Professional Development with Prioritisation of Graduate Attributes within Pharmacy Technician Studies

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In this case study, a student engagement approach to developing graduate attributes, enhancing employability and work-based learning, supported students and staff to set out a vision for employment-ready graduates. The evidence-based research methodology, combined with student-led projects combined to create new opportunities for impressive charitable initiatives.

Introduction and Context

Employability is the ability to gain, maintain and secure new employment[1]. To build a successful career or even secure a first employment, students need to have the qualifications, appropriate transferable skillsets and the ability to demonstrate their knowledge and professional competencies in an appropriate manner. In 2013, Dublin Institute of Technology (DIT), now Technological University Dublin (TU Dublin), launched a suite of skills, termed graduate attributes (GAs), aligned to its academic mission as an industry-focused institution that delivers employment-ready graduates. The GAs were to be integrated into curricula, and were the focus of the Institute's Learning, Teaching and Assessment strategy. They are branded under 5-'E's: Enterprising, Engaged, Enquiry-based, Expert and Effective; and are further broken down within each 'E' (Table 1).

Work-placement is a period of planned work-based experiential learning, where the learning outcomes are part of a program and should be associated with a formal assessment[2,3]. There is an emergent consensus that being reflective and developing reflective practice is crucial to becoming an effective healthcare professional, adding to and enhancing everyday professional values, knowledge and skills[4]. Therefore, reflection-based assessment has been designed and implemented into the curriculum of Higher Certificate in Pharmacy Technician Studies (TU654/DT425). The students are required to produce bi-weekly reflective blogs during work-placement using a provided virtual space, and the blogs are shared and commented on by peers and assessed by the lecturer.

To support students' understanding of reflective writing, a workshop has also been identified. However, it was noticed/communicated that the students continued to struggle with the practice of reflective writing as evidenced by their own opinions and blogs. Hence, to improve the quality of the students' reflection performance, to facilitate their development of the transferable skills and the GAs established by the University, a research project was carried out by the TU654/DT425 Programme Team together with the TU654/DT425 students (2013/2014 and 2014/2015).

Project Outline

The project was to investigate whether a better appreciation of specific prioritised GAs will support students to improve their employability and deepen the reflection quality shown in their placement reflective blog assessment[6]. This project used a Participatory Action Research methodology[7], where the students acted as co-researchers. This methodology creates a learning environment that connects theory and practice with action and reflection as an outcome of participating with others[8], and ensures students take responsibility for all aspects of the project[9], and are able to develop their own understanding of the concept of GAs. The research also considered that each individual student might have different perceptions of GAs.

The control group (CG) and research group (RG) involved were the students in the final year of TU654/DT425 in the two consecutive years 2013/2014 (CG) & 2014/2015 (RG), respectively, where no incidents of students belonging to both groups. The RG was involved in the three phases of the research, as follows.

Analysing & developing the knowledge
Phase-I was to assess the initial level of confidence about the 20 GAs through student surveys (n=22). The results (Figure 1) initiated a disputational discussion, and the lecturer subsequently stepped in to help the students to build basic and mutual understanding about GAs. More resources were also provided to develop students' knowledge before the next phase, including resources from the HE STEM Employability Skills Review[10], careers service resources from University of Sheffield[11] and the Open University[12], and information from the University of Aberdeen Centre for Academic Development[13]. Knowledge development was performed over a series of face-to-face tutorials involving peer-tutor discussions.

Prioritising GAs for pharmacy technician students
Phase-II was to identify, adopt and embed the appropriate GAs explicitly into the curriculum and extra-/co-curricular activities, an online survey of pharmacy technician employers (n=48, from hospital and community pharmacists and human resource professionals) was carried out. This survey was developed in conjunction with the contribution made by the students (Nov-Dec, 2014), including student-developed definitions of GAs (Table 2). Seven, the most important, GAs were prioritised from this survey (Table 3).

Evaluating the impact of student's reflective wring skills
Phase-III was to evaluate the effect of students' reflective writing through work-placement blogs. The placement preparation workshops employed, and the assessment rubric and details used for the students remained exactly the same as for the CG (2013/2014). Details of this blog assessment have been published by Dunne & Ryan[5].

