

# Outcomes from a Digital Literacy Project: the EIT experience

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The Digital Literacy Project was launched in response to recognising that the use of technologies to enable dual campus collaborative teaching and learning required an improvement in the digital skills of staff. The project used a process of self-assessment and competency based training to address identified needs in workplace, educational and communication technology skills. On completion of the project, staff were surveyed and asked about their experiences of the self-assessment and training processes. Staff indicated that while the needs self-assessment process was cumbersome, time-consuming and sometimes confusing, the training received was beneficial, but needed to be timely, personally relevant and easily accessible. As a result of this research, it is recommended that the self-assessment process be consolidated and that the Institute consider mechanisms to measure the overall effectiveness of ongoing training initiatives with respect to training delivery, embedding of new skills and Institutional Return on Investment.

Keywords: Digital Literacy, ICT literacy, staff development, training, technology

## Introduction

In 2011, the Eastern Institute of Technology (EIT) launched a Digital Literacy Project to improve the digital skills of all staff. The project was driven by institutional change, and the subsequent harmonisation of the academic portfolio meant technology-enhanced learning and teaching was a necessity. In conceptualising the focus of the project, EIT adopted the NZ Ministry of Education's (2004) definition of digital literacy "the ability to use digital technology, communication tools, and/or networks to locate, evaluate use and create information" as its guiding philosophy.

This paper reports on the training outcomes of the Digital Literacy Project. The reality of delivering institutional-wide training programs to staff with differing needs, base skills, and attitudes, is discussed in the context of digital literacy as adopted by the project. Feedback from staff gives valuable input into the future direction of this initiative as the project is folded into business as usual and becomes part of the induction process for new staff.

## Literature review

The concept of Digital Literacy is generally accepted to mean the ability to confidently use, manage and create digital information in an effective way (Clark & Visser, 2011; Ferrari, 2012). Other related and overlapping concepts are often referred to in the same context, and include terms such as digital competency, ICT literacy and digital skills (Ala-Mutka, 2011), but essentially, the digitally literate not only have technical skills to perform software tasks and operate digital devices (Markauskaite, 2006), but have a variety of complex cognitive and behavioural skills essential to interpret information, collaborate and communicate, ensuring survival in a rapidly changing technological era (Eshet-Alkali & Amichai-Hamburger, 2004). The digitally literate also have the ability and the willingness to critically reflect on their own performance and problem solve when faced with new digital challenges (Hegarty, Penman, Kelly, Jeffrey, Coburn & McDonald, 2010).

A high level of digital literacy is deemed critical for both staff and students in higher education (NMC Horizon Report, 2014). As early as 2008, the NZ Government recognised the need to increase digital literacy skills as part of New Zealand's aim to be world leaders in ICT (NZCS, 2010) and included this skill in its Digital Strategy for NZ. Although this strategy is no longer active, introducing digital literacy initiatives into the education system is seen as essential to ensure increased capability within New Zealand. Netsafe, in conjunction

with NZ teachers, and drawing from the key competencies and values in the NZ Curriculum, produced a definition of Digital Literacy for this purpose;

Digital Literacy ... is the combination of technical and social skills that enable a person to be successful and safe in the information age. Like literacy and numeracy initiatives which provide people with the skills to participate in the workforce, digital literacy has become an essential skill to be a confident, connected, and actively involved lifelong learner (Netsafe, nd).

While the Netsafe initiative is focused on digital literacy within the primary and secondary schooling systems, developing these skills for teachers at tertiary level is no less important as students' progress through the pathway to higher education.

As the global education sector faces the challenge of developing digital literacy skills in both students and staff, various researchers have attempted to underpin the essential philosophy of digital literacy with frameworks or models to support the rationale for development of the required technological, cognitive and social skills. The most common initial strategy is the adoption of a variety of training methods to ensure operational competency is reached in specific technical skills (Kearns, 2002; Ferrari, 2012). This training is often delivered in three tier models addressing basic, intermediate and advanced skills, but it has been shown that these models do not take into account individual competency levels where a learner can have different levels of ability over the breadth of the assessed skills (Ferrari, 2012).

