

Research Report

Pathways Awarua: A digital learning tool to support adult literacy and numeracy

Prepared for

The Tertiary Education Commission

Te Amorangi Mātauranga Matua

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Executive Summary

Introduction

Pathways Awarua is a New Zealand learning programme available online to support adult literacy and numeracy skill development. It comprises a series of reading, writing and numeracy modules based on competencies set out by the Learning Progressions.¹

The increasing use of Pathways Awarua throughout New Zealand provided an opportunity to find out more about how this learning tool is being used in different contexts; the extent to which it supports face-to-face teaching; and the extent to which it is affecting outcomes for learners, in particular Māori, Pasifika, youth and learners with low literacy and numeracy skills (Steps 1 and 2 of the Learning Progressions). The research also looked at benefits and challenges to using blended learning approaches with learners who have low literacy and numeracy skills.

Blended learning, a combination of face-to-face and online learning, fundamentally aims to make learning accessible, flexible and fun, and encourage an independent approach to learning. Researchers agree that blended learning exists on a continuum and is subject to “a range of permutations in technologies, pedagogies and contexts”, (Graham, 2006; Garrison & Vaughan, 2008, cited in Smythe, n.d.). Pathways Awarua is on the lower end of this continuum for learners as it is a digital learning tool that complements and supports classroom teaching.

Data were collected from documents and literature; surveys with educators using Pathways Awarua (200 complete responses), and learners (36 respondents) and practice studies at nine Tertiary Education Organisations (TEOs) where a combination of educators, managers and learners were interviewed. The practice studies involved three Institutes of Technology and Polytechnics (ITPs) and six Private Training Establishments (PTEs).

The use of Pathways Awarua

Data gathered from the surveys and practices sites demonstrate that Pathways Awarua is being used in a thoughtful and informed way.

Educator survey respondents varied in the extent to which they reported using Pathways Awarua, with the largest group of respondents saying they use it on ‘a needs basis’ (34 percent). Nearly half of respondents say they use Pathways Awarua one-three times a week (47 percent). PTE respondents are using the tool more regularly than those educators working in ITPs. There is little difference in the frequency of use by type or level of programme in the ITPs and PTEs with both using it mostly at Levels 1, 2 and 3.

¹ The Learning Progressions are a framework showing what adult learners know and can do at successive points as they develop their expertise in literacy and numeracy.

<http://www.tec.govt.nz/Documents/Publications/Learning-progressions-literacy.pdf>

Nearly seven-in-ten educators report using Pathways Awarua for 30 minutes or more during class time (68 percent), while one in five say they never use it in class time (21 percent). A quarter of educators say learners are using Pathways Awarua one-three times a week in their own time. Educators thought the motivation and interest of learners and their access to computers outside class time were important factors in use of the tool in learners' own time.

The most cited uses of Pathways Awarua by educators were as an independent activity (70 percent), to target gaps (65 percent) and to supplement learning resources (55 percent). This was similarly reflected in the practice sites, where it was also commented that it was being used to complement and consolidate what was being done in class. The survey and practice site data also show that use is 'tutor-informed' with the Assessment Tool results being the most common guide to getting learners started on Pathways Awarua.

A significant majority of educator survey respondents (87 percent) said they checked learners' progress, either online or through a discussion with learners. This was also found to be the experience of most practice site educators and learners. A greater proportion of those in ITPs and ITOs said they never checked progress as opposed to those in PTEs.

For many learners with low literacy and numeracy in this study, initial and on-going support from their tutors was essential. This support takes many forms including support to use computers, guidance on accessing the Pathways Awarua platform, and conversations about activities and progress.

Engaging learners

Pathways Awarua engages learners in a number of ways including through its visual and audio aspects and its interactivity.

Educator and learner survey respondents agreed on the top four things learners like about Pathways Awarua: the ability to work at their own pace; the instant marking; the ability to retry questions; and the use of computer based technology. Both groups of respondents also agreed that their least-liked feature was competing for points.

Educator survey respondents think the tool engages most learners well. Sizable numbers of respondents were however 'Not sure' how well Pathways Awarua engaged Pasifika learners (37 percent), second language learners (33 percent), and Māori learners (29 percent). Interestingly, educators at the practice sites found their ESOL learners, particularly those with more formal learning backgrounds, engaged well with Pathways Awarua. Self-motivation was often a key factor in learner engagement, and this was present for many of the practice sites ESOL and older learners.

In relation to engagement with the different strands on Pathways Awarua (reading, writing and numeracy), 58 percent of the educator survey respondents thought learners were not equally engaged in each of the strands. Over a third of the

respondents (n=86) supplied a reason for their comment, with 28 of them saying there was preference for, or they mainly used, numeracy because it is either all they have used, or because it engages their learners more.

The findings were mixed in terms of whether the content and context engaged learners (both cultural content and contexts, and authentic life and work content and contexts). While the technology, the self-paced and independent environment appear to engage most learners in this study, it is unclear whether these aspects might be important for groups of learners who were engaging less well.

Impact of using Pathways Awarua

Most educator survey respondents believe Pathways Awarua makes a big/some contribution to both literacy and numeracy proficiency (skills) and practice (what they do) (70-80 percent). A very small number of respondents considered there to be no contribution to proficiency or practice. Learners at Steps 1 and 2 were observed as having improved in both their proficiency and practice by almost half the survey respondents (46 percent).

Practice site educators observed similar improvements. The extent of the contribution to improvements from Pathways Awarua was however difficult to ascertain given its use is integrated into or sits alongside face-to-face teaching programmes.

What's working well and not so well?

Pathways Awarua is a valued learning resource by educators and learners, particularly in that it complements teaching programmes, engages learners well, works well with motivated, independent learners and is observed as 'making a difference' to literacy and numeracy proficiency and practice. Learners, particularly those less familiar with computers, are guided by educators in establishing themselves on Pathways Awarua and through on-going progress discussions.

The challenges to the use of Pathways Awarua concern access to professional development on digital learning tools for educators; the lack of familiarity some learners have with computers; lack of access to computers outside the classroom; and time to use Pathways Awarua in a crowded vocational curriculum. The lack of content and contexts specific to learners may also be a barrier for some groups of learners.

Conclusion

This study has found Pathways Awarua is well connected with the existing literacy and numeracy infrastructure (the Learning Progressions and the Assessment Tool) and is being used well by educators in a thoughtful and informed way.

Its use, mainly as an independent learning activity, suggests it could be better integrated with programmes of learning, although there is also evidence to suggest it is used to consolidate or reinforce what is learnt in a face-to-face learning situation.

Initial and on-going tutor support is essential, particularly for those learners with low literacy and numeracy skills, and low or no computer skills.

While this research found mixed views on the need for appropriate contextualised material there are comments from and about learners being self-motivated enough to use Pathways Awarua, and finding the interface and interactivity engaging without the contexts being specifically relevant to them. More needs to be known however about the engagement of specific user groups, particularly Māori, Pasifika, second-language learners, and learners on Steps 5 and 6 of the Learning Progressions.

Given that Pathways Awarua is used well and is beneficial for learners, the question should be asked, why, to date, uptake is not greater than it is? Greater use would mean extending the benefits for more low-level learners and a greater return on the significant investment in building this New Zealand platform and modules. More needs to be known about what it would take to get more learners 'hooked on and hooked in'.

Introduction

Research report

The report is divided into sections on: Pathways Awarua and blended learning; the use; learner engagement; the impact of the use of Pathways Awarua; and what's working well and not so well. Each section includes information from the surveys and practice studies, a discussion of the findings, and a comparison between the findings and the literature. The report finishes with overall conclusions and recommendations for the future development and promotion of Pathways Awarua.

Research aims

The increasing use of Pathways Awarua throughout New Zealand provided an opportunity to find out more about how this digital learning tool is being used in different contexts, the extent to which it supports face-to-face teaching, and the extent to which it is affecting outcomes for learners. It provides information to add to the evidence-base about how the use of Information and Communications Technology (ICT) works to improve the skills of adults with low levels of literacy and numeracy.

This research aimed to find out:

1. how learners and educators are using Pathways Awarua and how it is linked to their face-to-face teaching
2. how Pathways Awarua engages learners, particularly Māori learners, Pasifika learners, youth and learners with low literacy and numeracy skills (Steps 1 and 2 of the Learning Progressions)
3. what difference Pathways Awarua is making to learners' reading, writing and numeracy (proficiency and practices) and how this is evidenced
4. the barriers and enablers to using blended learning approaches with learners who have low literacy and numeracy skills.

Pathways Awarua

Pathways Awarua is a learning programme available online to support adult literacy and numeracy skill development. It comprises a series of reading, writing and numeracy modules of increasing difficulty for learners to complete at their own pace, based on competencies set out by the Learning Progressions.

The reading modules are in Steps 2 and 3, the writing modules are at Steps 1-3, and the numeracy modules are in Steps 3-6 of the Learning Progressions. The reading, writing and numeracy learning modules are intended to supplement educators' face-to-face teaching and resources and also to be used independently by learners in their own time.

Development of Pathways Awarua started mid-2010 and became available to educators and their learners in 2011. By February 2014 there were 301 modules developed in general, trades and services strands. Learners interact with the content

of the modules through drag and drop, multi-choice, highlighter and open-answer questions and get immediate feedback on their responses. Each learner has their own account, which tracks the progress of their accumulated points; certificates are awarded at 500 points and 1000 points.²

When Pathways Awarua started, learners were only able to access it through their tutors, but since 2013 it has been opened up for learners to be able to register and use as individual learners. As at May 2014, there were 21,131 learners, 1935 educators, and 199 organisations who had registered to use Pathways Awarua since 2011.³

Professional development is provided on the Pathways Awarua website for educators to use before they register a class. There is also a resource database where educators can share their learning resources and have discussions.

