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Developing graduate attributes through the application of coaching theory

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Abstract

Graduate attributes (GAs) have been formally adopted by higher education institutions for some time and describe the skills and competences that students should develop over the course of their studies. GAs are considered to be important to universities as they act as a means to represent and extend their brand, while also providing a channel to maintain connection with industry. However, despite regular engagement with industry, employers remain unsatisfied with graduate transferable skills. This may be caused by a lack of a common theoretical underpinning to develop such attributes. Therefore, the aim of this study was to provide an evidence-based methodology which develops transferable skills in university graduates. Two classes at a public university in Hong Kong were used in this study. One class received a 12-week intervention incorporating a variety of coaching activities. The second class acted as a control group. Students were asked to complete pre-intervention surveys which provided self-reports of current ratings in GAs and resourcefulness behaviours. After completion of the 12-week intervention, students were asked to complete post-intervention surveys, again reporting self-ratings on the same topics. Survey data was analysed to identify changes in student scores, which highlighted improvements in all graduate attribute ratings post-intervention. Furthermore, help-seeking behaviours were shown to have significant improvement post intervention. The findings of this study suggest that coaching practices may provide an efficient and effective way to develop transferable skills in students, and this paper provides discussion on the implications of these results.

Keywords
Graduate attributes, transferable skills, employability, resourcefulness, help-seeking, coaching

Introduction

Graduate attributes (GAs) have been a topic of research for several decades with the most commonly used definition offered by Bowden et al. (2000, Executive Summary):

> *...the qualities, skills and understanding a university community agrees its students should develop during their time with the institution. These attributes include but go beyond the disciplinary expertise or technical knowledge that has traditionally formed the core of most university courses. They are qualities that also prepare graduates as agents of social good in an unknown future.*

In most cases, GAs are considered to be concerned with transferable skills rather than contextually relevant or vocational competences (Allen & Simpson, 2019; Barrie, 2012; Bath et al., 2004). GAs are considered to be a method of communicating the core learning outcomes of a particular university education (Hughes & Barrie, 2010) and the contribution that these can make to the broader society (Barrie, 2012). As a result, GAs have become formally adopted by higher education institutions (Mahon, 2022), however, this has led to GAs varying across regions and institutions (Bath et al., 2004; Pitman & Broomhall, 2009).

As a result, there is no commonly held set of attributes that a generic university education seeks to cultivate. However, it has been suggested that GAs are currently driven by both internal and external influences. Internal factors include the drive for universities to use GAs in order to position themselves more uniquely alongside vocational and other providers in an increasingly saturated education market (Pitman & Broomhall, 2009). Mahon (2022) likened this to the concept of universities developing and extending their brand. External influences include those of industry who seek to ensure graduates are aligned with the needs of the profession or sector (Hager, 2006). However, despite GAs being influenced by industry and their associated requirements, employers continue to report dissatisfaction with graduate transferable skills (Archer & Davison, 2008; Wilson, 2016).

This may be influenced by the absence of any common theoretical underpinning to develop GAs (Coetzee, 2014). A literature review by Allen and Simpson (2019) found no evidence of a clear approach to develop GAs. Efforts to promote GAs have been unsuccessful, in part, due to scepticism and a lack of clarity held by teaching and academic staff (Barrie, 2012). As a result, graduate attributes appear to lack justification and therefore value. As such, there is a need to develop evidence-based methodologies which seek to develop transferable skills within university settings.

One avenue for investigation is to consider coaching theory. The term 'coaching' may refer to a variety of developmental activities and has been defined as below:

> *Coaching is the art of facilitating another person's learning, development, wellbeing, and performance. Coaching raises self-awareness and identifies choices. Through coaching, people are able to find their own solutions, develop their own skills, and change their own attitudes and behaviours. The whole aim of coaching is to close the gap between people's potential and their current state* (Rogers, 2016, p. 7).

The growing popularity of the field has led to the development of several strands including executive, personal, life, workplace, and academic coaching. However, coaching in educational settings continues to be limited with the majority of evidence being generated from corporate or professional settings (Griffiths, 2012). Unfortunately, in the education sector, there continues to be confusion regarding what coaching is and does, and has been incorrectly perceived as therapy, tutoring or mentoring (Griffiths, 2012). While executive coaching (EC) is considered to be the most established form within industry and in research (Griffiths, 2012), it is not considered to be appropriate in the context of university students. EC involves a partnership of three stakeholders: coach, coachee and the coachee's sponsoring organisation, with the goals of the coaching process related to organisational objectives (Ennis & Otto, 2015). In a university context, while there are external influences from industry as mentioned above, no sponsoring relationship exists and besides, GAs incorporate a range of qualities that extend beyond a certain sector.

