

# Creating digital self-reflective frameworks to encourage learner autonomy in post-graduate courses

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The almost universal acceptance of constructivist views of education has firmly placed the learner at the centre of the teaching and learning experience. This acceptance has required educationalists to critically review existing educational strategies, techniques, methods and beliefs. Learner autonomy, the ability to take charge of one's own learning, is based on the concept that learners have the capabilities to reflect on their current skills and identify areas of development. Interactive self-reflective frameworks enable learners to firstly, make independent and informed decisions about their learning needs and secondly, establish a personalised learning plan to address the needs identified. This paper explores how the development and implementation of a digital self-reflective framework for post-graduate study in transdisciplinary education contributes to wider acceptance of the conceptions of learner autonomy.

Keywords: learner autonomy, learner centeredness, constructivism, reflective frameworks

## Context

Globalisation has changed the dynamics of the New Zealand economy: successive governments and educational organisations have introduced a raft of educational reforms to ensure industries are able continually to up-skill their workforce so that they are more productive, higher performing and competitive in regional, national and global contexts (Ministry of Education (MoE), 2014). These reforms have been focused firstly, on approaches encouraging and recognising ongoing individual capability building within the workplace and secondly, strengthening the applied research linkages between industry and tertiary institutions in order to increase the economic returns of publicly-funded research. In essence, there is growing recognition that learning is a continuous, life-long, un-constrained activity and is not confined to formal, academically-focused, externally-delivered and accredited courses (MoE, 2014). To address these work-based initiatives, the Waikato Institute of Technology have begun the process of developing a curriculum to offer a work-based, post-graduate course in transdisciplinary studies to commence in 2015. The Master of Transdisciplinary Research and Innovation (MTRDI) aims to develop intellectually-capable, work-ready graduates with demonstrated research competencies, able to contribute to business-led innovation and applied research by working on industry-provided themes or proposals in work place environments (Waikato Institute of Technology, 2014).

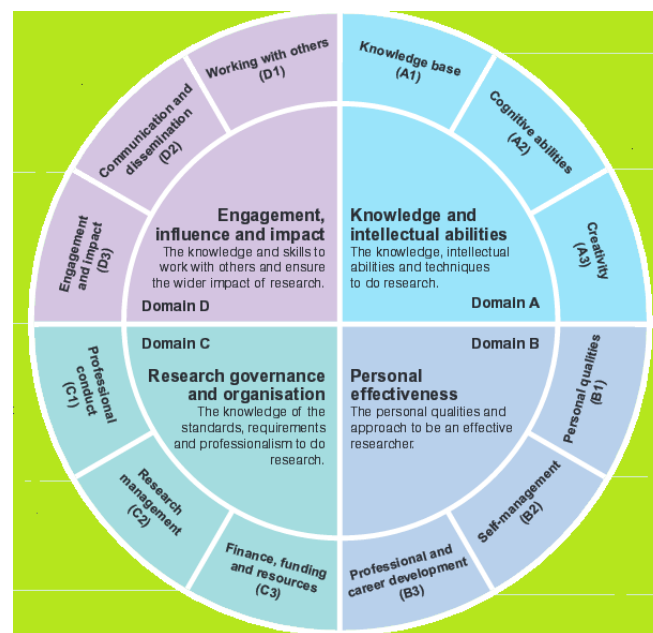
In traditional post-graduate learning environments participants, learners and mentors are often bound by time, place and pace. Activities are scheduled to occur in a specified location and an educator systematically guides learners to achieve stated objectives through a variety of strategies, methods and learning events (Syed-Khuzzan & Goulding, 2009). The work-based learning environments to be developed for the Master of Transdisciplinary Research and Innovation will not be as constrained as these traditional environments. Learners will have more choice in the time they learn and the place the learning will occur. While mentors and supervisors have clearly defined outcomes to monitor progress the ultimate responsibility of achieving those outcomes is transferred from the supervisor to the learner. In these more personalised environments learners need to be more self-motivated and self-directed (Clayton, 2009). They are autonomous learners.

