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How peer mentoring fosters graduate attributes

Carole A. Scott, Angela McLean, and Clinton Golding

ABSTRACT

The most common approach to foster graduate attributes is to teach them in the curriculum of a bachelor's degree. However, it is difficult to include every graduate attribute in every degree. In this article we consider how co-curricular peer mentoring might provide an additional approach. We examine a case study of the mentors of the Peer Assisted Study Sessions (PASS) programme at a research-intensive university in New Zealand, and we examine the process by which they developed graduate attributes. PASS mentors reported that they developed a range of graduate attributes such as communication, critical thinking, and ethical responsibility, due to the extra responsibility and leadership involved in being a mentor in an authentic work environment. We argue that co-curricular programmes such as PASS can provide useful additional opportunities for students to acquire and develop graduate attributes. While not all students will be able to participate as PASS mentors, we also argue that our findings can inform other programmes for fostering graduate attributes. If these programmes offer authentic responsibilities to participating students, they may be more effective at fostering graduate attributes.

INTRODUCTION

Graduate attributes are now an important focus in higher education research and practice. These are “the skills, knowledge and abilities of university graduates, beyond disciplinary content knowledge, which are applicable to a range of contexts. It is intended that university students acquire these qualities as one of the outcomes of successfully completing any undergraduate degree at a University” (Barrie, 2012, 80). It is now common for universities and other tertiary institutions to list the graduate attributes they want their graduates to develop, such as critical thinking or communication (Barrie, 2006; Bridgstock, 2009; Clanchy & Ballard, 1995; Hager & Holland, 2006; Spronken-Smith et al., 2013).

An institution typically fosters graduate attributes by embedding learning opportunities within the curriculum (Barrie, 2004, 2006, 2012; Hager & Holland, 2006). As a student studies physics or history, for instance, they also develop graduate attributes such as critical thinking. However, this curriculum-based approach may lead to inconsistent outcomes for students, as not all attributes are addressed in all courses (Cranmer, 2006; Green, Hammer, & Star, 2009; Hager & Holland, 2006). For example, a mathematics graduate might have developed high levels of critical thinking, but not teamwork.

We suggest that the typical curriculum-based approach to developing graduate attributes can be supplemented with a *co-curricular* approach. In particular, we argue that co-curricular *peer learning and support* may provide a valuable complementary approach to foster graduate attributes.

The peer learning programme we focus on is the co-curricular Peer Assisted Study Sessions (PASS), based on Supplemental Instruction developed in the USA in the 1970s (Martin and Hurley, 2005). In PASS, students attend weekly study sessions for a course in which they are enrolled, typically a first-year course such as law or physics. PASS sessions are facilitated by second- or third-year students who have successfully completed the course, and who typically have participated in PASS when they were first-year students. The facilitators are trained and supported by PASS mentors who had been PASS facilitators for at least one year before becoming a mentor (Horwood et al., 2012; University of Wollongong, 2003). The PASS mentors are involved in recruiting, training, mentoring, and evaluating PASS facilitators, as well as promoting PASS in their university. For the purposes of this article, we refer to these three roles respectively as PASS participants, facilitators, and mentors.

Research shows that PASS *participants* develop important academic and social skills (Green, 2008; Dawson et al., 2014). This includes independent learning skills, enhanced self-efficacy, and interpersonal skills (Congos & Schoeps, 1993; Despotovic & Fisher, 2012; Martin & Hurley, 2005; Prebble et al., 2004; Topping, 2005), as well as a range of employment skills (Chilvers & Waghorne, 2018; Carr et al., 2018).

Studies also show that peer *facilitators* develop important attributes such as increased self-confidence, problem solving, teamwork, and relationship-building skills (Congos & Stout, 2003; Donelan & Wallace, 1997; Green, 2008; Lockie & Van Lanen, 2008; Laurs, 2008, 2018; Micari, Streitwieser, & Light, 2006; Skalicky & Caney, 2010; Stout & McDaniel, 2006).

The *mentor* role, with its leadership responsibilities, offers students further opportunities to build the skills they developed as PASS facilitators (Skalicky & Caney, 2010). Before our research, we had explicit anecdotal evidence from our PASS mentors that they developed a range of graduate attributes, most notably communication, critical thinking, and ethical responsibility, and this is consistent with the broader literature about PASS. But what we did not know was *how* being a mentor fostered these graduate attributes. This is the focus of this paper.