Furthermore, skills development presents other challenges. New Media Consortium (2014) acknowledged in their latest report, digital literacy training in higher education is not only largely ineffective, insufficient and often lacked institutional support, but also often ill-received by reluctant staff. The reported ineffectiveness of training has often been a result of individual reluctance due to lack of motivation, lack of desire to learn, self-efficacy or perception of unfairness around the training decisions (Quinones, 1997) and although training initiatives may be attended by staff, motivation to learn is less likely if training is mandated and not seen as intrinsically beneficial (Facteau, Dobbins, Russell, Ladd & Kudisch, 1995).

However ill received, training in basic skills competency is shown to be the foundation on which to base further development towards becoming digitally literate (Markauskaite, 2006). Ongoing training is seen as vital, and as Ala-Mutka states (2011, p.5), "developing digital competence should be considered as a continuum from instrumental skills towards productive and strategic personal competence". The eventual aim is to have staff with high levels of digital literacy, effectively allowing them to be more confident in themselves, able to support students and harness the benefits from adding technology to learning and teaching (JISC, 2014).

## **The Digital Literacy Project**

### **Background**

At the end of 2010, Tairāwhiti Polytechnic was formally disestablished and subsequently merged with the Eastern Institute of Technology (EIT). As part of the academic harmonization, a Blended Delivery Project was launched to enable several EIT degree programmes to be delivered into the Tairāwhiti region, thereby allowing access to a wider range of study by students in that area (EIT, 2011). EIT acknowledged there would be challenges to face in delivering programmes across the two campuses in a blended delivery mode, especially around the increase in digital technologies used in multi-campus learning and teaching, and the skills required by the teaching staff in the use of these technologies. The merger also meant staff in all areas would be required to collaborate within teams and across both campuses in a variety of ways including; co-authoring of documents, communicating on projects and aligning systems and processes. To meet the needs in up-skilling staff, the Digital Literacy Project was launched. This project was conceptually an 18 month, institute-wide, all-inclusive venture to evaluate the digital skills of all staff and provide a range of training opportunities in the use of workplace, educational, and communication technologies. The digital Literacy Project was not only targeted at those

### **Project planning and preparation**

A Digital Literacy Project team was convened and consisted of staff from Human Resources (HR), teaching staff expert in Microsoft Office, and educational technology specialists from the Educational Development Centre (EDC). Their role was to manage and implement the project beginning November 2011.

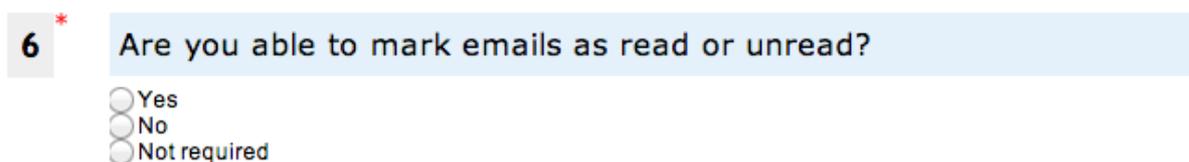
Initial scoping for the Digital Literacy Project, looked across both Hawkes Bay and Gisborne campuses and investigated the resources available to staff, including general facilities, classroom teaching equipment, communication technologies and infrastructure that would enable a program or programs to be delivered in a blended mode. This involved the collaboration of staff from multiple areas of expertise across both campuses. The knowledge gained from this scoping exercise informed the direction of the project when choosing the technologies and skills on which to focus.

Once scoping was complete, the project team developed a skills assessment questionnaire that would capture all the skills necessary for staff to be competent in the three identified areas of focus - workplace technologies, the institute's learning management system (EITOnline), educational technologies and associated pedagogies. The questionnaire would be made available to staff (both academic and allied) so they could self-assess their own skills against a set of predetermined competencies required for their position. Staff who were permanent full-time or part-time, on limited tenure of one year or more were required to participate. Other employees, including contract workers and non-permanent staff on short-term tenure, were able to participate if they wished. A competency was defined as a single skill required to be proficient in a particular task for the given technology and were categorised as either core, intermediate or advanced depending on level of expertise required. This resulted in 430 competencies overall, 253 core, 142 intermediate and 35 advanced competencies. This skills assessment questionnaire became known as the Digital Literacy Needs Assessment and was delivered to staff for completion using the questionnaire tool in EITOnline.