Academic coaching (AC) remains the most common form of coaching in university settings and is a strand which is already referenced in research. AC has been defined as a 'one-on-one interaction with a student focussing on strengths, goals, study skills, engagement, academic planning and performance' (Robinson & Gahagan, 2010, p. 27). AC focusses on self-assessment, reflection and goal setting, and supports students to identify their interests, motivations and resources (Warren, 2019). AC typically focusses on the practicalities of study which has been shown to produce positive outcomes for students including retention within academia and completion of degree programs (Bettinger & Baker, 2011). However, this approach seems limited in the context of GAs and designed

to support students to cope with academic commitments rather than develop holistic skills and attitudes.

Indeed, the nature of coaching has broadened over time, initially being viewed as a remedial tool for poor performance (Athanasopoulou & Dopson, 2018). The context of AC outlined above is aligned with this view, either as a remedial or preventative method to academic performance issues. However, coaching is also considered as an appropriate method to develop those with potential (Coutu & Kauffman, 2009) and to support transitions (Sherpa Consulting, 2014). Both outcomes seem entirely relatable to university students and as such coaching seems to be a fitting approach to develop graduate skills. With this view in mind, personal coaching (PC) is considered as the strand which may be most aligned with obtaining GAs and is worthy of further investigation.

PC uses two common approaches: goal-directed coaching and facilitation and process-oriented coaching. PC facilitates the development of goals and orchestrates the actions required to lead to the achievement of these goals (Griffiths, 2012). This approach has been successful in other sectors, for example in sport, where it is used in supporting Olympic and Paralympic athletes to improve their performance through the development of personal and professional skills (Ashfield et al., 2017). This demonstrates the value that coaching can have in supporting improvements in those with significant potential. However, research on PC within educational contexts is limited. One study, by Campbell & Gardner (2005), indicated that PC may support the development of skills such as resilience and contribute to wellbeing. As such, there is need to further investigate the impact that PC can have on students.

We know that the field has typically focussed on the outcomes of coaching and has been less interested in how coaching is delivered (Athanasopoulou & Dopson, 2018). Furthermore, a common problem in coaching relates to the lack of evidence highlighting its effectiveness (Grant et al., 2010). Therefore, assessing the outcomes of coaching theories is warranted. This study has two main objectives: i) to provide an evidence-based methodology which develops transferable skills in university graduates; and ii) demonstrate efficacy of coaching theory in the personal and professional development of individuals. Exploring the outcomes from coaching practice will help researchers to understand how coaching methodologies develop transferable skills and relevant attitudes. This will further inform our understanding of coaching, specifically in an under researched area and aid the development of applied recommendations for future structuring of university skills development.

Methodology

Research strategy and philosophy

Given the research inquiry, a positivist paradigm was adopted. This viewpoint suggests that there is an objective reality where researchers measure quantifiable data which is impartial and free from bias (Giacobbi et al., 2005). A positivist methodology uses a deductive approach and seeks to explain relationships (Scotland, 2012). As such, this approach allows for the identification of 'facts' regarding the outcomes produced from a coaching programme and for the development of practical recommendations which aim to make a positive contribution in applied areas of student learning.

Participants and Sampling

This study used a cluster sampling approach to select study participants. The lead author had access to a variety of student classes at the host institution, which were all categorized as elective courses and had broadly the same characteristics. Elective courses are those in which students enrol themselves. The research team had no input to or control over this process. Therefore, this acts as an additional layer of random sampling as students were enrolling in regular elective classes with no indication that their cohort would be used within this study. Due to this, each available course had variation in the age, gender, and duration of study within the student profile. Out of the available

groups, two student classes were selected. To participate, students had to be at least 18 years old; there were no other exclusion criteria.

A total of 57 students agreed to participate in this study across the two groups. All students were categorized as local, i.e., there were no international or exchange students within this study. There were no students who declined to participate. However, there were cases which were excluded from data analysis due to non-completion of survey data. The demographic data is shown in the results section. It is recognised that the sample size is small, however, the sampling method used ensures that study participants were representative of the wider study body from the host institution. In addition, the availability of resources including access to appropriately experienced coaching practitioners, were limited, and dictated the sample used in this study. Furthermore, the sample size is considered acceptable for a pilot investigation.