Blended learning

This research positions Pathways Awarua as a tool to be used within a blended learning approach. Therefore this report starts with a brief description and positioning of blended learning in order to set the context for the research.

Research shows blended learning, as a combination of face-to face and online learning, has considerable potential to engage many adult literacy and numeracy learners, (ODS Consulting, 2009). It makes their learning accessible, flexible and fun, and encourages an independent approach to learning. The research also shows there is limited evidence to date on how well it is working, including what works to improve outcomes for learners with low literacy and numeracy skills.

Defining blended learning is challenging because of the ways in which it is described by various researchers and the way in which people use it to mean different things (Sharpe, Benfield, Roberts, and Francis, 2006). What is clear from the research is that blended learning exists on a continuum and is subject to “a range of permutations in technologies, pedagogies and contexts”, (Graham, 2006; Garrison & Vaughan, 2008, cited in Smythe, n.d.).

At one end of the continuum Garrison and Kanuka (2004) are clear blended learning involves the use of communications elements of online technologies. Stacey and Gerbic (2007) state it is the mediation of ICT that is central to blended learning and also talk about the communicative ICT elements. Both imply the online (especially online communication) element is integral to blended learning.

At the other end of the continuum is the purposeful use of ICT that connects to or integrates with face-to-face teaching. This use of ICT typically involves the use of materials or ICT tools of various sorts (e.g. simulations, games, instructional exercises) presented for an individual learner. In fact, a Scottish study with adult

² Pathways Awarua website. <https://www.pathwaysawarua.com/about.aspx>. Retrieved 15 July 2014.

³ *ibid*

literacy learners found the most used form of blended learning was when learners accessed readily available materials online, (ODS Consulting, 2009). They concluded this form of blended learning, while at the low ICT-use end of the continuum, was no less valuable for these learners as it had them actively engaging with (online) materials while at the same time developing their literacy and numeracy skills. Pathways Awarua is at this end of the continuum and as such in this report, is described as a digital learning tool.

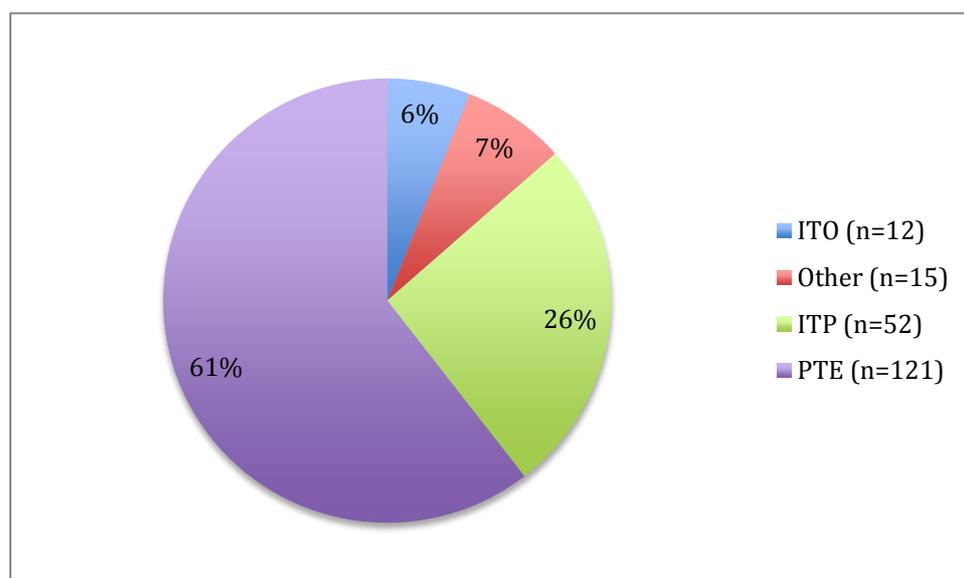
However, at this end of the continuum, presentation of materials need not be online – the online nature of the material does not markedly change the material's instructional attributes although it does enhance accessibility and more easily enables independent learning. Online or not, learners are using a digital learning tool to support their literacy or numeracy learning; the delivery is less relevant.

Approach to this research

A mixed-methods approach was used and data were collected in the following ways: from documents and literature; surveys with educators and learners; and practice studies at nine Tertiary Education Organisations (TEOs). Details of the approach can be found in Appendix One.

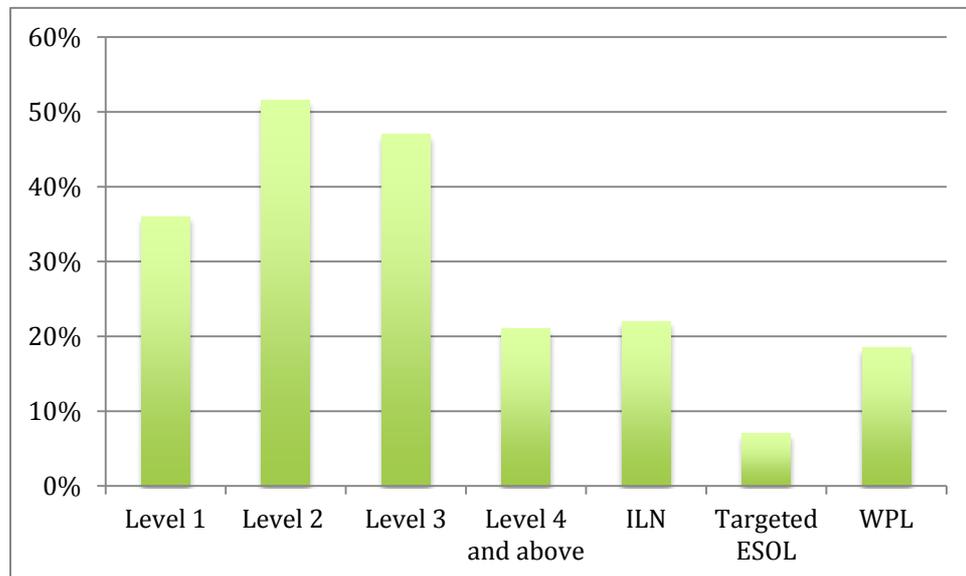
The figures below show where the educator survey respondents came from and the programmes in which they use Pathways Awarua.

Figure 1: Educator survey respondents' organisations (n=200)



Pathways Awarua is used in a range of programmes, with greatest use at Levels 1, 2 and 3. The pattern in the practice studies was similar to that in the survey.

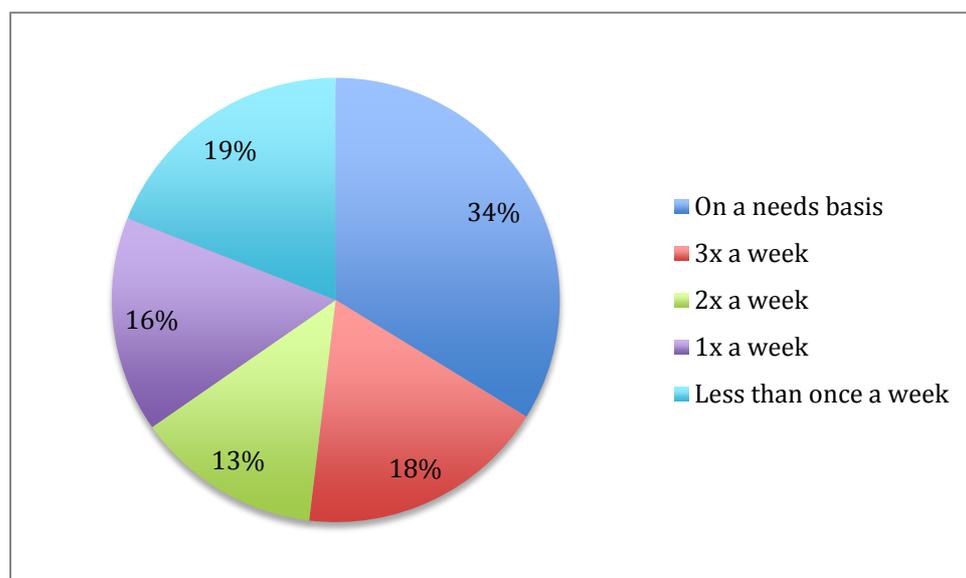
Figure 2: Programmes where Pathways Awarua is used (n=200)



Use of Pathways Awarua

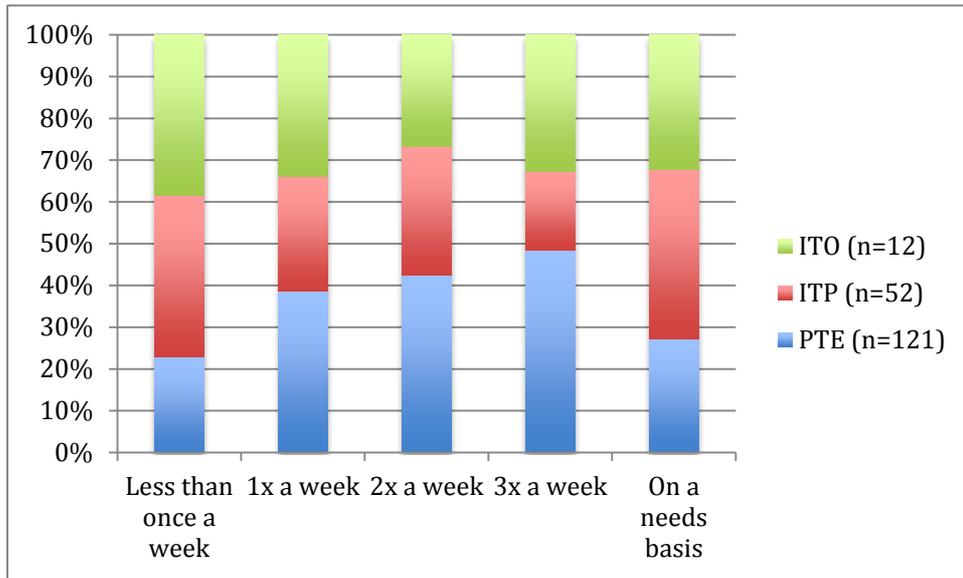
Educator survey respondents varied in the extent to which they reported using Pathways Awarua with their learners, with more respondents saying they use it 'on a needs basis' (34 percent) than in the other categories.

