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Student mentoring to enhance graduates' employability potential

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Student mentoring to enhance graduates' employability potential

Science & Justice – Special Issue

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Abstract

This paper considers whether the adoption of a ~~voluntary,~~ subject-specific, classroom-based, voluntary extra-curricular student mentoring scheme could provide an effective mechanism and andragogic approach to enhance higher education students' employability potential pre-graduation.

Over the three-year pilot, 26 more advanced (second to fourth year) undergraduate students~~individuals~~ actively mentored nearly 400 first year undergraduate students during workshops delivered annually within forensic and policing focused courses. In total, 17 mentors ~~and 165 mentees~~ anonymously completed online, post-scheme surveys. Survey data was qualitatively and quantitatively analysed to evaluate the scheme, establish which skills and attributes mentors had developed and investigate whether mentors could appropriately identify example skills within professional terminology used during employer recruitment. ~~Survey data was also inter-compared to validate whether mentors had demonstrated these skills and attributes to the mentees in the classroom.~~ In addition, this paper reflects on the implementation of remote student mentoring during the COVID-19 pandemic and its adoption within a blended learning framework.

The results from this research strongly support mentoring as an effective mechanism to develop undergraduate employability skills, significantly developing mentors' self-confidence and self-efficacy in their interpersonal and communication skills. Although mentors were aware of university graduate attributes and thought they could evidence these with appropriate examples, in practice this was not necessarily the case. As a result, a framework is proposed to enable mentors to identify their skills and how they may align with competencies sought by relevant forensic and policing employers.~~Thus, additional~~ Although, other andragogic practices may need to be implemented to maximise the potential for successful graduate employment.

Keywords: andragogy; confidence; COVID-19; employability; forensic; graduate; mentor; policing; self-efficacy; skills~~confidence; employability; forensic; graduate; mentor; self-efficacy; skill; remote pedagogy; policing~~

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Abstract

This paper considers whether the adoption of a subject-specific, classroom-based, voluntary extra-curricular student mentoring scheme could provide an effective mechanism and andragogic approach to enhance higher education students' employability potential pre-graduation.

Over the three-year pilot, 26 more advanced (second to fourth year) undergraduate students actively mentored nearly 400 first year undergraduate students during workshops delivered annually within forensic and policing focused courses. In total, 17 mentors anonymously completed online, post-scheme surveys. Survey data was qualitatively and quantitatively analysed to evaluate the scheme, establish which skills and attributes mentors had developed and investigate whether mentors could appropriately identify example skills within professional terminology used during employer recruitment. In addition, this paper reflects on the implementation of remote student mentoring during the COVID-19 pandemic and its adoption within a blended learning framework.

The results from this research strongly support mentoring as an effective mechanism to develop undergraduate employability skills, significantly developing mentors' self-confidence and self-efficacy in their interpersonal and communication skills. Although mentors were aware of university graduate attributes and thought they could evidence these with appropriate examples, in practice this was not necessarily the case. As a result, a framework is proposed to enable mentors to identify their skills and how they may align with competencies sought by relevant forensic and policing employers. Although, other

andragogic practices may need to be implemented to maximise the potential for successful graduate employment.

Keywords: andragogy; confidence; COVID-19; employability; forensic; graduate; mentor; policing; self-efficacy; skills

1. Introduction

This paper focuses on the adoption of a new mentoring scheme into a core, introductory first year undergraduate module delivered across forensic and policing-related degree programmes at a United Kingdom (UK) university. The module initially comprised of lectures and laboratory practicals to develop theoretical understanding and subject-specific skills, with tutorials to develop personal attributes and academic skills to higher education (HE) level. In 2012, weekly 1-hour tutor-led workshops were also introduced to further support core skill development and application of theoretical knowledge to meet graduate employer needs in the sector [1-5]. Workshop activities included; witnessing and responding to a simulated firearm incident, attending a mock crime scene, investigating contamination reduction through use of personal protective equipment (PPE), critically evaluating and describing packaged evidence, sampling and packaging suspected drug evidence, writing contemporaneous notes, and producing group videos related to quality assurance. Although initial feedback established first year students valued the new workshop content, learners felt they could benefit from further support due to the novelty of the skills and concepts being developed and the relatively large class sizes (approximately 40 students per workshop). As a result, in 2013 the author designed and implemented the School's first informal mentoring scheme [6] to support workshop activities (see section 2.1 for more detail). This scheme aimed to;