To better understand the development of graduate attributes in PASS mentors, we conducted a focus group and semi-structured interviews with 11 PASS mentors about how they developed attributes as facilitators and then as mentors. In the following sections, we first examine the background literature about graduate attributes and how to foster them. We then detail the method we employed in our study, and finally, we present our results and conclusions.

GRADUATE ATTRIBUTES

In recent years, higher education institutions have emphasised the fostering of graduate attributes—particular attributes that all their graduates should develop, regardless of their course of study. This new emphasis on graduate attributes was initiated by the 1997 Dearing report and the 1999 European Bologna agreement (Barrie, 2007; Keeling, 2006; Spronken-Smith et al., 2013), but it is also a response to growing pressure from various external stakeholders and government bodies to produce “work ready” graduates (Barrie, 2006; Bridgstock, 2009; Hager & Holland, 2006; Green et al., 2009).

A variety of terms are used to describe and define “graduate attributes,” such as skills, qualities, and competencies, as well as personal characteristics, values, or human qualities. These attributes are described as transferable, generic, core, or key, and may be linked with employment or citizenship (Barnett, 2012; Barrie, 2004, 2006; Cranmer, 2006; Green et al., 2009; Hager & Holland, 2006; Muldoon, 2008; Laurs 2018).

The most common approach is to teach graduate attributes in a disciplinary context by incorporating or embedding them within the curriculum (Barrie, 2004; Bath et al., 2004). However, it is generally agreed that embedding and “teaching” graduate attributes within the curriculum is difficult and, due to differences in courses, may not consistently foster all attributes for all students (Barrie, 2004, 2006; Bridgstock, 2009; Cranmer, 2006; Hager & Holland, 2006). For example, while students might easily develop the graduate attributes of teamwork and leadership in a professional course, they might have little opportunity in a more theoretical course, such as physics (Winch, 2006).

GRADUATE ATTRIBUTES FOSTERED THROUGH CO-CURRICULAR PEER LEARNING

Complementing the curricular approach, co-curricular peer learning and support activities such as peer mentoring and Supplemental Instruction offer the potential for a more consistent approach to fostering graduate attributes for all students (Jackling & McDowall, 2008; Laurs, 2008; Muldoon, 2008). As noted earlier, previous research into peer-assisted learning programmes focussed predominantly on the academic benefits for participating students. However, increasing research shows that when students act as peer facilitators, they further develop and refine graduate attributes (Congos & Stout, 2003; Green, 2007; Donelan & Wallace, 1997; Micari et al., 2006; Stout & McDaniel, 2006; Muldoon, 2009; Laurs, 2018; Stracke & Kumar, 2014). For example, when acting as peer facilitators, students developed graduate attributes such as teamwork, communication, and leadership skills (Jackling & McDowall, 2008; Laurs, 2008; Skalicky & Caney, 2010), as well as empathy, patience, self-efficacy, responsibility, and commitment (Couchman, 2009; Laurs, 2008; McPhail, Despotovic, & Fisher, 2012; Skalicky and Caney, 2010).

Despite this research on peer facilitators, there is little research on either academic peer mentors or on the learning process by which peer leaders develop graduate attributes. We conducted a case study to understand how PASS mentorship led to the development of graduate attributes for PASS mentors at our institution.

METHODS

Our core research question was *how* do mentors think the mentorship programme fostered the development of their graduate attributes?

Our research is a qualitative case study (Yin, 2003; Harland, 2014) of the graduate attributes developed by PASS mentors at the University of Otago. We provide a rich, explanatory account to capture the complexity of this single case (Yin, 2003; Stake, 1995).

We used a focus group and interviews to ask students about their experiences and probe further as necessary. The focus group was used initially so we could

identify particular issues and questions to explore (Kitzinger, 1994), and these issues and questions were followed up in each of the subsequent individual interviews (Kvale, 1983).

The interviews and focus group were conducted by the first and second author. The first author was also the work supervisor for the PASS mentor participants, and had spent at least a year developing an open and honest relationship with the participants. Ethics approval was granted by the University of Otago.

PARTICIPANTS

We invited all PASS mentors from the University of Otago PASS programme between 2012 and 2014. Because there were only four mentors per year, the research needed to cover least three years to get sufficient data. Of the 12 possible participants, 11 agreed.

