

MATT THOMPSON REMINISCES ABOUT THE EVOLUTION OF CARPENTRY E-PORTFOLIOS AT OTAGO POLYTECHNIC FROM 2007 TO 2018

Matt Thompson interviewed by Bronwyn Hegarty

INTRODUCTION

A lot has happened since 2006 when Matt Thompson and Graham Burgess started getting students in the Certificate in Carpentry (Level 4) programme to take photographs of their practical skills with a digital camera. Back then, teachers were doing a lot of the work – downloading photos from the camera, uploading them to the students' internal drive, and supporting students to create electronic portfolios in PowerPoint.

By 2007, Graham had been convinced by Matt that e-portfolios had lots of benefits for both learners and teachers. Learners could provide visual evidence that they had completed tasks, and teachers could see more easily and quickly what had been accomplished. Marking would be quicker. Graham agreed that the e-portfolio method could be used to assess the Certificate of Carpentry students, and replace the traditional unit standard methods of marking workbooks. Thus, the visual e-portfolio method of assessment was born in the carpentry programme. Matt, in his quiet pragmatic way, was ecstatic. He knew how much time was going to be saved in marking, and how much more enjoyable and effective assessment would be for students and teachers alike.

In this article, you are invited to read about the evolution of the carpentry e-portfolio revolution that advanced for some years, quietly and behind the scenes, at Otago Polytechnic. The story begins with a little bit of history, and moves through the years to 2014, stopping for a while to check out some action research carried out by Dr Bronwyn Hegarty and Matt Thompson to investigate the use of mobile technologies for creating e-portfolios, and ending at the present day and the new application, Record of Work, that has been launched. The story is taking on a life of its own and word is getting out there. The article takes the shape of an interview with Matt Thompson conducted by Bronwyn Hegarty.

THE INTERVIEW

Bronwyn: Thanks, Matt, for agreeing to talk about the mobile learning research that you did back in 2014. It would be good to get a bit of background first, and then we can talk through how your teaching has changed over the years and where you are now. A lot has happened in the interim.

Matt: Yes. I was writing something for a conference I'm working on and presenting at this year, and I remembered it was 2006/07 when we started using the first version of e-portfolios, with students taking photographs with a digital camera. This was before we had mobile phones. Then, they were getting those photos and creating PowerPoint presentations.

Bronwyn: So that was the old way you did it?

Matt: Yes, we tried different versions before that, but nothing was associated with an assessment. It was after 2007, once we did it for the first time, that, my boss, Graham, said, "Oh, this is a great idea, we could use this instead of doing Unit Standard assessments." They were really, really long, and that was a real relief for me, because it was the first time another staff member had said, well, actually, there is an advantage to this. So instead of just listening to people from the Educational Development Centre telling us this would be a good idea, here was actual proof – so that was where it kind of started from.

Bronwyn: Yes. I remember bringing tertiary teaching students, our teaching staff, over so you and Graham could talk to them about what you were doing with the digital portfolios, way back then. That must have been 2007.

Matt: It could have been back as far as then, or a wee bit later. It went on like that until about 2012, when students started saying, "Hey, this isn't the best way to do this, we could do this better."

Bronwyn: So what were they saying they didn't like?

Matt: Well, the method that we had used a digital camera, and it cost about \$200 back then, so we would share the camera around the class because the students didn't have their own. Then we would put the photos on the students' I-drive so they would have access, and they would take their photos and put them into their portfolio and then write about them.

Bronwyn: So what was the portfolio, and what was it in?

Matt: At that stage it was only in PowerPoint – because that's what I designated was the best way to do it – and it worked, and we knew how to show the students how to do it. Those students were leaving high school at that stage without the knowledge that the students had in 2011 and 2012, when they started saying, "Hey, we could do this better." This was because they already had that experience.

Something I've found with learning is that if you've got to teach a student how to use a piece of media, you could spend all your time teaching them how to use it. On the other hand, if they are doing something which is quite natural to them, and they can record it 'live' – as they would these days on Facebook, or on something that they think is quite simple to use – you're not doubling up on the learning. If you've got to spend lots of time showing them how to use a bit of software or a new e-tool, then it really slows their learning. What we really want them to do is have a look at what they've done and go from there, and make it a reflective process.

Bronwyn: So teaching them how to use PowerPoint would have taken up quite a lot of your time then?

Matt: Oh, not too bad, because it's so simple. It was kind of, create a new slide, add a photo, and as long as they curated it into some kind of legible story, then it wasn't too bad. And we marked it as we went, with the student, while sitting alongside them.