The authors recognize the potential for implied coercion of participants due to their role as students within the class. Authors sought to mitigate this risk by ensuring student autonomy and fairness in study arrangements, initially via an in-depth review of consent materials by the research team. Authors did not offer reward or incentive, to ensure participation was completely voluntary and not forced or manipulated in any way. Consent materials were followed up in class with detailed explanations of the study components, aims and objectives, and by highlighting the complete independence of study participation from course rubrics and grading criteria. Authors used comprehension checks to gauge understanding and ensure informed consent. Finally, once student questions had been answered, course instructors left the classroom allowing students space to decide their participation without any pressure caused by instructor presence.

Procedures

Given the nature of the research questions, quantitative methods were chosen. Specifically, participants were asked to complete surveys prior to the commencement of the coaching intervention and after the completion of the programme. Pre- and post-intervention tests were considered appropriate as these allow for within-group and between-group comparisons (Brewer & Kubn, 2010). Specifically, surveys were used as this ensured anonymity for study participants while also providing structured data which could be easily compared (Jones, 2022). All data was collected online using QuestionPro which was selected as it was familiar to study participants and was speculated to result in lower survey completion errors or other technical issues. Pre-intervention surveys were completed during the first class of term, before any coaching theory or practice has been delivered. The post survey was completed in the final class after completion of the intervention. Surveys were pilot tested by three students outside of the study groups to highlight any potential issues and to improve the data collection process.

Participants were initially provided with an information sheet which described the study and were invited to ask questions to ensure clarity. Participants were informed that they could withdraw from the study at any time whilst assuring confidentiality throughout, before participants signed consent forms. Participants then completed three pre-intervention surveys. Firstly, participants completed the resourcefulness skills scale (Zauszniewski & Bekhet, 2011) which measures how often students use self-help or help-seeking behaviours. Participants were asked to indicate how frequently they demonstrated a particular behaviour on a four-point scale ranging from never (0) to always (3). When scores for all behaviours are totalled, higher score indicate higher resourcefulness skills. Secondly, participants completed a modified version of the host institution's Student Learning Experience Questionnaires (SLEQ). The SLEQ contains questions relating to student experiences of their study, their university life, and the development of GAs. The survey is completed prior to commencing learning at the university and subsequently in each year of study. For the purposes of this study, only questions relating to GAs were included and followed the exact wording from the SLEQ. A total of 28 items were included across seven different GAs with participants asked to indicate their rating of each item on a five-point scale from very poor (1) to very good (5). Finally, participants completed questions

relating to the learning objectives of a coaching programme (Phillips et al., 2012). These questions were intended to obtain understanding regarding student's expectations as to the outcomes from a coaching programme. In addition, participants were also required to submit demographic and descriptive data in order to create a profile of participants within each group.

Coaching activities commenced after pre-intervention data collection, lasted for approximately 45 minutes per class and were delivered for 12 weeks. Activities included both goal-oriented, and facilitation and process-oriented coaching approaches and followed principles outlined by Rogers (2016). This approach, as per the stated coaching definition, is one of facilitation and supports coachees to identify their own learning objectives. Lessons were structured to utilise a flipped classroom approach whereby students were directed to themes, relating to sport and healthy lifestyles, outside of contact time. This was deemed relevant as it provided students with a reference point by which to reflect upon their perceptions of coaching as an existing practice. All students had previously experienced coaching, in the form of sports coaching, from previous primary and/or secondary education.

The flipped classroom approach acted as the initiation of the coaching process by promoting self-directed learning. Students were encouraged to access initial content at their own time and pace, and prepare their thoughts, reflections and questions for class contact time. Initial content varied weekly but was designed to promote student self-awareness and included tasks such as generating personal SWOT analyses and mind maps. Personal coaching was then structured into existing classes and focussed on facilitating students to develop their learning objectives and associated actions to achieve these objectives. This aligned with several established coaching theory principles discussed by Rogers (2016). Firstly, that the client (i.e. the student) sets the agenda. Secondly, coaching is about action and change. Thirdly, that the client is resourceful. Therefore, while the instructor provided a relevant theme to develop student self-awareness e.g. singular/multiple role identities, the student decided the context of this information to their own needs and thereby directed the conversation with the coach to explore their views. The coach supported the student to understand what they were currently doing, and what they believed were capable of doing i.e. establishing possibilities for action and change. Finally, the coach focussed on developing student resourcefulness by never giving advice and instead facilitating students to critique information, alongside their perceptions or feelings, and then to identify options, choices or actions. Again, this approach aligns with established theory whereby the role of the coach is to facilitate self-directed and self-regulated learning and development (Griffiths, 2012).