All mentors had at least one year's experience as a PASS mentor. Most mentors had been a student participant for a year in the PASS programme, and all had been a facilitator for one to three years. They all started in PASS two to four years prior to their promotion to mentor. One participant had not attended PASS as a student but had been a facilitator in the programme for three years before becoming a mentor in 2011. See Table 1 for more details about the participants.

Table 1
Details of PASS mentors who participated in the study

Level of study at time of interviews	Area of study	Gender	Time employed in PASS programme
1 3 rd year undergraduate	4 Commerce	4 Female	All had three to six semesters as PASS facilitators plus at least one year as a mentor
9 4 th year undergraduate	2 Health science	7 Male	
1 1 st year master's	5 Science		

In our focus group and interviews, we started by introducing students to the idea of graduate attributes and explained what these were. In the focus group, we then had an open discussion to identify the questions that we would address in the interviews. In the interviews, we asked the PASS mentors to address these questions, which were

- Did you develop attributes? Which ones?
- Did you acquire new attributes or enhance existing attributes?
- Which attributes did you feel you developed, acquired, or enhanced?
- How did you develop these attributes?
- Did the PASS programme contribute to this development? If so, how?
- Did your role of PASS mentor contribute to this development? If so, how?
- How much did your course of study at university contribute to this development?

The four PASS mentors from 2012 participated in a two-hour unstructured focus group in the middle of that year to identify questions to discuss in interviews, and then they participated in individual semi-structured interviews about these questions at the end of the year. Then, the four mentors from 2013 participated in interviews, and in 2014, three of the four mentors from that

year participated in interviews. Each interview was approximately 60 minutes long and was conducted towards the end of the academic year when the participant was a PASS mentor. We followed the schedule of interview questions as above, but when necessary, we also probed to expand and clarify what the mentors were saying and to follow lines of discussion that illuminated the mentors' experiences.

We took a general inductive approach for our data analysis, so we could allow the findings of the study to emerge as recurrent themes in the raw data (Thomas, 2006). The first two authors read the transcripts of the data separately and made notes about potential themes, and then they compared their notes and found consensus about the major themes. There was a very high level of agreement about themes from the first two authors because the mentor participants tended to give explicit answers to the questions, which fitted into obvious themes. For example, one mentor commented that being a mentor forced them to improve their communication because they now had to talk with many different students, facilitators, and academic staff. The first two authors both categorised this into the theme of developing graduate attributes because of the added responsibility of the mentor role.

Using this method of analysis, we identified the most common themes in the transcripts where students were saying similar things about their attribute development. We organised these various themes into four sub-sections for ease of presentation in this article.

There were three graduate attributes that the mentors all agreed they had developed, which we list using the descriptions from the *Guidelines for Teaching at Otago* (2011):

- COMMUNICATION: Ability to communicate information, arguments, and analyses effectively, both orally and in writing.
- CRITICAL THINKING: Ability to analyse issues logically; challenge conventional assumptions; consider different options and viewpoints; make informed decisions; and act with flexibility, adaptability, and creativity.
- ETHICS: Knowledge of ethics and ethical standards and an ability to apply these with a sense of responsibility within the workplace and community.

We include all the themes related to how they developed these attributes in the following sub-sections: communication in the first sub-section, critical thinking into the second, and ethics in the third. In the fourth sub-section of our findings, we discuss the overall process of developing graduate attributes. Rather than include quotations from every participant in every theme, we have selected quotations that depict the clearest articulation of a given theme.

FINDING 1: COMMUNICATION

All participants indicated that being a PASS facilitator and mentor was pivotal in fostering and enhancing their communication skills. Several mentors stated that they applied for the PASS facilitator role because they believed that it would enhance their existing communication skills. Although their time as facilitators had increased their confidence and skill in public speaking and articulating ideas, participants emphasised that their communication skills

were enhanced in the mentor role. We highlight two main aspects of how PASS mentors said they developed their communication: effective communication and professional communication.