Figure 3: Frequency of use (N=216)



However, frequency of use varies by organisation type. A greater proportion of educators in PTEs use it 'three times a week' than those in ITPs, while a greater proportion of those in ITPs use it 'less than once a week' or 'on a needs basis'.

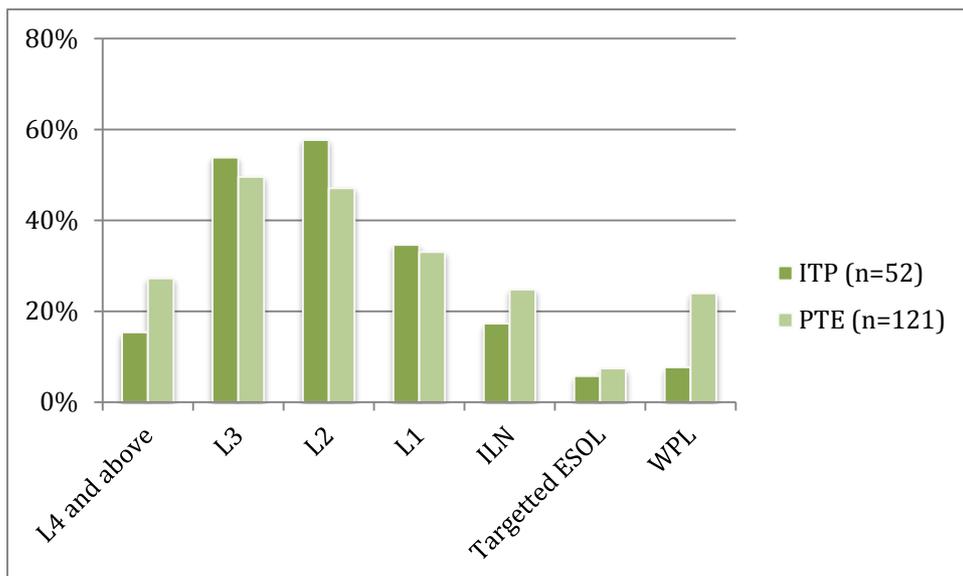
Figure 4: Frequency of use by type of organisation (n=185)



It does not appear the type or level of programme in ITPs and PTEs makes a difference to frequency of use, as the data show reasonably similar patterns across the organisations. The only points of difference are:

- a greater proportion of PTEs use Pathways Awarua at Level 4 and above and in workplace literacy programmes, than ITPs (although the latter figure can be attributed to more PTEs being funded to deliver workplace literacy than ITPs)
- a greater proportion of ITPs than PTEs use Pathways Awarua in Level 2 programmes

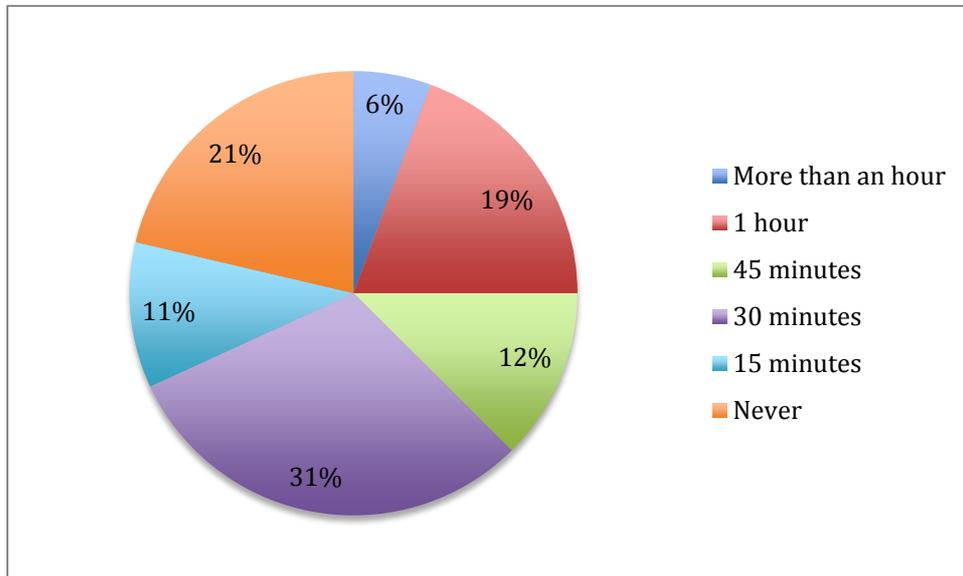
Figure 5: Use by programme level (n=173)



The length of time learners spend on Pathways Awarua varies with the most being 30 minutes (30.6 percent, n=66), followed by 21.3 percent (n=46) who said it is never

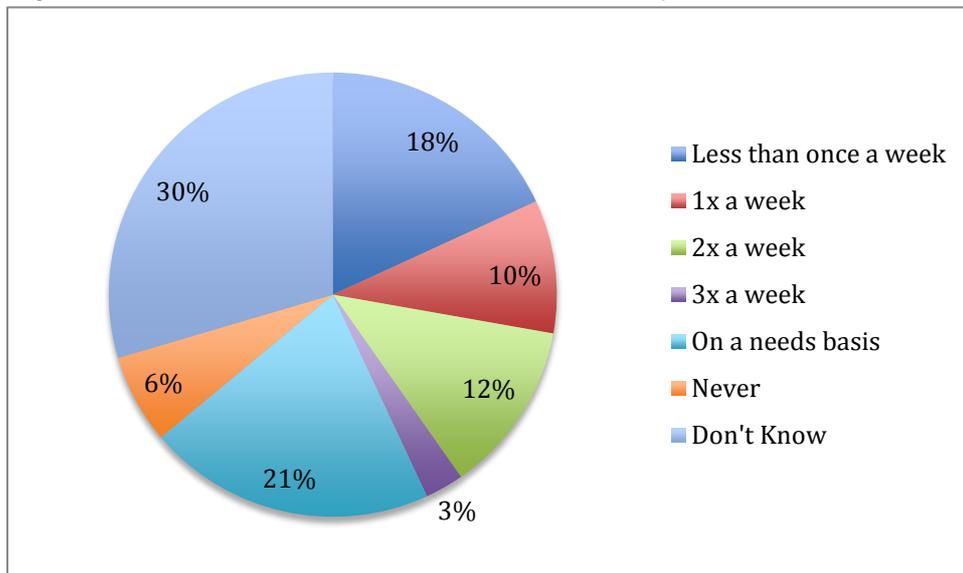
used in class time. A greater proportion of survey respondents in ITOs and ITPs than those in PTEs say they 'never' used it in the classroom.

Figure 6: Amount of class time on Pathways Awarua (N=216)



Seventy percent of educator respondents were able to comment on the time learners spent in their own time, on average, on Pathways Awarua. Of the 30 percent who said they 'don't know' there was little difference in terms of organisation type.

Figure 7: Amount of learners' own time on Pathways Awarua (N=216)



Thirty educator survey respondents made comments about the extent to which learners used Pathways Awarua in their own time. Two key factors came through in the comments – the motivation and interest of learners and their access to computers outside class time.

“It varies according to each learner. Some love the online learning and have access to a computer outside class, others don’t. Some aren’t interested except for specific topics.”

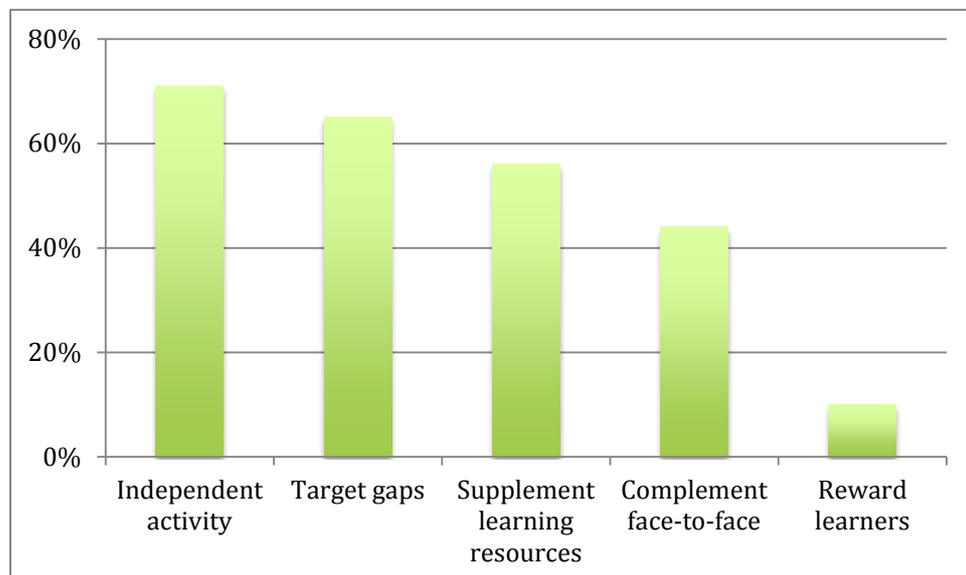
“This is highly dependent on individual students, their needs and motivations. Our ESOL students really took to Pathways and were by far the biggest users outside of class time last year and during 2012.”