The programme was the Certificate in Carpentry (Level 4) that had been going for years. The students have always built a house as part of the programme and, as they built the house, none of their work was actually recorded as part of the course – although we know now it was the most valuable part of their learning. Since the students were spending so much time on building a three- or four-bedroom house – because that's what they really enjoyed – we thought we could try and extract some of their learning from the practical side of the programme. We thought if they could do this practical work, then they could most probably understand the theoretical side. So the e-portfolio work was about the students being able to show how they applied the theory and the practical.

Bronwyn: Can you give me an example of something they would have been learning to do while building the house, and how that would have been assessed, at that time?

Matt: Sure. Think of putting on a wall lining like gib board, and having to describe how to do the job in a written assessment. For example, students would have to explain the full range of skills and forethought that goes into actually putting a piece of gib board on a wall; it's not just about cutting and putting it on, they would have to make sure they've got the right type of gib, and cut it to length. They also have to prepare the wall, make sure the gib is straight enough to put it on, make sure the insulation is in the wall, and tick off a whole series of checks that a building inspector might do. They have to get the right tools to cut and then screw the sheet onto the wall, and apply the right adhesive. So, they could write pages without actually learning much, and assessment should be natural and real, if we can make it like that. The best assessment



Figure 1. Source: Hayden Parsons

just kind of falls out of what they are doing in the course. They do enjoy the practical side, so as they were applying the gib and going through the process they would take a couple of photographs. This did two things, it let them show a bunch of stuff through a photograph and, when they were putting together their e-portfolios, they could think back, remembering what they did and add a couple of notes: "This was the gib, this was the wall, it was straight, here's some adhesive, here's me screwing it in." Then we could see that they'd done the skill, we could observe it in the photograph, and we used a bit of professional judgement. I know you weren't supposed to do that with Unit Standards, but we knew that they'd completed the job, and it was done correctly. Then when a building inspector came in and looked at the job and said, "Yes, it's all been put on correctly," that's all we needed the students to do, rather than write and write and write.

Bronwyn: And so they'd have a series of photos to show each step.

Matt: Yes.

Bronwyn: And was there a certain number of steps and requirements of what they had to show for their assessments?

Matt: Yes. We just gave them a really simple bullet-pointed list for the photographs they needed to show for the different steps along the way. We still do this today, too, and the bottom line is – if we can see the job is done correctly and an outside person signs it off, then we know that they've followed the whole process.

Bronwyn: Yes. So how did they do that before – did they have to fill out worksheets?

Matt: Yes, they would have had to fill out written assessments or drawings, with lots of sketches.

Bronwyn: For a practical?

Matt: Yes. So when I started here, back in the day, I think there were 120 assessments in the programme.

Bronwyn: It must have been terribly time-consuming marking all those worksheets.

Matt: Well, it was not so much as time-consuming for us, but we had students who would fail; they might have been doing the tasks really well, but if their written communication wasn't that good, we were stopping the students from learning and proving that they could actually do the practical skills, and that they had the knowledge. They might not have been able to write it down correctly or remember all of the steps when writing, which was kind of unimportant. I suppose, looking back at it now, that's why they got rid of the Unit Standards; assessing using Learning Outcomes makes it so much easier.

Bronwyn: So, your programme is very experiential.

Matt: Yes.

Bronwyn: You've got this house that the students build – and are there other ways that they learn practical skills, where they might take photos of themselves?

Matt: Yes. Now with every assessed practical task there's a practice run, and then there's the actual assessment. We don't like putting students in a position where they only get to do it once. We want the students to make mistakes, as they generally learn from them. During the full-time programme, students will spend six weeks on work experience, and while they're there they photograph and record what they've learned from another tradesman; and also what they've learned overall and what they could do better next time. We also ask them to think about what the company could do better as well, without being aggressive or 'nit-picky.' If they can think about a process or an outcome and how to create something that's better, how they could do it, that is a good way to learn.

Bronwyn: How long have students been taking pictures of what they're doing on work experience?

Matt: Just for the last year.

Bronwyn: So that wasn't happening when you were doing the skills early on?

Matt: No, they were putting in photographs of their work experience, but it wasn't assessed.

Bronwyn: OK.

Matt: They just wanted to put their photos into the e-portfolio, at first. Within a year this had turned into an assessment tool, and then into an assessment tool and a CV, that they edited later on to show just their experiences to potential employers.

Bronwyn: So they're basically creating a visual record of their time while they're studying the Certificate in Carpentry (Level 4), aren't they?

Matt: Yeah. Also at that time we were teaching a one-year programme and then waving goodbye to them, and that was the end of their learning. Now we've created another four-year path of study afterward, where they take that same portfolio and build on it, you know, for up to five years really.

Bronwyn: So as an apprentice?

Matt: Yeah. That's what I do now.

Bronwyn: That's incredible evidence for them to be able to get into the apprenticeship programme, I guess, isn't it – to have that record?

Matt: It is.