Follow-up activities
Based on the outcomes, various students-engaged/-centred activities have been designed and implemented, including careers management, ethical debate, integrated-case-study, personality identification and evaluation, community learning, etc. Here, we focus on a volunteering project activity: CIRCLET. CIRCLET is an Erasmus+ Strategic Partnership project aiming to embed deep collaboration between students and community partners, and strengthen capacity among higher education lecturers to improve learning outcomes for students. This project was part of the Community Engaged Research Learning (CERL) initiative run at TU Dublin (along with Queen's University Belfast, Corvinus University of Budapest, Open University of Catalonia, and Vrije Universiteit Brussel).

The project was performed during the 2020-2021 academic year. The year-1 TU654 students and St John of God service users co-designed fundraising initiatives with four charities. The class was grouped into four teams, and each designed and initiated their own activities for one charity. Virtual classes were held weekly (due to the COVID-19 pandemic) with academic/community mentors with each session having a clearly designed focus along with a feedback mechanism built-in at the end.

Action	Brief Description
Action A **Student Survey**	Student surveys to assess the basic level of understanding about the 20 GAs adopted by DIT. The results are presented in Figure 1.
Action B **Employer Survey**	Students to define the 20 GAs (Table 2) based on their own understanding to enhance their familiarisation of the GAs, as part of the development of the online survey before sending to the employers for GAs prioritisation. Note: the DIT official GAs' definitions were announced and published on the institute's website.
Action C **Reflective Assessment Analysis**	Evaluate the impact on the depth of critical reflection from the placement blogs, and the relationship with the discussion of the prioritised GAs by comparing the CG and RG. Table 4 is the breakdown of references to each attribute made by the two groups, indicating there has been little difference in references alluding to emotional intelligence or communication attributes. However, there is a perceptible increase in references alluding to ethical behaviour, innovation, problem solving and critical thinking by the RG. To understand if there is any noticeable difference in blogging behaviour in relation to the manner in which GA statements are being made, the results that separates the explicit and implicit references into the RG and CG (according to the most frequently discussed GAs, Table 5). This data shows that the CG's statements are mostly made implicitly, whereas the RG is much more likely to make explicit statements, with these being made about as frequently as implicit ones, suggesting the RG appears 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. Communication and emotional intelligence skills are most frequently discussed by both groups. Overall, the findings show that the students have been positively influenced by the project. 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 platform, which also provided them with additional peer examples which they can learn from and use to frame their own experiences in a similar fashion.
Action D **CIRCLET Initiation**	A Kick-off meeting was organised by the TU Dublin coordinator, and student groups were subsequently formed.
Action E **CIRCLET Implementation**	Each project team decided their charity and designed their own the fundraising activities. All CIRCLET activities were carried out through February and March 2021 (Figure 2). • Irish Cancer Society, involved online quizzes (€600 raised) • Jigsaw - the mental health charity, involved the Clang challenge (Connect, Learn, Active, Notice, Give) and 1000km-walk/run-participation over 5days (€557 raised). • Temple St. Hospital, involved a virtual Mama Mia fitness Event (€430 raised). • Dublin Dog Trust, involved baked cakes sales for local friends and family and squat challenge (€1,105 raised). It's a great achievement raising an incredible € 2,692 in total during the COVID-19 lockdown for purposes that all students hold close to their hearts.

Reflections

The findings of this research show an increase in reflection associated with GAs in the RG compared to the CG. More importantly, there is evidence of an increase in the variety of GAs being discussed by the RG, with the specifically prioritised attributes featuring most frequently. This shows that activities that emphasise GAs within a curriculum before entering 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 experiences regarding GAs and 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 GAs, which is a challenging but necessary academic task in a modern professional curriculum.

