

# Analyzing Work-integrated Learning Assessment Practices through the Lens of Autonomy Principles

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## **Abstract**

There is generally an increasing interest in the vocational aspects of higher education, including work integrated learning. Yet there is often an assumption that students will make connections between these two sites, but this is often not the case; connecting university knowledge and practices to those of working life thus remains a vexing problem. In this research article, we examine this connectivity with a focus on work-integrated learning (WIL) assessment as this may highlight what lecturers judge as important knowledge. The lens for examining assessment is that of the Legitimation Code Theory concept of Autonomy codes. Whereas we find that work and university practices and knowledge may be quite well connected, our theoretical lens reveals an unexpected outlying field that may be less well connected to disciplinary knowledge: that of writing and presentation practices judged as valuable by the lecturers. The paper suggests that the integration of the two fields, general writing and presentation and disciplinary knowledge and practices, may be improved for the purposes of strengthening student learning.

**Keywords:** work-integrated learning; assessment; legitimation code theory; autonomy codes

## **Introduction**

In general, there is an increasing interest in Higher Education worldwide in

the use of some form of work experience alongside the regular university curriculum (Billet 2009). For the purposes of this paper we will use the acronym WIL, denoting ‘work-integrated learning’, for the workplace experiential period that university students undergo, rather than the alternative term of ‘workplace learning’ (WPL). We recognize, as have a number of other authors concerned with relationships between the university and workplaces, that these are two different contexts with different forms of knowledge and practices (Eraut 2004; Le Maistre & Pare 2004; Wheelahan 2010). Of interest in an analysis of WIL assessment would be the identification of where the assessment is situated: predominantly at work according to the principles of the workplace or predominantly within the university for the purposes of the university. When assessment is situated within the workplace then the assessment criteria could be said to reflect work learning as a field of study unto itself, for instance where such assessment concerns issues such as specific work organization or practices. By contrast, when the assessment is mostly situated within the university then work learning is a mode of university study and the assessment criteria are drawn predominately from the university curriculum (Costley & Armsby 2007).

Where the assessment sits, whether within the field of work or as a mode of university study, is an arena of development and contestation currently in South Africa and beyond. For example, work assessment, in order to gain credit, is increasingly being linked to programme outcomes and content rather than to the interests and principles of the workplace as is reflected in the descriptions of WIL in the emerging South African Higher Education Qualifications Framework or HEQSF (2013) documentation. In a similar vein, other initiatives, for example in the United Kingdom, attempt to position WIL assessment within the overarching university curriculum structure of ‘constructive alignment’ (Walsh 2007).

Where WIL (and also WIL assessment) is understood as a mode of university learning, there is an attempt to integrate university practices and purposes with those of the workplace. Students ideally are required to transfer knowledge and practices from university and effectively recontextualise them for work (Barnett 2006). In support of this mode, authors such as Maton (2014) and Billet (2009) have argued that learning something in one context then being required to use it in another can, under the right circumstances, help students to build up more connected and advanced forms of meaning than when learning occurs in one context only. As Billet (2009: 838) suggests:

Within the curriculum and pedagogical practices of contemporary higher education, it is therefore important to advance approaches that can support the integration of practice-based experiences.

However, such integration is often expected to be enacted autonomously as long as theory and practice are brought together, and lecturers may not be aware of the complexity students experience in actually doing this (Eraut 2004). Thus, as Maton, Howard and Lambrinos (2016) suggest, connecting knowledge from university with that of working life remains a key goal but also a problem for higher education.

To this end the research reported on in this paper examined how and when such integration may be occurring, and the nature of the knowledge involved, drawing on the recently developed (and developing) lens of Maton, Howard and Lambrinos' (2016) and Maton's (2005) Autonomy codes. However, although we began with an analysis of integration between work and university knowledge and practices, our findings suggest that there is a third field of knowledge and practice that requires analysis as to its degree of integration; the field of communication, writing and presentation skills.

Maton's (2014) theory of Legitimation Code within which the Autonomy dimension lies, has been used to analyse assessment more generally in higher education. For example, Shay (2008) uses the Specialization dimension of Legitimation Code Theory to critique constructivist approaches to assessment which, in her view, may prioritize how students represent knowledge over the actual nature of the knowledge itself. Similarly, Wolff and Hoffman (2014) also used the Specialization dimension to examine WPL assessments in Engineering. Their findings highlighted that assessors often value students' dispositions, how they present themselves, as well as their knowledge, even though Engineering has a strong disciplinary base. However, Autonomy dimensions and their associated codes have not been used extensively in higher education research; the work of Arbee, Hugo and Thomson (2014) on the Marketing curriculum in South Africa and that of McNamara (2010) on principles underpinning the Irish nursing curriculum are notable exceptions.

The research reported on here draws on four cases of WIL assessment carried out in science courses. Assessment was selected for two reasons. Firstly, the faculty in question is itself interested in examining and improving WIL assessment. Secondly, assessment is well known in higher education as

an indicator of what counts in the field being assessed from the perspective of the assessment designer (Race 2003; Wass, van der Vleuton, Shatzer & Jones 2001).