After completion of the coaching programme, students were required to complete post-intervention surveys which contained the same questions and format as described above. The intention of the pre- and post-intervention design was to identify any changes in resourcefulness and ratings of graduate attributes after completion of the coaching program. Additionally, the final survey was to identify any changes between students' expectations of coaching and their experiences, i.e., understanding, of coaching.

Full ethical approval for this study was provided by the host university's Research Ethics Committee (Unique reference number: REC/20-21/0568). This project was intended to act as a pilot project, ahead of a much larger study incorporating a significantly larger sample.

Data analysis

Data was exported from QuestionPro into an excel spreadsheet where data issues were identified and corrected. The data was then transferred into and analysed using International Business Machines (IBM) Statistical Package for Social Sciences (SPSS) version 27. Descriptive analysis was conducted to describe the characteristics of the participants. Mean and standard deviation were reported for continuous variables. Number and percentage were reported for categorical variables. Differences in raw scores between the two groups were detected using an independent sample t-test. Pearson

correlation was used to analyse the relationship between the variables examined. These have been outlined in the results section in table format for the various analysed items.

Results

Demographic information

Descriptive and frequency analysis were used to examine the attendance, gender, age, and duration of study in each group. 60 students participated in this study. Of which 36 students were allocated to the intervention group and 24 students were allocated to the control group. 10 students allocated to the intervention group did not finish their pre-test while six students from the control group did not complete their pre-test. Regarding the demographic information, no significant difference in gender and age was found between the two groups except for duration of study (p=.012). The detailed characteristics of the two groups have been displayed in Table 1.

Table 1: Demographic Information

	Group		**P value (*p<.05)**
	Intervention	**Control**	
Completers	36 (60%)	24 (40%)	
Non completers (pre-test)	10	6	
Non completers (post-test)	3		
Gender	Male: 22(61.1%) Female: 11 (30.6%)	Male: 15 (62.5%) Female: 9 (37.5%)	.536
Age (mean)	20.93	19.42	.891
Duration of study (mean)	2.88	2.09	**.012***

Resourcefulness Skills Scale

Paired sample T-tests were conducted to detect whether help-seeking behaviours, self-help behaviours or total resourcefulness skills scale score were significantly improved after intervention. As is shown in Table 2, only help-seeking behaviours in the intervention group significantly improved after intervention (CI: -1.489 to -.011; p=.047) while the other two variables did not demonstrate an obvious improvement over time, with p =.113 and p=.416, respectively. Paired sample T-test found no significant differences in three variables in the control group over time (p=.110; p=.136; p=.252).

Table 2: Resourcefulness Skills Scale Result

Group	**Improvement categories**	**Mean**	**SD**	**95% Confidence Interval of the Difference**		**P value (*p<.05)**
				Lower	**Upper**	
Intervention	Total Score - Total Score(post)	-1.292	3.839	-2.913	.329	.113
	Help-seeking behaviours	-.750	1.751	-1.489	-.011	**.047***
	Self-help behaviours	-.542	3.203	-1.894	.811	.416
Control	Total Score - Total Score(post)	-1.000	2.268	-2.256	.256	.110
	Help-seeking behaviours	-.333	.816	-.785	.119	.136
	Self-help behaviours	-.667	2.160	-1.863	.530.	.252

Graduate attributes

The improvement was calculated by using paired sample T-test, with purpose of comparing the pre- and post- subtotal of each category included in the GA survey. As is shown in Table 3, after intervention, all graduate attribute components were significantly improved in the intervention group while no significant changes regarding these components were found in the control group.