Effective communication

Participants indicated that they developed a “range of communication skills” (Participant 2) during their time in PASS. As facilitators, they learned to communicate information in an accessible manner, break down difficult concepts to assist understanding, and consider the diversity of their audience:

Something that I've really enjoyed is learning how to, kind of reword questions if someone doesn't quite get what you mean the first time. You know, like keep breaking it down and making it more simple, which I think is a fantastic skill to have, being able to, you know, really make something understandable for someone who doesn't get it. (Participant 4)

Participants also developed their verbal communication skills so that they could effectively organise and direct students, manage group dynamics, and engage students in collaborative learning activities such as group learning, discussion, and debate:

I think it's just been great in terms of making me more comfortable in front of a group of people and being able to manage a group of people and get them all doing the same sort of [things], getting them doing what I want them to be doing. (Participant 4)

It's all about managing the dynamics, and it's not just what you say. It's also how you say it and that kind of thing. (Participant 5)

However, participants also emphasised that their new role of PASS mentor, with its broader scope, helped them to refine their communication even further. Being a mentor gave them an expanded view of the PASS programme and they realised that “a whole different level” (Participant 1) of communication was required. In particular, they emphasised that their role in training, supporting, and debriefing the PASS facilitators contributed strongly to their development of communication skills. The mentors said that because they felt responsible to ensure that facilitators had the right information and understood the PASS model, they developed better communication skills so that they could fulfil this responsibility. They also felt that they had learned ways to communicate that motivated and encouraged buy-in from the facilitators. And, because the mentors had limited amounts of time in which to give constructive and effective feedback on a facilitator's practice, they learned to communicate more efficiently:

Just being able to communicate with the facilitators, you know, at first on a weekly basis and just try and get your ideas across in a meaningful way where they accept what you say and really take something from it, and I think being able to be concise, as well, and we get to meet with them once every week...and then once a month...you've got to make the most out of that one hour. (Participant 7)

Professional communication

The PASS mentors said that they developed formal or professional communication skills because they had to form diverse working relationships, such as liaising with “lecturers and staff” (Participant 1). The mentors became more aware of the need to communicate in a way that built relationships and paved the way for positive dialogue. Similarly, they realised that how they communicated would reflect on the programme, and this motivated them to consider carefully their written and verbal communication with students and staff, and to develop diplomacy skills and a professional communication style:

Someone emailed me...I had to sit down for a bit and make a carefully crafted reply to it in case we get on the wrong side. Now that is an opportunity for development itself and also made me recognise that...I need to do it better in terms of generating the diplomatic response more quickly, and that's made me think a great deal about how I would respond if something similar were to happen again. (Participant 5)

Learning how to build relationships...for the better of everyone. (Participant 4)

Learning how to write emails and stuff like that....You just kind of learn how to word things so that it comes across nicely and, you know, you don't get on the wrong side straight away. (Participant 1)

When asked whether they felt these skills were transferable, mentors commented that they were also more confident in dealing with their own academic supervisors:

That's kind of how I first contact[ed] my supervisor...to say, “I've seen in your profile that you're interested in this area. I am, too. May I talk to you about this to discuss options?” Umm, I think I would have been a bit too scared to do that to start off with, actually, if I hadn't have gone through the PASS programme and, like, I didn't even know how to, where to start or anything with writing something like that. (Participant 1)

FINDING 2: CRITICAL THINKING

The participating PASS mentors strongly indicated that they developed critical thinking as a result of their role in PASS. We discuss the three main aspects of how PASS mentors developed critical thinking, each of which is interrelated with the others.

Analyse, evaluate, and make complex judgements

Participants reported strengthening their analytical skills. They felt better equipped to analyse issues logically and to make careful and complex informed judgements. Although they thought they developed some critical thinking skills as PASS facilitators, they thought the mentor role required a deeper level of thinking. They now had to ensure the most appropriate and effective decisions were made to support the facilitators and enhance the quality and integrity of the whole programme:

To do my job well, I have to reflect and I have to know more about how things work...critical thinking, that's been helped a lot by being a

mentor...not just taking everything for granted...going a bit deeper and thinking about why things work. (Participant 4)

In particular, mentors felt their role “in the training of the leaders and...the selection of the PASS facilitators” had made them “a bit more analytical” (Participant 3). They also felt that the added responsibility of assisting with quality assurance of the programme and observing sessions and facilitator practice encouraged them to critique, reflect, and question so they could make informed decisions:

Are they a really good PASS facilitator? Particularly if you're looking for, for new mentors in the future...what is it that they're bringing to [PASS]? (Participant 3)

Flexibility and seeing multiple perspectives

PASS mentors also reported an enhanced ability to consider different options and viewpoints, and to act with flexibility by “continually adapting and changing...trying to do things in a creative way” (Participant 3). They attributed this development to moving their focus from the narrow perspective of facilitating their individual PASS sessions to the broader perspective of the mentor role, focussing on the quality and integrity of the whole programme.

