Work placement reflective assessments and employability enhanced through highlighting graduate attributes.

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Abstract

This paper reports on a study which investigated the effect of activities to promote awareness of specific prioritised graduate attributes on the quality of reflection displayed in student work-placement reflective blog assessments. The focus of the paper is on the results from a thematic analysis of reflective writing assisted by NVivo software from a control and research group, using the a priori codes of 'reflection' and 'graduate attributes', as part of a Participatory Action Research study. The findings show an increase in reflection associated with graduate attributes in the research group compared to the control group. More importantly, there is evidence of an increase in the variety of graduate attributes being discussed by the research group, with the specifically prioritised attributes featuring most frequently. Additionally, the research group were much more likely to explicitly identify the skill or attribute by name. This shows that activities that emphasise graduate attributes within a curriculum in advance of entering an internship or work-placement can help students by providing a focal point to frame their work-placement experiences in their reflective assessments. Students have an increased tendency to frame their placement experiences in terms of graduate attributes, as well as core skills developed in the curriculum. This consequently broadens their reflection and advances their employability, particularly initially securing employment, through improved articulation and evidencing of their transferable skills. It also provides a means of assessing the development of graduate attributes, which is a challenging but necessary academic task in a modern professional curriculum.

Keywords: graduate attributes, work-placement, reflective assessment, thematic analysis, employability, blog assessment

Introduction

This paper discusses the results of a research investigation into the effect of emphasising graduate attributes within a curriculum on student pharmacy technician work-placement reflective assessments, with a view to enhancing their employability. Employability is the ability to gain, maintain and obtain new employment (Hillage & Pollard, 1998). Gaining initial employment requires the correct skills and qualifications, but also the ability to present them

to an employer in an appropriate manner. These professional competencies relate to both theoretical knowledge and graduate attributes, as both are key to students employability (James, Lefoe, & Hadi, 2004). Given that employment advertisements and interview questions typically refer to specific transferable skills, along with professional and disciplinary competencies, inability to articulate and provide evidence for relevant graduate attributes thus reduces employability. The Higher Education Authority (HEA) Employability Skills review advises that Higher Education Institutions (HEIs) can help to close the skills gap by offering students the opportunity to develop an ability to articulate generic and other employability skills that can be applied in a professional capacity to address challenges (Toland, 2011).

A comprehensive review of integrating graduate attributes into the curriculum in Australia identified challenges in setting standards, and in determining to what extent these standards are being met by students (Hughes & Barrie, 2010). It emphasised that graduate attribute assessment plans will not accomplish their aim if students are not made aware of their objectives and if students are not actively involved as partners in the assessment process. They argue that a '*Student-centeredness'* in which graduate attributes are assessed *with* rather than *for* students is needed. They emphasise that the collection of evidence of progress in relation to specific attributes is needed for success, as well as active discussion about improvement with teachers and peers. The reflective process that underpins this approach to the understanding and development of graduate attributes is also key.

There have been many literature reports in various fields wherein attempts have been made to make more explicit within the curriculum the development and assessment of graduate attributes. Treleaven and Voola (2008) advocate that students' awareness of graduate attributes and their value must be developed and put in the context of their future careers, using reflective journals to gather evidence. Nicol (2010) has also included self-regulated learning in the development of graduate attributes, and reasons that students need opportunities to develop the ability to critically evaluate the quality and impact of their own work, which requires both self-assessment and peer review.

Like many HEIs, in order to realise a graduate skills portfolio, Dublin Institute of Technology (DIT) identified a suite of skills aligned to its academic mission as an industry focussed Institution that delivers job-ready graduates. DIT requested that these be integrated into curricula (DIT, 2013), and they were the focus of the Institute's Learning, Teaching and Assessment strategy. They are branded under 5 'E's: Engaged, Enterprising, Effective, Enquiry based, and Expert; and are further broken down within each 'E' (Figure 1).

The 20 DIT Graduate Attributes				
Expert	**Effective**	**Enquiry Based**	**Engaged**	**Enterprising**
Work based/work related learners	Strategic thinkers	Critical thinkers	Global citizens	Leaders
Disciplinary knowledge	Active team players	Creators of new knowledge	Excellent communicators	Innovators
Reflective practitioners	Emotionally intelligent	Decision makers	Motivated self-starters	Collaborative workers
Digitally literate	Resilient	Problem solvers	Ethical	Entrepreneurs