## **Legitimation Code Theory (LCT) and the Autonomy Dimension**

Drawing on Bourdieu's field theory, LCT understands the social world as consisting of relatively autonomous fields each with their own favored knowledge resources and practices (Maton 2014). Bourdieu and Wacquant (1992), in particular, were concerned with the degree of insulation of the university from the influences and interests of the state and industry. Thus in the classical use of autonomy and field by Bourdieu and Wacquant (1992), it is autonomy of the university which is being examined against the influence of other social, political and economic influences. LCT, therefore, has obvious relevance to examining WIL assessment where we are examining practices which span the fields of work, and their interests, and those of the university.

LCT is concerned with identifying what counts in the social world both in terms of the required knowledge and its underlying principles but also the extent to which a particular way of knowing, or knower code, has effect. These knowledge and knower 'codes' are often tacit yet where people draw legitimation from has real impacts on what they actually do in practice. Furthermore, understanding what is being learnt and how it is to be learnt in the systematic way offered by LCT is important for development and change in practice (Maton 2014).

LCT looks at the principles which underpin the ways in which knowledge is organized and how the different sections of knowledge fit together so that it is easier to see what we as teachers are in fact doing (which may be tacit). Once teachers understand and are made aware of this organization, it becomes more possible to help students understand how different parts of knowledge (e.g. university and workplace knowledge) can be brought together, thus enabling students to both cross boundaries into new contexts and so enhance their learning.

The Autonomy principle in general refers to the degree of insulation or differentiation between fields (Maton 2014). In the case of this research, it refers to what is valorized in workplaces and in universities, and thus which

exerts the most dominant control over and hence legitimation of practices. Maton (2005) distinguishes between two aspects of Autonomy: positional and relational autonomy.

Broadly speaking, positional autonomy indicates which area of knowledge, the principles, theories and ways of practices, is being referred to (Maton 2005). Following Bourdieu and Wacquant (1992), the position of the university is seen as the primary position and other positions are measured in relation to this, as either close to the university (+) or far from it (-). As we are dealing with science programmes, strong positional autonomy in assessment would therefore refer to a strong focus on scientific theory and practices as is taught in the curriculum. Where there is this focus then the positional autonomy is given a '+' sign (PA+). By contrast, where the principles, theories and ways of practicing are drawn from outside of the science curriculum then these sorts of knowledge are referred to as PA-.

Relational autonomy (Maton 2005) refers to a somewhat different aspect of knowledge, that of to what purpose the knowledge and practices are being put. For example, where the knowledge and practices (which may be either about science or about something else) are being used to further the aims and purpose of the science curriculum, then relational autonomy is strong and would be referred to as RA+. Alternatively, where knowledge is being used for the purposes of something outside of the science curriculum, for example for the purposes of the workplace, then relational autonomy is weaker or RA-. To put this simply, when we ask where practices or knowledge are coming from, from inside or outside the university science curriculum, we are referring to different strengths of positional autonomy; when we ask where the purpose for which they are being used is predominantly situated, we are referring to relational autonomy (Maton, Howard & Lambrinos 2016).

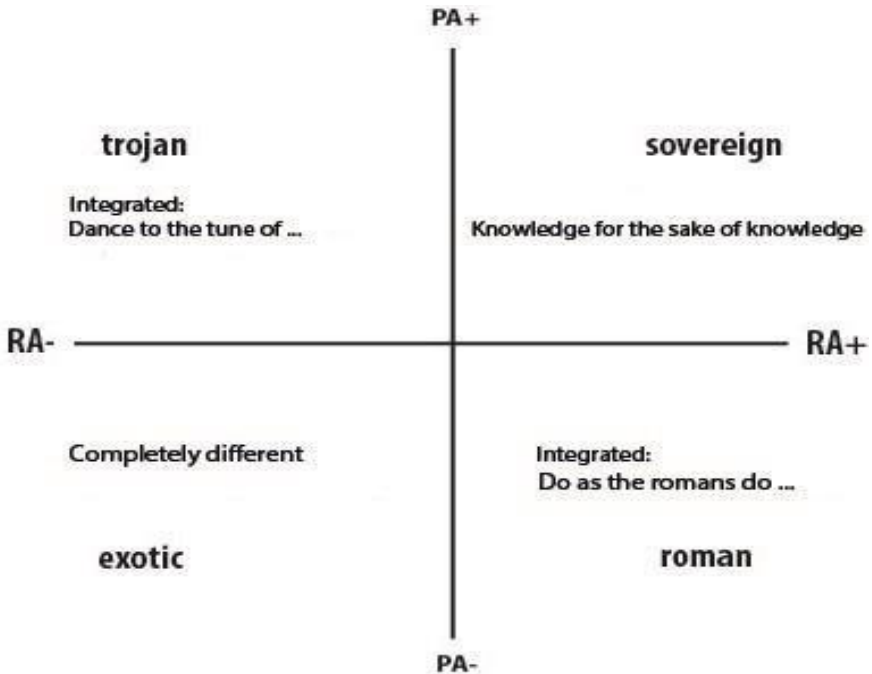
In this article, the focus is on assessment as we are interested in where assessment practices are being drawn from: whether it is from the university curriculum (PA+) or from elsewhere, for example, from the workplace (PA-). In addition, we are interested in ascertaining for whose purposes the assessment is being used: whether for the purposes of the university curriculum (RA +); or for purposes outside of the curriculum (e.g. for work purposes) which would be labeled as RA-.