The Needs Assessment initially consisted of solely PC-based technologies. While this covered the majority of staff, the institute has a number of Apple Mac users, particularly in the Arts, Design, and Screen Production areas. The inclusion of the Mac version of Office (Office:Mac 2011), and the Internet browser Safari required the development of a set of competencies particular to this user group. This resulted in the competency list swelling from 430 to 758 with the addition of the Mac software.

### Project needs assessment and analysis

All EIT staff members were given four weeks to complete the Needs Assessment. The competency assessments primarily consisted of 'yes/no/not required' answers to a series of questions about a particular software, technology or skill.



6 \* Are you able to mark emails as read or unread?

Yes

No

Not required

**Figure 1. Outlook Email Core Competency Question**

At the end of the completion timeframe the results were exported from EITOnline and individual staff member responses collated into spreadsheet reports and transferred into the project database.

### Project database

The development of the database was initiated during the assessment phase of the project, and was designed to capture:

- technologies and competencies;
- staff details and their Needs Assessment results;
- workshop attendance; and
- competency completion.

The database output a number of reports including periodic staff reports which listed competencies to be completed, and HR progress and completion reports by institution, faculty, and school.

## Project training preparation and delivery

A staff development program was designed to deliver competency training using a multi-layered approach with institutional experts in each area provided a combination of workshops, online resources, online courses, and one-to-one training. The institute developed its own resource bank of online training material and this was made available to staff in EITOnline. This resource bank consisted of video demonstrations and how-to documents suitable for self-paced, self-directed learning. The digital literacy staff development program was delivered from September 2012 to December 2013.

## Research methodology

### Materials

This study reports on the evaluation stage of the Digital Literacy Project. A survey was designed to capture staff experience of the various stages of the project. The survey consisted of four sections:

1. General demographic data including age, institutional role and years worked at EIT
2. Respondent experience of the assessment phase of the project, including completion rate and opinion of the process
3. Respondent experience of the training phase of the project, including their opinion of the process and perceived usefulness of the various training options and completion rate,
4. Respondent opinion of the effectiveness of the project and their experience of the project process as a whole.

### Procedures

Respondents were recruited by way of an “all staff” email that was delivered to 708 EIT staff at both the Hawkes Bay and Tairāwhiti campuses. This email included the link to an online survey containing a set of 13 questions needed to capture the required data. The survey consisted of 8 multi-choice questions, 2 likert rating questions and 3 open-ended questions. The survey was conducted anonymously and remained open for 10 days. No reminder emails were sent.

The qualitative analysis of the open-ended questions involved a process of open-coding using to draw the key conceptual themes from the responses.

The digital literacies database was also queried to gain numerical data regarding competencies, training and completion.

## Analysis and discussion

### Survey

The survey received 62 complete responses from both academic ( $n=32$ ) and non-academic staff ( $n=30$ ). Age brackets were indicated as less than 25 ( $n=1$ ), 26 - 30 years ( $n=0$ ), 31 - 40 years ( $n=8$ ), 41 - 50 years ( $n=21$ ), 51 - 60 years ( $n=24$ ) and over 60 years ( $n=8$ ). Respondents indicated they had been employed at the institute for less than one year ( $n=4$ ), 1 - 5 years ( $n=15$ ), 6 - 10 years ( $n=12$ ), 11- 15 years ( $n=14$ ), 16 - 20 years ( $n=9$ ) and over 20 years ( $n=8$ ).

95.2% ( $n=59$ ) of respondents indicated they completed the needs assessment process, while 3.2% ( $n=2$ ) indicated non-completion and one indicated they made no attempt. When asked about completion of competency training, 38.7% ( $n=24$ ) indicated they completed their required training, 53.2% ( $n=33$ ) indicated they completed some training requirements and 8.1% (5) indicated they had completed no training.

### Database

A number of queries were run on the digital literacies database. These queries revealed:

- 535 staff completed at least some of their projects needs assessment requirements as part of the project;
- 529 staff required training in one or more competency;
- 6 staff required no training by indicating they were skilled in all competencies at the time of assessment;
- 173 staff members attended either one or more of the 211 offered competency workshops;

- 103 staff members indicated they self-taught either one or more competency requirement;
- 87 staff members received one-to-one training;
- 129 staff members used the online training materials to complete one or more competency,
- 22 staff members attended three days of Apple Mac training;
- 287 staff did some form of training; and
- 107 staff completed all training requirements at the completion of the project.