Figure 1: *DIT Graduate Attributes*

In tandem with this, on-going research has been carried out in DIT into the use of blogs as a reflective assessment and as a tool to foster a Community of Learning for pharmacy technician students on work-placement (Dunne & Ryan, 2016). Work-placement is a period of planned work-based experiential learning, where the learning outcomes are part of a programme of study. Common to best practice recommendations is the notion that students should actively participate in reflection, which is key to turning experiences into learning (Boud, Keogh, & Walker, 1985). Smith, Clegg, Lawrence, and Todd (2007) argue that the academic benefits of work-based experiences depend largely on the *extent* to which students reflect on them and relate them back to knowledge gained in theoretical modules. Reflection must be considered a purposeful activity that is pursued with intent, and involves and inter-relationship between feelings and cognition. Teaching innovations in the area of reflection for professional development include online technologies (for example blogs) which provide a virtual space for reflection which can be accessed by peers and tutors alike (Chretien, Goldman, & Faselis, 2008). A recent review of the supports for student reflection in technology-enhanced learning identified that pre-defined guidance and human-intervention guidance can both act as a positive support for high-quality reflection (Kori, Pedaste, Leijen, & Mäeots, 2014). The review advises that some kind of mechanism should be designed to guide learners in '*focusing on critical points'* while engaging in reflective practice.

The previous DIT research, which can be seen as reconnaissance for the study described in this paper, identified that a workshop on reflective writing improved the students' understanding of what good reflective writing looks like (Dunne & Ryan, 2016). However they continued to struggle with the practice of reflective writing as evidenced by their own opinions as well as their reflective assessments.

As an additional positive support, the current research proposed to investigate whether a better appreciation of graduate attributes may help the students to focus on these as 'critical points' (Kori et al., 2014) upon which to frame their work based experiences and consequently improve and deepen their reflective writing, and also their employability. This paper will discuss the results of a comparative thematic analysis of the reflective blog assessments of a control group (CG) from 2013/14 and a research group (RG) in 2014/15 to determine the effect of emphasising graduate attributes in the curriculum on their subsequent work-placement reflective writings.

The study

Theoretical Framework

A Participatory Action Research (PAR) methodology was implemented for the study in order to create a learning environment that connects theory and practice with action and reflection as an outcome of participating with others (Reason & Bradbury, 2008). As research that is carried out with participants not on them (Baldwin, 2012), this facilitated the students to act as co-researchers, and thereby through their participation and interactions each contributor was able to develop their own understanding of the concept of graduate attributes. A constructivist ontological position allowed for concepts about how graduate attributes are perceived and developed by the students to be produced through social dialogue and reflection. Research into how each individual student perceives graduate attributes must take into account the differences in individuals, and thus an *interpretation* of their reflective assessments was required. Therefore an interpretivist epistemological position was assumed.

The method chosen for the interpretation of the reflective assessments was through template analysis (King, 2014) for thematic coding. Analysis of the control group (2013/14) and research group (2014/15) was based on a hypothesis driven confirmatory approach using the *a priori* codes of 'reflection' and 'graduate Attributes'. Independent double blind coding of a random sample of assessments was carried out.

Participants in the study

The control group (CG) and research group (RG) involved in this study were all the students registered in the final year of the DIT Higher Certificate in Pharmacy Technician Studies in the two consecutive years of 2013/14 for the control group, and 2014/15 for the research group. There were no incidents of students belonging to both groups – each group was entirely independent of the other. Other than the activities included in the study described by this paper that were implemented for the research group, there were no other significant changes to the curriculum, nor those teaching it, during the years involved.

Implementation

Engaging in a PAR project enabled students to share responsibility for all aspects of the project (Fowler, Wu, & Lam, 2014). It placed the students at the centre of the research as co-researchers who would benefit through the development of a deeper understanding and articulation of graduate attributes and how they relate to the curriculum and the profession. This aligned to the concepts of Hughes and Barrie (2010) and Treleaven and Voola (2008) as explained in the Introduction. The research group students were involved in the three cycles of the action research, as follows.

During the first '*Knowledge development'* cycle of PAR (September to October 2014) a baseline level of research group (RG) student knowledge and confidence in their understanding of the twenty DIT graduate attributes (Figure 1) was achieved through student surveys. Their level of initial confidence about graduate attributes is depicted in **Error! Reference source not found.** in the Results and Discussion section. Following this, they were provided with several resources to develop their knowledge. These included information from the University of Sheffield careers service (Department, 2014), the HE STEM Employability Skills Review (Toland, 2011), the Open University careers service resources (University, 2014), and resources from the University of Aberdeen Centre for Academic Development (Aberdeen, 2014). *Knowledge development* was carried out over a series of face-to-face tutorial sessions, and involved peer and tutor discussion.

