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FROM CONCEPT TO COURSE: CREATING A PATHWAY TO BETTER COMMUNITY HEALTHCARE IN RURAL AOTEAROA NEW ZEALAND

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INTRODUCTION

This paper describes the learning design and processes to ensure that a concept developed into a viable and comprehensive online course from the perspectives of the Otago Polytechnic (OP) staff who developed the Certificate in Digital Health. There were many factors to be considered in the design of this course including the remote nature of the learners, their diverse backgrounds, and working in collaboration with the community. A constructivist, learner-centred and culturally-inclusive approach was used to develop the course. This culminated in a 16-week online course using a number of learning modalities to ensure the learners meet the learning outcomes of the course to prepare them to become digital health aides within their communities. In September 2020, the School of Nursing is planning online delivery of the first pilot of this innovative Certificate in Digital Health training scheme.

BACKGROUND

The concept of delivering digital healthcare assessments in a community setting originally came from Dr Lance O'Sullivan, a medical doctor based in Kaitaia, Northland, who was extremely concerned about the level of untreated yet easily-treatable conditions, particularly in children, in his community. Initial meetings with Phil Ker, Chief Executive of OP, in 2017 culminated in a shared endeavour between OP and the Moko Foundation to develop a course and a micro-credential to create a new role of 'Digital Health Aide' (DHA). A DHA would be a community-based practitioner such as a teacher, teachers' aide, school administrator or pharmacist who would undertake a course in how to use a digital health app, for example, the iMOKOTM App, which also includes content regarding child health and wellbeing. A DHA could then perform healthcare assessments on children and use the app to share this information with a central team of doctors who would make a diagnosis and electronically send a prescription if any medications were required. For people working in this role already, an EduBits micro-credential was developed to validate their existing skills and knowledge. A programme document for a 20-credit Level 4 training scheme (TS), the Certificate in Digital Health, was approved by NZQA in July 2018. Course design was a collaborative process between medical staff at Moko Foundation and paediatric nursing staff at OP's School of Nursing, facilitated by OP's Learning and Teaching Development (LTD) team. Course development was carried out by LTD staff in late 2018-mid 2019.

LEARNING DESIGN

In August 2018, Amy Benians started working in her current role as a Learning and Teaching Specialist in the LTD team at OP. Due to her background in pharmacology, she was asked to continue the development of a training scheme in collaboration with staff at the Moko Foundation, whose iMOKOTM digital health app was already in use in parts of Northland. The brief was to create a fully-online, 16-week, Level 4 TS to enable trainees to perform in the role of a DHA by providing professional and confidential healthcare assessments in a community-based context such as an early childcare centre, school or pharmacy. A subject matter expert, Emma Collins, a nurse and Learning and Teaching Specialist also, was already onboard the project.

LEARNER PROFILE

By taking a learner-centred approach, we designed the TS for a typical learner who is 18 to 65 years old, most likely female, lives in rural parts of Aotearoa New Zealand and may be engaged in formal or informal work within her community. Our typical learner has a genuine concern about the health outcomes of children in her community and wishes to upskill to make a contribution. Her community is most likely to be culturally diverse with a large population of Māori and Pasifika peoples, an example being rural Northland. Some, but not all, may already be a trained teacher, teaching assistant or early childhood educator. These learners are likely to be motivated to gain training and a qualification in digital health for altruistic reasons, such as improving health outcomes in their communities. Other learners may be motivated by economic factors, for example, to secure better future career prospects. Foundational training as a DHA will give these learners knowledge of how to practise safely, professionally and ethically in a healthcare environment. They may be encouraged to progress to other health-related programmes of study at the equivalent or higher level. As there are no prerequisites for this TS, the learner may have a minimum of a school-leaving certificate and there may be challenges around digital skills, literacy and numeracy.