1) provide a safe, nurturing environment to support first year undergraduate students (junior learners, mentees) learn within a HE environment

2) provide an extra-curricular opportunity to develop subject-related employability skills and enhance the professional development of second-, third- or fourth-year undergraduate students (senior learners, mentors)

3) create a cross-level community to facilitate student transition into and progression through the student HE journey.

Mentoring has become an increasingly popular mechanism to support learners as they progress through education [7] and training. Being mentored can develop competence in a work-based environment [8,9], and enhance professional performance [10], career development [11,12] and career success [13]. In the context of HE, mentoring has increased academic performance in a subject-specific discipline [14] and holistically improved integration, retention and satisfaction [15,16] of the students receiving mentoring (mentees).

Mentoring-based interventions benefit from incorporating both pastoral and academically targeted components [17,18] and have been effective after major transitions, such as within 10 weeks of moving into HE [19]. However, such published research and support for mentoring is predominantly assessed from the mentees' perspective. There has been

relatively little focus on the development opportunities for mentors within these synonymous learning partnerships [6,20,21]. Where mentors have been the focus of employability-based research in HE, mentors have typically been external industry professionals rather than undergraduate students [22]. As a result, this research starts to fill the literature gap from the perspective of undergraduates as mentors, specifically in the field of forensic science.

This study evaluates whether implementing a subject-specific mentoring scheme can provide an effective andragogic opportunity for senior undergraduate students to develop their employability potential in a classroom environment. In doing so, the paper explores the development of mentors' skills, self-confidence and self-efficacy. The author reflects on the mentor's ability to identify and classify skills as specific graduate attributes and poses a suggested framework to improve skill identification. In addition, the wider adoption of such schemes are considered, including in a post-COVID era. It is hoped that this article will initiate wider implementation of mentoring as an andragogic practice within criminal justice curricula and initiate future research into the value and impact of becoming a mentor.

2. Method

2.1. Establishing the mentoring scheme

As graduates can place greater value on extra-curricular activities and placements compared to degree content [23], the author designed this new mentoring scheme to be voluntary, inclusive, informal and extra-curricular. Any undergraduate (Bachelors of Science [BSc] or integrated Masters of Science [MSci]) student who had previously passed (aggregate module grade over 40%) the core module in which the scheme was implemented could volunteer as a mentor. Mentors were recruited through announcements on Blackboard, the institution's virtual learning environment. No financial or credit-based incentives were offered to mentors in return for their participation.

All mentors received a basic yet formal 2-hour induction and training session [20,24] outlining the role of the workshop's lead tutor/academic, the author's expectations regarding mentors' preparation prior to, and conduct during, each workshop, and provided some opportunities to consider teaching and mentoring approaches using example scenarios based on the author's past experiences. This training session was not overtly underpinned by specific andragogic or mentoring models to reduce the potential for mentors feeling overwhelmed or panicked whilst being challenged to perform outside their comfort zone [25].

Post-training, mentors were provided with a detailed lesson plan for each 1-hour workshop outlining the aims and learning objectives, the material being delivered with key questions posed by the lead tutor/academic, the expected range of mentee responses and the most appropriate answers sought. Mentors were expected to guide mentees towards achieving the workshops' learning outcomes under the direction of the lead tutor/academic (directional mentoring) [26,27] rather than adopting the role of an undergraduate teaching assistant [28]. Mentors were therefore asked to encourage all mentees to engage in the workshops by actively asking questions, providing constructive peer feedback on mentee's responses and offering relevant advice from a student's perspective. For example, if a mentee asked for the direct answer to a question, the mentor may instead ask "What do you think the answer is?".