In particular the mentors noted that assisting with the training and support of facilitators outside their own area of study exposed them to alternative viewpoints and ideas, which challenged their opinions, perspectives, and actions. As a result, they reported a change in their thinking, realising there was not one “right way” to approach learning. As one mentor commented,

As a mentor, hearing the problems that [the facilitators have] been facing and trying to help with problem solving...it's really challenged me, too...reshaping my thinking...just because it's worked for me this way, doesn't mean it's going to work for someone else. (Participant 1)

Mentors also felt that they became progressively more flexible as their responsibilities increased. As facilitators, they had learned to adapt or change their plans “on the fly” according to student needs or preferences. However, as mentors, they felt they became more flexible, adaptable, and creative because they had to continually find ways to encourage and support a diverse range of facilitators and disciplines:

I've tended to be continually adapting and changing...to try and think of some way to do it...in a creative fashion. (Participant 3)

Reflection and evaluation

The third main aspect of critical thinking developed by the PASS mentors was reflection and improving their practice as facilitators and mentors.

It was hardly surprising that PASS mentors reported the development of reflection because this is explicitly encouraged in our PASS programme. Facilitators are required to complete a weekly reflection form about their facilitation. This is designed to help facilitators improve their practice, encourage them to think more broadly, and to challenge their own ideas about learning.

However, it was when they became mentors that the participants most strongly developed the ability to reflect. Some mentors acknowledged that “as a first-year facilitator...I never really thought about why things did work.” (Participant 4) Most admitted completing reflections only because it was a requirement of the job. However, as they moved into the mentor role, they realised the true value of reflection:

I was sharing my experiences with others. I had to think about, you know, why things were working and...weren't working and whether they...might work in a different situation. (Participant 4)

Once again, it appears that it was the increased responsibilities of the mentor role, and a broadened view of the PASS programme, that led to this strong development of reflection. The reflection process became more important because the PASS mentors were responsible for the other facilitators and for the whole programme. As one participant commented,

I don't think I did it as much when I was a facilitator because...I just kind of would take it as it came. Whereas being a mentor and actually telling people what works and what doesn't, you need to...think about why things worked and, and why they didn't....To do my job well, I have to reflect, and I have to know more about how things work. (Participant 4)

Learning to reflect on their assignment results and the feedback received from markers made a difference in how the mentors approached their studies. They were able to better understand where the marker “was coming from” (Participant 1), leading them to more easily find ways to improve:

PASS teaches...to go back over the work I've done...to check what the lecturer said was good and to reflect on how I did that essay in order to help me move forward....I've always had a tendency to, to write long sentences and long paragraphs and just keep writing and adding words...and it's only through reflection on how I've been writing that I realise that, actually, you've got to be shorter and more concise with how you write....That's some of the skills I learnt in PASS, to reflect on things. (Participant 3)

The mentors also saw reflection as a transferable skill that could give them an advantage in the workplace:

I've learnt the value of reflecting, and I think that that's going to be a really important—I think it's going to be something that I'll have over a lot of others...as with a situation where something doesn't go to plan. I will be able to reflect on it and...probably pinpoint why. Whereas someone who hasn't done a lot of reflecting or doesn't know how to reflect won't be able to. (Participant 4)

FINDING 3: ETHICS AND RESPONSIBILITY

The participating PASS mentors indicated they developed a greater awareness of ethical behaviour and a broader sense of responsibility as a result of their role in PASS. For several of the mentors, the broader scope of the mentor role

within the PASS team meant the “responsibility’s got bigger” (Participant 1). Mentors spoke of a greater awareness of the needs of others and “learning that...you do have to step up to the game sometimes.” (Participant 1)

When they were a facilitator, their role was narrowly focussed on producing quality PASS sessions for their students. But as a mentor, their role expanded to include tasks such as training, mentoring, and evaluating PASS facilitators, and promoting the programme to the university, and so they experienced greater responsibility:

I think you’ve got that sort of accountability, just making sure the programme runs....I feel like if something’s going wrong, it’s on us...so we have a responsibility to make sure that things run efficiently and that we make an environment that helps the facilitators...because if they’re having an easier time and they’re enjoying the work, then the sessions are going to be better....Starts at the top, really, and it sort of trickles down. So if we’re running inefficiently, there’ll be a breakdown in teamwork....If there’s no accountability, then the programme suffers. (Participant 7)

This heightened sense of responsibility led some mentors to a greater ethical awareness in general that “you’re not the only one in the world.” (Participant 2)

Working with people teaches you...how you should function as an ethical human being...and PASS teaches [that]. (Participant 3)

FINDING 4: AUTHENTIC TASKS AND ROUNDEDNESS

Our findings suggest that an effective way to develop graduate attributes is to involve students in tasks that they see as authentic or real work, where they have genuine responsibility, such as being a PASS mentor. As PASS mentors, they were employed in real work, or a “real job...a real-life opportunity to practice” (Participant 6), rather than completing a contrived assignment or project, and they worked with university staff as fellow professionals, not in the teacher-student relationship. This sort of work environment seemed to be more effective for developing graduate attributes than the artificial or simulated tasks often involved in the curriculum. Participants said that because of their “responsibility within the workplace” and “accountability,” (Participant 7) they learned “a whole lot of things that...just study doesn’t teach.” (Participant 3)

The mentors also said that they felt like a “more rounded person...more complete” (Participant 7) as a result of their experience in the PASS programme. They felt they developed a variety of interwoven attributes—academic, personal, and professional—and the ability to apply these in real-life situations. They also thought that it was impossible to get this sense of roundedness from study alone:

I don’t think you can be rounded just from doing study. In fact, you can’t be...when you spend all your time doing academic study, you can’t get this rounded character. You need extra-curricular activities, and PASS is an amazing extra-curricular activity for getting you to learn things like these skills. (Participant 3)

Because of this sense of roundedness, participants also saw all the graduate attributes they developed as an interwoven whole. Whenever we tried to talk about one attribute with participants, they would quickly link this with other attributes, because they were not developed in isolation. For example, they reported that in order to fulfil their ethical responsibility towards their students, they had to develop their communication, and in order to communicate more clearly, they also had to develop critical thinking.

This sense of roundedness also made them feel they were more employable than their less rounded peers. They said that they had developed a range of useful skill and attributes as a PASS mentor and this meant they “had an advantage over others in my class” and this “will make me a better employee than others.” (Participant 4)

That whole variety of skills that I wouldn't have had otherwise on leadership...working with group dynamics...reflection for myself, on understanding how other people operate, all the things like that that have rounded me out as a person, as well, and that's all things that I would use in the future, and if you're justifying it in the job market, then I would try and communicate that sort of stuff to, to someone who's employing, looking at employing me. (Participant 3)

DISCUSSION AND CONCLUSIONS

We drew four main conclusions about the way PASS mentors developed graduate attributes because of their PASS mentor role. First, having students working as a mentor in PASS can be an effective way to develop the specific graduate attributes of an institution. Although we discussed only three attributes in this article, the PASS mentors in our study believed they had developed most of the graduate attributes stated in the graduate profile of our university. This extends the literature that shows that being a PASS facilitator is an effective way to develop graduate attributes (Laurs, 2008, 2018; Skalicky & Caney, 2010).

Second, our study also stresses the importance of co-curricular activities such as PASS for developing graduate attributes. The participants saw PASS as the main contributor to the development of their graduate attributes. While they acknowledged that they occasionally encountered opportunities for the development of graduate attributes through their curricular studies, they all felt that PASS offered greater opportunities. Some pointed to large gaps in their curricular studies (e.g., lack of ethics) while others perceived that their involvement in co-curricular activities enhanced or strengthened what they might be learning elsewhere (e.g., critical thinking and communication). This conclusion is consistent with other studies that argue the importance of co-curricular activities for fostering graduate attributes (Jackling & McDowall, 2008; Laurs, 2008; Muldoon, 2008), and it extends them by giving specific examples of how these attributes are developed in this particular case study.