COURSE AIMS AND CONTENT

Digital health is an emerging field of healthcare in Aotearoa New Zealand (Ministry of Health, 2020) which – it is hoped – will enable easier access to healthcare and improved health outcomes for children and their families in rural Aotearoa. The Certificate in Digital Health is intended for individuals who currently, or who may in the near future, work as DHAs in a community-based context such as an early childhood education (ECE) centre or school. This course will enable them to gain the appropriate knowledge, skills and theory to perform professional and safe health checks on children in their care and to report these using a digital health application or "app" on an iPad. The curriculum choices were based on the graduate profile, which in turn informed the learning outcomes and learning design or 'blueprint' that was developed in consultation with subject matter experts (SMEs). The SMEs were a paediatric nurse, based at OP's School of Nursing, and a registered nurse and two medical doctors working for the Moko Foundation.

CREATING A CULTURALLY-INCLUSIVE ONLINE LEARNING ENVIRONMENT FOR THE TS

A learner-centric approach to learning design involves firstly recognising learner diversity: their culture, ways of learning, aspirations and levels of starting knowledge, including literacy, numeracy and digital skills. Secondly, an effective learner-centred design involves ensuring variety in learning activities and assessments to cater for learner diversity (Beetham, 2013, p. 37). This can be achieved by incorporating the principles of universal design for learning (Meyer, Rose & Gordon, 2014), which includes offering:

1. Variety in content representation (visual, audio, text, and kinesthetic activities).
2. Variety in ways for learners to demonstrate what they know (as examples, delivery of learning activities via synchronous or asynchronous modes, or use of collaborative learning strategies) but always offering these with guidance such as exemplars, templates, reflective models, provision of feedback, and support in building learners' skills, such as with digital technologies.
3. Variety in means of learner engagement (such as offering choice in tasks to reflect a learner's cultural identity and goals) to encourage, motivate and enhance a learner's feelings of agency and control over their own learning.

Importantly for the learning design, we are aware that our adult learners bring with them abundant knowledge of the tamariki (children) in their care, of their communities, language and culture. They are the people who know how best to work within their communities. Hence we adopted a culturally responsive pedagogy in the Certificate in Digital Health where we moved from a deficit-focused approach to a strengths approach to incorporate inclusive learning and teaching strategies by embracing the learner's culture and prior knowledge (Howard, 2012). In culturally responsive teaching, we hope to harness this "richness of culturally embedded knowledge" (Howard, 2012, p.6) to create openings in which we will engage a learner emotionally and intellectually, and where he or she will explore concepts such as ethical and professional practice, confidentiality, consent, and disclosure. In the third and final module 'Enhanced practice' we introduce the term kawa whakaruruhau meaning 'cultural safety' (Ramsden, 2002, p.120); here the learner explores culturally-safe practice in their future role as a DHA.

Indeed, in the social constructivist view of learning, learning is considered to be a social process in which knowledge is constructed in the context of language and culture (Vygotsky, 1978). When creating a constructivist learning environment, the teacher takes the role of facilitator, and learning then occurs through interactions, from facilitator to learner, learner to learner, and – while somewhat humbling, but gratifying – from learner to facilitator. This resonates with the kaupapa Māori concept of ako, implying a two-way learning process in the learner/teacher relationship (Berryman et al., 2002, p. 143).

ONLINE DELIVERY

To create online learning communities, we plan to create groups of learners in Moodle, our learning management system. Guided by an online facilitator in Dunedin, each group will progress through the 16-week course at the same time. This approach should incorporate peer learning through the use of Moodle forums to encourage online learners to construct knowledge and share their ideas in groups. These discussion forums are introduced early on, with a 'low stakes' activity – a compulsory ice-breaker forum – which should encourage all our learners to participate. We give some guidelines around this, especially around maintaining privacy, which is very important when working with children and families, particularly in smaller communities.

> *We don't want you to name the workplace that you work in because that could put some of the children and families that you work with in a compromising situation. New Zealand is a bit of a small village at times and it's not hard to work out who some people are in some communities.* (dialogue from Moodle course)

Establishing how to behave in a professional manner is a key part of this course and a message that students need to be aware of before proceeding. Whilst this course is primarily about preparing people to work as DHAs, at a national level there have been breaches of patients' privacy and confidentiality, particularly through the use of technology to share medical information. At an institutional level, there is a reputational risk if students do not abide by privacy and confidentiality guidelines. On an individual level, students are given the opportunity here to practise professionally, responsibly and ethically in a safe environment and to develop their own capabilities in these areas.