Thus, from the previous paragraph, there are four possible configurations of Autonomy codes, where both PA and RA are plus or where they are both minus, and two more configurations of +/- . These configurations

are shown as four quadrants in the graph, or Autonomy plane, in figure 1. The quadrants can be used as a means to map where assessment practices are predominantly located, so that the researchers, and the lecturing staff, can gain a clearer picture of where they are drawing their actual assessment practices from. This matters not just because it can make staff more aware of what they are doing in assessment but also more importantly, whether and how they are integrating the practices and purposes of the university curriculum and workplaces. As was pointed out earlier, it is this sort of integration of the university curriculum and the workplace that provides the optimal conditions for student learning. In the rest of this section we will describe the nature of the different quadrants in more detail so that their use as an analytical tool may be made clearer.

The descriptions and naming of the quadrants, with reference to figure 1, is drawn predominantly from Maton, Howard and Lambrinos' (2016) recent work on Autonomy codes. As Autonomy refers to the degree of insulation of the university from outside, we start with the so-called *sovereign* autonomy code in which, in this case, content, concepts and practices are drawn mostly from inside the field of the science curriculum (PA+). In addition, this knowledge is being used to further scientific knowledge, so RA+, rather than for other purposes, e.g. outside contexts such as workplaces or other knowledge fields. This code could be described as 'knowledge for knowledge's sake'. Where knowledge and practices are again drawn from inside the scientific curriculum, but are being used for other purposes, e.g. the workplace or another field of study, Maton, Howard and Lambrinos (2016) describe it as a *trojan* code; here, knowledge and practices 'dance to the tune' of the other field and can be described as PA+/RA-. Thus, for example, where scientific knowledge from the curriculum is being applied to solve 'real' workplace problems (as is discussed in the data where lecturers talk about 'contribution' to work) this can be coded as mostly PA+/RA-, or trojan code.

In the *roman* code, knowledge and practices are drawn from outside of the field of the science curriculum (PA-) but these are being used for the purposes of advancing the knowledge of science (RA+) rather than that of outside fields. Thus, for example, the model of WIL as a mode of study of the science curriculum would fall predominantly in this field, and work knowledge and practice would be judged mostly against academic, science curriculum criteria.



**Figure 1: Autonomy Codes after Maton (2016)**

Maton, Howard and Lambrinos (2016) suggest that a catchphrase for the roman code is ‘when in Rome do as the Romans’ do. In the *exotic* code (PA-/RA-) everything lies outside of the field of science studies and there is much distance from the university science curriculum. An example of this code would be where WIL is understood to privilege the advancement of students’ knowledge of workplaces so that they may come to understand how the field functions rather than as a mode of learning curriculum content (Costley & Armsby 2007).

The LCT dimensions plotted on the Cartesian plane typically represent continua or relative strengths. In this article, however, we are interested in what Maton, Howard and Lambrinos (2016) have described as autonomy ‘tours’ or journeys. The metaphor refers to teaching or assessment practices which typically start in one of the pure or insulated fields of the university curriculum

or workplace (sovereign and exotic codes respectively) then move into the more integrated roman or trojan codes. In ‘going on a journey’ students are crossing boundaries such that what has been learnt or experienced in one context now has to be re-visioned for a new context.

## **Methodology**

As with other investigations into higher education and work, the research is small scale, localised and exploratory (Smith *et al.* 2007) as we wish to put forward argument as to the extent to which university and workplaces are connected through the lens of assessment practices. The research revolves around four case studies of WIL assessment practices. The expectation is that the researchers can put forward tentative principles from these cases (Anderson 2001) that can be further explored within their faculties. The research does not aim to present any general observations or principles pertaining to WIL assessment except in so far as the theoretical framing of the research may be transferred to other sites.

This investigation took the form of case study research in that data was gathered from a defined and bounded context. Descriptions presented were analyzed so that their plausibility as being representative of a trend can be judged by the reader (Cousins 2009). The units of analysis presented here are those of lecturers’ perceptions of how WIL assessments are designed and conducted, drawn from four different programmes in the Faculty of Applied Science. Each programme formed a case in that they involved different actors and contexts but have in common that they reside within one faculty, which is typical of collective or comparative case study research (Cohen, Manion & Morrison 2000; Cousins 2009).

The four cases were selected as they were representative of each of the four clusters of programmes offered in the Applied Sciences: Environmental, Chemical/Biological, Applied Mathematical and Agricultural Sciences. Applied Sciences was selected as staff had expressed an interest in evaluating and improving their WIL assessment practices.

In conducting the research, and in the light of recent moves for greater incorporation of WIL into the curriculum, we were interested in the degree to which assessment does or can integrate the two fields of work and science knowledge and practice. In order to gather data on these issues the following



broad questions were presented to the lecturers responsible for WIL in the four programmes identified:

- Describe your WBL assessment methods.
- Why were these chosen/for what purpose?
- What did you base the assessment methods on e.g. curriculum outcomes, graduate attributes, workplace, professional bodies?
- Who does the assessments and why?
- Are the procedural elements mostly work-related or academic-related?
- Given a marked assessment, can you describe why you assessed it as you did?