Table 3. Graduate Attributes Results

Group	Variable	Mean	SD	95% Confidence Interval of the Difference		P value (*p<.05); (***p<.001)
				Lower	Upper	
Intervention	Citizenship	-1.45833	1.88770	-2.25544	-.66123	**.001*** **
	Knowledge	-.79167	1.76879	-1.53856	-.04477	**.039***
	Skills	-1.50000	2.89087	-2.78174	-.21826	**.024***
	Creativity	-.70833	1.45898	-1.32441	-.09226	**.026***
	Communication	-1.66667	3.66733	-3.21524	-.11809	**.036***
	Teamwork	-.58333	1.21285	-1.09548	-.07119	**.027***
	Learning	-1.08333	2.32036	-2.06313	-.10353	**.032***
Control	Citizenship	-.06667	2.63131	-1.52384	1.39051	.923
	Knowledge	-.60000	1.35225	-1.34885	.14885	.108
	Skills	-.64286	3.56494	-2.70119	1.41548	.512
	Creativity	.06667	1.16292	-.57734	.71067	.827
	Communication	-2.40000	5.22084	-5.29120	.49120	.097
	Teamwork	-.46667	1.92230	-1.53120	.59787	.363
	Learning	.20000	2.36643	-1.11049	1.51049	.748

Learning objectives of a coaching program

Paired sample T-test was conducted to assess any significant improvement in learning objectives from a coaching program by comparing the pre- and post- subtotal that students in each group rated. After intervention, no significant difference regarding the learning objectives of a coaching program was found in either the intervention group (p=.772) or in the control group (p=.306).

Table 4. Learning Objectives of a Coaching Program

Group	Variable	Mean	SD	95% Confidence Interval of the Difference		P value
				Lower	Upper	
Intervention	Learning objectives	-.33333	4.53649	-2.24892	1.58226	.722
UCHL	Learning objectives	-1.46154	4.92638	-4.43852	1.51544	.306

Correlation

As is depicted in Table 5, Pearson correlation was conducted to detect whether there is correlation between the three variables examined. In the intervention group, correlation was found between GA and learning objectives of a coaching program (p<.001) while neither resourceful skills and GA (p=.324) nor resourceful skills and learning objective (p=.240) were correlated. In terms of the control group, both resourceful skills and learning objectives (p=.039) and GA and learning objectives (p=.028) were found correlated, but this correlation was not found between resourceful skills and GA (p=.190)

Table 5. Correlation Results

Intervention		**Resourceful skill**	**GA**	**Learning objective**
	Resourceful skill		.324	.240
	GA			**.000*** **
Control		**Resourceful skill**	**GA**	**Learning objective**
	Resourceful skill		.190	**.039***
	GA			**.028***

***. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Discussion

Through the delivery of coaching activities, and the subsequent review of student self-assessments, this study has indicated that coaching methodologies may influence student perceptions of achievement of graduate attributes.

Prior to the commencement of the study, it was hypothesized that several GAs would see improvement as a result of coaching activities. Firstly, the attribute entitled 'learning', which related to developing independent, curious, and lifelong learners. This GA had connections with concepts of self-awareness in order for students to identify their own strengths and weaknesses, learning needs and recognise their abilities in addressing such needs. Coaching was considered a suitable method by which to develop this attribute, as the stated concepts are clearly inherent to the definition presented by Rogers (2016). Second, 'skills' – specifically regarding problem solving as a requirement to function effectively in work and personal life. Problem solving skills are important in the context of this study as a common feature of coaching is to aid the recognition of potential choices for actions. Finally, the attribute of 'teamwork', which incorporated concepts of service, leadership and working with others. Again, this was deemed relevant to coaching practices as coaching requires open dialogue in discussion, entails coachees leading conversation with self-directed topics, and working with coaches to explore those topics. After analysis of the collected data, as hypothesized, these three attributes all saw significant improvements post intervention.

The comparison of pre- and post- subtotals of each category included in the GA survey is shown in Table 3. In addition to those GAs stated above, the results show that improvements were made in all categories of GAs for the intervention group which suggests that coaching may have scope to contribute a range of skills. This is significant as GAs are composed of different 'types' of skills including attitudes and dispositions (Mahon, 2022). The students in this study were asked to rate themselves in each individual GA, with students indicating significant improvements in all attributes. The findings of this study suggest that coaching can contribute to different types of GAs, and therefore may be an efficient method to include within student development programs. However, it may be the case that coaching is relevant to developing the specific attributes selected by the host university and that other

attributes which are not included in this study may not be improved or produce different results. This was a recognised limitation within this study and one of the reasons why this study was always intended as a pilot investigation. Therefore, due to the variety of GAs across different institutions, it is necessary to seek another larger study to further explore these findings across multiple institutions.

