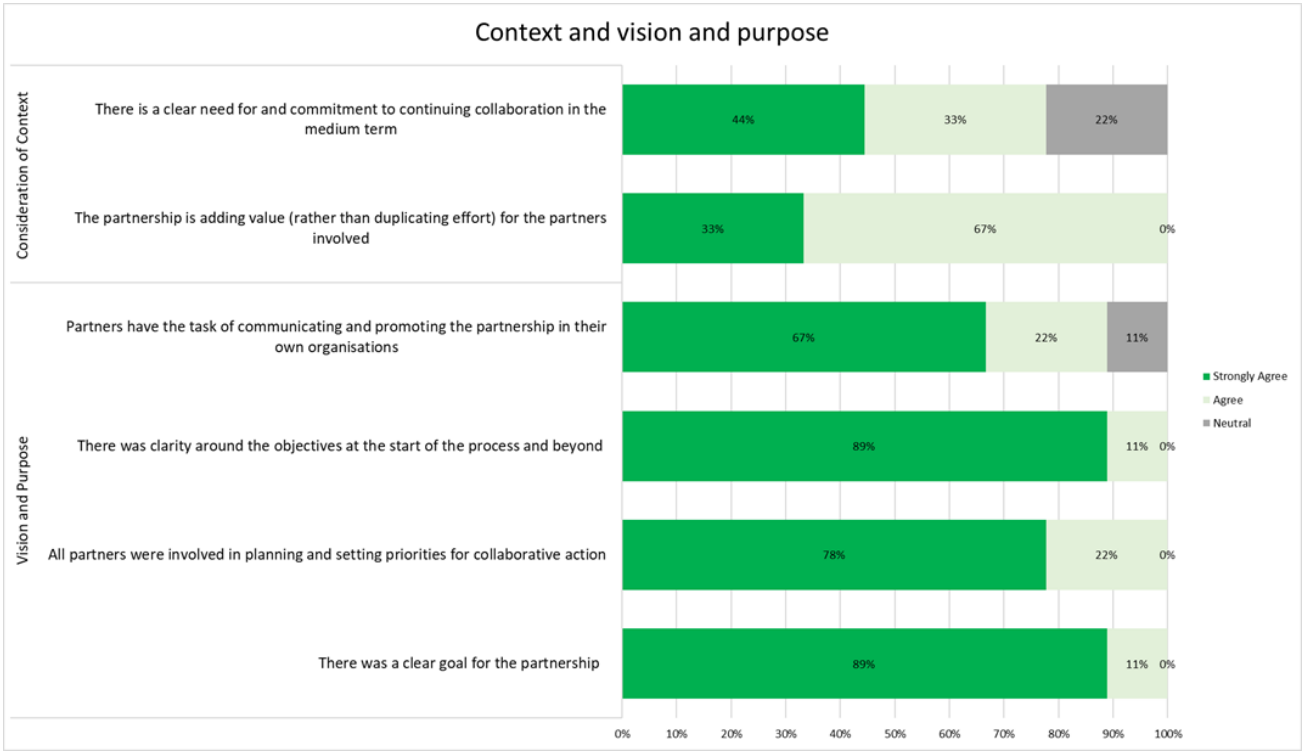
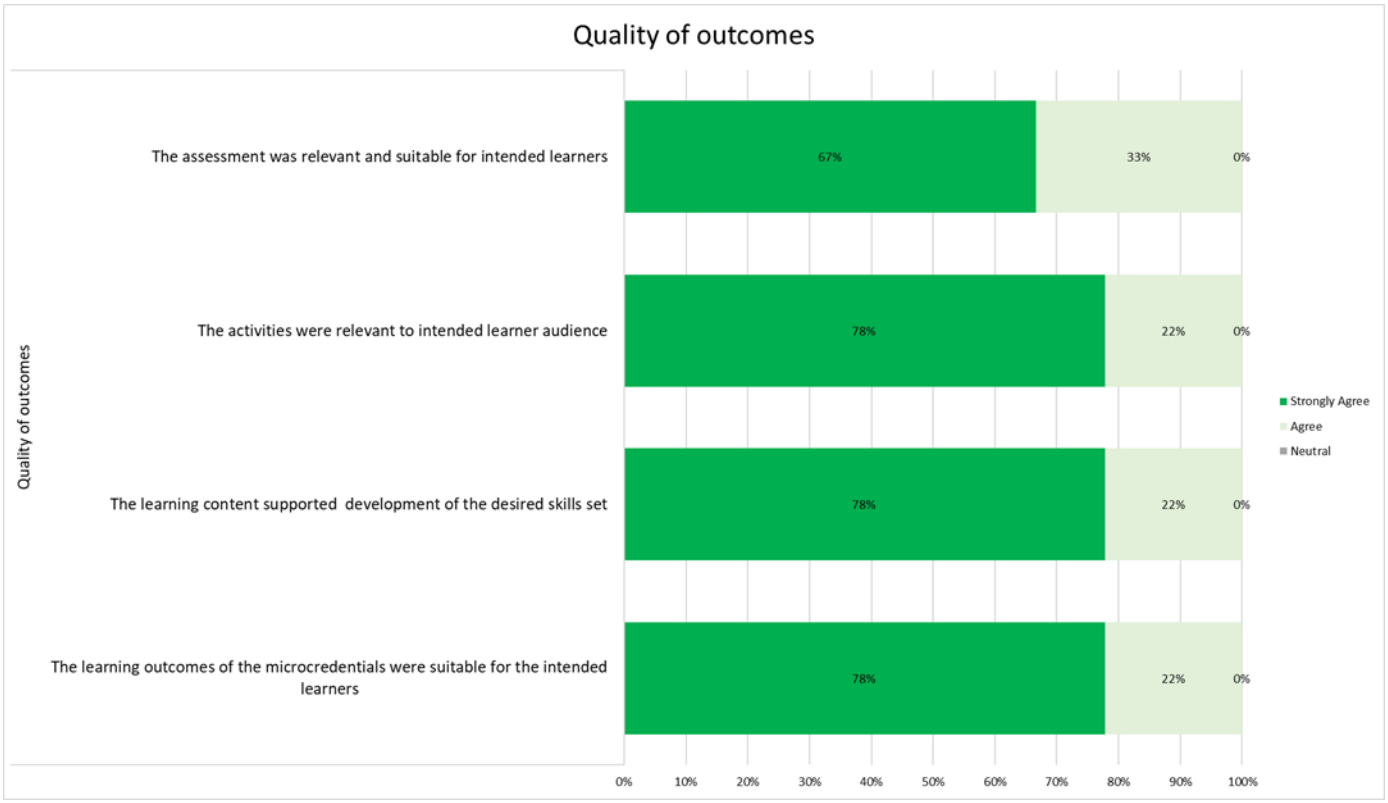