One of the practice study sites has learners using Pathways Awarua exclusively in their own time. This is either in free time during a study day or in their own time outside class time. The rationale for this is the amount of vocational curriculum material that needs to be covered by tutors and the fact that Pathways Awarua is seen as contributing to the overall skills that learners require to work in the industry.

At the other practice sites, learners have the opportunity to use it either before class, in their free time during the day, or at home. One learner spoke of using it every morning before her family gets up, *“I want to hurry up and finish the snake”*. For this learner the ‘snake’ indicated the full pathway of modules.

Educator survey respondents were given five options to respond to about how they used Pathways Awarua. As the figure below shows, the most cited uses are as an independent learning activity and to target the specific gaps in learners’ literacy and numeracy.

Figure 8: How educators use Pathways Awarua (N=216)



This finding was supported at the practice study sites where the use as an ‘independent’ activity was elaborated on a little more and seen in a number of different ways including: self-directed use with tutor support; learners being encouraged to use it in their own time on site; or as a home work activity.

“We have set a number of numeracy and reading modules that students have to attempt. It is used as a motivating tool for adults to gain confidence in computer

literacy, numeracy and literacy. It is used as part of the students' homework expectation. Students are invited to sign up for Pathways Awarua using the students' tutor's code so whānau can make use of the programme."

"Free use. They have three hours of computer time a week. Not all of it is spent on Pathways Awarua. They are encouraged to use it in their own time for self-development. They can access it before and after class. Older learners are more likely to do this ... In our work we have five major topics and direct learners to these ... [They] see it as a semi-formal part of the curriculum."

"Learners can learn and train at their own pace and in their own time. For example the 'Wordfit' strand is commonly done at home."

While the use of Pathways Awarua as an independent learning activity comes through strongly, this independent learning is also seen as complementing or consolidating what is being done in class.

"It complements the teaching very well, both in the independent work and when they [learners] use it in sessions. It helps to consolidate literacy and numeracy skills by practice."

"Once they are using Pathways, I watch and see where they are at and make suggestions. I'm directive about what they should be doing. For example using the arms⁴ or going further up the ladder. If they are finding things easy, for example basic facts, I get them to move on."

While the most cited use was as an 'independent activity' for learners, the survey data shows that it is 'tutor-informed use' with the Assessment Tool results being the most common guide to getting learners started on Pathways Awarua.

This finding was confirmed in the practice studies where the majority of educators said they also used the Assessment Tool results to inform the starting point for learners. However while the Assessment Tool information was used, it was used in a range of different ways. In one place, learners were told to start at a step lower than their Assessment Tool results as this was seen to be more empowering and confidence-building for learners. At two other places the Assessment Tool results inform the Individual Learning/Care Plans and this in turn informs the use of Pathways Awarua.

"[We] assess learners on Tool then slot them into Pathways Awarua. We use it more for numeracy than literacy. It really suits the nature of Pathways Awarua, whereas literacy is more difficult to slot into."

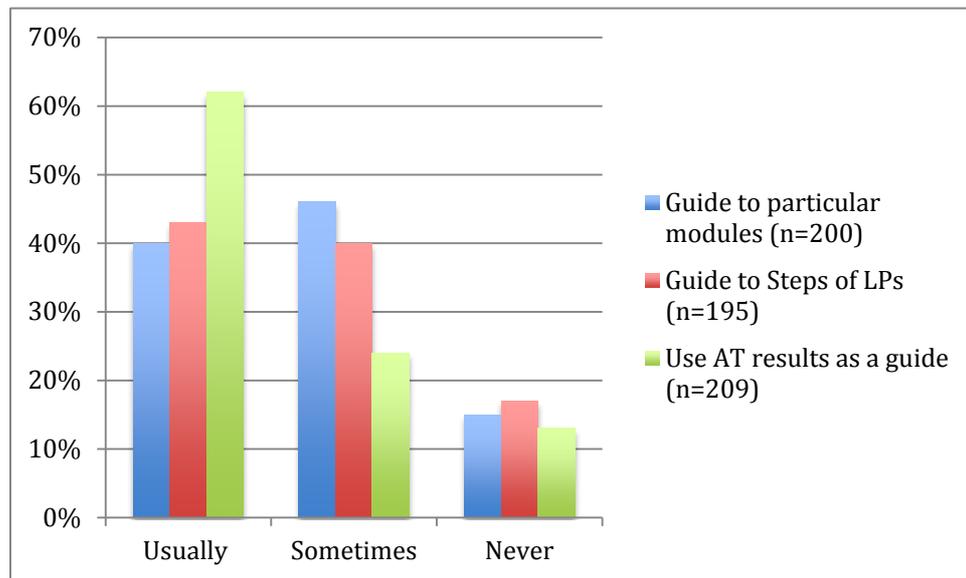
"It's used with Level 3 learners as part of their daily routine. After LNAAT, which is done in Week Three, those targeted are put on a Care Plan. This is a new

⁴ Some modules have a + sign indicating supplementary modules which are either contextualised versions of the same module (i.e. a service/trade flavour) or additional learning for learners who found the main pathway module challenging.

initiative ... to place them properly on to Pathways Awarua and make sure they are launched properly on to it, ensuring their passwords work etc...”

Around half the learner survey respondents (n=17) said that they worked through modules based on their Assessment Tool results, but a slightly larger number (n=20) said they also worked through modules that they themselves chose.

Figure 9: Guided use of Pathways Awarua (N=216)



The majority of educator survey respondents (87 percent, n=187) said they checked learners' progress, either online or through a discussion with learners. A greater proportion of those in ITPs and ITOs said they never checked progress as opposed to those in PTEs.

At the practice study sites, educators talked about tracking or checking learner progress with one of them commenting on the usefulness of the user report for her and her tutors.

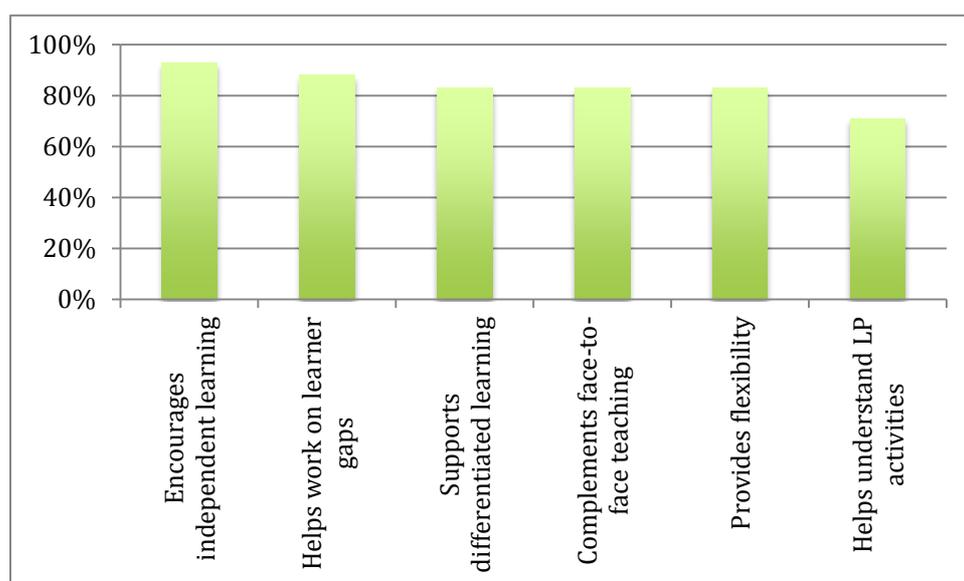
“This allows us to track usage across the whole organisation and our Head of Study at each campus to track the user activity for their tutors and class group. In turn the tutor can also track their class activity. Our tutors can now run reports, showing the number of modules completed at each step and the total points scored per user across the reading, writing and numeracy pathways. By changing the dates, we can obtain a snapshot report on the class, or look at progress between time points.”

The majority of the learners in their survey (61 percent, n=22) said their tutor talks to them about their progress. Another seven said that their tutors check progress online.

Educator survey respondents were asked to indicate 'Strongly agree', 'Agree', 'Disagree', 'Strongly disagree' or 'Not sure' to a series of statements about Pathways Awarua and the role it plays in their teaching programmes. As Figure 10 shows the

most 'Strongly agree/Agree' comment about Pathways Awarua is that it 'encourages independent learning', closely followed by 'it helps me to work on specific gaps in learners' knowledge and skills'. This finding is in keeping with educators' earlier comments about how they use Pathways Awarua where their top two uses were as an independent learning activity and to target learner gaps. Figure 10 shows the results of 'Strongly agree' and 'Agree' combined

Figure Ten: What Pathways Awarua does (N=216)



Survey respondents were asked about the professional development or support they have accessed for Pathways Awarua. Forty percent said they had used the National Certificate in Adult Literacy and Numeracy Education (NCALNE) Lite modules. Some of those who had not used these modules said they had not done so as they already had an NCALNE qualification. Others (n=8) commented they had used the professional learning tutorial that comes with Pathways Awarua and four said they had internal professional development or support. Two respondents noted the difficulty they have with Pathways Awarua, one because they found it too time-consuming and difficult to use and another the professional development module put them off.

“Personally I felt it was quite intense at the start. Doing the first module on how to use it just switched me off.”

Educators at the practice sites had only accessed the professional development that goes with Pathways Awarua or run some internal professional development. At one ITP there were three tutors who were undertaking a paper on blended learning.