## Limitations

There were 62 valid responses to the online survey. A higher response rate may have been possible had reminder emails been sent to all staff and the response period increased. Some staff that participated in the project no longer work for EIT and would not have received the invitation to participate in the survey. Likewise, part-time short tenure staff members who were not part of project were included in the ‘all-staff’ email invitation and were therefore unlikely to have submitted a response. Anecdotally, staff indicated they were “over” the project, having been bombarded with reminder and follow-up emails throughout the projects 18-month lifetime and this may have contributed to lack of response. The larger number of negative comments received from the survey is typical of a voluntary response sample, where those with strong opinions are more likely to respond (Moore, McCabe & Craig, 2009). However, in this case, some recurrent themes within these responses have informed possible changes to future digital literacy assessment and training.

Demographic data including age and years worked at EIT were captured in the survey in an attempt to investigate any relationship between age and time worked with attitudes towards training and perceived success of the project. There are too many other variables to take into consideration here to draw any conclusions with confidence and this line of investigation was dropped.

## The Project

Respondents reported mixed opinions and experiences of the Digital Literacy Project. Many felt they had gained some useful skills and that the project was “Supportive of developing in literacy skills”, “very well coordinated and well publicised” and that their experiences were “largely positive”. Some who were initially resistant found it helpful “Although I resistant at times, I have to admit that I found it very helpful in the end.”

Others felt like the project lacked integrity “It felt like a lot of ticking-the-box rather than meaningful engagement in own learning”, “something that had to be completed for performance appraisal purposes” and “I am comfortable with using computers so a lot of it felt like just ticking the boxes”. This attitude of ‘ticking the box’ or going through a process for the sake of it indicates a lack of perceived relevance or value to the workplace and manifests in a lack of overall engagement and motivation. This is consistent with previous research by Goldstein (as cited in Anvari, Amin & Seliman, 2010) who noted that motivation was critical if trainees were to benefit from any sort of training and lack of motivation was due to viewing the training as not relevant to personal needs and goals (Carlson, Bozeman, Kacmar, Wright, McMahan, 2000). Others indicated they found it difficult to attend training due to time constraints and some indicated their commitment was lacking.

There was also some feeling of inequality or unfairness about the staff that had not completed their competencies, and that it “doesn't force the ones who need it into upskilling so is a token gesture. And still, we have people who cannot do the basics or care enough to learn how to”. Managers were seen to be key to success, “if all the Managers had of made their staff do this the benefits to EIT would have been huge”.

## Needs Assessment Process

The Needs Assessment questions focused on assessing basic operational and technical IT skills, and as the literature suggests, this forms the grounding knowledge and the basis of further digital literacy development (Kearns, 2002; Ferrari, 2012). The process of identifying training requirements by the way of the needs assessment relied on staff accurately assessing their own training needs against a set of job role competencies designated by their manager. The accuracy of self-assessment as a means of determining training needs has previously been questioned and researched. Two obvious risks have been associated with the self-assessment method and these are; intentional errors, i.e. deliberate manipulation of the answers by the respondent and unintentional errors, i.e. the questions being misunderstood in some way (Allen & van de Velden, 2005). However, this self-assessment process was seen as the only way to quickly capture the competency training requirements of a large number of staff.

Feedback from the survey suggested frustration with the length of the assessment, “It took some time and was very detailed”, “long and lengthy and far too involved” and “Long winded and ended up just clicking no for everything towards the end”. Some also indicated their confusion, “Some of the questions were unclear, and I wasn't sure of the purpose” and “some of the terminology threw me off”. A small number indicated it was “Easy to understand” and useful “Useful to have to think about what my digital literacy proficiencies were”.