Furthermore, it is quite promising and encouraging that this project may promote both the students and the staff to continue the reflection process on practice throughout their professional career as life-long learners and continue to find strategies and evidence for skills development. However, this research was limited to the year-2 students (n=29) in TU654/DT425, 2013/2014 as the CG for comparison. Owing to the nature of the methodology, there is an inherent deficit in the study because both groups weren't sampled from the same cohort, but rather individual cohorts in their final year of the same course in consecutive years.

As part of the online CIRCLET experience, the reflective training session (delivered by TU Dublin's support services) embedded was thought to be beneficial, which further enhanced students' experiential learning and assisted them in writing a reflective report at the end. Students reported improved communication/project management skills.

Some particularly said *"I'm also very appreciative that I was able to take part of this fundraising, as I felt like I have helped someone and that I have done my part to make our country proud. I would love to do more volunteering work in the future because after doing this fundraiser for Jigsaw it helped me to strengthen my skills, including teamwork, organising, engaging, communicating along with an appreciation of ethics".*

St John of God service users also stated that they loved working and getting to know the TU Dublin students, and that it was of great benefit being able to co-design the projects. Being co-designers, gave the community a voice and increased benefits were reported like being able to participate in exercise particularly during the COVID-19 crisis.

Explanatory Figures & Tables (pages 5—7)

Figure 1. Initial self-confidence in understanding of graduate attributes by the research group students (n=22) during phase-I of the research project.

Table 1. Graduate attributes adopted by DIT.

Table 2. DIT graduate attributes and corresponding definitions created by students during phase-I of the research project.

Table 3. Prioritisation of graduate attributes for pharmacy technician graduates by external stakeholders (n=48) during phase-II of the research project.

Table 4. Breakdown of references to graduate attributes by research and control groups during phase-III of the research project.

Table 5. Analysis of most commonly referenced graduate attributes for explicit vs implicit statements by research vs control group during phase-III of the research project.

Figure 1. Initial self-confidence in understanding of graduate attributes by the research group students (n=22) during phase-I of the research project.
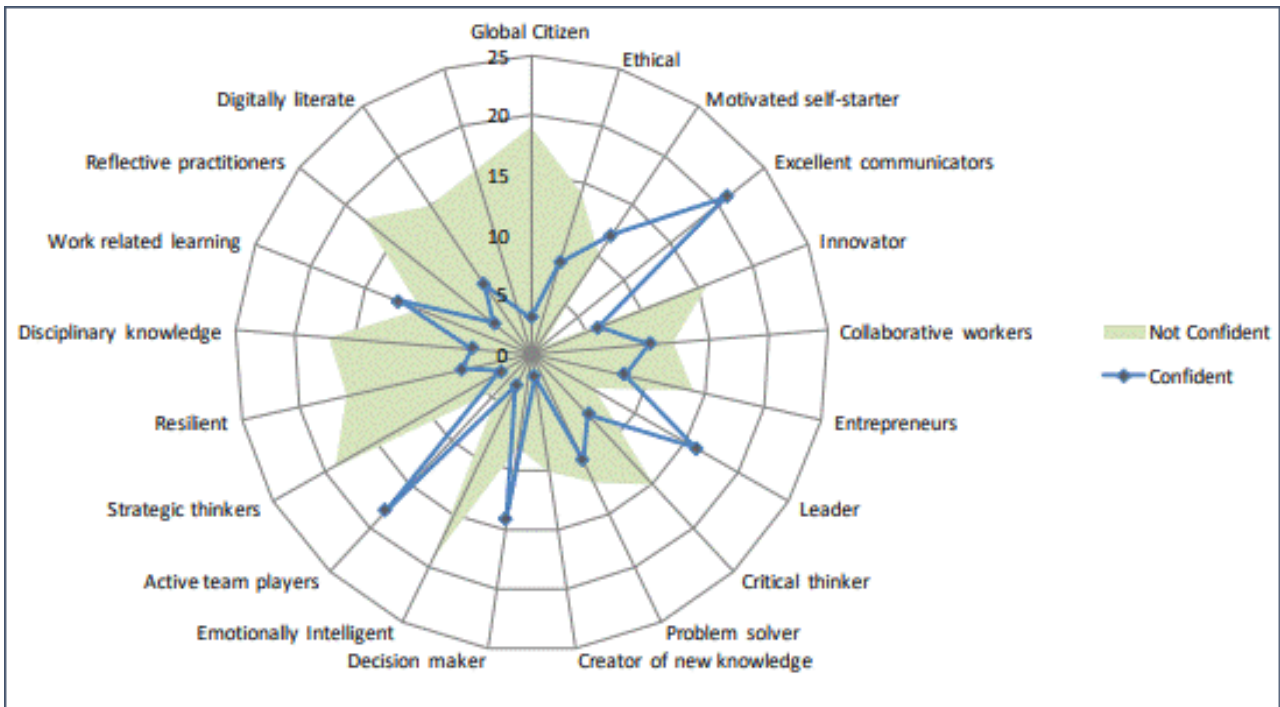