During the second cycle '*Prioritisation of Graduate Attributes'*, prioritisation for the programme in question was achieved through an online survey of pharmacy technician employers, including hospital and community pharmacists and human resource professionals (N=48). The survey was developed in conjunction with the students (November–December 2014). Allowing students to be involved with the development of the simple online survey assisted with their familiarisation of the graduate attributes. For example, the survey included student input into developing a definition of each graduate attribute. These definitions are provided in the Appendix. Further details about the survey design, which was based on the Australian Graduate Employability Indicators survey are available (Dunne, 2015). The results from the survey allowed for the most important graduate attributes for pharmacy technicians to be prioritised. These are listed in Table 1. Based on these, a series of activities to highlight the most important graduate attributes was carried out with the students. The Assuring Graduate Capabilities website (Oliver, 2015) was used to identify suitable activities. These included online self-evaluation exercises to allow students to determine their strengths and weaknesses in skills to date. They also included an ethics debate centred on a short ethical case study relevant to the role of the pharmacy technician, organised based on a modified version of the 'think-pair-share' format reviewed in Kennedy (2007) (December 2014 – February 2015).

Following these activities, the final cycle of the action research project to determine any effect of their reflective writing, the students undertook exactly the same placement preparation workshops as the 2013/14 control group. Details of these are already published (Dunne &

Ryan, 2016). The assessment rubric and details also remained exactly the same as for the control group.

Students were on placement from March – August 2015 and reflective blogging took place in four weekly instalments during April – May 2015.

Data analysis using NVivo

While qualitative research is not given to mathematical analysis, it is nonetheless systematic in its approach to data collection and analysis. In this research, the process involved breaking down the data into discrete 'units' and coding them to categories according to pre-defined *a priori* codes. Coding of the 2013/14 and 2014/15 reflective blogs was carried out using NVivo software to support the qualitative analysis. While the researcher carried out the hermeneutic task, NVivo was used as a tool for efficiency and transparency of coding, and to query the data during the analysis. The coding in relation to the results in this paper sought to look for evidence of increased emphasis on graduate attributes in student reflection.

The phases of the analysis were as follows:

Phase 1: Extracting the data from individual blog posts from the research and control groups into individual Microsoft Word documents and uploading these as sources in NVivo as 'case nodes'. The control group comprised of 26 student case nodes and 78 blog sources, while the research group consisted of 29 student case nodes and 87 blog sources. For anonymity when using extracts from their blogs, the students have been assigned the codes CG1-CG26 and RG1-RG29 for control and research groups respectively.

Phase 2: 'Open coding' each blog post case node into the primary NVivo 'node' of graduate attributes, according to the NVivo Codebook.

Phase 3: 'Coding on' the primary nodes into sub-nodes, according to the NVivo Codebook. Note, during the early analysis phase, a further coding-on was carried out to reduce the explicit references to graduates attributes into 'explicit but unnamed', and 'explicit and named'. Examples to show the difference between these can be found in the Results and Discussion section.

Phase 4: Running NVivo matrix queries on the coded data to establish trends and relationships between the different categories of codes from the Codebook.

Phase 5: Comparison of sample double coded assessments for agreement of coding.

Table 1: *NVivo Codebook for Open Coding and Coding-on for Thematic Analysis of Control and Research Blogs*

Open code	Sub-code	Code description
Graduate attributes		All references to graduate attributes explicit and implicit
Specific attributes:	*Communication*	References to communication based graduate attributes
	Emotional intelligence	References to emotional intelligence based graduate attributes, including discussion on ones own feelings, and ones perceptions of others.
	Motivation	References to motivation based graduate attributes, including taking initiative.
	Work related learner	References to work related learning graduate attribute, including CPD, on the job learning, and standard work skills such as organisation, time-keeping.
	Collaboration	References to collaboration based graduate attributes
	Team work	References to team work based graduate attributes, including organisation and time keeping. Accuracy and precision.
	Innovator	References to innovation
	Critical thinking	Reference to critical analysis and problem solving
	Ethical	Reference to ethical practice
	Others	References to specific graduate attributes not listed
Statement type:	*Implicit*	References to graduate attributes that have been interpreted by the researcher rather than explicitly labelled by the blog author.
	Explicit	References to graduates attributes that have been explicitly acknowledged by the blog author, either by using the Graduate attribute term itself or clearly alluding to the skill as has been defined for this project. Interpretation by the researcher was not required.

Limitations, Delimitations and Ethics

This research was delimited to the students in DT425/2 Higher Certificate in Pharmacy Technician Studies (DIT), 2013/14 as the control group for comparison. The study is limited to the cohort of students registered to the module TFIP2001 Pharmacy Work-placement DIT (N=29). Owing to the nature of the action research based methodology, there is an inherent deficit in the study because the research group and control group were not sampled from the same cohort, but rather individual cohorts in their final year of the same course in consecutive years. The study was delimited to a single primary coder, namely the author of the study, with a representative sample of double coding by an academic unrelated to the project for rigour. The project has received ethical clearance from the DIT Research Ethics committee (Ref no. 14-68).

Results and Discussion

The graduate attributes that were specifically identified by the pharmacy stakeholders as being most important for graduates of a pharmacy technician programme are shown in Table 2.