## Theoretical framework

While there are differing opinions on a finite definition of 'learner autonomy', Holec's contention that autonomy is "the ability to take charge of one's learning" is generally accepted (Zoghi, & Dehghan, 2012). There is also general agreement that a common theme underpinning 'learner centeredness' comprises new perspectives on the role of the learner and the teacher in the learning process (Furtak & Kunter, 2012). From a learner autonomy perspective, learning takes place as learners actively engage with ideas presented to them. These conceptions are familiar to constructivists who would argue that learners' existing knowledge frameworks mediate engagement, and learning is not simply the acquisition of correct responses forming a repertoire of set behaviours (Duschl, 1998). This fundamental shift, from passive acceptance to learner engagement, creates a need to construct learning environments that are focused on meeting individual learners' identified needs. There is an expectation that learners, through the selective use of personal strategies, are able to firstly, improve their

ability to learn, secondly, structure learning environments that suit them, and finally, play a significant role in selecting the form and amount of instruction they require. They are self-regulated learners (Zimmerman, 2002).

In Europe, and indeed across the world, there is a growing trend to establish the career of a 'researcher' as a valued profession. There is an acknowledgement that learners will wish to develop the capacity to become researchers. To establish the fundamental knowledge, behaviours and attributes that the higher education sector has identified as significant for researchers, a Researcher Development Framework (RDF) has been created (Careers Research and Advisory Centre (CRAC), 2010). The framework is structured into four domains: knowledge and intellectual abilities; personal effectiveness; research governance and organisation; and engagement, influence and impact. They are illustrated in Figure 1 below:



**Figure 1. Researcher Development Framework (CRAC, 2010)**

These domains establish the wide-ranging knowledge, intellectual abilities, techniques and professional standards required to undertake research, as well as the personal qualities, knowledge and skills to work with others and ensure the wider impact of research.

The concept of self-reflection (the conscious act of purposefully thinking about activities undertaken) has been widely debated in educational circles for a number of decades. To advocates of reflective practice, deep learning is dependent on individuals making meaning from their experiences through the process of reflection. The outcomes of the reflective process help learners firstly, highlight the strengths of their current skill and knowledge base and, secondly, identify areas where undertaking educational activities or training would facilitate increased capability (Kanthan & Senger, 2011). It has been argued that on-going reflection will help individuals iteratively build their capability and capacity (Hoyrup, 2004). In essence, reflection creates individualised learning environments that are on-going (sustained), connected to acknowledged needs (situated) and focused on individually-generated tasks (authentic) (Clayton, 2012).

Recognising learners require guidance in identifying capability/knowledge gaps, members of the Master of Transdisciplinary Research and Innovation curriculum development team used the theoretical framework of learner autonomy, key domains of learner knowledge and self-reflection in the development of an online instrument that would enable learners to identify their learning status. The purpose of using these domains and associated criteria was to allow learners to align their current skill levels against accepted standards. From this activity learners will be enabled to generate a personal learning plan.

## Developing a self-reflective instrument

As noted previously, the concept of reflection, where deep-learning occurs as individuals make meaning from their experiences through reflection, has been widely debated. To engage participants in reflective practice and to aid them in making connections between identified pedagogical standards research and their previous

experiences, self-reflective competency assessment tools have been developed. For example, staff at Leeds Metropolitan University in their Research Training Programme uses a Training Needs Analysis (TNA) instrument comprising thirty-six questions exploring six themes: research skills and techniques, research environment, research management, personal effectiveness, communication skills, networking and team work and career management. The TNA was designed for learners to establish if they had particular skills, identify areas for development and recognise new areas for investigation (Clegg, 2014). Based upon the TNA and RDF an Online Training Needs Analysis instrument (OTNA) was created for MTRDI candidates. The OTNA was designed to enable learners to assess their current research capability against the internationally-defined standards in the RDF.