Bronwyn: So we've got to the point where you moved from students taking images with a clunky camera, you loading them into I-drive, the student drive, and then putting it into PowerPoint, and to the stage where the students were saying they didn't want to do that anymore. Was that 2011?

Matt: Yes, I think it was.

Bronwyn: And then what happened?

Matt: It was about the same time as you said to me that I should do my Graduate Diploma in Tertiary Education.

Bronwyn: Yes, the project for the Graduate Diploma in Tertiary Education.

Matt: Which I knew at the time was a silly idea (laughing), as I really didn't want to do it. It might have been the year after that I decided it would be a good idea to do it as a project. So at about that time, mobile phone ownership in 18 to 21, and 22-year-old males in New Zealand seemed to skyrocket. I noticed it went from one or two people in the classroom having a mobile phone, and taking awful photographs – they really were – to everyone having a mobile phone, and they could all take reasonably good photographs. The students didn't always know how to share them really well, and apps weren't really that big at that stage. I don't know how many apps were on the market, but students were leaving high school with better digital skills, and we didn't have to teach them anymore, and they were starting to teach us things. So it was time to pull our socks up again, and use the students' knowledge to improve the e-portfolio. So we tried various things, and I guess I led the way by leaving it up to the students to choose how they took the photos. It was 2013/14 when you convinced me to start my Graduate Diploma in Tertiary Education project and we ran an official research study.

Bronwyn: Yes, we had to go through planning your work-based learning project as part of a bigger research project on mobile learning, for which I had received funding from the Otago Polytechnic research office. We put in an ethics application, and I appointed a research assistant and we got going.

Matt: I just remembered. In 2011, I tried an i-pad for the first time, and teachers thought that education could be made better by using i-pads and mobile technology. So we had a tools app developed to use in our School, but it was a failure because no one else had an i-pad. We've come a long way in seven years. So in 2013 we started making changes in the programme, and then in 2014 we did this research project. The approach for the research was based on what I'd learnt previously from students and their new abilities when leaving high school.

Bronwyn: I remember early on, one of the comments you made was that the majority of your students had smartphones, and that was really important for you, wasn't it, because you wanted them to use the device that they actually had rather than you providing a bunch of devices?

Matt: Yes.

Bronwyn: Did you have i-pads at the same time, in the department?

Matt: Yeah, we did have some i-pads but they were just too big, with nine or ten-inch screens, to take out on the building site and we couldn't store them easily. As much as I wanted the i-pads to work, a personal mobile phone was better as it was right there in the student's pocket. They needed to be able to take photographs when they thought it was a good time to take them, rather than, "Oh, there's an i-pad, what should I take a photograph of?" Students' ownership of mobile phones was over 95%, but not 100%, so we could get students to use their phones, and it became their choice to judge that their work was worth photographing.

I added an extra dimension so that they could recognise what was good work and what was 'a bit of a failure,' so they could take another photograph later on. It was a really good chance for them to cheat, but they didn't, and although they shared their work with each other, they wouldn't give their photos away to others. We organised the students into teams, so each team of students, usually a team of three, would be given a task to do and to take a part of a house, and put the doors and windows in, putting on the lining (gib board) and the insulation, and that was a stand-alone team. They didn't help any other teams and they knew that when the task was finished – we call it a "job and knock" – they could go home.

Bronwyn: So was three a good size for the teams?

Matt: Yes – they were limited by the physical size of the house, because the rooms were approximately four by four metres – 16 square metres.

Bronwyn: So how did they help each other, in terms of capturing these images of what they were doing?

Matt: About then selfie sticks came in, so we did see selfie sticks for a while, or they would hold the phones for each other, and ask, "Can you get a photo of me doing this?"

Bronwyn: So they had the images stored on their own phone? So what did they do with these images?

Matt: For the research project in 2014, I went through some iterations of trialling different software, and we did it as a compulsory trial. Before that, I'd said to the students, "Just use anything you like – PowerPoint is great, and PowerPoint is, if you like, the default one which will work." But I had also said they could print the images out if they wanted and stick them on paper, leaving it up to them.

In 2014, because of their common use of Facebook and other social media, it didn't seem hard for them to try different applications for their e-portfolios. I trialled Facebook, Evernote and Google Plus each for a period of three weeks. Google Plus is a great platform for photo sharing, as long as they are backed up in Google Photos, which I found easy, but the students didn't find it that easy – and there were some other problems with it. We let the students use it for assessment of one Unit Standard, so they would provide evidence, and I set up a closed group so they could share with each other.

Bronwyn: Weren't there issues that they found it tricky to upload directly from their phone, and they had to go and download the photos at home or in the computer lab or classroom, and then upload them to Google Plus separately?