Table 2*: Prioritisation of Graduate Attributes for Pharmacy Technician Graduates by Stakeholders (N=48)*

DIT Graduate attribute
Excellent Communicators*
Active team players*
Collaborative workers**
Motivated self-starters**
Emotionally Intelligent**
Ethical**
Work based/work related learners**

* Top priority **Very high priority

The results from the baseline survey (N=22 RG students) show that there was a considerable lack of confidence in understanding by many of the research group students in regard to many of the attributes at the outset of the project (Figure 2), including those prioritised by their future employers. On average across all the skills, 8.75 students reported having confidence in their understanding of the graduate attributes, compared to a significantly higher 12.75 reporting not being confident.

With the exception of communication and team-work, none of the stakeholder prioritised skills ranked highly in terms of student confidence. Therefore it can be argued that at this point in their development, students who attend for either a work-placement or employment interview would struggle to articulate their skill-set in the language typically used at interviews and in employment advertisements.
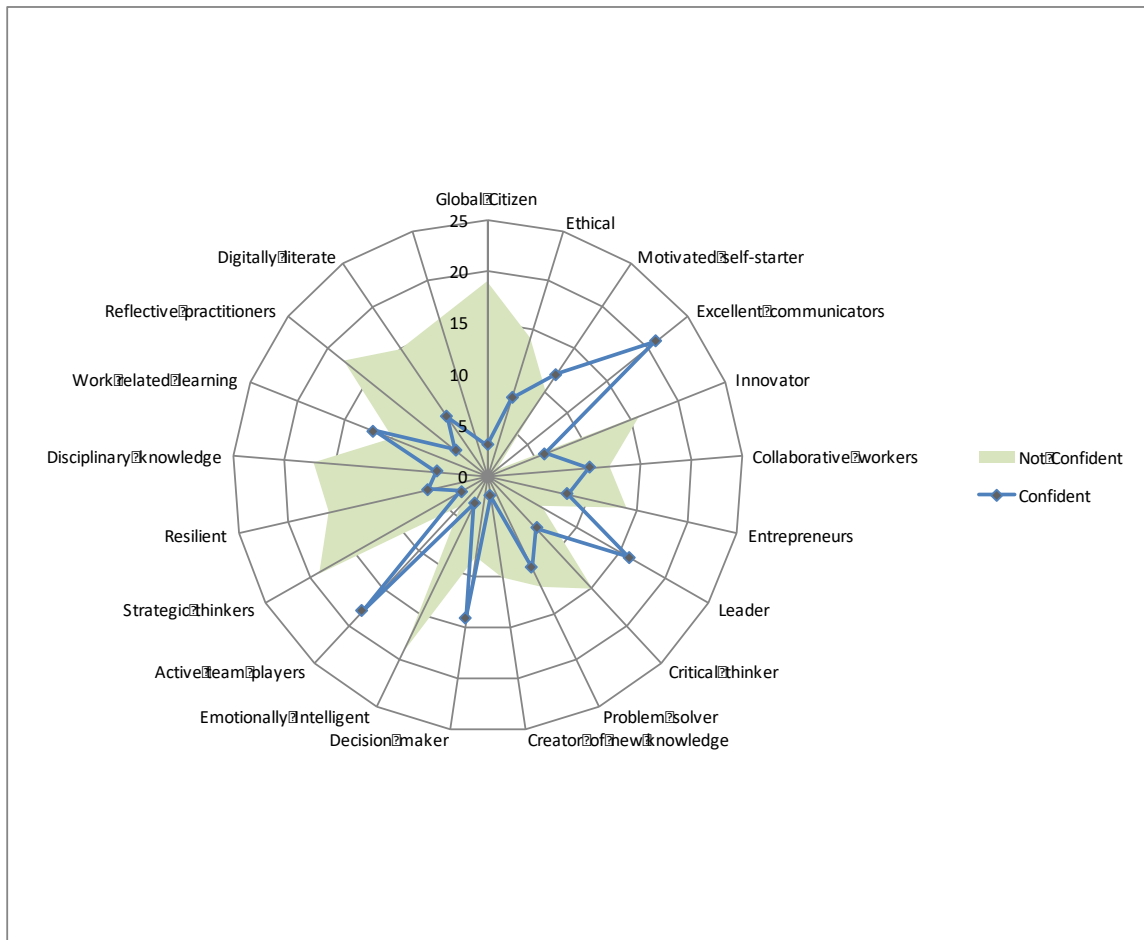
Figure 2: *Initial Self-confidence in Understanding of Graduate Attributes by the Research Group (RG) students*

Discussion of thematic analysis of control and research group blogs

Whilst there is some numerical aspect to the analysis, it is not intended that the findings be analysed in any strict numerical sense. For example, the coding has not been analysed with regard to word count being an indicator of level of discussion in relation to any of the given topics. The data was instead used to uncover broad trends in the assessments in order to gain an understanding of any changes that may have occurred in the blog assessment writings of the research group compared to the control group. This is appropriate owing to the qualitative nature of the study, as well as for robustness given the delimitation that only a random sample of the data has been double blind coded. From the coding analysis, the total references made to graduate attributes by the control and research groups combined was 359 references. This is shown in Table 3. This double coding did not highlight any discrepancy in relation to the board trends.