Comment

It is clear from the surveys and practices sites that Pathways Awarua is being used in a thoughtful and informed way. Its use mainly as an independent learning activity could suggest it is not as integrated or connected to programmes of learning as it might be. However, evidence from some of the practice sites suggests it is used to

consolidate or reinforce what is learnt in a face-to-face learning situation and in two cases provides literacy and numeracy skill development alongside vocational learning.

While research (Porter and Sturm 2006; Silver-Pacuilla 2008) suggests learners with low literacy skills can use online/distance technology-based approaches reasonably well, it seems that for many learners with low literacy and numeracy in this study the support (both initial and on-going) of their tutors is essential. Davis et al. (2010) note that the initiation of learners into e-learning and supporting them through initial issues such as online access is seen as pivotal in ensuring that learners persist in their programmes. For Pathways Awarua this support takes many forms including, support to use computers, guidance on logging on to a computer and accessing the Pathways Awarua and conversations about activities and progress.

The research (Porter & Sturm 2006; Kehelly 2009; ODS Consulting 2009; Davis et al, 2010) notes the need for educators to have the appropriate knowledge and skills to be able to incorporate e-learning into their programmes. These skills can come about through professional development. The evidence from this research shows that educators have accessed limited professional development in relation to Pathways Awarua and e-learning or blended learning more generally.

Further, the practice sites suggest use of the tool is enhanced where management and other organisational supports encourage its use and lead internal professional development on it.

Engaging learners

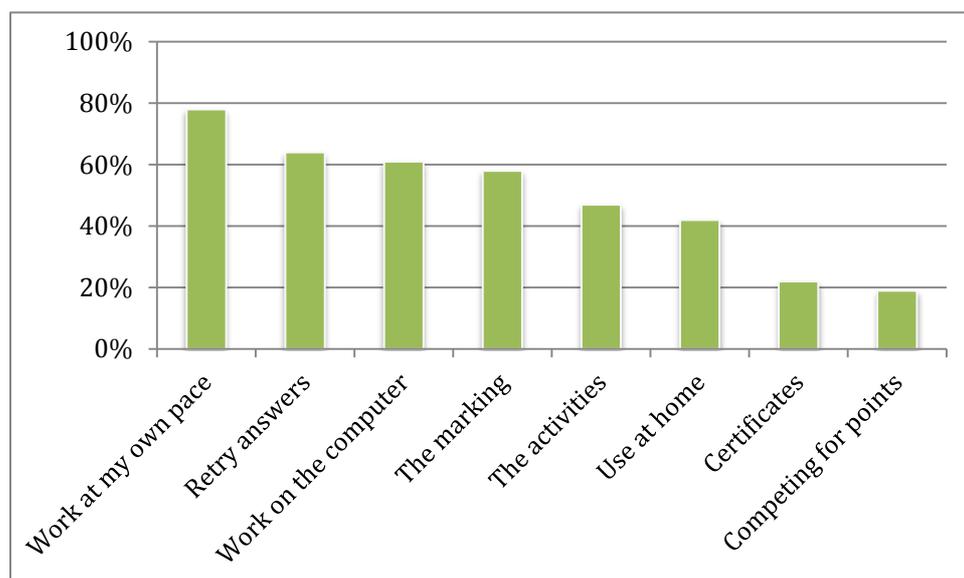
Educator survey respondents were asked what they thought their learners like about Pathways Awarua. They were asked to 'Strongly agree', 'Agree', 'Disagree' 'Strongly disagree' or say they were 'Not sure' about a number of statements. The most strongly agreed/agreed to statements are in keeping with the tutors' earlier comments about Pathways Awarua as encouraging or being used as an independent learning activity. Perhaps the most surprising response is the lack of agreement to 'competing for points' given the anecdotal evidence at some of the practice sites that this is what learners like. However the educators' view is supported by the learners in their survey where their least-liked aspect is 'Competing for points'.

Table 1: What educators said learners like about Pathways Awarua (n=200)

Statement	Strongly Agree/ Agree	Strongly Disagree / Disagree	Not sure
The ability to work at their own pace	93.5%	1%	6%
The instant marking	92.5%	1%	7%
The ability to retry questions	90%	2%	9%
The use of computer-based technology	90%	3%	8%
Accessible in their own time	85%	7%	9%
A fun way to learn	82%	5%	13%
The feedback for incorrect responses	80%	8%	13%
The types of literacy and numeracy tasks they are asked to complete	79%	7%	14%
The context of the activities	74%	8%	19%
The ability to select their own starting levels	73%	12%	16%
Competing for points	50%	26%	24%

Figure 11 shows the alignment between the educators' and learners' views.

Figure 11: What the surveyed learners like about Pathways Awarua (N=36)



Educators at the practice sites thought there were a number of aspects that engaged the learners. The strongest theme was the interactive nature of Pathways Awarua, along with its visual and audio appeal, *“The use of colour, picture, sound as well as questions”*. Self-paced learning and the ability to retry questions were also favoured features. Educators saw these aspects as being important for learners as *“giving them confidence”*; *“They aren’t made to feel dumb, they can see their progress and nobody knows your level”* and *“There is no whakama”*.

Self-paced learning also included learners being able to use Pathways Awarua in their own time and learners at some of the practice sites reported appreciating the opportunity to do this. However at other sites access to the internet or lack of computers in learners’ homes, or their own lack of motivation meant this independent learning did not happen.

“It fits with students’ children’s literacy learning. Students can choose their own time to work on Pathways Awarua so it suits their other responsibilities, for example the students with the highest score for the week are both Māori students who are dealing with major issues in their life circumstances yet they have the highest scores.”

The concept of competing for points, while rated the lowest by educator and learner survey respondents, comes through as something the educators at some of the practice sites thought engaged learners. In some cases the competition was done within a collaborative environment. As one tutor commented,

“Competitiveness is encouraged, it aids motivation. If students are having difficulty, they can assist each other and get assistance from a tutor.”

While a learner at this organisation commented she didn't really like competing with others, there was a sense from the group they liked to get through the modules they were expected to achieve. These were on a wall chart and learners had to highlight where they were up to and "You don't want to have no yellow". They were also clear that working together to problem solve was something they enjoyed. When they are "stuck ... we figure it out over a coffee and a cigarette".

At another site where Pathways Awarua is used every morning before class it was clear the learners enjoyed the competition aspect of it.

"I always tell the girls I want to make sure that none of you are better than me. I used to come in and try and do it so we can try and get to the next level faster than them... So it became a sort of competition between us that we would just come in every day just trying to beat each other. To make sure we get to that level before anybody else."

Whether it is competing with others or the self-motivation to achieve, getting the certificates for points was something that was appreciated by learners and their tutors and a cause for celebration in four of the practice sites.

The educators' survey asked about how well Pathways Awarua engages different groups of learners by ethnicity, age and Steps of the Learning Progressions. The information provided in Table 2 shows the respondents think it engages most learners well. Of particular interest is that 37 percent of respondents were 'Not sure' how well Pathways Awarua engages Pasifika learners with another 14 percent saying it doesn't engage them 'well'. A greater proportion of respondents in ITPs than in PTEs gave the 'Not sure' response about Pasifika learners. There was a similar response for Māori learners with 29 percent 'Not sure' how well it engaged them and 9 percent saying 'Not well'.

The other two groups that respondents were 'Not sure' about were second language learners with 33 percent 'Not sure' how well Pathways Awarua engages them and 22 percent saying it does not engage them well. This is the largest 'Not well' response for any of the learner groupings. The other group is those at Steps 5 and 6 of the Learning Progressions with 32 percent 'Not sure' how well it engages them and 16 percent saying it doesn't engage them well. It is difficult to draw conclusions about why educators are 'Not sure' about learner engagement. This may reflect that they don't have these learners in their programmes or, that they have less engagement with these learners, or that the learners may not engage in their programmes generally.

Table 2: Learner engagement (n=200)

Groups	Very well	Well	Not well	Not sure
Māori	19%	43%	9%	29%
Pasifika	15%	34%	14%	37%
Youth	21%	53%	8%	18%
Older learners	18%	43%	17%	22%
Second language learners	11%	34%	22%	33%
Those on Steps 1 and 2	21%	47%	15%	18%
Those on Steps 3 and 4	24%	52%	6%	18%
Those on Steps 5 and 6	18%	34%	16%	32%

Educators at the practice sites held similar views to those expressed in the survey. The only difference came in relation to second language learners where those who had these learners in Intensive Literacy and Numeracy-funded programmes thought there were aspects that engaged them. One ITP commented on ‘Wordfit’ as being especially engaging for these learners. They described their ESOL learners:

“being totally absorbed ... [they] have to use their ears, eyes, hands and brain ... it’s good as ESOL learners see spelling as an issue ... it is well presented. For example in ‘Wordfit’ the words fade away.

The educators at this site also believed ESOL learners who had come from a background of formal, structured learning engaged well with Pathways Awarua.

Overall, educators at the practice sites thought Pathways Awarua met the needs of most of their learners. However many of them thought the learners needed to be self-motivated and often this was the case with the older learners and ESOL learners.

“[It] has the most impact on those who have a formal education background [in other countries] who understand how learning works. It requires a level of motivation so older people might find it more useful. They know where they are going and where their gaps are. Older learners are more likely to use it by choice.”

“Self-drive to improve their skills. We get their buy-in from day one about the industry ... and they know that they will learn and be doing a lot of different activities that will give them the skills and build on what they don’t understand, for example vocabulary.”

Educators at four sites thought learners at the higher Steps of the Learning Progressions were less likely to be engaged, with three commenting this was the case for reading as it only went up to Step 3, but it was not the case for numeracy which went to a higher step level.