Matt: Yes, that's right. The mobile interface wasn't as good as the one on the desktop, so if they'd stored it, we ended up back in the classroom, using the laptops, and that wasn't really what we were trying to do. I found Google Plus great – I could use it on the mobile platform, but I spent more time than them practising, and it wasn't natural for them; and they felt like their progress was slowed by spending time mucking around learning how to use the platform. Evernote was my favourite of the three applications, because images could be annotated.

Bronwyn: So how did you get them feeling comfortable using those applications?

Matt: In each case, I nominated a Unit Standard and asked them to show me their practical skills evidence using the nominated platform. They agreed early on to trialling these applications so, in each case, I'd sit down in the classroom with them and use the data projector and form a closed class group within Google Plus or Facebook or Evernote. I'd ask them to join the group we were using at the time, and they'd get on their phones, log on and create an account. This took a little bit of time, and then they could see themselves appearing on the data projector screen, and would say, "Oh look, I'm part of this group." Once they had joined and got used to each other's nicknames, it was easy, especially as they were already familiar with each other by that stage. If they didn't have a phone they could use one of the laptops, but they were pretty much all on mobile phones by then. Once we'd used those first three applications, I let them provide evidence for the fourth Unit Standard any way they wanted – for example, they could go back to using PowerPoint or they could use another application that they'd discovered themselves.

Bronwyn: Did you find it time-consuming to show them how to use the applications and make sure that they were using them properly?

Matt: Ah, no – teaching them how to use the apps might have taken 20 to 30 minutes for each one. The most time-consuming part of all this was that they would do their homework after hours, in their time, at home, and that's when I had to start doing my work, giving them feedback on their photos and e-portfolios. I know if they were a bit more motivated they could have done it on campus, but they were generally building, so they'd just record the photos on-site, then they'd go home, and it might be 11 o'clock at night and my phone would start vibrating – "ding ding ding" – and that's when I realised it probably wasn't the sharpest idea to have told them, "I'll mark it live."

Bronwyn: So you were spending hours of your own time in the evening when you should have been sleeping, checking their images, because they were putting them up then?

Matt: Yeah. I always think that if you do it live and you ask them a question and recommend something, you should be available to check it. For example, I might say, "Is there something else you're supposed to have in this photo, or what's that big red thing in the middle?" Then they could fix it while they were ready to work. I just wanted to be that person to encourage them.

Bronwyn: So what time did you go to bed then?

Matt: When they were finished.

Bronwyn: Good grief!

Matt: I know, at the time it seemed like a good idea.

Bronwyn: A lot of people wouldn't do that. Their phone would be off, you know, and they'd say I'm just not doing it. But I guess you were really passionate about this project.

Matt: There was one other thing, though. The carrot that I dangled before them at that time was that they could have Friday mornings off, if they had done all the required work. We used to have class on a Friday morning when they used PowerPoint to create their e-portfolios as well as retests from 1 to 3 o'clock, when they'd fix up lots of assessments. So I said to them, if you can get your e-portfolio finished by the end of Thursday, you don't have to come in Friday morning. The top 80% of the class took that statement as, we don't come in on Fridays any more, and we do our e-portfolios on Wednesday and Thursday nights.

Bronwyn: So while they stayed away on Fridays, you were having an extra sleep, were you? (laughter). So what was your general feeling in terms of the approach you used with Evernote, Google Plus and Facebook – how sustainable was this for your teaching and how did it help students' learning?

Matt: OK, so it was a lot of work at the time to get it up and running, and I suppose that's the problem with using multiple platforms. But we changed from having to mark 120 assessments to marking only 80, and the size of the assessments themselves had dramatically reduced. My boss Graham, who'd been teaching at that stage for 40 years or so, was the biggest supporter of it, because he saw a reduction in our assessments – probably a third less written assessments by students. The e-portfolios still needed to be marked, but marking a visual photo was so much simpler – I wasn't looking for lots of words, I was wanting to see the process, which was in front of me. I was checking to see that they'd done the tasks correctly, and I very rarely had to ask a student to do anything more apart from having to annotate a photo. It really sped up the assessments.

Bronwyn: And the fact that you'd already given them formative feedback must have sped it up as well, because you'd already seen the images at 11 o'clock at night.

Matt: Yes, and also before then, and their learning was at a greater depth. You could see that because they had to think about things on-site a little bit more, knowing they had to collect evidence at the right time. Also, from the teacher's point of view, I knew the student was actually there on the day, as they knew they had to be there for each part of the process.

Bronwyn: So you and others were facilitating students doing the house build, and what they were learning there, and watching them. They were taking the photos, and you're then seeing the evidence of that work again in the evening when they uploaded it to whichever application they were using at that time. It was great that you got to see their work again and give them feedback on the evidence. Good one, Matt.

Matt: Also, I could tell that they were part of a team and, if they didn't really understand what they were doing, they couldn't take the photographs they needed because they wouldn't have known what was important to capture. So the method combined what they'd learnt in the classroom, and helped them to put it all together in one place.