Moodle forums are used thereafter to encourage learner discussion around more involved topics, such as meeting legislative requirements, being professional and ethical in their future practice as a DHA, and working safely with children and their families.

Social constructivism also acknowledges that learning must occur in the zone of proximal development which is close to the learner's current knowledge (Vygotsky, 1978). It is important to help a learner by scaffolding them to develop their knowledge from the starting level to the desired level. A number of activities are included to achieve scaffolding using formative assessment, which is not marked or checked by the facilitator but gives the learner instant feedback whether their answer is correct or incorrect. This 'active learning' approach uses interactive online activities such as videos and quizzes, made using the H5P software plugin in Moodle. An example of an H5P quiz is shown in Figure 1 below. It uses a digital version of flash cards, in which the question introduces the "why?" They may know that they need to weigh a child for a health assessment, but they may not know why. The reason for doing this is to obtain an accurate weight to calculate the amount of drug prescribed to the child. Therefore, it is *extremely* important that an accurate weight is obtained. Understanding the reasons for doing something is often the most powerful motivator for carrying out a procedure correctly.

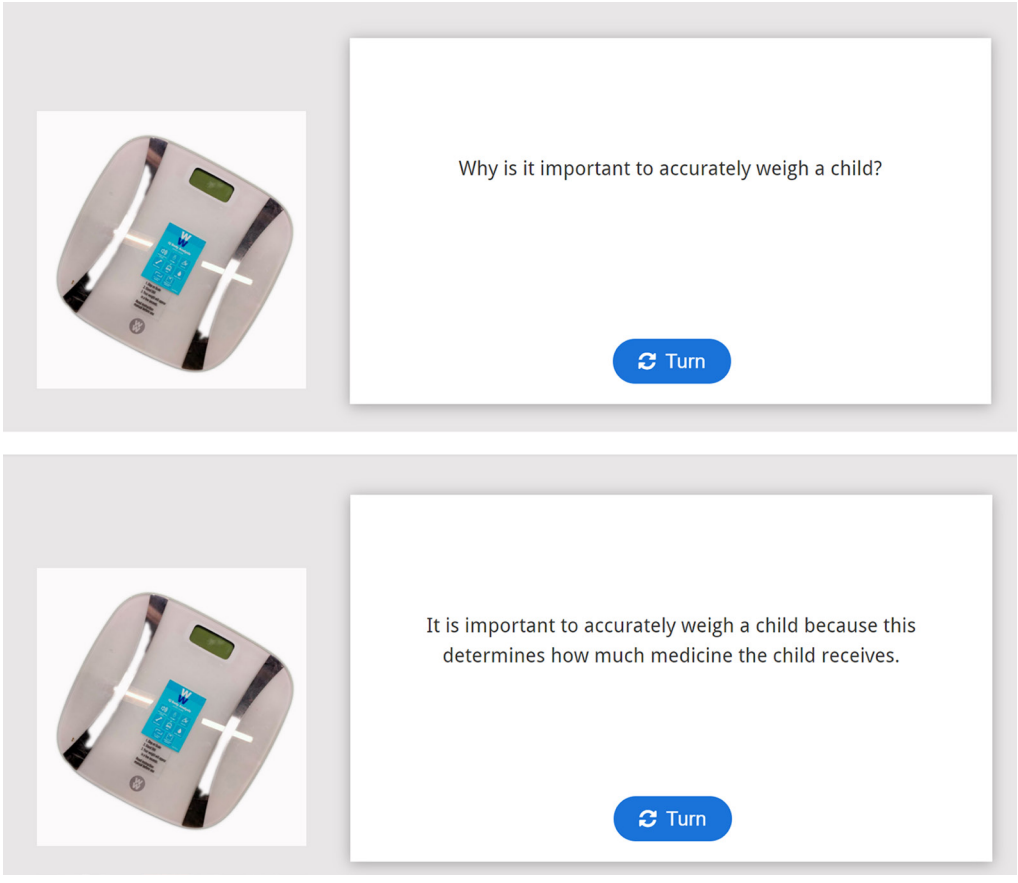

Figure 1. An example of the use of flash cards to introduce a "why?" question.