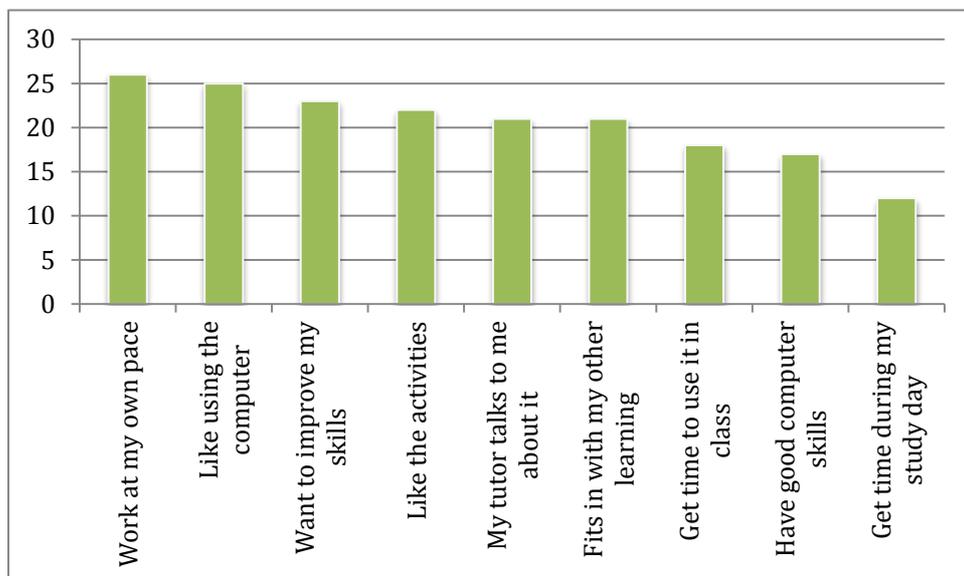
“Higher level students don’t want to do it ... see it as repetitive. The already have strong foundational knowledge, so see no real purpose for them to use it.”

Educators also thought in some cases older learners might be a bit concerned about using computers, but once they overcame this there was no issue.

“No one resists – they see what is possible and the benefits. Using computers is a highlight. The young ones are very familiar with this type of learning. The older ones get equally comfortable over time ... [they] quickly get familiar and confidence grows.”

In their survey learners were asked why they find Pathways Awarua easy to use and as Figure 12 shows the same themes discussed by educators are also what the learners like, namely, being able to work at their own pace, liking to work on a computer, wanting to improve their own skills and having their tutor talk to them about how they are going.

Figure 12: What learners like about Pathways Awarua (N=36)



In relation to engagement with reading, writing and numeracy, 58 percent of the educator survey respondents (n=186) thought learners were not equally engaged in each of these strands. Sixty-eight of the respondents supplied a reason for their comment, with 28 of them saying there was preference for, or they mainly used,

numeracy because it is either all they have used, or because it engages their learners more.

"I have found the learners lost interest more quickly on the reading modules, but are generally engaged with the numeracy modules."

"More numeracy, but this is because of the trades-based learning."

"Numeracy seems to engage more 'cleanly'. There is less anxiety and there is possibly more structured, accessible help with the activities".

There were only four comments about learners staying away from or avoiding the numeracy modules.

"Numeracy is never the preferred module. However once students gain confidence they are more likely to engage with Pathways – in almost all cases this reluctance is related to previous bad experiences with maths learning in formal settings."

It appears from the educator survey responses that writing is the least preferred option for learners. Nine respondents made comments about their learners not liking or using the writing modules.

"Many learners know their writing is poor and try and avoid writing activities."

Three of the comments were about the writing modules demanding more of learners because of the way they are written.

"[With] the writing [it is] sometimes very difficult to match the learner answer to the expected, rather narrow correct answer, which can be off-putting for students."

"The writing intentions at Step 3 are not easy to follow."

Educators at the practice sites had mixed views about the extent to which they thought cultural context and/or vocational context was important for engaging and motivating their learners who are using Pathways Awarua. Essentially they fell into three groups.

- a) Those who thought context was important, a 'nice to have', but that realistically it is not always possible and that this did not seem to bother the learners.

"Ideally, but that's not realistic is it? People move, change jobs etcetera so they have to adapt to new contexts. It's not the end of the world is it?"

"It would be nice to have more relevant cultural contexts, but it doesn't bother them ... but it would be nice ... more inclusive to hear/have their own stories. Whānau is important."

"One Pasifika student says it is helping to understand words better, is building his comprehension and he likes being able to check if he has the right answers."

He also said it doesn't bother him that he doesn't recall any context involving Pasifika."

- b) Those who thought it was important and noticed their learners engaging more with relevant contexts or when the content matched their courses.

"... none of the content relates to what they are doing in their course they don't engage. It's not specific enough. They are constantly asking, "Why do I have to do this?""

- c) Those who thought that the contexts were already relevant to learners in New Zealand, but there could be more of it.

"Māori and Pasifika names are used in some contexts. Koru are used as markers on the programme ... however there seems to be little cultural content although students don't seem bothered by this. I wonder as whānau are so important in any culture if there should be more cultural content included."

Comment

Research (Porter & Sturm 2006; Davis et al., 2010; Clark 2011) found the online learning approaches can work for/engage those with low literacy and numeracy skills. The comments made by educators and learners show Pathways Awarua certainly engages learners in a number of ways including its visual and audio aspects and its interactivity.

While there was general agreement on this point, there was less consensus about the extent to which the content and context engaged learners (both cultural content and contexts; and authentic life/work content and contexts) and the extent to which this impacted on learners. Maths Technology (2011) found the majority of educators would like to have been able to select more contextualised pathways for their learners using Pathways Awarua, which is in keeping with the thinking of those in adult literacy and numeracy sector and their long-held view that using authentic contexts is essential. Davis et al., (2010) also found that acknowledging cultural context was important for adult Māori and Pasifika learners.⁵

However, despite these views there is limited empirical research to back these claims (Benseman, Sutton & Lander, 2005). One exception (Purcell-Gates et al., 2002) researched changes in the actual reading and writing practices of the students rather than standardised test results according to the degree of curriculum authenticity. The study concluded that there was a positive relationship between those engaging in real life, authentic activities in the classroom and changed literacy behaviours. Other studies such as one of Canadian workplace programmes (Kline

⁵ Note this research explored the cultural content and context of the learning modules on Pathways Awarua. It did not look at the overall teaching practices used by educators where the Te Kotahitanga research (Bishop & Berryman, 2009) on learners in school settings shows that effective teaching of Māori learners includes culturally appropriate relationships and interactions that subsequently impact on achievement. Therefore this research is not saying cultural teaching approaches are not important, rather there are mixed views from educators on the extent to which cultural content and contexts are necessary to engage students with the Pathways Awarua modules given that it engages learners in other ways.

2009) and a New Zealand study (Davis et al., 2010) reported that those using higher amounts of contextualised teaching material achieved slightly higher participation rates and better literacy and numeracy outcomes.

As has been discussed and in keeping with adult learning theory, adult learners do engage when there are authentic contexts. However, it does not look as if this is essential for engagement with Pathways Awarua, particularly for learners who are self-motivated and find the interface and interactivity engaging without the contexts being specifically relevant to them. Therefore the technology and the self-paced, independent environment are perhaps sufficient to engage the majority of learners. The caveat to this is that Pathways Awarua is just one part of their learning environment and the research (Salomon, 2009; Vorhaus, Litster, Frearson & Johnson 2011) shows the need for multiple ways to engage adult literacy and numeracy learners including in-class and ICT-supported learning.

Having said this, the information in Table 2 on page 22 shows more needs to be known about the engagement of specific user groups, especially given the extent to which educator survey respondents said they were 'Unsure' about Māori, Pasifika, second language learners, and learners on Steps 5 and 6. Of note here is the response about Pathways Awarua not engaging second language learners as educators at the practice study sites, though it did when its use was supported by face-to-face teaching. Their thinking is supported by Guiney (2012) who reported on a study of ESOL learners that found they were positive about blended learning approaches, as opposed to e-learning on its own.

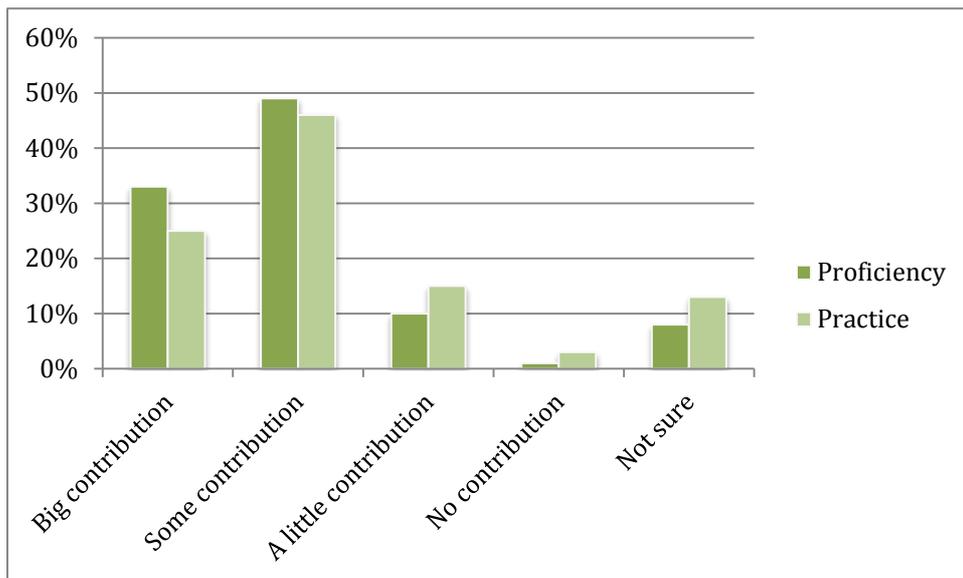
In addition more needs to be known about the unequal engagement with reading, numeracy and writing. Given that educators talk about targeting gaps and using the Assessment Tool to inform the use of Pathways Awarua knowing more about why reading and writing do not seem to be as engaging as numeracy is important.