Bronwyn: So they had to draw on their theoretical understanding to annotate the images to explain what they were doing. Yes, that has to help them understand it better.

Matt: I know it sounds really simple, but in a process like that, when I stood back and looked, I could see that they had learned at a higher level than if they'd just been writing about it.

Bronwyn: That's great. So, if that was working well, why did you then change, because now you've evolved into doing something else, haven't you? You're using a different application altogether.

Matt: In 2016, I left the carpentry department, and went and worked with the Learning and Teaching Development team. So the whole carpentry department got to do their own thing. While I was away, the format of the e-portfolio used in the full-time one-year programme changed. The e-portfolio concept fully evolved onto Google Docs, which is an excellent platform for the students to use. The students, especially the school leavers, tend to already have a Google account, that's their go-to thing now – and if you said to use something else, you'd have to teach them again. The students won't use OneNote, which is the Microsoft version. The staff here have all learnt how to use Google Docs, which was really nice to see when I came back to the department, 18 months later.

Bronwyn: So can they add the images from their smartphones directly to Google Docs, or do they have to go and download them into Google Drive? You can share from your phone to Google Drive, can't you?

Matt: I know, with my phone, every photo is backed up to Google Photos, so when you're creating a doc, the images are already there – so they're live, and on the cloud, so you don't have to worry about it. Half the students would have Apple phones, and half would have Android. In 2014 we got a really big Wi-Fi router out near the building site, so the students could have access to the Internet when they were working.

Bronwyn: Is that as a result of your mobile learning research project? I remember you saying at the time there were issues with wireless access.

Matt: Yes, and it just so happened that the building site I was traditionally working on was the furthest away from the Wi-Fi, so we had a great site where no one's smartphone could access the Internet.

Bronwyn: That's terrific that the Otago Polytechnic IT department responded to that and fixed the problem.

Matt: It's still not perfect, but yes. It's no longer 'no bars,' and now two or three out of the four showing wireless is working.

Bronwyn: So infrastructure is really important. I recall from the research that students didn't want to use their own data because it's expensive – and it *was* expensive at that time, and most of them wouldn't have had plans that included data.

Matt: No, not when they're that age – they do tend to have plans now, though.

Bronwyn: What happened next?

Matt: I started another programme in 2015, the apprenticeship scheme, which is a managed apprenticeship. Once our pre-trade students have gained employment, we manage their learning for another four years. They come in for block courses, and we see them three times a year for a one-week block course. I know that's not much, but we also go out on site and we visit them four or five times a year. While we're on site, we talk to their employer or their foreman, whoever's teaching them the practical side. They're doing a traditional, 8000-hour apprenticeship, but

its competency-based, and it takes about three to four years depending on the apprentice. When we first started doing this the traditional way, the apprentice would keep a diary, and at the end of each day they'd write down under different headings what they'd done that day. For example, they might have been putting up wall linings, so they'd open up the diary and they would open up the page on wall linings and put a brief entry in there to say, "Today I put up gib board for the day." They'd write very little, and generally they wouldn't do it, and then they were excuses like they were away for the weekend or one guy sold his car with his diary in the boot – therefore, he lost it.

Bronwyn: "The dog ate my diary."

Matt: Literally – and we'd get lots with mud on them and beer and water, and they generally just got lost. In 2016, I met Josh Galuszka and he had created an application called the Record of Work. He'd made it himself for carpentry apprentices, and he came along and talked to us at a carpentry tutors' conference. He was willing to customise this for each institution, so I worked with him over that year and we rolled the app, Record of Work, out in 2017. Otago Polytechnic and Unitec were the first ones to put it out.

I liked the whole concept, and essentially Record of Work is an e-portfolio and different to Google Docs – the approach that some lecturers started using while I was away. Google Docs is more like the paper diary and can only be seen intermittently. Once the apprentices are on a building site, we generally can't see what they've done until we go to visit them, and that might not be for two months. In two months you can do a lot of things – you could do nothing, you could push a broom around, you could be doing lots of learning but not recording it. So, the evidence wouldn't be provided. Now with the Record of Work app, we can see a daily record and it's in the cloud. Essentially it's just another e-portfolio platform and, for the Wanaka-based apprentices that I'm managing, I can go onto the app say once a week and see what they've done. Straightaway I will know if they've done anything, have been at work and have kept up their records. So I know just from checking their entries on the app whether they're doing an amazing job or have been lazy. I can give them feedback on their work, and they can see it and respond.

Bronwyn: So where is this application located? Can they use their smartphones to access it?