A secondary objective of this study related to resourcefulness, originally conceptualized as 'learned resourcefulness', which was composed of a series of self-help behaviours including self-monitoring and problem solving (Meichenbaum, 1977). These behaviours are important as they have clear connections to GAs. Indeed, problem solving is one of the components of the 'Skills' GA included within this study. Furthermore, this conceptualization indicates that these attributes can be formally learned. However, when considering the achievement of goals, a reliance on personal skills may be insufficient (Zauszniewski, 2016). As such, the conceptualization of resourcefulness has grown to include help-seeking which is defined as 'the process of actively seeking out and utilizing social relationships, either formal or informal, to help with personal problems' (Rickwood et al., 2005, p. 8). Those with greater overall resourcefulness, i.e. both self-help and help-seeking skills, are shown to cope with challenges more productively, have higher quality of life, better life satisfaction, and lower anxiety and depression when compared to those with lower overall resourcefulness, i.e. either self-help or help-seeking skills alone (Zauszniewski & Bekhet, 2011).

The comparison of pre- and post-intervention resourcefulness skills scores are shown in Table 2. This study demonstrated a significant improvement in help-seeking behaviours post intervention, which may have positive implications for students. There are a variety of benefits to help-seeking, including improved mental health, reduced stress and personal growth amongst many others (Vidourek et al., 2014). This finding is of particular significance for several reasons. Firstly, a meta-analysis by Fong et al. (2021) indicated that college students tend not to seek help. The context of their findings were in relation to academic help-seeking and how these behaviours may contribute to academic achievement. This also comes at a time when poor academic achievements among university students are associated with mental health issues including higher levels of depression and higher dropout rates (Sheldon et al., 2021). As such, coaching may contribute to overall wellbeing while ultimately supporting higher academic achievement through developing self-awareness and individual responsibility. These outcomes are key aspects of facilitation and process-oriented coaching whereby coaches help to generate client awareness to learning, leading to self-directed and self-regulated progress and then manage accountability (Griffiths, 2012).

Further research is needed to establish which aspects of the coaching intervention contributed to this finding. However, we speculate this may be driven by an initial focus on student self-awareness. This study used undergraduate students in an elective course, and we postulate that these factors may have resulted in a sample who recognise gaps in their knowledge or experience. Perhaps this resulted in an increased openness to exploring their own self-perceptions and by initially using tasks which focussed on raising self-awareness, it may have resulted in a more developed consciousness of personal strengths and weaknesses. This then may have caused an increased receptiveness to help-seeking actions. Furthermore, as coaching activities were repeated over a 12-week period, it is likely that students developed familiarity with using help-seeking behaviours to achieve their personal objectives and gained trust in the benefits that could be obtained from doing so.

Additionally, improvements in help-seeking may also be significant for certain student profiles. In particular, attention ought to be paid to students of colour who are shown to have low rates of accessing support services (Lipson et al., 2022). Additionally, a recent systematic review found low help-seeking behaviours among student-athletes (Castaldelli-Maia et al., 2019). This may be due to an intense focus on sports performance and the stigmas prevalent in elite sport environments, such as appearing weak (Hägglund et al., 2023). The implications for athletes continuing to avoid seeking help are broad and include issues relating to mental health, loss of identity, and early career termination (Miller et al., 2023). Therefore, coaching may indirectly support student-athletes to achieve in other

areas of their life. These examples highlight that there is potential for coaching activities to make a positive contribution to a variety of students and indicates avenues for further research.

The final survey included within this study related to learning objectives of a coaching program. These describe 'the expected immediate and intermediate outcomes in terms of knowledge acquisition, skill attainment, and awareness and insights obtained through the coaching experience' (Phillips et al., 2012, p. 20). The intention of the pre-intervention survey was to understand student's expectations regarding the outcomes from a coaching programme. The post-intervention survey was designed to identify students understanding of coaching from their participation in the intervention, establishing any changes to students' perceptions because of the coaching experience. The results for this component are presented in Table 4 and show that no significant difference was found in either of the study groups which indicates that the experience of coaching met participant expectations. Researchers also sought to identify any correlations between the three surveys completed, the results of which can be found in Table 5. In both groups, correlation was found between GAs and the learning objectives of a coaching programme, which indicates that those who understand the benefits of coaching are more likely to improve GAs.