Impact of using Pathways Awarua

Survey respondents were asked about the contribution Pathways Awarua makes to learners' proficiency, i.e. their skill levels in reading, writing and numeracy and their practices, i.e. what they can do differently or more of.

As Figure 13 shows, the majority of educator survey respondents think Pathways Awarua makes 'a big/some' contribution to both proficiency and practice. Of note is the difference between the two at the 'a big contribution' level with more respondents thinking Pathways Awarua makes more a difference to proficiency than practice.

Figure 13: Proficiency and practice (n=200)



A greater proportion of those in PTEs than in ITPs think Pathways Awarua makes a 'big contribution' to proficiency, and a greater proportion of those in ITPs than PTEs think it makes 'some contribution'. Thirty-nine respondents made additional comments. Thirteen of these were about proficiency gain being dependent on the amount of time learners spent on Pathways Awarua and their motivation and perseverance to use it.

"For those that enjoy using Pathways Awarua and use it a lot I have noticed improvements in their assessments."

"Without a lot of time to spend on LN teaching in the classroom, Pathways provides extra practice and teaching for those who need it and past experience has shown improvement from those who use Pathways."

"I think it is a fantastic resource. I did not use it last year, but will definitely use it again this year. I noticed a big improvement in my students' learning."

Two respondents described significant gain learners had made. One talked about a pilot they had run where both reading and numeracy had increased. The other gave an example of a learner who fully engaged with Pathways Awarua.

"... He loved the tool and played on it instead of computer games. He made a 193 –[scale score] change to end up in Step 2. It makes a huge contribution."

Educators at the practice sites talked about the contribution that using Pathways Awarua is likely to have made to improved proficiency, but that it was not possible to comment on the extent of this contribution or to prove that it is Pathways Awarua that has made the difference.

“It’s hard to isolate out its effect from the other components of the programme, but it’s one of the things that’s helping them get their results. Seventy-five percent went up a Step and it [Pathways Awarua] was part of it.”

However, at one site the educator had compared the Assessment Tool results of learners in a year group who had not used Pathways Awarua to those who had used it in a 16-week course of study. She found that a greater percentage of learners in the latter group had made statistically significant gain in numeracy. This educator also cited examples of individual learners who had used Pathways Awarua and whose Assessment Tool results had improved.

Most of the educators at the practice sites were able to cite examples of differences they have seen Pathways Awarua make to some of their learners. For example:

- two Cambodian women who now understand fractions
- a student who needed help with decoding
- a student who succeeded in gaining entry to Police training
- a dyslexic worker who wanted to continue with Pathways Awarua once the learning programme finished and was given a laptop by the company so he could continue, *“He’s made massive progress”*.

The educators attributed the general increase in confidence and computer skills for some of the learners to Pathways Awarua and in turn thought this may have helped to improve progress Assessment Tool results, especially for those learners who lacked computer skills in their first assessment.

“See them doing what they couldn’t do before and doing it confidently. The re-test on the Assessment Tool – see them as more comfortable with computers. They are more familiar with and able to concentrate with the computer medium...”

Another educator cited the example of six students who wouldn’t read and as a result of using Pathways Awarua for homework now do so. S/he thought it has increased their confidence, *“It encourages reading habits and demystifies reading”*.

In the educator survey, a greater proportion of those in PTEs than ITPs thought Pathways Awarua made ‘a big’ or ‘some contribution’ to improved practices. As with changes in proficiency, educators at the practice sites found it difficult to comment on the extent to which Pathways Awarua contributed to learners doing things more often or more easily. Here again they commented on increased confidence and reading more, with two also commenting on learners’ ability to use computers.

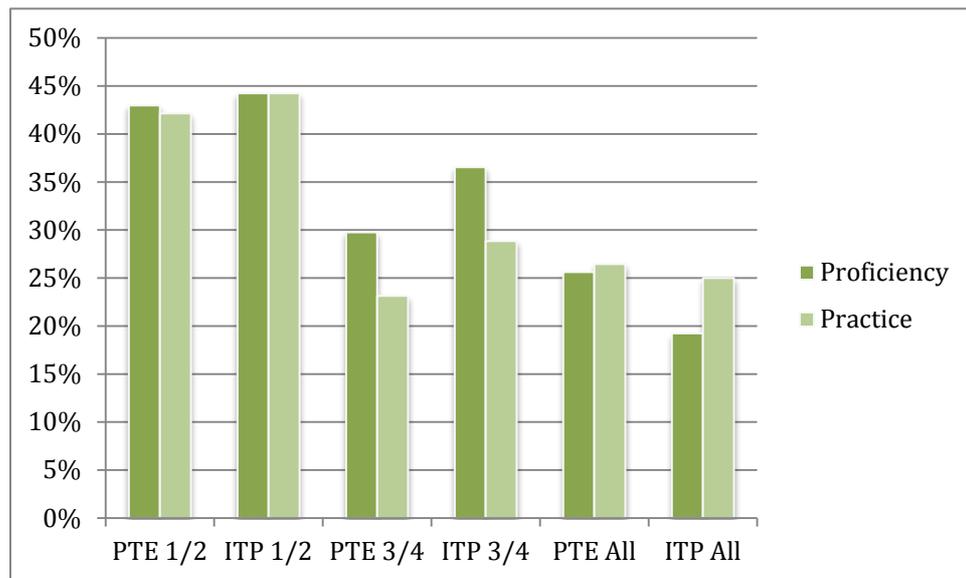
“They are using computers more easily, especially the older learners. It helps them with computer-related things like emails and memos.”

Use of computers also came through from learners, with one commenting how her use of Pathways Awarua has given her more confidence with computers and for the first time she has been able to book airfares online. She talked of booking family

members to go to a wedding and saving \$210 as she did not have to go through the travel agent and pay their booking fee.

The majority of educator survey respondents (46 percent) thought it was learners at Steps 1 and 2 who had improved in both their proficiency and practice. In relation to proficiency, PTEs and ITPs had similar responses in relation to the improvements at Steps 1 and 2, but a greater proportion of those in ITPs than PTEs said they had seen an improvement in proficiency for learners on Steps 3 and 4.

Figure 14: Who improves in proficiency and practice by ITP (n=52) and PTE (n=121) and learner step



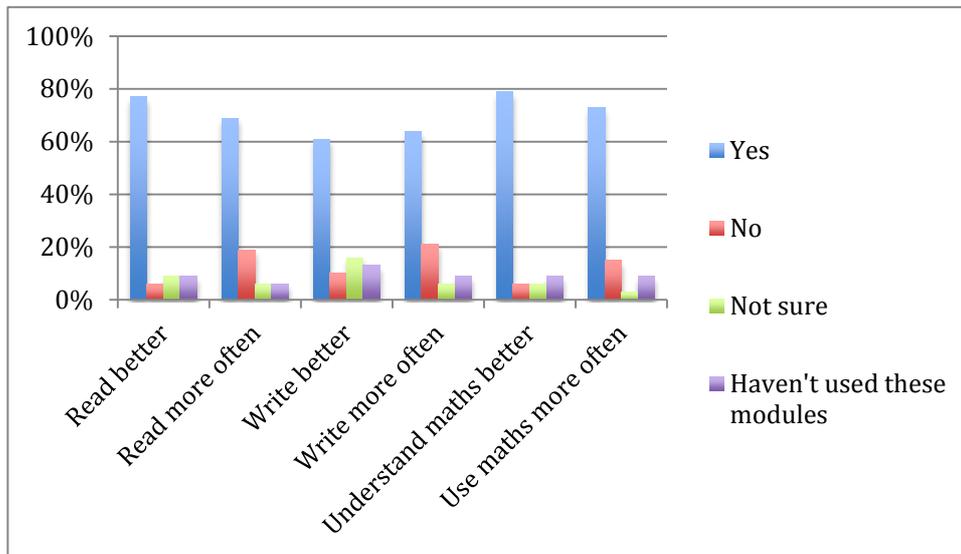
Twenty-one educator survey respondents supplied additional information. Their responses varied. Most gave a comment supporting the option they had selected. Six said they either did not know what difference it had made to literacy and numeracy practices, with two of them saying they would like to have responded “no improvement”.

“I haven’t used this long enough to notice or be able to notice a difference in my students’ abilities ...”

“Haven’t seen any significant improvements in any groups of learners in either practices or proficiency.”

In their survey, the majority of learners said that both their proficiency and their practices had improved.

Figure 15: Learners say they improve (N=36)



The learners at the practice sites had mixed views on the extent to which using Pathways Awarua made a difference to their literacy and numeracy skills and how they used these skills. However, some provided specific examples related to numeracy. One learner talked about how she notices she can now do percentages when she is out shopping with her children. Another talked about how she now knows about ratio and area, *“I didn’t think I could do these things, but I’m slowly learning to”*.

In relation to reading, the comments were more general. At one site learners commented,

“I find most books dull and boring to read but Pathways Awarua writing and reading is enjoyable, that’s why I go on it quite a lot when I can. It has helped me improve my reading skills a lot.”

“I don’t know if it’s made a difference, but I think it must because I read more and I’m not so scared of maths. It’s so easy to use.”