Table 1. Graduate attributes adopted by DIT.

Enterprising	Engaged	Enquiry-based	Expert	Effective
Innovators	Global Citizens	Critical Thinkers	Disciplinary Knowledge	Strategic Thinkers
Leaders	Ethical	Problem Solvers	Reflective Practitioners	Active Team Players
Collaborative Workers	Motivated Self-Starters	Creators of New Knowledge	Work Based/Related Learners	Emotionally Intelligent
Entrepreneurs	Effective Communicators	Decision Makers	Digitally Literate	Resilient

Table 2. DIT graduate attributes and corresponding definitions created by students during phase-I of the research project.

DIT Graduate Attribute	A graduate who can demonstrate…
Engaged	
Global Citizens	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-Starters	An ability to work on their own initiative without constant supervision, whilst having an enthusiastic and positive attitude to work.
Effective Communicators	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	
Innovators	Ability as a creative initiator and improver of concepts and ideas, with the capacity to invent solutions to current issues and challenges.
Collaborative Workers	Willingness to pool resources with others and understand the benefits of a collegiate working environment to reach a common goal.
Entrepreneurs	A willingness to take risks, and to seek and identify opportunities to develop and apply an enterprising mind-set to new initiatives.
Leaders	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 Thinkers	An ability to question and analyse data from many sources, to challenge ideas, and apply logical reasoning to formulate arguments.
Problem Solvers	An ability to identify and analyse problems from a variety of standpoints to clarify and overcome barriers in order to implement effective solutions.
Creators 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 Makers	An ability to make confident and unbiased decisions based on appropriate data and accepts responsibility for the outcomes.
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.
Reflective Practitioners	An ability to review their performance, evaluate it against suitable criteria (e.g., regulations, theory) and allow this evaluation to influence future performance.
Work based/related Learners	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.
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.
Effective	
Strategic Thinkers	Use of a logical and objective approach to information, who is able to plan ahead, considering the long-term objectives and consequences.
Active Team Players	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.
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.
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

Table 3. Prioritisation of graduate attributes for pharmacy technician graduates by external stakeholders (n=48) during phase-II of the research project.

Prioritised Graduate Attributes				
Active Team Players*	Effective Communicators*			
Collaborative Workers	Motivated Self-Starters	Emotionally Intelligent	Ethical	Work Based/Related Learners

*Top priority

Table 4. Breakdown of references to graduate attributes by research and control groups during phase-III of the research project.

Graduate Attribute	Control Group	Research Group
Communication	67	72
Emotionally Intelligence	50	50
Motivation	8	35
Work Related Learners	12	24
Innovator	0	9
Collaboration	6	6
Critical Thinking & Problem Resolving	0	6
Ethical	0	5
Team Work	4	5

Table 5. Analysis of most commonly referenced graduate attributes for explicit vs implicit statements by research vs control group during phase-III of the research project.

Graduate Attribute		Control Group	Research Group
Communication	Explicit	11	30
	Implicit	56	36
Emotionally Intelligence	Explicit	8	13
	Implicit	42	34
Motivation	Explicit	2	20
	Implicit	6	12
Work Related Learners	Explicit	7	18
	Implicit	5	7

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