The above findings, both in terms of developing GAs and broader resourcefulness, are also of relevance due to our understanding that GAs take different 'forms'. As mentioned earlier, these may be skills, attitudes, or dispositions. However, we would suggest that this is also the case for resourcefulness skills, which also encourage a variety of attributes. Both self-help and help-seeking behaviours rely upon self-awareness whereby individuals must recognise their strengths and weaknesses, or to put it more simply, the boundaries of their capabilities. This self-awareness allows individuals to know what they can manage themselves and where they may require the help of others. Furthermore, it also encourages individuals to develop confidence in themselves and their skill sets, while having an open mind as to the benefits that the support of others may provide. Resourcefulness skills also have inherent associations with common GAs. Regarding this study, self-help behaviours connect with the host institution's GAs of 'learning' and 'skills', with corresponding items of independent learning and problem-solving skills respectively. Help-seeking behaviours may also associate with the above GAs, although through different items, in addition to GAs of 'communication' and 'teamwork' as they require interaction with others and social exchange. While this study did not find an improvement in overall resourcefulness which would indicate the benefits outline above, e.g., better life satisfaction etc., the improvement of self-help behaviours is considered a significant outcome. The benefits to developing these skills is outlined above and reinforces the justification of coaching theory as an appropriate methodology to develop GAs.

Limitations

While the above discussion highlights that coaching may produce a variety of benefits, it is important to recognise that this project has limitations. The sample size has been discussed previously and was considered acceptable for a small pilot project of this kind. The intention from the findings of this study is to develop a future project which is designed to incorporate several universities and a larger sample size. It is also important to recognise that the results of this study may be influenced by the academic disciplines of the students involved in the sample groups. All participants within this study have experience of coaching, specifically in the context of sports coaching. The two groups used within this study were health and physical activity related courses and as such, participants had some familiarity with the concept of coaching. Specifically, the experiential group in this study were physical education (PE) majors, which is a discipline that is closely related to coaching. PE majors undertake a variety of sports training, both within curricular activities through the learning and development of sports skills, and often through extracurricular activities perhaps as part of the university representative teams or elsewhere. Furthermore, these students may also have had some experience in delivering coaching themselves. Familiarity with coaching practice, in any form, may be a contributing factor to the results of this study.

It may be the case that students with a more comprehensive understanding of the concept of coaching, or indeed experience of this practice, may be more willing to commit to the process of being coached. This is in line with previous research by A. Jones (2013, p. 593) which states that 'in order to understand teaching and to successfully implement graduate attributes, it is necessary to understand the culture in which this occurs'. Jones argues that the development of GAs is successful when there is alignment between discipline, department, epistemology, and teaching practices. It may well be the case that these factors are aligned when the student cohort is from an academic major experienced in receiving coaching of some form. However, it may be unsuccessful when used with non-related majors or mixed major cohorts. Jones (2009) found that, while an institution may have a set list of GAs, these may differ in relation to the discipline studied. Students in different academic subjects may develop varied GAs. Classes which are mixed major may also produce inconsistent results as students, or indeed programmes, may value some of the institution's stated GAs more highly than others. This issue is worthy of further research and is of concern as in future this could lead to a rethink of how GAs are initially conceptualised, as it would undoubtedly be more complicated to implement multiple programme-specific GAs across an entire university. This would also clash with the premise of universities using GAs as a brand development tool as programme specific GAs would undoubtedly dilute or blur such branding. Therefore, future research directions include the need to explore the use of methodologies to develop GAs with different academic majors to identify the most beneficial approach to developing shared GAs.

In his review of GAs, Mahon (2022) highlights that the assessment of GAs is problematic, with no generally accepted method by which to measure such achievement due to an ability to clearly evidence these improvements. This may be in part due to the incorrect conceptualisation that GAs are acquired by, and internal to, individuals (Hager, 2006). Yet it is clear that many recognized GAs are inherently social. Furthermore, from the perspective of industry, some GAs are indeed a social construct and can only be displayed through the collective performance of individuals. Hager uses the idea of customer service to evidence this point, as good customer service is a construct generated by several individuals. Mahon recognised that assessment is an issue for universities, but also for employers who seem unable to provide objective measures by which to evaluate the achievement of GAs. The results in this study include self-assessment of performance in specific attributes. A concern in self-ratings is whether one understands the scope of what is being measured. While the participants involved in this study had a clear idea of what each attribute related to, as this was explained by the research team, this may not be the case on a wider scale. Participants may misinterpret the meaning of an attribute and give a rating based on misunderstanding. Furthermore, while participants are rating their performance in each GA, this format of assessment does not allow for participants to evidence the degree to these attributes have been achieved.