FIGURE 4 SURVEY RESULTS EXAMINING QUALITY OF OUTCOMES WITHIN THE EVALUATION TOOL!



IMPLICATIONS FOR MANAGEMENT PRACTICE, LEARNINGS, AND CONCLUSIONS

This section summarises the key learnings from the co-design project and affirms the benefits of co-design to develop microcredentials. Key learnings to share with others interested in the co-design of educational products are that it is important for the partnership to have clear administrative, communication, and decision-making structures. The project employed a participatory decision-making system that was accountable, responsive, and inclusive. There was a clear goal and timeline for the partnership, with all partners sharing an understanding and commitment to this goal. Partner organisations gained value from their involvement, and the partnership was able to successfully demonstrate and document its collective outcomes. Design meetings were concise and focused, utilising the ADDIE model for instructional design. Building trust and authenticity in co-design and partnership takes time, with a clear understanding of roles essential. Industry experts provided insights into workforce requirements, while academics aligned theory with industry practice. Respecting the time of busy health professionals was crucial, ensuring effective and efficient use of their time.

We involved a diverse range of knowledge and experience from various sectors, including an Aboriginal-controlled health care service. Technology supported rapid, agile, and progressive co-design, using Microsoft™ tools, shared information packs, and iterative processes. Essential methods and skills such as project management, communication, and stakeholder management were key to optimal delivery. Engaging with industry in co-design was a positive experience, and we plan to evaluate the partnership. Sustained engagement requires mutual respect, delivering on agreements, and active listening.

To work with speed and agility, and to collaborate effectively with the University's digital technologist team, access to appropriate tools was crucial. We provided pathways for formal credit and aligned with existing units, including learning outcomes and assessment. Iterative design and prototyping supported rapid development, critical thinking, innovation and user engagement. Communication and transparency were vital for on-time, quality delivery. Modest resources were allocated for planning and documenting the design of the microcredentials, with educational technologist support ensuring the best application for tools like H5P. Reuse of microcredential materials will be key to sustainability, and digital tools like Microsoft Forms, Teams, and PowerPoint demonstrated their appropriateness for collecting data to inform design.

The table below summarises key learnings.

Heading	Details
Respect	Building trust and authenticity in co-design and partnership takes time, with a clear understanding of roles. Respecting the time of busy health professionals was crucial, ensuring effective and efficient use of their time.
Delivering What Has Been Agreed	Project management skills and application of techniques is crucial. Communication and transparency between team members (academics, instructional designers, and partners) is key to on-time, quality delivery. Modest amounts of resourcing are required for time to think, plan, and document the design. Instructional design support and input into design to assure look and feel, best applications for h5P, videos, quizzes are vital. Reuse of the materials in existing higher degree units is key to sustainability and relevance of microcredential content. The ability to update learning material in one place particularly in digital and cyber is key.
Collaboration	It is important to work at speed, agility, and for all team members to be able to work the 'top of license' and collaboratively, for example Academics and Instructional Designers, to achieve the best quality outcomes. Provide pathways for formal credit and align microcredentials to existing units, i.e., learning outcomes and assessment. Iterative design and prototyping. Prototyping in the development of educational products for higher education offers several benefits and enhances skills in development, project management, and effort estimation; stimulates critical thinking and innovation; promotes user engagement; and enhances communication. Microsoft Forms, Teams, PowerPoint, and other digital tools can collect data to inform design. Design meetings were concise and focused, utilising recognised models, such as ADDIE for instructional design. Clear roles for collaboration with industry experts providing insights into workforce requirements, while academics aligned theory with industry practice.

GOING FORWARD

It is important that changes can be made to the microcredential content with ease and agility. Partnering to produce education products can be a strategic approach to leverage complementary strengths, resources, and expertise. Key success factors for such partnerships typically include ensuring that partners have similar objectives and vision for the education product. Team selection is critical and ensuring that members bring unique and complementary skills to the table. Open and transparent communication is vital for successful university/industry/professional partnership as is mutual trust and respect. As a result of building and maintaining trust with industry further opportunities to work together have arisen. Education landscapes can change rapidly due to technological advancements, pedagogical shifts, professional body, and industry skills requirements. Learning content must be easy to update and regularly reviewed. The results and outcomes from developing microcredentials in digital health and cybersecurity demonstrates that Universities have the capability to produce suitable learning products in partnership with industry and professional associations to meet the educational needs of Australia.

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