Matt: Yes, it's an app, and it works on any smartphone, so they take the photographs at work. Generally they use the app at night when they do their homework to put the photo into a specific box. It will be automatically curated when they select the appropriate Unit Standards or courses they're studying. They add the photo in the right place with a short description – we've given them a list of things that they must put on each photograph. It's not just 20 photos of them doing stuff – we want them to have it in the right place, with the correct judgement statements. When they've accumulated enough evidence, we always check with their employer, and there's a verification button that the employers see when they log on and they can verify the student's work.

Bronwyn: So they don't have to check everything, they just have to verify certain things?

Matt: They've just got to verify that "Yes, this is the site we're working on."

Bronwyn: So the students can still take tons of photos until they get it right?

Matt: Yes.



Figure 2. Screenshot of the Record of Work app.

Bronwyn: Or if they think it's a good photo, showing what they've been doing, the next step is selecting the best ones to put into this record?

Matt: Yes. The idea is they take one or two photographs a day – “this is what I did in the morning; this is what I did in the afternoon.” Before, we wouldn't know if the student was any good at doing a skill, because they could just show you the finished product on site, and also now we don't have to spend ages trying to find evidence in their diary. On site, because I've already seen their evidence, I can look at the big things and ask them to tell me about them and the process, and ask them questions about the materials that they are using. For example, I can ask students – where did they get the materials from, how did they work out how much to get, what is the legislation, should they have done this, is there a better way to do it, and how could they do this better next time?

Bronwyn: So when you ask these questions, where do they record their answers, and what does “do it live” mean?

Matt: I can do it in the app, or in person on the site or in a call to them, and together we might record on paper, or electronically. I can log in to the cloud where they store their records and evidence to add comments and feedback on their work. Then the apprentice gets a notification on the app – then they are required to respond to any questions. I can do the recording on the actual photographs that they're producing. I'll make comments, not on every photograph, but on some – and it's not just “Keep up the good work,” but I ask them questions directly relating to that photograph. So it might be what strength or what treatment, that kind of thing, so they're talking the lingo. The others supervising apprentices do the same.

Bronwyn: That sounds really good. So if you do notice a student is not producing the work they should be, what do you do, pick up the smartphone and ring them?

Matt: Well, we've just put another thing on the app where we get an automatic update if they haven't done anything for ten days. Even so, we should be looking at it more than that, so we text them, and we talk to their employer because their employer's got more clout than us. The employer might say to the apprentice, “Well look, do you want to do a ten-year apprenticeship”, which was something which was happening before, “or do you want to finish in three or four years?”. Before, when we were only seeing them every two months, they might promise to do something and get away with doing nothing for that long. It can become a bad cycle of false promises.

Bronwyn: What about the potential for cheating, like stealing their mates' photos – do they have to show themselves in the photos?

Matt: No – that's why we get the employer to verify their work.

Bronwyn: Alright.

Matt: We organise a logon for the employers and they can log on and see as many apprentices as we allow. I've got one employer in Wanaka, he's got three apprentices, and goes on with a single logon and sees each person's work. Unfortunately, most of the employers don't even go on. We have found that most employers take the responsibility for teaching the apprentices the practical side of the trade. They see Otago Polytechnic as being experts in managing the theory teaching and doing the onsite assessments. Employers don't want to get involved in everything if they don't have to, so what I've found easier is to do a backup. As we look at apprentices' work, we print it out as a PDF and keep it on their file here. Under Otago Polytechnic policy, you've got to make sure you're actually recording students' work and storing it in a safe place. Then we ask the employer to look at ten pages of work on a laptop screen, and verify if this is the apprentice's work. Some of them are interested and some aren't.

Bronwyn: That's a shame, isn't it, because they could be helping to monitor that process.

Matt: One of our best employers in Dunedin has got 15 apprentices, and he wants to see every single one and he takes a real interest. It takes a long time, but he's an employer who's really interested in creating a better apprentice than the next employer.

Bronwyn: So are they getting through their apprenticeships faster?

Matt: No, but they are getting a better quality experience. It's up to the employer to provide that, and as long as the apprentice is given the right scope they do okay, and we can see that and track it. For example, we can say: "Look, you've completed this now – for your next job, talk to your employer and see if you can get onto a different type of job needing a different type of skill." That way, they're getting the full range of skills. It still has to be the employer saying they're commercially competent. As an apprentice, I could say, I built this house here, but it took me 23 years.

Bronwyn: And it fell down at the end.

Matt: Yeah, yeah. So we still need approval from the employer for the apprentices to show they are competent.

Bronwyn: So is there any kind of, like, badging system built into the app, so you could turn it into a gamification approach so they end up with a collection of badges, gaining a badge every time they do something right?

Matt: Nope, we've done it the 'boys' way, where they get gold coins – no they don't. On the app, on the front screen when they open it up they've got the place where they put all their stuff and it is linked to EBS, so they can go there and get their results.

Bronwyn: So you call that a reward?