A second formative activity is shown in Figure 2. Here they are asked to match up each statement stating what the equipment is meant for with an image of the equipment. While this activity may seem basic, it is an entry-level activity to get them started thinking about their role as a DHA. What does the equipment look like? What is the function of each piece? How does that relate to their future role? In terms of literacy, people with low literacy skills will also benefit from the visual interaction between the images and the words. The image is of a thermometer, but it is used for measuring temperature. The two words may appear similar but have different, related meanings.

In Figure 2, the unanswered question is shown (above), with the completed question (below) in which each statement describing what the equipment is meant for is matched with an image of the equipment.

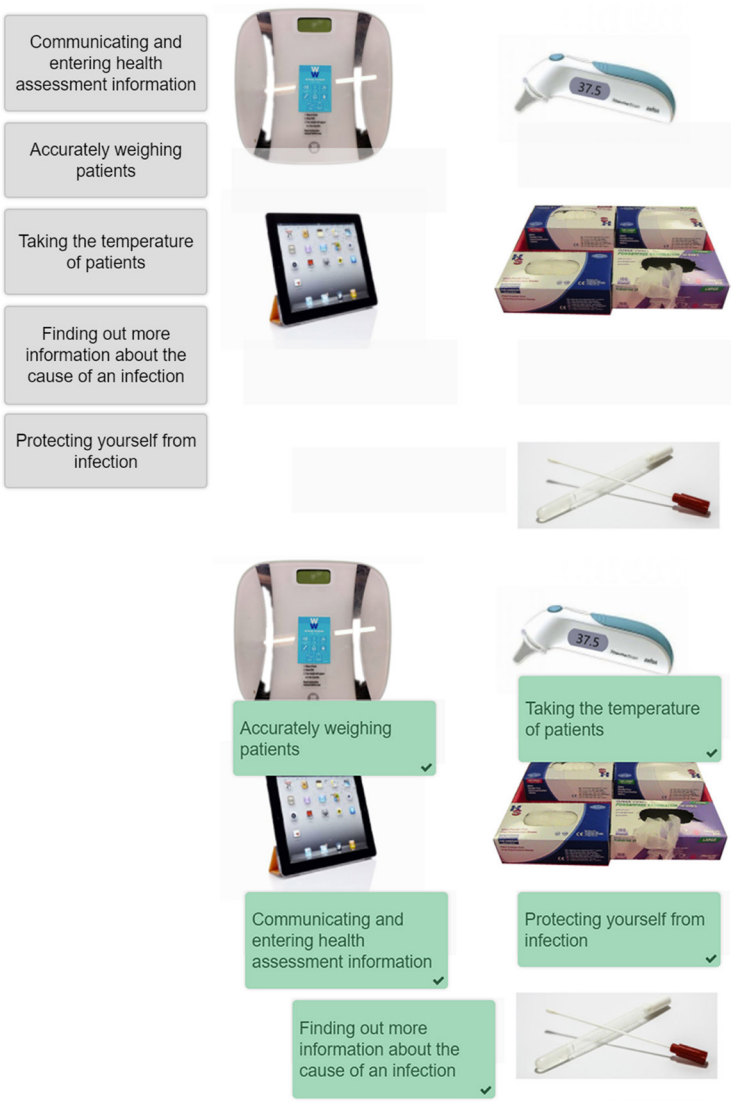

Figure 2. Drag-and-drop activity.