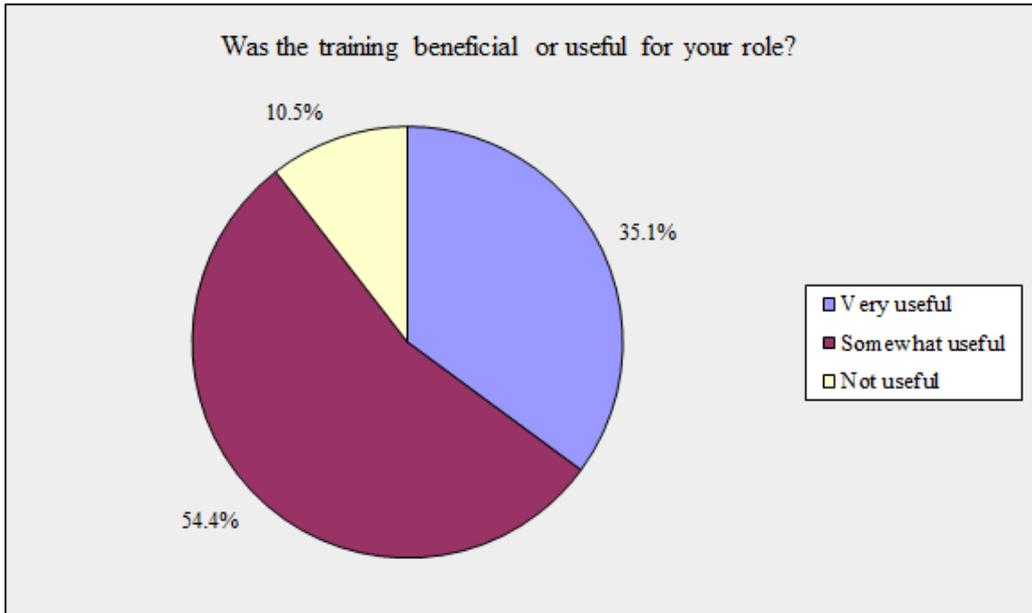
After analysing the results of the staff survey, it was apparent that the competencies were not always seen as relevant and there was a disconnect between the designated competencies required of a role and what a staff member thought they should know, “I questioned the relevance of some of the competencies to my role ... some of the competencies will never be used by me so although interesting at times, it felt like a waste of time”. As part of the process of needs assessment, there was a requirement for conversations between managers and staff to reach consensus around the various competencies to be assessed. This feedback indicates managerial/staff dialog may not have happened in all cases. This need for managerial involvement is highlighted in previous research by Santos and Stuart (2003) who found that staff were more likely to embrace training opportunities and embed newly developed skills into practice if there was managerial input into not only individual analysis of training requirements, but also goal setting and eventually progress review.

## **Training**

Responses to the survey indicate the initiative to offer training was appreciated however 53.2% of respondents did not complete the full training requirement. When asked, “If you were unable to complete any or all of your competencies, please tell us why”, 33.9% indicated they felt that the competencies were not relevant to their role, 29% indicated heavy workload / not enough time. Other reasons included lack of clarity about how to attend training “not clear how to arrange it or who with”, “Online would have been easiest for me but I didn't know what was available online or how to access it” and “workshops not available when I could go; no online resource”. 35.5% of respondents indicated they completed compared to an overall completion rate of 18.8% as indicated by the project database.

Despite the non-completion rate, respondents had positive things to say about the training they did receive. The timeliness of the training was mentioned, “good at the time but difficult to remember if not using regularly” and “very helpful in the moment”. The training options were “excellent” and “The training seemed to cater for different learning styles, was comprehensive and easily accessible”. The online learning materials, both documents and videos, continue to be valued as an accessible source of information for learning new skills, “Good, could do in my own time and know where to source information if I forget in the future” and “very use[ful] reference when something arises”. However, provision of this type of resource is not without problems. The online learning materials, both documents and videos, will require ongoing maintenance and updating as technology changes. This brings with it the challenge of identifying who is responsible, how often this will happen and identifying the ongoing costs involved.