Matt: No, it's not a reward, only tracking.

Bronwyn: Hopefully, they are motivated enough to feel a sense of achievement when they eventually find that they've passed.

Matt: It is beyond me what motivates apprentices. Some apprentices, with family commitments, tend to draw out the apprenticeship for five or even seven years, because their motivation is that they're being paid a full tradesman's wage, and they're not wanting to leave their employer, and aren't worried about gaining a qualification. Some employers will link success in the programme to their next pay rise – that's the best reward I see.

Bronwyn: So how are the students finding all this, using this app?

Matt: Well, because it's me, I wanted to let them make their own choice. When we started at the start of 2017, we had about 30 apprentices using the app, and some of them went back to recording on paper. We've got 120 apprentices now and I think we've got 64 using it every day, and then there's probably another 20 using it sporadically. For some of the other ones, because their employers, some of the big companies said, "We don't want our apprentices using it, we want them doing it on paper," we had to respect the employer's decision.

Bronwyn: It's pretty Luddite-ish, isn't it?

Matt: Well, we have to give them that opportunity, and again, I don't want to stop them learning. Some people are technophobes, and that's fine – the main thing is they are recording their stuff, but some are doing a combination, which is really annoying.

Bronwyn: I remember you saying – when you initially brought in the smart phone e-portfolio approach and students were using them to take pictures of their work – that some of the employers didn't want cell phones being used. Have you changed that mind-set, do you think, now?

Matt: I'm going to say that when builders don't want cell phones on the site, they've got a good reason. Mainly, it's because they see their apprentices mucking around on them, and some employers have got some fairly firm views; some have even banned them from the smoko shed, as they see smoko sheds for eating and talking and not for staring at your phone. As far as the social aspect goes, I think that's really important.

Bronwyn: But it makes it hard, then, if the cell phone is banned, when they need to collect this evidence.

Matt: Yes, it's a really small minority; I'm going to say it's under five percent, maybe less.

Bronwyn: So to finish this part off, do you think that it's a better learning experience for your students, using apps like this and the e-portfolio and capturing this visual evidence?

Matt: I still think that the biggest enhancement in their learning is the time they spend putting it all together, linking theory and practical, and engaging in the process every day. For example, an apprentice might be doing Pink Batts for four days on a really big building, and over that time is tying everything in. They might say: "I did this, I'm using this material and I'm using it for this reason, and once I've finished that part of the process, I start the next part of the building process." So they're mapping the whole thing all the way along, and you can see it when you look at their evidence, day by day by day, that they're building a house, and it is really scaffolding their knowledge. The process of them putting it all together is really good learning.

Bronwyn: Well, it's providing structure and, even though it is teacher-directed, it's letting them organise how they go about doing it, isn't it?

Matt: Yeah.

Bronwyn: So there's some autonomy happening. Do you ever get students where you have to keep directing them, because they don't organise themselves?

Matt: Yes. You're always going to have that with students.

Bronwyn: Would that be a minority or would you think most people would kind of take charge of their learning?

Matt: It's still that 80:20 rule, approximately. The students that weren't going to record it on paper or by cell phone and are unmotivated – well, they're often the ones that won't finish their apprenticeship. Perhaps they're just not enjoying it. The enthusiastic ones who are really trying hard to do well, they'll be the most successful ones, and easy to track, and you don't have to worry about them. I can give them a bit of direction in the first year and they're away. I guess the big thing to me is that we can monitor the students better and know straight away if they're not having success and then engage with them. If anything, the app has given me a better understanding of failure to progress, or if there is disengagement I can step in.

Bronwyn: So what do you do if that's happening, and how do you help them to progress?

Matt: I phone them. Young men don't email.

Bronwyn: No women in this course?

Matt: Yes, we've got three.

Bronwyn: That's a small proportion.

Matt: But better than nothing. We're doing a press release shortly through marketing.

Bronwyn: Is there a noticeable difference in how female students engage with the process, compared to male students?

Matt: My experience with the women in the programme is that they have had to work very hard, like many others, to get a start in an industry where we don't employ many women. There is nothing really different about them – we are very proud to have them as part of the industry as it changes to include everyone.

Bronwyn: So what's the feedback? Are you getting good evaluations from the students?

Matt: We're getting evaluations on the programme, but not on the e-portfolio as such.

Bronwyn: If they didn't like it, they'd be groaning, wouldn't they?

Matt: If they didn't like the e-portfolio app they wouldn't use it – but it's either paper or electronic.

Bronwyn: Do they see the value of the e-portfolio for their CV?

Matt: Yes, not in the first or second year, but in the fourth year they start to realise as they get toward the end of their apprenticeship. All builders have a portfolio – you have to, not just for advertising, but you must by law now record what you do.

Bronwyn: Oh really? A professional portfolio.