EMBEDDING LITERACY AND NUMERACY EDUCATION IN THE TS

Part of knowing and recognising diversity in our learners also involves acknowledging that they may have varying abilities in literacy and numeracy. While designing the TS, one of the authors was taking an Open Polytechnic course in Adult Literacy and Numeracy Education. Below is a list of some ways support has been embedded for learners who may need to further develop their literacy and numeracy skills:

4. By providing typed transcripts with video and audio recordings (podcasts), we make content accessible to deaf students and also help students with poor literacy. In one example, a podcast introduces four ethical principles (autonomy, beneficence, non-maleficence and justice). Being able to see the words as they are spoken is important for students with limited literacy skills who are encountering these words for the first time.
5. Māori literacy is acknowledged and developed by the use of te reo Māori words (for example, tamariki for child, and whānau for family or extended family). A Māori label image activity was created to encourage learners to improve their te reo Māori language skills (Figure 3).
6. Numeracy issues are addressed by giving students guidance in the correct ranges for normal values (for example, a normal body temperature is around 37°C) and stating units of measurement (height, weight, and so on). Accurate reporting is a very important part of health assessment, so the link to their future practice should reinforce the importance of developing these numeracy skills.

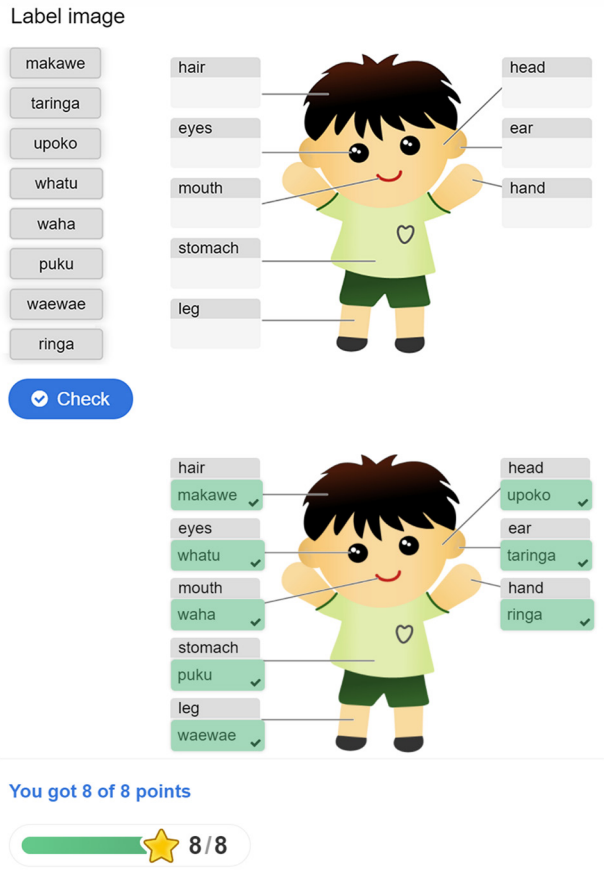

Figure 3: Māori label image activity.

In Figure 3, the label image is introduced with the instruction: "Practise your te reo or learn some new words by completing this activity." To complete the activity, the student needs to get all the answers correct.

DIGITAL SKILLS AND THE COURSE ASSESSMENT

A focus of the TS is to improve the trainees' digital literacy skills, essential in the role of a DHA, and seen as a vital skill that all New Zealanders should possess, requiring a local as well as national approach (Digital Inclusion Research Group, 2017). Hence, for the TS assessment, learners are required to provide evidence they can do the following:

- install and use a digital health app;
- create a new case with the iMOKOTM app;
- make videos showing core skills (taking a patient's temperature and using a digital weighing scales); and
- present these videos and cases using an ePortfolio.

Schwenger (2016) asserts that use of new digital tools such as ePortfolios for assessments requires explicit instruction and deliberate acts of teaching (p. 74). Due to the range of digital tools used for the TS assessment and digital skills required in the role of a DHA, clear and timely instructions are provided for downloading digital health reports, uploading videos, and submitting these to their learning journal or ePortfolio for assessment. However, we are aware there is a risk that, due to the fully-online delivery of the TS, these instructions around key tasks (for example, how to upload a video) may be missed, particularly by those students with limited digital literacy skills. Evaluation of how easily students access these instructions and cope with the assessment tasks in an online learning environment will be crucial in our first pilot of the TS.