The author's mentoring scheme was implemented and evaluated over a three-year period (September 2013 to December 2015). During this three-year evaluation, 26 individuals mentored nearly 400 individuals (approximately 130 mentees and 7 mentors per academic year). Mentors volunteered for up to 11 weeks of workshops and up to six repeat sessions each week based on their availability. The numbers of repeat workshops running in any given academic year was determined by the number of mentees in the cohort; either four or six repeats each week. Although the number of mentees per workshop should have been consistent each year, the actual number in attendance could vary each session. As a result, mentors may or may not have worked with the same group of mentees from week to week and mentee-to-mentor ratios could also differ due to mentor availability. Incorporating such a flexible approach could enable mentors and mentees to self-select and naturally choose to develop their mentoring relationships over time [29]. Where mentor numbers were limited within a workshop, mentors may have supported approximately 12-15 mentees (up to three groups), or the lead tutor/academic may have provided additional cover where a mentor was not present.

2.2. Data collection

Following ethical approval of the author's institution, mentors voluntarily completed anonymous online Qualtrics questionnaires (Appendix 1; note - questions 6,9,15,24-26 were only asked during the final evaluation period, September-December 2015) regarding their experience on the mentoring scheme. Mentors typically completed the questionnaires within two weeks of completing the scheme. While mentees' perspectives were also sought during the evaluation, this paper focuses only on the mentors. Section 3 discusses the questions most relevant to this paper.

Of the 26 mentors who participated in the scheme during the three-year evaluation period, 17 individuals (65%) engaged in survey evaluation and therefore the results should be representative of the wider mentor cohort. However, it is important to bear in mind that six mentors volunteered in multiple years and therefore each completed more than one survey.

2.3. Mentor demographic

Of the 26 mentors, 22 were female and four were male. Of the 17 mentor respondents, all but one mentor was studying a BSc (Hons) in 2014/15, whereas in 2015/16 four of seven mentors were completing a MSci. Ten respondents mentored in their final year of study (one mentor did not disclose) and informal verbal discussions suggested this high proportion was due to impending graduation, a need to enhance their curriculum vitae and increasing independent study time within their timetable.

Most students (15) who became mentors studied forensic-focussed degree programmes rather than policing-focussed programmes. As all mentors had previously passed the module, this demonstrates that they could adequately support the academic and practical content.

2.4. Mentor engagement

In year one, the author gave the mentors the opportunity to participate in all 11 weeks of workshops. Mentors typically engaged with between five and eleven (mean of eight) weeks of workshops. Anecdotally this decision was mainly influenced by students' availability, interest in the workshop content and perceived confidence in supporting the session. Following verbal discussions between the author and mentors it was identified that a further

four workshops had a greater focus on whole group rather than individual, paired or small group activities. Therefore, the author advised mentors of this during training in subsequent years. Consequently the number of weeks mentors typically volunteered reduced to between three and seven (mean of five) in 2014/15 and three to five (mean of four) in 2015/16.

Depending on the number of mentees in a cohort, each 1-hour workshop was repeatedly delivered either four or six times a week and was led by a tutor/academic rather than the mentors (as previously mentioned). On average, mentors volunteered for three (when four) or four (when six) repeats each week. Section 3.1 discusses whether delivering repeat sessions had any impact on their level of professionalism and support provided to mentees over the semester.

During each workshop mentors worked with one to three smaller groups of students adopting a directional mentoring, question-based approach to inclusively encourage mentee engagement throughout the session. Mentors encouraged mentees to discuss activities with their peers, prompt ideas/thoughts/opinions, explain any difficulties they encounter with the activities to enable and facilitate mentees to meet all workshop learning outcomes in the time available. Mentees were not expected to lead the workshop but did take a leadership role within their group to ensure activity completion. Mentors were encouraged to reach out to the lead tutor/academic delivering the workshop if they were unsure or needed support at any time. Additionally, the lead tutor/academic provided mentor oversight and intervened if the lead tutor/academic perceived the mentor or mentees may benefit from additional guidance or steering. Further detail regarding mentor activities and the skills developed are discussed in section 3.2.