Table 3: *Overall References to Graduate Attributes*

Specific attributes	Blog sources	References
Communication	89	139
Emotional intelligence	54	100
Motivation	38	43
Work related learner	31	36
Collaboration	10	12
Team work	9	9
Innovator	8	9
Critical thinking	5	6
Ethical	4	5

To investigate if there was any difference in the references to the various attributes by each group, the results from an Nvivo matrix query that has analysed the data in Table 3 and separated it into references to each attribute made by the research group and the control group individually is presented in Table 4.

Table 4: *Breakdown of References to Graduates Attributes by Research and Control Groups*

Graduate Attribute	Control Group	Research Group
Communication	67	72
Emotional intelligence	50	50
Motivation	8	35
Work related learner	12	24
Innovator	0	9
Collaboration	6	6
Critical thinking and problem solving	0	6
Ethical	0	5
Team work	4	5

The trends indicated by the data in Table 4 suggest that there has been little difference in references alluding to emotional intelligence or communication attributes between the control and research groups. However, there is a perceptible, albeit small, increase in references alluding to ethical behaviour, innovation, problem solving and critical thinking by the research group.

These findings do suggest a greater awareness and breadth of attributes being reflected upon by the research group. However, returning to the description of employability by Hillage and Pollard (1998), it is also important that students have the ability to explicitly articulate skills and map their experiences appropriately to a future employer. It is interesting therefore to investigate to what extent the graduate attributes are being explicitly discussed, compared to implicitly, within each group. As described by the Codebook in Table 1, the open coding references to graduate attributes were coded on into statements that were made explicitly or implicitly. Explicit statements naturally included those that named the attribute directly. It also included those where a skill development had been identified by the blog author and there

was very obviously a reference to a graduate attribute development or demonstration. Implicit references were coded for when it was the researcher coding the blogs that identified the development or demonstration of a graduate attribute, as opposed to the blog author identifying it.

Overall, statements relating to graduate attributes have been made far more frequently by implicit insinuation (214 statements), compared to overt statements related to skills development or demonstration (134 statements). The difference between these two types of statements can be illustrated by reviewing references from each category.

For example, the following blog taken from the control group, which relates to increasing prices for medical card prescriptions, there is reference to graduate attributes. It is possible to identify emotional intelligence in the authors writing, but this has not been identified or elaborated upon in the blog and is therefore an implicit reference:

> *Exasperated, the man said it was getting difficult for him to afford his medication each month. I sympathised with him and asked the pharmacist if there was anything we could do. The man appreciated this gesture and I was struck by how much it meant to him to save such a small amount [of money]. This would be of particular concern to me for people like old age pensioners. These people may be living on their own, and have very limited means. I would fear that, in an attempt to live on a very limited budget, these people would cut back on their recommended medication.* [CG1]

On the other hand, examples of blogs in which the author has made an explicit reference to the demonstration or development of a graduate attribute can be seen in below in examples taken from the research group.
In this first example, describing a situation where a customer had to be informed of potential dangers of medication interactions, there is explicit reference to graduate attributes:

> *I realise that I used my emotional intelligence to tell the lady there was a possible interaction but I saved her the stress by not telling her how harmful the interaction may be.* [RG1]

Whilst in the following example relating to the sale of near out-of-date stock, there is a clear indication of reference to ethical behaviour. Even though 'ethical' is not mentioned directly, it is still an explicit reference to the demonstration of an attribute:

> *As a friend I would rather have said nothing to the Pharmacist so that the other technician didn't get in trouble but as a technician I felt that I couldn't knowingly hand out almost expired medication. To me, this was a moral issue. Should I look out for my friend's interests even though it meant going against the store's code of conduct? I knew that my job as a technician came first, even if the other technician was annoyed over my actions. I had to put personal feelings aside and go with what I knew was right.* [RG2]

To understand if there is any noticeable difference in blogging behaviour in relation to the manner in which graduate attribute statements are being made, the results of an Nvivo matrix query that separates the explicit and implicit references into the research and control groups is shown in Table 5. This data shows that the control group's statements are mostly made implicitly, whereas the research group are much more likely to make explicit statements, with these being made about as frequently as implicit ones.

This suggests that the research group appear to have developed a greater capacity to be able to frame an experience in terms of skills development and thus refer to it explicitly in their reflective writing. Presumably, as per the findings for the increase in the breadth of skills being referenced (Table 4), this increase in likelihood for explicit reference by the research group is a result of the action research project. Their curriculum and their participation in the project allowed a greater emphasis on graduate attributes including activities to support their development, compared to the control group's experience.