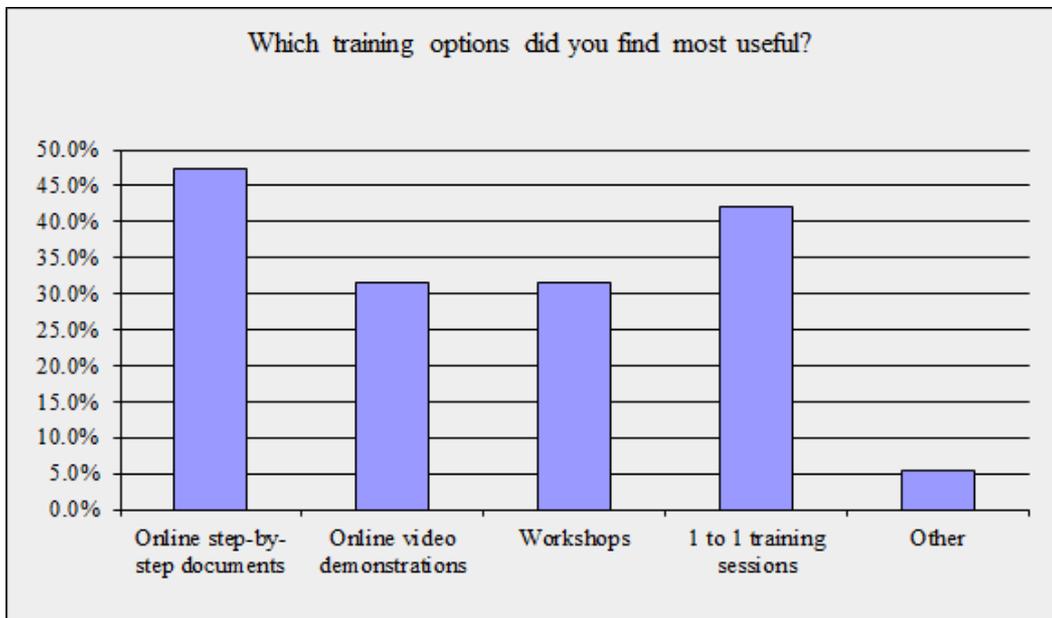
General criticism centered around perception of the immediate usefulness of the training “Training on a system that isn't directly useful to me at present and won't be able to be backed up with regular practice seems like wasted effort and time” and “Training should be relevant to current needs - I didn't think I needed those skills at that time OR questionnaire overestimated my needs”. These comments confirm previous research by Dooley, Metcalf and Martinez (1999) who found that for technology professional development to be successful, training needed to relate either logically to direct need, or be seen as an innovation that offers tangible positive benefit and outcome. The survey results do suggest that staff found the training useful to some degree. When asked ‘Was the training beneficial or useful for your role?’ a majority of respondents rated the training either somewhat useful (54.4%) or very useful (35.1%) to their role (Figure. 2).



**Figure 2. Survey results - Benefit of training**

Other responses illustrated how difficult it is to provide workshop training to groups comprising individuals having different overall digital literacy “the face-2-face stuff was a waste of time with people at all different [sic] levels with different needs”. However, praise was directed at the facilitators of the training workshops “enjoyed the teaching ... and all workshop facilitators willingness to do items outside the brief of the workshop”.

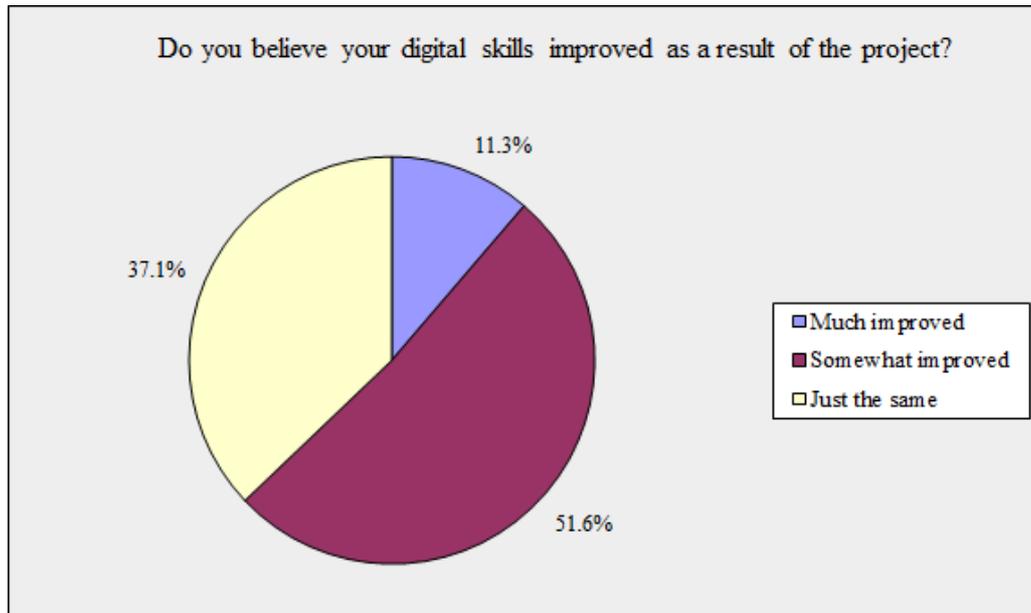
The variety of training methods offered suited staff, with freely available how-to documentation the preferred option, followed by 1 to 1 training sessions (Figure. 3).