Schwenger also discusses how critical digital information literacy skills, such as making judgements about the reliability of information found on the internet, can be interwoven into blended learning courses. Development of critical digital information literacy was not addressed in the TS for the Certificate in Digital Health at Level 4. However, to develop students' critical digital literacy skills, activities might include:

- In the preparation for a research task, arrange with a library specialist to provide an online session to demonstrate use of library databases and introduce support pages.
- For a smaller research task, demonstrate to students how to make a search on Google Scholar more powerful by using search terms in quotation marks with Boolean operators (linking words such as AND).
- In a PDF or Word document, encourage students to use computer shortcuts to find a word or phrase in the document (Control + F to find a term in a PDF or a webpage).

COURSE DELIVERY

To determine the effectiveness of using an online approach with such a diverse group of learners, an evaluation is planned when the first pilot is run in September 2020 to determine whether sufficient support has been provided to guide trainees through the activities and assessments. A potential barrier that has been identified is access to learning resources for learners in remote areas. These may include but are not limited to a laptop, iPad and WiFi. A connection has been made with a local tertiary provider who may be able to assist with these issues. This will be a key part of the evaluation of the first delivery to students.

As an alternative to full online delivery, different blended delivery models that additionally incorporate the principles of Kaupapa Māori are currently being trialled in Northland. In the whanaungatanga pedagogical approach, the teacher establishes links and connections between learners and encourages a mutually supportive learning environment in which learners behave and respond as members of extended family, or whānau (Bishop,

Ladwig, & Berryman, 2014, p. 28). There is a shared responsibility to give and receive support where required. For example, small local groups of learners working towards the Certificate in Digital Health could meet for informal learning sessions to co-construct knowledge and skills together. In addition, a tuakana-teina approach (Ministry of Education, 2009, p.28) could be taken in which a more experienced learner such as an existing DHA takes on the role of tuakana (older sibling) to guide a less experienced teina (younger sibling) through the course work and assessment tasks.

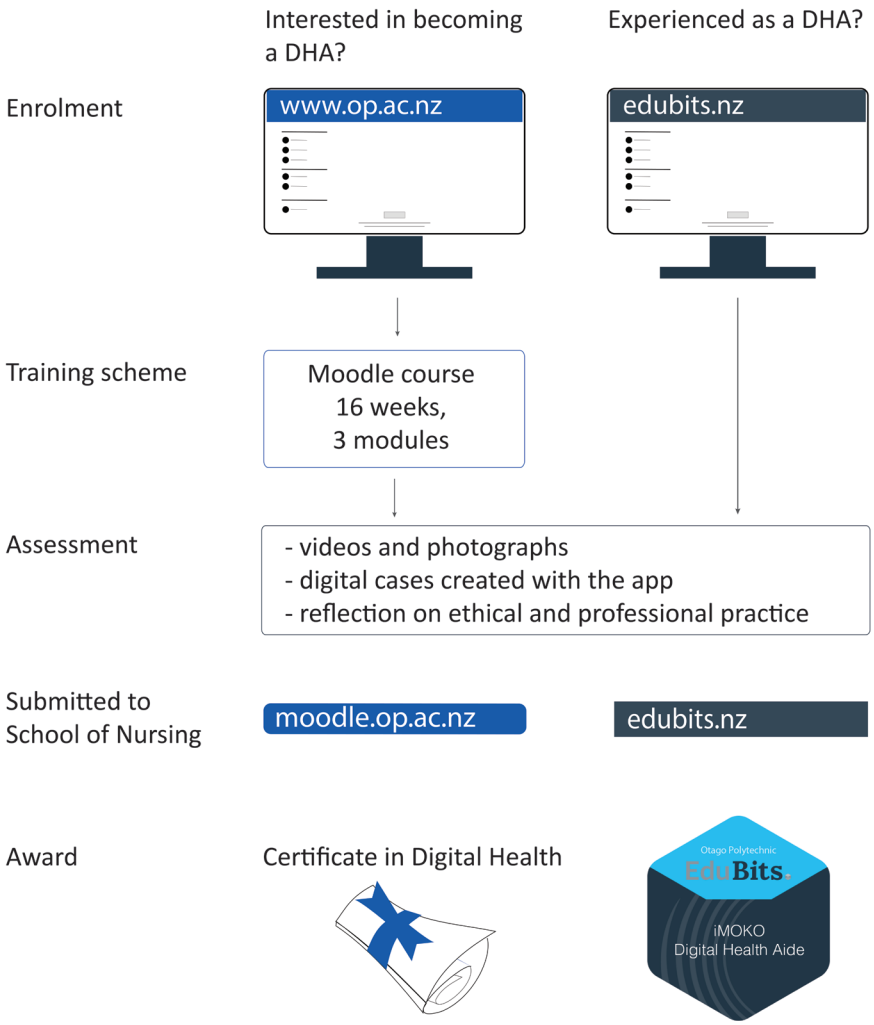

Figure 4. Pathways to becoming a Digital Health Aide (DHA)