Table 5: *Breakdown of Graduate Attribute Statements into Implicit vs Explicit by Research and Control Groups*

	Implicit	Explicit
Control Group	115	32
Research Group	99	102

To explore this still further, the explicit references were further coded-on depending on whether they were actually 'named' or whether the attribute was 'unnamed' despite the direct intimation to the attribute in the reference. A query to examine if there was a trend in the behaviour between the research and control group in relation to the likelihood that they will expressly name a skill being developed within their blogs as a whole was carried out, and the results are shown in Table 6.

This query shows a trend that the control group's explicit reference to skills development is not concurrent with the overt use of the name of the graduate attribute, whereas the opposite is true for the research group, who have made considerably more references where skills have be transparently named.

Table 6: *Blogs Containing Explicit References Broken into Named and Unnamed*

	Control group	Research group
Explicit and named	2	72
Explicit but unnamed	23	5

To gain a more complete understanding of the types of attributes being explicitly referenced by both groups, a series of Nvivo queries were run which catalogue the data according to the most frequently discussed attributes. This is outlined in Table 7.

Table 7: *Analysis of most Commonly Referenced Graduate Attributes for Explicit vs Implicit statements by Research vs Control group*

Graduate Attribute		Control Group	Research Group
Communication	Explicit	11	30
	Implicit	56	36
Emotional intelligence	Explicit	8	13
	Implicit	42	34
Motivation	Explicit	2	20
	Implicit	6	12
Work related learner	Explicit	7	18
	Implicit	5	7

As has already been elaborated above (Table 4), communication and emotional intelligence skills are most frequently discussed by both groups, and as can be seen below in Table 7 they have most commonly been implicitly insinuated.

Typical implicit references to communication are shown below, and really reflect the student retelling of the day to day events of the pharmacy which involve their interaction with customers, and other members of the pharmacy team:

Just to make sure that it would be suitable with the antibiotic I double checked what I giving to the girl by telling the pharmacist what the problem was and what I suggested for her to take. [CG4]

Whilst characteristic explicit references include the following, which fall into named and unnamed categories respectively:

While looking back on the situation I realise how important communication skills are especially when dealing with the elderly as things need to be explained clearly and examples must be shown if necessary [RG3]

I am strongly of the opinion that as healthcare professionals, we need to know the audience to whom we are delivering advice to. It is important to alter the way you deliver information to each individual. [RG4]

It is apparent that the statements that have been made explicitly in these typical cases also appear to be more analytical in nature.
Examples of typical implicit references to emotional intelligence are:

Sometimes, I try to envision what it must be like for them [methadone patients] living with this addiction every day and still having to fulfil tasks, such as raising children and arriving at their places of employment as many of these patients work and have respectable jobs. [CG5]

Whereas a similar reference to the one above, but in the explicit category is:

I feel that this situation allowed me to develop some emotional intelligence. I could understand why the customer [methadone patient] felt the way he did. Perhaps he has felt he has been treated differently by people because he was a drug addict? [RG5]

Here the student's ability to monitor their own and others' emotions, to discriminate among them and to use that information to guide their thinking and actions has been demonstrated, as defined for emotional intelligence by Mayer and Salovey (1993).

Furthermore, a recent report by Por, Barriball, Fitzpatrick, and Roberts (2011) into the relationship between emotional intelligence, and stress and well-being in student nurses suggests that an increased feeling of control and emotional competence assists student nurses to actively assume effective coping strategies to deal with stress, thus increasing their subjective well-being. Whilst the current study relates to pharmacy technicians who are in a different and less stressful environment to nurses, they nonetheless experience challenging situations such as dealing with recovering addicts as outlined in the examples above, and also armed robberies and other criminal activity such as prescription forgery. Continuing to support discussions and reflection as a pedagogy to develop emotional intelligence as a learned skill should assist in producing emotionally-competent graduates (Horton-Deutsch & Sherwood, 2008).

The next attribute to be considered is motivation. The data in Table 7 shows a considerably higher rate of explicit discussion of motivation by the research group, with much of the discussion related to students showing initiative, for example:

I was pleased with how I used my own initiative to take matters into my own hands and competently handle it. When the pharmacist who had dispensed the medication came back I told him about what happened and he said he was happy with what I did. [RG6]

Whilst it is encouraging to see students reflect on incidents where they could demonstrate motivation, it is important to recognise that aspects of motivation, especially intrinsic motivation, are linked to personality, which is enduring over time, although environment plays a role (Boudreau, Boswell, & Judge, 2001). Assisting students to identify their personality type, for example using the extensively validated NEO Personality Inventory (Costa & McCrae, 1992) could consequently provide them with a more informed decision about the most suitable career-path, including in this case whether to opt for hospital or community pharmacy placement. This is turn could lead to improved job-satisfaction, which is considered important for extrinsic motivation (Boudreau et al., 2001). This will be considered in future review of the curriculum.