In addition to this, while certain GAs may be displayed in some degree by individuals, this does not mean that they hold these to the extent required by industry or indeed in the same context. As such, even those with competence in a particular GA require training in employer practices. This would initially suggest that further clarity needs to be provided for each type of attribute. For example, what is the difference between good and very good performance in a particular component? How does this distinction change in regard to the nature of the attribute in question? The lack of any hard or objective evidence that improvements have occurred results in subjective and arguably rather abstract ratings. Until more objective measures have been developed the issue of subjectivity will need to be managed, however, future studies of GAs should allow for descriptors of performance rating to support objectivity. This issue extends to employers, who also provide subjective feedback of graduate performance. Developing more relevant assessment of GAs should allow for employers to provide meaningful feedback on if and how GAs are being demonstrated. Such feedback can then be used to further develop employability and student development programs by more clearly understanding industry relevant issues.

Considering the above, it is important to comment on the assessment method used in this study and recognise that pre- and post- intervention surveys also have limitations. Pre- and post-intervention study designs have been one of the most commonly used designs in educational research for several decades (Dugard & Todman, 1995). In addition to the benefits of this design which have been outlined earlier, this design is cost efficient which is appropriate for a pilot study, and user friendly which supports engagement and compliance. The latter is important due to the context of the target population and the risk of non-completion. The most obvious issue is that results produced from this type of study design may be attributable to other factors. So, in this case, it may be argued that improvements in graduate attributes may not be because of the coaching intervention but perhaps due to the natural development of students as part of a comprehensive university education. It could be argued that students are naturally developing these skills and any attempt of an educational practice intervention provides a structured opportunity for students to improve on these attributes. So, in other words, the design does not eliminate the possibility that improvements in GAs may have occurred regardless of the coaching intervention.

There are several factors which may affect causal validity in designs which we have sought to control for within this study. These include history, maturation, and test effects (Brewer & Kubn, 2010; Marsden & Torgerson, 2012). This study has sought to control for history with the inclusion of a comparable control group. No historical events were reported during the intervention period. Regarding maturation effects, the risk is considered low. There is no significant age difference in this study, which reduces any possibility that participants may have improved their graduate attributes due to increased maturity. The researchers have tried to control for maturation by ensuring that the coaching intervention was kept to a limited period but recognise that changes can still occur within short timeframes. Regarding testing effects, it is recognised that participants in this study completed the same survey items. As such, they may have developed some familiarity with the format of the assessment. However, researchers attempted to control for this by using a short intervention period and by incorporating only two assessments at the very start and very end of the study period. Additionally, the information included in the surveys used did not include a rationale or description of the study purpose in order to reduce any study habituation and bias.

Conclusion

This study sought to provide an evidence-based methodology which develops transferable skills in university graduates and to demonstrate efficacy of coaching theory in the personal and professional development of individuals. The intervention in this study used personal coaching to facilitate students to direct their own learning, improve their self-awareness, identify choices, options and solutions, and to promote individual responsibility. The findings of this pilot study suggest that coaching practices may provide an effective approach by which to develop a broad range of skills including attitudes and dispositions, which aligns with the varied nature of GAs. Coaching practices may therefore provide a common approach for universities to develop such skills in their students despite variance in GAs between institutions, and this provides one avenue for further research. Study findings also suggests that coaching facilitates help-seeking behaviours, which is an important finding as such behaviours are associated with improved mental health and personal growth. This may be attributed to the focus of coaching on self-awareness, allowing students to learn what they are confident to manage themselves and where they may benefit from the help of others. Furthermore, this may indicate that coaching encourages individuals to develop confidence in themselves and their skill sets, while having an open mind as to the benefits that the support of others may provide. This may be of particular relevance to improve outcomes for in-need groups e.g. students of colour, student-athletes, or indeed those experiencing wellbeing issues such as stress and anxiety. Therefore, the findings of this study indicate that coaching may be a warranted inclusion in any student development programme.

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