EDUBIT MICRO-CREDENTIAL VERSUS CERTIFICATE IN DIGITAL HEALTH TRAINING SCHEME

As we embark on this next phase, it is useful to reflect on how we arrived at the structure for the design and delivery of the Certificate in Digital Health. The Digital Health Aide EduBit was developed prior to the Certificate in Digital Health training scheme. The assessments are the same but the training scheme for the Certificate has a healthcare focus that is suitable for novice students.

The Level 4, 20 Credit EduBit validates competency and is suitable for anyone with at least 200 hours of experience working as a Digital Health Aide (DHA) in the community. An experienced DHA (for example, one who has been using the iMOKOTM digital health app) could follow easily understood task instructions to gather and submit their evidence, and obtain a digital micro-credential, the Digital Health Aide EduBit. Completing a micro-credential is an excellent way to validate new or existing skills and can be shared on social media platforms like LinkedIn with colleagues or potential employers.

ASSESSMENT VIA EPORTFOLIO IN ONENOTE'S CLASS NOTEBOOK

While the learners work through the three modules for Certificate in Digital Health on the Moodle platform, they are asked to make notes and answer questions each week in their learning journal (this is in Microsoft's OneNote Class Notebook). When complete, this ePortfolio will be submitted via Moodle for assessment. Marking and moderation will be carried out by staff in the School of Nursing.

INCORPORATION OF VULNERABLE CHILDREN ACT CONSIDERATIONS IN THE TRAINING SCHEME

In Aotearoa New Zealand, all organisations or workplaces that provide services to children and/or youth must be covered by the Vulnerable Children Act 2014. Therefore, if a learner engages with an organisation and/or activity that is covered by the Vulnerable Children Act 2014, they must successfully meet the safety check requirements. To ensure their suitability for working with children in the community, learners working towards the Certificate in Digital Health will be required to complete a New Zealand Police Consent to Disclosure of Information form and meet the Vulnerable Children Act's safety check requirements. In addition, learners must be at least 18 years old or older. This involved a change to the Entry Requirements for the Certificate, which led to a 'Type 2' change in the programme approval document that required external approval from NZQA and TEC. Approval for the addition of these entry requirements was received in January 2020. This was a necessary step to ensure Otago Polytechnic meets the legislative requirements of the Vulnerable Children Act 2014, a commitment that is already honoured for all other programmes that involve work with children, such as the Bachelor of Nursing (Levels 5-7) and Early Childhood Education Level 3 and Level 4 programmes. This is a commitment reflected in the values of Otago Polytechnic and the aspiration that "our people make a better world".

In conclusion, the Certificate in Digital Health aims to enable people to care for each other in their communities by making healthcare accessible and appropriate. By working through the TS and becoming a digital health aide, learners are able to provide legitimacy to the care they are giving in their communities, develop their own capacity for healthcare delivery, and enhance their digital literacy skills. By delivering healthcare through new and innovative ways we aim to meet the needs of our communities and remove barriers between different institutions that a family may have to progress through to receive the care they need for their tamariki.

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Amy Benians has a PhD in clinical pharmacology and has worked as a research scientist, lecturer, scientific writer and instructional designer. She chose to pursue her passion for learning design after achieving her Graduate Diploma in Tertiary Education (GDTE) at Otago Polytechnic. In her role as a Learning and Teaching Specialist, she supports staff to design and develop blended and online courses using Moodle and other educational technologies. Her research interests include professional learning and development within communities of practice, blended learning, and literacy and numeracy education for adults.

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