Work-related learning was another attribute that a query demonstrated a high level of explicit discussion in the research group, compared to the control group (Table 7). In this case the latter group was also quite inclined to discuss this in an explicit way. Much of the discussion in this area related to the development of accuracy skills in dispensing while on placement, for example:

*Overall I am happy about my progress in improving my accuracy skills as they are key to being a successful pharmacy technicia*n [RG7]

However, there were also several examples of the skill being discussed in a more named sense, for example in relation to hospital weekly cross-departmental discussion meetings:

It is my observation that these meetings are very well attended demonstrating an interest in ongoing, continuing professional development. [RG8]

The students generally, and particularly those in the control group, have discussed the remaining graduate attributes considerably less frequently, as was clear in Table 4. Nonetheless there were some very insightful comments in the blogs relating to the remaining attributes. A selection of these has been presented below. While collaboration was not named as a skill by any of the control group, a small number of references clearly indicate collaborative working, such as:

I wrote about this topic as I find it a very interesting task in the pharmacy. It includes ordering stock, maintaining stock levels and talking directly with the dietician and clinical nutritionist. [CG6]

Whereas there were several named explicit references to it by the research group, for example a reference similar to that above also discussed collaboration, but this time it is named:

I felt I communicated well with the dieticians and pharmacist and worked well under the pressure and multi tasked well. I could have saved a lot of time had I asked for help. I could have collaborated with my colleagues to get back on schedule rather than allowing things to snowball. This shows how important it is to work as a team and not to take on too much too soon. [RG9]

This is yet another example where the student has been actively articulating the development of a skill, and this adds to employability in terms of that discussed by Hillage and Pollard (1998) and Toland (2011).

The research group also more often discussed the related skill of teamwork explicitly, although the numbers of references to this are small, as shown in Table 4. Indeed, one blog in particular has captured the essence not just of the concepts of teamwork versus collaboration, but indeed of the participatory action research project broadly:

> *At the start of the college year we worked on a project to decide and assess what the most important graduate attributes were for future pharmacy technicians. This list was then sent around to those in the profession to get their opinion on what they felt a good technician should be. What was valued highly on this list was a 'Collaborative Worker'. The definition for this is a, 'Willingness to pool resources with others and understand the benefits of a collegiate working environment to reach a common goal.' Until recently I found it hard to see the difference between a collaborative worker and an active team player (Someone that takes full participation in the team, keeping the team's interests in mind and focusing on the end goal). However, within the past week the differences have become much clearer for me…*[RG2]

The blog continues to discuss a situation whereby the pharmacy's very experienced technician employee went on annual leave, leaving the student technician to work alongside a less experienced employee. The blog details the different skillset both had based on their relative previous experiences, and also the anxiety both felt to maintain high standards in the busy pharmacy.

> *It didn't take long before both of us felt the pressure and stress but we realised that by working together and pooling our knowledge, we were a much more productive team. For the rest of the week we have worked in partnership with one another….I see now that I may have been relying too much on the senior technician to help me. Without her there this week though, I have realised that I am more capable than I thought. Now that I have seen for myself how beneficial being a collaborative worker is in the pharmacy, it has made me think about the other graduate attributes that were voted most important. I have been looking for how I can apply and develop them during my time there. Is anybody else thinking about these attributes or have examples of where they would apply in our work?*

Although few blog assessments considered the action research project as a whole to this extent, there was certainly a perceptible influence of the project in several blogs.

The remaining three attributes were not discussed at all by the control group, and whilst not being a very large area of discussion for the research group, nonetheless show that the cohort have been influenced by the action research project and the stakeholder survey. This was a perceptible change from previous years, when blogging predominantly dealt with singular critical events and the student's immediate response, as opposed to ongoing practice and professional development.

Overall, the findings in relation to graduate attributes show that the students have been influenced by the project to improve their awareness and articulation of their skills, and this has impacted positively on their work placement assessments. This is in agreement with Hughes and Barrie (2010) who advocate for ensuring that students are aware of the objectives of including graduate attributes in a curriculum, and ensuring their active participation in the assessment process. It also agrees with Treleaven and Voola (2008) in terms of placing value

on graduate attributes being developed, and being put in the context of students' future careers.

All students have had the opportunity to reflect and find evidence for the development of their own skills, but also to discuss and debate with their peers through the blog commenting forum, which also provided them with additional peer examples which they can learn from and use to frame their own experiences in a similar fashion.