The last question was particularly revealing. Here we were trying to find out what lecturers were actually doing in action under real marking situations, rather than what they espoused to do in interviews. The method could be said to draw upon Argyris and Schön's (1974) distinction between espoused theory and theory in use, and whether there is congruence between them.

Lastly, in analysing the data themes related to the Autonomy dimension, codes were identified and claims made are supported by quotes from the interviewees. From this analysis, the autonomy journey for each of the four cases is represented graphically on the Autonomy dimension Cartesian plane.

## **Discussion of the Data**

### ***Environmental Studies***

In Environmental Studies, the first assignment for students is a scan of the workplace they are in and what activities they will undertake. So this task is drawn strongly from actual work practices. However, the task is assessed by the lecturers and what counts as 'good' is judged collegially. In the following quote the lecturer highlights that assessment is focussed on what the students are doing at work.

And also what skills they think they need, ja, the values and the principles because of their position and also, what skills they think they need and what sort of knowledge base they need ... We invite feedback

from my colleagues on this what they take as good and what's not good and then we sit with the final things that everybody knows we are doing.

Not only is the task assessed by lecturers according to what they believe matters, but it also fits in with the perceived culture of the university environment, where marks determine whether or not students pay attention to tasks, as the following quote suggests.

They know the importance of doing things right, to get marks. So they take it seriously.

This description of assessment can be described as predominantly about workplace practices and knowledge – what is actually being done at work- for the purposes of students' knowing about the workplace, thus an exotic code. However, it appears that academic standards are also being applied such that these outside work practices are being partially recontextualised for the purposes of the university. Thus the assessments take students on a journey from the more exotic field of workplace knowledge and skills into a more integrated mode or roman code.

Apart from the workplace scan, the main additional assessment in Environmental Studies is an investigation of a work practice carried out by students while in the workplace. The purpose of the main assessment is to put theory learnt into practice and thus can be seen as an extension of students' university studies, rather than being predominantly about work. This can be described as doing work for the purposes of learning more about science, again a roman code (PA-/RA+). In other words, work practices are being recontextualised for the purposes of learning science, as the following quote outlines.

... actually seeing that whatever we taught our students, the theory, was really practiced at the work place

As with most work place assessment the situation is not simple as lecturers recognise that simply extending university studies is somewhat one-sided as indicated by a participant that 'students are being prepared for industry'. Thus

there are always reflective components in the assessments of what the students have learnt in the workplace.

We do not tell them what to include, we just indicate broad topics like ... how you feel you have grown professionally, what sorts of skills you have developed, that sort of thing.

Accordingly, assessment practices, though situated mostly in the roman code, are also partially moving back into the exotic code.

As was pointed out in the methods, lecturers were also asked to take the researchers through a marked WIL assignment, highlighting how they awarded marks. As the lecturer takes us through a good assessment, she again describes the importance of theory into practice, reflection and some workplace skills (such as teamwork): in other words, they are working predominantly within a roman code. They are, however, also quite strongly expressing the importance of the way the report was written, and its presentation.

So I think the reflection was very good and the whole presentation of her report, ideas logically presented. So I think and I just said here it's a pleasure to read. The report is well written with an easy, logical flow of ideas.

It could be suggested that a 'good' report has to mainly align itself to university principles. However, she also points out that in assessing a report as 'good' she would like to know if it contributed to work practice. This is of some importance in her industry as the mentors themselves are often not so well trained nor know how to run things adequately, as she suggests in the following quote.

And also to contribute. Like I said, with our students in these municipalities where there is lack of expertise they can make a contribution. Like do the things that are not happening (in the workplace) and make suggestions.

What matters here for the lecturer is the knowledge and practices learnt at the university being put to service for the purposes of improving work. What can

thus be suggested is that assessment takes students on a journey from the pure sovereign code of university knowledge to an integrated trojan code. Conversely, a poor report is judged partly according to more academic principles of good structure but this is also integrated with theory and practice.

So you'll find it's a list, just a list of things that happened. No reflection, no integration of theory with what is given, what the student was doing. That would be a good example of a bad report for me.

Figure 2 summarises the autonomy journey followed in WIL assessment in Environmental Studies, from work scans for works' sake (exotic), to work for the purpose of learning science (roman), and back again. Then there is the journey from the more sovereign code of science knowledge and practice to the more integrated code of science contributing to work – science for the purposes of work – a trojan code, which is shown on figure 2. Good, coherent writing (5) remains something of a difficulty as it is a university practice for university purposes even though it cannot be categorised as science. For the moment, however, we have categorised it as belonging to the sovereign code.

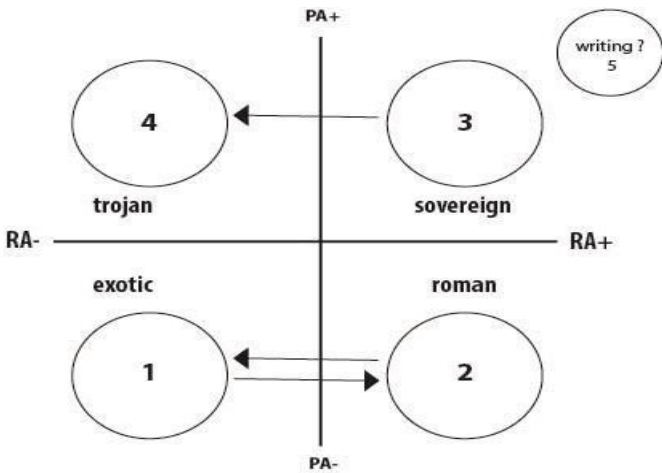


Figure 2: Autonomy Journey in Environmental Studies

### ***Chemical/Biological Sciences***

In Chemical/Biological Sciences the workplace assessments consist of initial reporting on learning at work followed by a more intensive and heavily weighted investigative written assignment and formal presentation. In so doing, students are required to present their workplace learning for the purposes of learning the university curriculum. As with Environmental Studies the purpose of WIL as described by the lecturers is primarily to apply in the workplace what they have learnt in the university and, secondarily, to learn about industry.