Matt: So, if anything, the app e-portfolio could turn into that, mainly because it's so easy to curate and put everything in the right order. But, I was on a building site the other day and for every job they use Dropbox, and there's a platform that sits over the top called Build Me. So if you were getting a house built and you want to see what the progress is on your building site, you'd log on to this part of the Dropbox with Build Me, and you can see all the photos that have been taken for the day.

Bronwyn: Wow.

Matt: Often these apprentices, believe it or not, are given the job to record the building and the boss has said, "Take ten photos of the house each day, and put it on this Dropbox account." Then the clients and the boss can log on and see what progress has been made, and the features that have been added. If the clients can keep track, they can get things changed immediately, if they don't like something.

Bronwyn: So the e-portfolio app is keeping apprentices up with contemporary practice in the building industry. Was this in your mind when you started the e-portfolio method of assessing?

Matt: It was, and I'm really keen. One of the reasons I'm working with Josh, the original developer of the app, is because we want to say it's not just for carpentry, it's for anyone who wants to track their learning – it's just a matter of relabelling some folders where students put information, and go from there.

Bronwyn: It sounds really good to me, to try and encourage that regular record, logging what they're doing. When do you get them to reflect on their work?

Matt: The other thing I've just rolled out in the last month is trying to get them together to learn socially. We have a Facebook page, and run it through Placemakers (a NZ building supplies store); they pay for it, so we're not spending any money on this. Also, we've had one breakfast about six months ago, and we got the apprentices together with an alert sent through Facebook: "Breakfast at Placies." They put it on, and we got a couple of speakers in. This is important, because a lot of the apprentices don't know each other, and this type of get-together helps apprentices to meet others from different years and a mentor system can be created. For example, fourth years and first years could be sharing work because they got to know each other through Otago Polytechnic and a get-together like this.

Bronwyn: Do you think it takes less time using this new app for your teaching, and is it more sustainable for you?

Matt: It could be much more time-consuming because my apprentices are all in Wanaka, or Central Otago, and to go and see them is a three-hour drive. I could phone them and they might say they've done the work, but they haven't. However, I can see if it's in the app and will know straight away, so that's saving a huge amount of time.

Bronwyn: It's also saving you time ringing up and checking in with them every week as well, isn't it?

Matt: Yes, because I would literally only get around the group and it would be time to begin again. I've just come back this week from a set of site visits – I can do about four site visits a day, and that is hard because I've got to write all that up. If I don't waste time on site looking at what they've done, because I've already seen their work, I can use the time on site to ask the more important questions.

Bronwyn: So each year, do you sit back and review how you could change the assessment process and also how the app might need to be modified?

Matt: I've had three modifications made this year to improve the app, which was quite expensive. We have given the employers the ability to see what their apprentices have put on the app. The employer can now view their apprentice live and can verify the work. We had a reminded automated email added, so the apprentice is reminded when they have not made an entry. The hyperlinks were added this year, so we had four hot spots on the app home screen that we can edit the web address to whatever we liked. We have used 'how to' videos, sponsor, web pages, Google Drive and the student hub.

Bronwyn: So you can do it as you go, basically – you don't have to wait till the end of the year?

Matt: Yes. All the app changes are purely from student feedback – can we do this, can we do that? And one of the ones this year was the employer logon, that came from an employer – "I want to see what my apprentice is doing; when it was on paper I could see it, but now I can't." So we got that feature added and someone else is paying for it now.

Bronwyn: That's great.

Matt: It's nothing that Mahara wouldn't have done, and other platforms, but we've got one developer in Wellington working directly for us.

Bronwyn: Well, it's working really well on smartphones, and that is good. So, where are you heading in the future?

Matt: Probably taking on more apprentices, and we're rolling out engineering as a managed apprenticeship, with electrical and automotive, so when they are ready we'd like to roll out the same app for them. So that I guess is the next thing – use the app for engineering apprenticeships, and then we'll roll it out across the world.

Bronwyn: Fantastic – so it could be speaking tours, and all sorts of stuff.

Matt: Yeah.

Bronwyn Hegarty is a principal lecturer in the Graduate Diploma in Tertiary Education. Her research has explored the evaluation of eLearning, mobile learning, eportfolios, reflective practice and digital information literacy. She works with tertiary teachers, developing their capability through the qualification and by supporting their engagement in work-based learning projects and research. Previously, she helped lead eLearning staff development in the ITP (Institutes of Technology and Polytechnic) sector.

Matt Thompson is a principal lecturer in carpentry at Otago Polytechnic, where he works with both fulltime students and apprentices on the construction programmes. His teaching passion stems from seeing students succeed using ePortfolios for assessment and reflective practice. His two-year national project with Ako Aotearoa in mobile learning using ePortfolios for assessment has produced a number of research publications.