This teaching and learning strategy aligns more generally to several of the factors that Hughes and Barrie (2010) have identified as being a requirement for meaningful assessment of graduate attributes, at least for those that can be implemented at modular level. 'Conceptualisation', or perceptions of the very nature of graduate attributes are fundamental to the ways in which they are taught and assessed. In this project the students and the teacher have together developed a common understanding of graduate attributes through devising suitable definitions in a collaborative manner. This allows for a more transparent and fair inclusion of graduate attributes in the assessment strategy. Furthermore, the opinion of key 'Stakeholders' has influenced the curriculum design though focusing learning activities on prioritized graduate attributes. The use of the 'capstone' work placement module as a 'high-impact activity' as a means to assess the development of graduate attributes through a reflection process also aligns to the recommendations of Hughes and Barrie (2010).

Conclusions and Future Work

In conclusion, the findings show that emphasising graduate attributes within a curriculum can have a marked effect on the reflective assessment of students when they go on work-placement. Students have an increased tendency to frame their placement experiences in terms of graduate attributes, as well as core skills developed in the curriculum. This should allow students to articulate their skills in a more explicit and concrete manner, and find evidence for their development. Consequently, this should impact positively on their employability in terms of initially securing employment. Furthermore, hopefully it may encourage them to continue the process of reflection on practice throughout their career as life-long learners, and continue to find evidence for their skills development.

On-going research into establishing if there is a link between increased levels of discussion on graduate attributes and depth of critical reflection will be reported in due course. Future work will include consideration of how to build on the activities related to the action research in order to integrate and assess graduate attributes formally in the curriculum in a sustainable way, for example through a professional development ePortfolio. This may include careers management workshops, volunteering or service learning, self-assessments for skills development and personality type, ethical debates, and further support for critical reflection, including the use of the blogs from the research group as exemplars.

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Appendix

DIT Graduate Attributes and corresponding definitions created during the Knowledge Development cycle.
[note: subsequently created DIT official definitions can be found here:
http://www.dit.ie/teaching/graduateattributes/]

DIT Graduate Attribute	A graduate who can demonstrate ….
Engaged:	
Global Citizen	Respect for human diversity, and can work within a multicultural setting, with an appreciation of international social, political and economic issues.
Ethical	An awareness of moral issues, and an ability to work within an accepted Code of conduct of their chosen discipline or profession.
Motivated self-starter	An ability to work on their own initiative without constant supervision, whilst having an enthusiastic and positive attitude to work.
Excellent Communicator	An ability to identify the most effective way to convey their message orally and in writing at an suitable level**,** using appropriate media, and who displays a willingness to listen to others to assess their understanding.
Enterprising:	
Innovator	Ability as a creative initiator and improver of concepts and ideas, with the capacity to invent solutions to current issues and challenges.
Collaborative worker	Willingness to pool resources with others and understand the benefits of a collegiate working environment to reach a common goal.
Entrepreneur	A willingness to take risks, and to seek and identify opportunities to develop and apply an enterprising mind-set to new initiatives.
Leader	An ability to influence, enable and empower others towards making a vision a reality in a respectful, confident, approachable and trustworthy manner.
Enquiry-Based:	
Critical Thinker	An ability to question and analyse data from many sources, to challenge ideas, and apply logical reasoning to formulate arguments.
Problem Solver	An ability to identify and analyse problems from a variety of standpoints to clarify and overcome barriers in order to implement effective solutions.

Creator of New Knowledge	Creative and innovative qualities, and whose curiosity motivates their desire to conduct research in order to establish new information and understanding.
Decision Maker	An ability to make confident and unbiased decisions based on appropriate data and accepts responsibility for the outcomes.

Effective:

Emotionally Intelligent	Use of emotional and social skills to control their feelings when faced with challenges, to develop and maintain relationships with others, can show empathy and be aware of how other people are likely to react.
Active team player	Full participation in their team, who can give and receive feedback, and who keeps the team's interests in mind and focuses on the team's goals or end result.
Strategic thinker	Use of a logical and objective approach to information, who is able to plan ahead, considering the long term objectives and consequences.
Resilient	A mind-set and behaviour to enable them to persevere when faced with personal or professional difficulties, to manage and mitigate the impact of challenges while moving to a position of greater control

Expert:

Disciplinary Knowledge	Can demonstrate theoretical knowledge and apply skills with precision in their chosen subject at internationally-recognised standards at the level required by their qualification.
Work based/work related learner	Application of disciplinary knowledge and skills to the workplace, can learn from on-the-job training and context based activities, and who demonstrates interest in on-going continuing professional development (CPD) throughout their career.
Reflective Practitioner	An ability to review their performance, evaluate it against suitable criteria (e.g. regulations, theory) and allow this evaluation to influence future performance.
Digitally literate	An ability to recognise when information is required, and locate, evaluate and use information appropriately, whilst being proficient in the use of a range of ICT packages as well as discipline specific technology.