The purpose is to get students to ... really put in practice what they have learnt. And also, learn things in the industry ... getting together a team there in the workplace and learning to learn. But it's to build up more on what they have learnt in the (university) laboratories.

Assessment practices focus first on the more exotic work knowledge and practices before students are taken on a journey into the more integrated roman code where work practice is used for the purpose of learning more about or enriching their science knowledge and practices.

For the final investigative assessment project students are asked to seek out a problem or issue that could be improved upon in the workplace. This is similar to a workplace scan but at the same time it is more complex in nature as it involves students in identifying a potentially solvable work problem. However, in solving the problem, students are expected to mobilise their science knowledge. Workplace mentors are much involved here because, firstly, they may have an interest in the results of the project (it may be of benefit to the workplace thus 'contributory') and secondly, to ensure that IP issues are dealt with (an issue in the work field of Biotechnology). Thus assessment practices take students on a journey from the more exotic code (assessment of workplace practices/problem for workplace purposes) towards the more integrated trojan code (science for the purpose of contributing to work).

On an investigation assessed as excellent, the lecturer indicates that it is the content and the structure of the report that matter, but there is an indication that structure and how the report was written may be of equal or greater importance than the actual content.

... because of the scientific content and the mastering of the presentation, the way it was presented was really, really superb work ... the way she wrote it ... I'm talking about it from the introduction to the literature review, the results, the methodology.

On a poor assignment there is no such ambiguity and she points specifically to language difficulty as the reason for a low mark, though acknowledging that this also made it hard to understand as well.

... because the English wasn't right.

In examining the autonomy journey of the assessment practices in Chemical/Biological Sciences there is a similar picture to that of Environmental Studies. Student assessment practices move from the pure fields of work and science into the integrated roman and trojan codes. Again, there is the outlier of the report structure and language (writing) which seems to be disconnected from either science and work; as it is a university practice seemingly for university purposes, it is placed in the sovereign code (5) in figure 3.

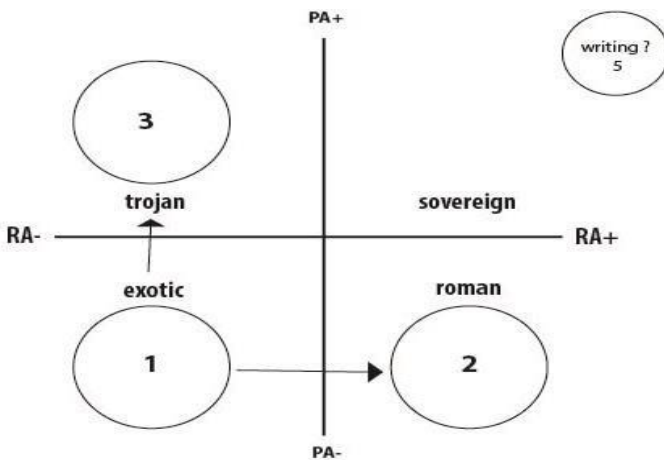


Figure 3: Autonomy Journey in Chemical/Biological studies

### ***Mathematical Sciences***

The third programme that made up our research study is more mathematically focussed. In this programme an outside workplace identifies a problem (for example, testing a statistical programme) that they need investigating and hands it over to the university. Finding a solution or better understanding the problem is then a task carried out by students with the help of their lecturers. Thus it differs from the other work based programmes because students do much of their WIL in the university, sometimes visiting the company which they are involved with for just a few days per month. The assessment is more focussed on the investigative project, its development, final written report and presentation to both work and academic representatives. The purpose of the assessment is thus, unashamedly, about extending and developing what has been taught in class (the lecturer refers to WIL as a ‘problem solving mode of teaching’).

I would say, to my mind the purpose of the project is two-fold. The first one is to integrate the classroom theoretical knowledge that they have gained in the last two and a half years and apply it in an industrial work place context. And the second one is also to consolidate all of the individual subjects because each subject is kind of like its own little compartment ... to solve a particular problem (at work).

The project is assessed by university lecturers against a university-developed rubric. As with Chemical/Biological studies the workplace mentors play a minimal role in assessment, usually in the form of ‘looking at the project’. When lecturers describe the criteria for assessing the investigative project, the ability to solve problems is highlighted, which could be seen as an ability for both the workplace and the university. Lecturers further highlighted the importance of being able to find literature resources and to apply appropriate investigative methods in their assessments, which could again straddle both work and university competencies, but given the situated nature of the project within the university they could be said to be aligned, predominantly, to the university agenda. The investigative project could thus be described as using work for the purposes of learning about university subject knowledge, that is, a journey from the more exotic work code to the more integrated roman code.