The OTNA interface provides the learner with a series of statements relating to each of the four dimensions within the RDF. The statements within each domain are classified within two categories, competent and capable. Learners are asked to reflect upon, and then respond to, individual statements using a ‘drop-down’ menu. Categories, statements and example responses are illustrated in Figure 2 below.

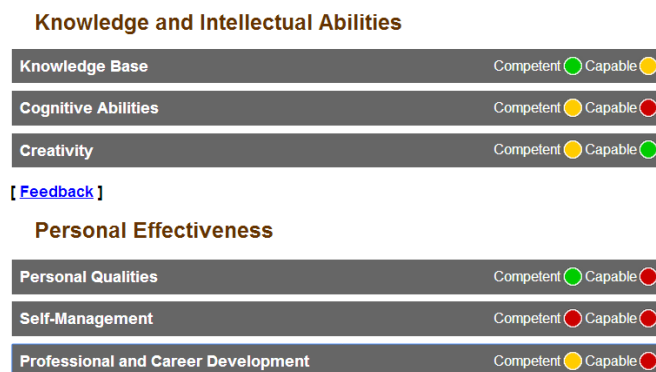
Knowledge and Intellectual Abilities	
Knowledge Base	
<b>Competent</b>	
I have in-depth knowledge of recent advances within my discipline and associated areas	Agree
I have good understanding of a range of research methodologies and techniques	Agree
<b>Capable</b>	
I have a broad understanding of the context, nationally and internationally, of my research focus	Select
I have the ability to recognise and validate problems	Strongly agree

**Figure 2. Online Training Needs Analysis Criteria**

As learners progress through the OTNA their answers affect the indicator colour on the index page. The indicator colours are based on the familiar “traffic light” theme;

- Red: This indicates to the candidate they have limited knowledge and/or experience in the attribute.
- Yellow: This indicates to the candidate they have some knowledge and/or experience of the identified attribute.
- Green: This indicates to the candidate they meet the requirements of the identified attribute.

A pictorial reflective framework carpet begins to emerge as the learner progresses through the modules, categories and statements. This reflective process and visual carpet enables learners to select which attributes they need to review and those they need to develop. This is illustrated in Figure 3:



**Figure 3. Online Training Needs Assessment Visual Carpet**

The visual carpet produced from learner engagement provides the learner with;

- An initial assessment of their current knowledge, experience and understanding of each domain,
- An indication of potential starting points to begin their learning journey, and
- A map of a learning route from starting points to intended achievements.

In essence, engaging with OTNA assists the learner in the creation of a personalised learning plan empowering them to become self-regulated learners.

## Summary

This paper has argued that there is an expectation tertiary education institutions will be able to firstly, design programmes to meet the identified needs of learners in a range of contexts and secondly, engage with industry in research initiatives. It is anticipated learners will participate in learning events, individually tailored to meet their identified needs. This requires a fundamental institutional commitment to the provision of learner-centred education and engagement in industry-focused research. To meet these expectations the Waikato Institute of Technology have begun the process, in consultation with industry, of developing a Master of Transdisciplinary Research and Innovation to be offered in 2015.

The programme aims to develop intellectually-capable, work-ready graduates with demonstrated research competencies, able to contribute to business-led innovation and applied research by working on industry-provided themes in workplace environments. Learners will be offered more choice in the time they learn and the place the learning will occur. They will have the ultimate responsibility of achieving their identified learning needs, and will develop the capacity to demonstrate autonomous learning. This learner-centred approach is based upon learner reflection and brings with it inherent risks, including whether the learners are able to accurately reflect upon their existing knowledge and level of skill and make informed judgments on the skills and knowledge they need to acquire. This paper argues that the inclusion of a reflective framework, based upon internationally-accepted capabilities, will enable such judgments to be formed that will determine the construction of a personalised learning plan.

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