Comment

As can be seen from the information above, educator survey respondents and educators at the practice sites thought Pathways Awarua contributed to improving the proficiency and practices of learners. However, they found the extent of the contribution difficult to ascertain given that Pathways Awarua is integrated into, or sits alongside, face-to-face teaching programmes.

Research shows (Reder, 2009; Vorhaus et al., 2011) measuring proficiency and practice gain is challenging as there is limited evidence about the relationship between participation in programmes and proficiency gain, although they concede there are studies showing short-term proficiency gain in programmes. However these researchers did find a relationship between participation in programmes and changed practices. In New Zealand proficiency gain in literacy and numeracy is

measured through the Literacy and Numeracy for Adults Assessment Tool and through other assessment processes organisations use at a local level. There is no national tool for measuring literacy and numeracy practices, although work on this is started through the Ministry of Education in 2014/2015.

The literature scan found limited research on learner impact and effectiveness of e-learning versus conventional teaching. ODS Consulting (2009) found there was evidence of benefits to learners, but these were anecdotal as programmes of online learning by adult learners had not been evaluated. Davis et al, (2010) found no direct evidence showing e-learning improves adult literacy and numeracy skills.

In relation to Pathways Awarua, Thomas and Ward (2010) found the five concrete workers who used Pathways Awarua in their own time made gains of one to two stages in the strand of the Learning Progressions that was the focus of their learning. This gain was made over a very short time. These learners also said they were able to apply the new numeracy skills in their personal and working lives.

An interesting finding from the practice sites is the impact that using Pathways Awarua has on learners' computer skills. While those with low skills have needed support, once 'hooked on and hooked in' their confidence has grown and extended to other ICT use. This finding is in keeping with other research (Porter and Sturm 2006; Mellar, Kambouri et al. 2007) that using ICT in their programmes helps develop learners' ICT skills along with their subject-matter skills.

Thus what this research shows is that Pathways Awarua is 'likely' to make a difference to literacy and numeracy proficiency and practices given the changes educators have seen and learners have described about themselves. However it is the measurement of the degree of contribution of Pathways Awarua to these changes that is difficult to ascertain. While more empirical evidence is required before definitive conclusions can be reached, getting such evidence can be challenging as it requires either randomised controlled trials or comparisons between similar population groups who have and have not accessed Pathways Awarua.

What is working well and not so well?

What this research has shown is that users, both educators and learners, clearly value Pathways Awarua as a learning resource. It is seen as:

- complementing and supplementing teaching programmes and resources
- engaging learners who enjoy using it
- working well with learners who are motivated to use it both in-class and independently
- being enjoyed by learners for its self-paced nature, its design and interactivity.

This research also shows that guidance, discussion and progress-checking of learners by educators, helps learners with using Pathways Awarua. For those not familiar with computers, the guidance and support at the start is essential, especially as it relates to logging on, remembering passwords and gaining knowledge of the computer activity terminology, e.g. drag and drop.

While there are a number of enablers, the research also found barriers and challenges to use, including:

- access to professional development for educators on Pathways Awarua, on digital learning tools, e-learning and blended learning approaches
- the lack of familiarity some learners have with computers, the lack of access they have to them outside the classroom including the lack of access to the internet
- the lack of content and contexts specific to the learners
- the time to use Pathways Awarua in a crowded vocational curriculum.

The first bullet point listed above about the capability of educators may well be key to increasing the uptake of Pathways Awarua. As noted earlier in this report, as at May 2014, 21,131 learners, 1935 educators, and 199 organisations had registered to use Pathways Awarua since 2011. This is a small proportion of the learners and educators in tertiary education and workplace settings in New Zealand.

Conclusion

The development of Pathways Awarua as part of the Tertiary Education Commission's infrastructure development to support literacy and numeracy learning has brought a digital learning tool into the mix. While Pathways Awarua was originally only available to learners through registered educators, access has now been opened up to all users. The challenge now is to extend its usage in the sector.

It is timely for this expansion to occur as this research has shown Pathways Awarua is being used by educators in a thoughtful and informed way. Its use mainly as an independent learning activity suggests that it is not as well integrated or connected to programmes of learning as it might be, although evidence from some of the practice sites suggests it is predominantly used to consolidate or reinforce what is learnt in a face-to-face learning situation.

Initial and on-going tutor support is essential, particularly for those learners with low literacy and numeracy skills and low or no computer skills. This support takes many forms including, support to use computers, guidance on accessing the Pathways Awarua platform and conversations about activities and progress. Added to this is the need for educators to have the capability to incorporate digital learning tools and blended learning into their programmes more fully.

Pathways Awarua engages learners in a number of ways, including through its visual and audio aspects and its interactivity. While there was general agreement on this

point, there was less consensus about the extent to which the content and context engaged learners (both cultural content and context and authentic life/work content and contexts) and the extent to which this impacted on the learners.

While this research found mixed views on the need for appropriate contextualised material there are comments from and about learners being self-motivated enough to use Pathways Awarua and finding the interface and interactivity engaging without the contexts being specifically relevant to them. Therefore the technology and the self-paced, independent environment are perhaps sufficient to successfully engage the majority of learners.

Having said this, more needs to be known about the engagement of specific user groups, especially given the extent to which survey respondents said they were 'Unsure' about how well Pathways Awarua engaged Māori, Pasifika, second language learners, and learners on Steps 5 and 6 of the Learning Progressions.

Educator survey respondents and educators at the practice sites thought Pathways Awarua contributed to improving the proficiency and practices of learners. However, they found the extent of the contribution difficult to ascertain given that Pathways Awarua is integrated into or sits alongside face-to-face teaching programmes.

Given that Pathways Awarua is used well and is beneficial for learners, one must ask the question about why, to date, uptake is not greater than it is. There has been significant investment in the platform and modules. Greater use would mean extending the benefits for more low-level learners and a greater return on investment. So, still more needs to be known about why educators are not using it and what it would take to get more of them and their learners 'hooked on and hooked in'.

Considerations for the future

Based on the findings from this research, we recommend the Tertiary Education Commission undertake further work to enhance the uptake and use of Pathways Awarua and give consideration to:

- the importance of a well qualified educator workforce and the availability of professional development for educators on the use of blended learning, including digital leaning tools such as Pathways Awarua
- why a significant group of educators working with low literacy/numeracy learners are not using Pathways Awarua and what would prompt their use of the tool
- making a stronger connection between Assessment Tool items and Pathways Awarua modules
- whether there are particular barriers and enablers to the use of Pathways Awarua for particular groups of learners who may be engaging less with, or less well with, the tool
- an active launch and promotion of Pathways Awarua to educators, aimed at increasing effective use of the tool with learners, particularly those at Levels 1-3

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Appendix One: Research Approach

The following briefly outlines the ways in which information was collected in this study, who was involved in the study, how the data were analysed and what the limitations and advantages are of the approach taken to the research.

The research used a mixed-methods approach and data were collected in the following ways:

1. Review of documentation and literature:

- TEC background and reporting documentation
- a brief scan of research literature on the use of blended or e-learning with adults with low levels of literacy and numeracy.

2. Educator survey:

- An online survey, sent to around 1200 educators who had registered to use Pathways Awarua since 2011 (of whom 515 had logged into their account in 2014).
- The survey was piloted and then open for three weeks. Maths Technology emailed the weblink to the survey to the registered users in late May 2014. A reminder email was sent in the first week of June and the survey closed at the end of the first week of June.
- Responses were received from 216 tutors, 200 of whom completed the full survey.
- An incentive of going into a draw for one of three \$100 vouchers for a morning tea shout for colleagues was offered to survey participants.

3. Practice sites were selected and involved as follows:

- Online survey respondents were asked if they were interested in participating as a practice site and as such were self-selecting. Respondents from 33 organisations said they were interested and Heathrose Research selected the sample of 12 sites in order to get a mix of Institutes of Technology and Polytechnics (ITPs) and Private Training Establishments (PTEs). The PTEs included those who delivered programmes in workplaces. In the end, nine sites participated. Two of those selected at the start were not able to participate, one because of the lengthy ethics approval process that was beyond the timeline for the research and another because the organisation thought the individualised approach taken by educators would not lend itself to robust data being collected. The third site was unable to complete an interview during the project timeframe. Interviews were completed with educators and managers onsite or by phone, and focus groups of learners were conducted at two of these sites.
- A survey with 36 learners from six sites. As it proved difficult to access learners for focus groups (the project coincided with exams and holidays in some instances), tutors were asked to run either a paper-based or online

survey with a small sample of their learners. Those learners who attended the focus groups also completed the survey.

- A case study presentation from one of the practice sites on the use and impact of Pathways Awarua in their organisation.

Research participants included:

- Educator survey respondents (N=216) who, in the main came from ITOs, PTEs and ITPs. Fifteen respondents came from 'other' organisations, 10 of which were schools. Sixteen respondents did not complete the survey including not supplying information about their organisation.
- Practice site tutors/managers (N=18) in three ITPs and six PTEs
- Focus groups of learners in two PTEs (N=11)
- Learner survey respondents in six organisations (N=36).

The educators' survey data was analysed as a whole data set and then by PTE and ITP. This approach enabled the data to be analysed for similarities and differences in use within the two largest user groups. The practice studies were analysed through an inductive approach whereby two researchers undertook several readings of the data to ascertain the key themes and points of difference. These findings were then compared with the findings from the literature and the surveys.

Although a limitation of the approach was the self-selection of participants, there are two major benefits. The mixed-methods approach meant the data provided in the survey was able to be explored further in the practice studies enabling richer stories to be told about experience with using Pathways Awarua. These practice studies are illustrative however, rather than representative of the use of Pathways Awarua.