However, when the lecturer takes the researchers through how they

marked two assignments, they pointed out where the student did not meet the criteria listed in the marking rubric, making it apparent that the focus is different to that of the roman code. The criteria, as indicated in the abstract described below, appear to focus mostly on what counts as an academically sufficient report, i.e. writing skills such as argument and cohesion, rather than what is actually found out or experienced at the workplace.

It says the abstract was supposed to capture the main findings of the report exactly. This doesn't capture the main findings ... she got ten out of twenty for the conclusion and I underlined one of the items in the rubric, which said that the conclusions were based mainly on subjective opinions and not clearly linked to results.

The observation that there is a focus on assessing the writing skills is strengthened by the comments of the lecturer who was 'shocked by some of the bibliographies students produce'. While the ability to compile a reference list is an important general skill, it is also one situated primarily in the academy rather than in the workplace. Thus again we have this academic outlier which is seemingly neither related to science nor to work knowledge and practices. The assessment journey is summed up in figure 4:

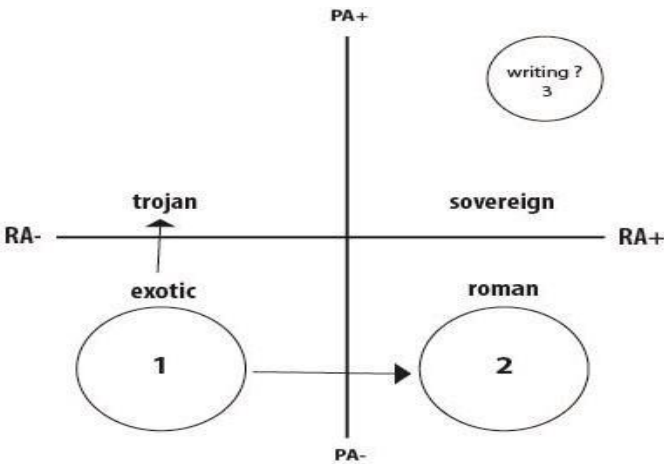


Figure 4: Autonomy Journey in Mathematical Sciences



### ***Agricultural Studies***

In the fourth programme (Agriculture), work assessment involves two components across two temporarily distinct WIL sessions. The first WIL session is in second year and here students are required to present a poster on their work experiences. In the second, a six-month session in the third year, students do a written assignment and give an oral presentation thereon. In the poster presentation, as the lecturer reports, what is important is the work they have actually done at the workplace. In marking the student's posters, students are asked to reflect on their learning at work. This is about work for the purposes of work, an exotic code.

They need to describe what they have done during the six months so we can understand they have fulfilled the criteria ... it is also a bit reflective ... the lecturer would ask the students where do you see yourself? How have you learnt from this? The student needs to think what they have taken away from the experience.

There is however some attempt to connect work practise to the curriculum. In talking about both the poster and the written and presented assignment, the lecturer asserts that there is also a more normative application of classroom learning in the workplace. Thus a connection is made between the more exotic workplace experiences and the university curriculum.

Obviously what they have learnt in class through lectures and things like that, to a large extent, this needs to be practiced within the workplace.

However, in getting the lecturer to talk about what actually counts in assessment by 'stimulating' them to think about an actual assessment, there appears to be less of a focus on reflection and application and more on surface features of the product (the poster, assignment and presentation), as illustrated in the following quote about assessing posters.

Polished ... the layout obviously, when you look at the poster it's got

to be easy on the eye, the colours that they use. I mean when Dr B does the lecture with them then he advises them what are good colours. He gives them the font size ... you look for colours and layout.

In the written assignments in the second WIL component the lecturer refers to their approach to assessment as being more than just about the importance of surface features; that what is written and what the assignment is about also matter, as indicated below.

I think layout is the first thing then also scientific knowledge ... the student must be able to get me to imagine the experience in that workplace.

However, surface features seem to be highlighted again as the 'first thing' and subsequent explanations of what matters in good and bad assignments is further substantiated in the reflections on actual marked assignments.

So even things like the font of something, the spacing, the alignment play a part ... a bad one (assignment) ... I mean there is so much that is grammatically incorrect, the spelling, the grammar and where they have taken pictures, the pictures are bad.

The final case is interesting in two ways. Firstly, the exotic code is not left as is but is linked to a more roman, integrated code, as was observed in the other cases. However, as has happened with most of the other cases, there is a focus on knowledge and practice (writing and presentation) which are peculiar to the university and do not seem to relate in any clear way to either the work experiences or the science curriculum (figure 5). In all the other cases we have presented in this paper this situation was represented as a form of sovereign code as it is about university principles for the purposes of the university. But a rethink is necessary here. These sorts of presentation skills may rather be seen as 'exotic', not because they are rooted in the workplace, but because they represent a field of knowledge that is different to science.