**Figure 3. Survey results - Training preferences**

Although 1 to 1 just-in-time training is considered very effective and staff indicated this as one of their preferred options, this form of training is not without extensive cost in both time and resource. However, the database query suggests this option was not as well used as either the workshops or the self-teaching options. Various reasons could account for this, from lack of trainer availability, time and workload pressures, lack of commitment and not being aware of whom to contact.

In self-assessing their own improvement of skills, 62.9% of respondents felt their digital skills had somewhat or much improved as a result of the project (Figure. 4), however, evaluation of training effectiveness is generally hard to quantify.



**Figure 4. Survey results - Skill improvement**

The Kirkpatrick model proposes four levels of training evaluation; reaction to the training process and content, skills acquisition at the end of the training, behavioural change or the embedding of skills in the workplace, and overall institutional outcomes such as productivity (Bates, 2004). While this research reveals the reaction to both the process and content of training, and to some extent the self-perceived learning, little has been done to measure how or if any learning has been embedded into day to day practice. Research suggests behavioural change after training is more likely to occur when a system of encouragement and reward for using the newly acquired skills exists (Santos & Stuart, 2003) and going forward, the extent to which employee reward is integrated into the process is worthy of consideration. Dooley, Metcalf, and Martinez (1999) also suggest implementing a process of informal monitoring to ensure new practices and skills are being embedded into practice. Likewise, mechanisms to measure how training has added benefit to the organisation, and methods to assess return on investment (ROI) are areas for further investigation.

## Conclusion

The Digital Literacy Project was ambitious in that it sought to firstly assess, and then increase, the digital literacy skills of all eligible EIT staff members. A process of self-assessment against a series of pre-determined competencies sought to provide evidence of individual training requirements that aligned to job role and position. Once training requirements were identified, staff had the opportunity to attend workshops, use online learning material or accept one-to-one help to reach the required levels of competency. The project ran for eighteen months and was completed at the end of 2013.

The purpose of this study was to gather staff feedback to examine staff experience of the Digital Literacy Project including the process of needs self-assessment and the delivery and effectiveness of training. Although the feedback was largely negative, it came from a small number of staff and the criticism centered on a small number of recurring key themes. Overall, EIT staff that responded to the survey saw the needs assessment process as cumbersome, time consuming and sometimes confusing. Staff feedback suggested some competencies appeared irrelevant to a job role and the attitude of the project being a 'tick-box' exercise was prevalent, confirming results of previous research by Goldstein (as cited in Anvari et al., 2010) and Carlson et al. (2000).

Staff members were positive in their praise of the available training options, and appreciated the availability of online material that provided them with flexibility to access as and when required. Results from the survey indicated one-to-one training was seen as the next most favourable training option, although this option requires

extensive human resource and the database query suggests this option was not as well used as it could have been. Trainer unavailability, time and workload pressures or not knowing whom to contact could account for this. As discovered here and in earlier research by Ferrari (2012), workshops caused frustration due to the different skill levels of participants. However, the facilitators were praised for their ability and willingness to cover additional material.

Staff also voiced concern over the irrelevance of some training and this can be directly linked to the perceived irrelevance of competencies during the assessment process. Previous research by Santos and Stuart (2003) suggests management involvement and support is critical to success and this is reflected in this study, where managers were seen as critical in both aligning assessed competencies to job role and motivating staff towards training completion.

## Recommendations

The challenge for EIT as this project becomes embedded into institutional process, is to ensure provided training is meaningful and retains its relevance regardless of changes in staff structure, roles and individual needs. It is recommended that the institute's definition of Digital Literacy is redefined and aligned to the Institute's Digital Strategy, with the associated training embedded into the institute's Staff Development Framework. The implementation of measurable key performance indicators as part of self-assessment requirements and annual performance plans will help motivate staff to achieve and embed new skills. It is also recommended that the Needs Assessment be consolidated into a single set of core competencies, with clear, unambiguous terminology and is a required pre-training assessment opportunity for new staff.

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