Third, the mentor role seems to be a particularly effective co-curricular activity for developing graduate attributes. Offering leadership roles in co-curricular programmes such as PASS can make a significant contribution to the development of graduate attributes in our institutions (Laurs, 2008; Skalicky & Caney, 2010). The leadership roles within PASS, such as PASS mentor, provide

a better opportunity to foster graduate attributes than other roles in PASS. The PASS mentors had an expanded role and increased responsibilities, and this role required them to use their skills in broader and more sophisticated ways, and thus, they developed a fuller and more rounded expression of the graduate attributes. This conclusion confirms the existence of a leadership pathway from PASS student to facilitator to mentor that Skalicky & Caney (2010) have suggested, and it shows one implication of this progression: higher leadership leads to increased learning benefits. This conclusion also has important implications for the training and professional development for PASS leaders. We suggest that it would be beneficial to explicitly align PASS leadership training and professional development opportunities to the graduate profile of the institution.

Fourth, authentic work environments, such as the PASS mentor role, seem to be particularly effective for fostering graduate attributes. Such roles require greater responsibility, and this seems to be an excellent catalyst for developing graduate attributes. This conclusion mirrors what researchers have found when investigating other work-based learning experiences such as work experience, internships, and placements. There are significant learning benefits for students when they are doing real jobs with real responsibilities (Simons et al., 2012; Kettis et al., 2013; Forsyth & Cowap, 2017).

A possible limitation of this research is that we did not investigate participants' attributes prior to their role in PASS. In fact, it could be argued that the students were employed for PASS roles because they already possessed well-developed skills and personal attributes. However, all participants identified *improvements* in the skills, attributes, and personal qualities that they possessed prior to PASS, and it is this improvement of graduate attributes that we studied. Other studies have also noted that PASS participants have a similar improvement in already existing graduate attributes (e.g., Laurs, 2008; Skalicky & Caney, 2010).

A second potential limitation is that the first author was the work supervisor for the PASS mentors, so it is possible that this might have influenced participants to portray the programme in an overly positive light. However, we do not see this as a major limitation for several reasons:

First, we ensured the participants felt safe to give any response without consequences. We explained that we were interested in understanding the process by which they learned graduate attributes while as a PASS mentor and that there were no right or wrong answers. The interviews were also conducted at the end of their term as PASS mentors after the working relationship had ceased.

Second, mentors were required to give constructive criticism about the entire PASS programme as part of their role, and they were very experienced at this. They had already demonstrated that they could offer negative comments and were not compelled to "tell us what we wanted to hear."

Third, we felt the relationship between the first author and mentors was well established, so the mentors had sufficient confidence to express their opinions in an honest manner. In fact, we consider the close relationship between the first author and the participants to be a strength of the study that outweighs

the potential limitations. Our aim was to dig deeply into the learning process of participants, and having one interviewer who had already developed an open and honest relationship with participants was an advantage for this.

The third potential limitation is the sample size. Eleven participants is a small number, and we must be cautious about generalisations. However, our aim was to present an explanatory case study, not to make generalisations, and we do include almost the entire population of PASS mentors over four years at our institution.

The fourth limitation is that we were studying only what participants reported about the development of their attributes. Further study might involve direct observation to see whether and to what extent the PASS mentors were better communicators or critical thinkers.

Despite the limitations, this study suggests that not only can co-curricular activities like PASS foster graduate attributes, but they also offer institutions a complementary approach to producing well-rounded graduates. The participants in this study doubted whether a university degree alone could enable the development of all of the attributes listed in our institution's graduate profile. They were in agreement that their roles as PASS facilitators and mentors had been the main contributors to the development of their attributes. They felt that their experiences had given them an advantage over other students who had not been PASS facilitators or mentors, and that PASS had made them more employable and better prepared for their transition into the workplace.

Our findings suggest that one way of fostering graduate attributes is by having students participate in the authentic work of PASS mentoring. But this is not a feasible method for fostering graduate attributes for all students because not all students will be able to participate as PASS mentors. However, we also suggest that our findings can inform other, more scalable, methods of fostering graduate attributes. For example, students may be more likely to develop graduate attributes if their assessments involved authentic or real-world tasks, or if they were required to engage in co-curricular or even extra-curricular volunteering. Another alternative for fostering graduate attributes based on our findings might be to develop a new programme of co-curricular peer mentoring, such as senior students peer reviewing the assignments of junior students.

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