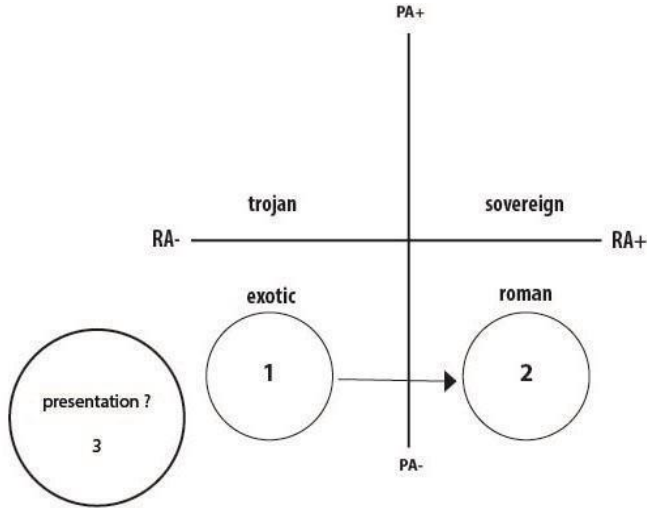


Figure 5: Autonomy journey of Agricultural Studies

## Discussion

The LCT tool of Autonomy focuses our attention on how different knowledges are situated in relation to one another, for example, science curricular knowledge, work knowledge and what we will describe here as more generic writing and presentation skills. LCT asserts that embarking on ‘autonomy tours’, moving between the different quadrants of the Autonomy plane is important for learning because students are confronted with different languages of legitimation, or sets of rules, that require recontextualising what has been defined in one way within a different set of circumstances. In particular, LCT Autonomy codes alert us to whether and how these languages of legitimation are integrated or whether they are simply placed ‘side-by-side’ in the hope that integration will occur. In so doing we are also conscious of the claim that what is selected and highlighted for assessment is the knowledge and practices which, in the mind of the lecturer (and so also the student), counts as important knowledge in that field (Race 2003).

As Costley and Armsby (2007) suggest, work experience or WIL may be used as a mode for learning science. In agreement with the aforementioned, all the respondents suggest that the normative purpose of WIL is to use

workplace practices for the purpose of learning more about science, which reflects a roman code. There is, however, also some movement to a trojan code where the purpose of WIL assessment concerns solving real problems at work, so contributing to workplaces. Thus assessment practices reported on in this research do describe a journey into integrated quadrants (roman and trojan codes), and there is also some signalling of what matters in these quadrants through what staff value in the assessments. It is likely, therefore, that students are experiencing some level of integration of scientific and work knowledge. This is most strongly so where lecturing staff indicate that they value 'reflection' and/or relating theory to practice in their assessment practices.

However, one particular field of knowledge stands out, perhaps, as being not so well integrated. When staff actually take the researchers through an assessment example, they often indicate that what counts are generic writing and presentation practices such as a correct 'bibliography', 'abstract and conclusion', 'layout', 'fonts' and even colour and neatness. These practices appear to have their own principles and criteria for what is legitimate, and serve mostly their own purposes rather than those of the science fields or the workplaces.

In Maton, Howard and Lambrinos' (2016) terms, assessment which focuses on generic writing and presentation practices takes students into the exotic quadrant at some distance from scientific principles and purposes. It can thus be described as 'other knowledge for other purposes' (Maton, Howard & Lambrinos 2016). Unlike with the integration of workplace and science's content, practices and purposes (e.g. as roman or trojan codes), there does not appear to be an attempt to connect these generic writing and presentation practices with science; neither is there an obvious attempt to link them to the field of the workplace. A similar finding can be seen in Maton, Howard and Lambrinos' (2016) work where they describe how learning science often involves learning about graphing, a maths principle. However, what teachers may sometimes do is move into maths and stay there without necessarily signalling the route back to the inside knowledge of science. The teachers appear to stay in the outside exotic code and students often fail to connect their mathematics learning to help them develop their knowledge of science.

How then could this tour into the 'exotic' be done better in the four cases discussed here, to both improve assessment practices and students' learning through integration? One suggestion would be to reconceptualise the more procedurally-orientated communication practices as 'social practices that

vary with context, culture, and genre'; in other words, through an academic literacy model lens (Lea & Street 2006: 368).

In an academic literacy model, the means which people use to communicate within a particular knowledge field typically reflects an understanding of that particular field (e.g. how the concepts in the field are connected to one another and how knowledge is typically represented and argued). Similarly, the use of abstracts or literature reviews incorporates referencing in order to present an argument that has value and is legitimate in that field. Students thus learn not only what matters in the field through learning in an academic literacy fashion, but also the beginnings of how to create their arguments in a legitimate way that will have purchase in the field (Lea & Street 2006).

The referencing and/or investigative report assessment criterion is then the extent to which students are able to explain the workplace problem through appropriate use of the scientific curriculum. The outside (of science) field of communication practices with its own principles and practices (PA-) is then recontextualised for the purposes of extending and learning science material (RA+), a roman code. In this way, better integration of the two fields for the overall benefit of student learning, may be achieved.

## **Conclusion**

Our concern in this paper has been, initially, to examine the extent to which WIL assessment practices are able to bring together knowledge and practices from the university science curriculum with those outside of it in the workplace. It was found that there was some degree of integration and students were given opportunities to rework workplace knowledge for the university and vice-versa. However, what was unusual was the emergence of an exotic code, related to how knowledge should be represented at university. In the discussion, we suggested that the means to help integrate this code with that of university science could be achieved by using the concepts of academic literacies.

In higher education, it is important that students engage with different contexts of learning for different purposes so that their learning is enhanced. The Autonomy codes indicate to us how the inside knowledge of a discipline (e.g. Environmental Studies) can remain far apart from other, outside practices,

or alternatively, how the inside and outside can be brought into closer proximity with one another. The latter, in which principles, knowledge and practices and their purposes are integrated, is suggested as being beneficial for student learning and development.

In the discussion we highlighted too how the apparent outlier of ‘writing and presentation’ skills can be better integrated with learning science. However, this particular orientation to teaching and learning science may warrant further interrogation. It may be fruitful in further research, to analyse generic writing and presentation practices in terms of the Specialization dimension which focuses attention on the interaction between assessment of knowledge and assessment of more socially orientated dispositions which are expected to have been cultivated in students (Wolff & Hoffman 2014). In this instance students are possibly being assessed against criteria for an ideal university knower, with particular dispositions ‘fitting the character of the university’ (Maton 2007: 91), rather than on their scientific knowledge.

## References

- Anderson, M. 2001. The Complex Relations between the Academy and Industry: Views from the Literature. *Journal of Higher Education* 72,2: 226–246.
- Arbee, A., W. Hugo & C. Thomson 2014. Epistemological Access in Marketing – A Demonstration of the Use of Legitimation Code Theory in Higher Education. *Journal of Education* 59:39-62.
- Argyris, C. & D. Schön 1974. *Theory in Practice: Increasing Professional Effectiveness*. San Francisco: Jossey-Bass Publishers.
- Barnett, M. 2006. Vocational Knowledge and Vocational Pedagogy. In Young, M. & J. Gamble (eds.): *Knowledge, Curriculum and Qualifications for South African Further Education*. Cape Town: HSRC Press.
- Billet, S. 2009. Realising the Educational Worth of Integrating Work Experiences in Higher Education. *Studies in Higher Education* 3,7: 827-843.
- Bourdieu, P. & L. Wacquant 1992. *An Invitation to Reflexive Sociology*. Cambridge: Polity Press.
- Cohen, L., L. Manion & K. Morrison 2000. *Research Methods in Education*. London: Routledge/Farmer.

- Cousins, G. 2009. *Researching Learning in Higher Education*. Routledge: London.
- Costley, C. & P. Armsby 2007. Work-based Learning Assessed as a Field or a Mode of Study. *Assessment & Evaluation in Higher Education* 32:21–33.
- Eraut, M. 2004. The Transfer of Knowledge between Settings. In Rainbird, H., A. Fuller & A. Munro (eds.): *Workplace Learning in Context*. London: Routledge.
- HEQSF 2013. *The Higher Education Qualifications Sub-Framework*. Pretoria: Council on Higher Education.
- Lea, M. & B. Street 2006. The ‘Academic Literacies’ Model: Theory and Application. *Theory into Practice* 45,4:368-377.
- Maton, K., S. Howard & E. Lambrinos 2016. Bringing it all Back Home: The Art of Building Knowledge from Diverse Sources. Paper Presented at a Regional Seminar, 19 April, Stellenbosch University, South Africa.
- Maton, K. 2014. *Knowledge and Knowers: Towards a Realist Sociology of Education*. New York: Routledge.
- Maton, K. 2007. Knowledge-knower Structures in Intellectual and Educational Fields. In Christie, F. & J. Martin (eds.): *Language, Knowledge and Pedagogy*. London: Continuum.
- Maton, K. 2005. A Question of Autonomy: Bourdieu’s Field Approach and Higher Education Policy. *Journal of Education Policy* 20,6:687–70.
- McNamara, M. 2010. What Lies Beneath? The Underlying Principles Structuring the Field of Academic Nursing in Ireland. *Journal of Professional Nursing* 26,6:377-384.
- Le Maistre, C. & A. Pare 2004. Learning in Two Communities: The Challenge for Universities and Workplaces. *Journal of Workplace Learning* 16,1-2:44-52.
- Race, P. 2003. Enhancement Themes, Workshop 2: Using Assessment to Motivate Learning. Available at: [http://www.enhancementthemes.ac.uk/documents/assessment/Assessment\\_Workshop\\_2FINAL.pdf](http://www.enhancementthemes.ac.uk/documents/assessment/Assessment_Workshop_2FINAL.pdf). (Accessed on 31 July 2010.)
- Shay, S. 2008. Beyond Social Constructivist Perspectives on Assessment: The Centring of Knowledge. *Teaching in Higher Education* 13,5:595-605.
- Smith, K., S. Clegg, E. Lawrence & M. Todd 2007. The Challenges of Reflection: Students Learning from Work Placements. *Innovations in Education and Teaching International* 44, 2:131 -141.
- Walsh, A. 2007. An Exploration of Biggs’ Constructive Alignment in the

Context of Work-Based Learning. *Assessment and Evaluation in Higher Education* 32,1:79-87.

Wass, W., C. Van der Vleuten J. Shatzer & R. Jones 2001. Assessment of Clinical Competence. *The Lancet* 357:945– 948.

Wheelahan, L. 2010. *Why Knowledge Matters in the Curriculum*. London: Routledge.

Wolff, K. & F. Hoffman 2014. Knowledge and Knowers in Engineering Assessment. *Critical Studies in Teaching and Learning* 2,1:74-95.

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