2.5. Data analysis

The Qualtrics questionnaire data was downloaded to Microsoft Excel for analysis. An external and independent data analyst (see Acknowledgements) manually conducted quantitative content (manifest) analysis on open-ended responses within completed questionnaires [30,31]. Close-ended questions were quantitatively analysed using descriptive statistics in SPSS v23. Totals did not always add up to 100% due to rounding or use of multi-coded questions.

3. Results and Discussion

3.1. Personal development of mentors

The mentoring experience was very positive; all responding mentors agreed they 'got a positive experience from working with the mentees'. Supporting findings of Stigmar [32], mentors identified this opportunity had improved their personal skills/attributes rather than academic learning, with less than a third (5) stating volunteering had benefitted subsequent submitted assessments. During the scheme, several mentors verbally commented to the author that mentoring had reminded them of key academic learning points, which had reinforced their underpinning knowledge. Such acknowledgement could explain why these five respondents perceived a positive academic enhancement.

Mentors rated their perceived level of self-development in specific pre-coded skills/attributes (Figure 1). All areas demonstrated some, if not some significant self-development and are similar to those reportedly developed by teaching assistants [33]. Greatest improvements

centered around direct engagement with others, challenging mentees to consider tasks themselves, encouraging communication of their thoughts and listening to the mentees' responses. Although beyond the scope of this paper, the mentors' listening skills and advice were greatly appreciated by mentees and the author observed significant improvements in active learner engagement with mentor presence. Prioritisation and time management were generally lower rated self-developments for those in their first mentoring year. However, these were identified as the most developed skills in more experienced mentors as delivering workshops before meant they needed to focus less on workshop preparation. Additionally, all mentors agreed that their perceived level of professionalism/support improved when they delivered repeat sessions and this may have led to more effective mentoring being delivered by those who have mentored for longer periods of time [34]. The author therefore strongly supports providing annual mentoring opportunities for students in forensic and policing programmes. Mentoring seems to broaden and deepen their skillset, ultimately developing subconscious competences [35] that will be more beneficial when seeking employment. Whilst the research method adopted in this paper cannot robustly test Pajares' [36] finding that enhancing self-efficacy increased academic performance, there is some evidence that mentors' assessment marks did improve across their three-year personal development programme and further research could investigate this.

<Insert Figure 1 here>

Figure 1. Ranking of and scores for pre-coded skills/attributes developed by mentors. Note - mean scores between 2.5 and 3.5 suggest some self-development; mean scores of 3.5 or higher suggest significant self-development.

In addition to pre-coded statements, approximately two thirds of mentors thought they had developed other skills/attributes during this initiative (Figure 2). However, coding their open comments highlighted that mentoring had predominantly increased their self-confidence in previously pre-coded skills, especially when communicating within groups (7);

> Mentor A: 'Increased my confidence with talking to people, approaching people and offering help and advice to people, particularly with groups'.

and reflecting on the knowledge attained during their degree (5), to the extent they may challenge themselves to lead future sessions;

> Mentor B: 'I have become more confident within my own knowledge - and believe I could run at least part of a workshop for the Level 4's [mentees] based on the knowledge and confidence I have gained …'.

In addition to reflection as a new, but unacknowledged skill, mentors did identify they had advanced their teamwork and interpersonal skills (4);

> Mentor C: 'Interpersonal skills - working with and helping different groups of students each week'.

<Insert Figure 2 here>

Figure 2. Additional skills identified by mentors in open comments (Q16 and 17 in Appendix 1).

This research therefore supports Westerman, Stout, and Hargreaves [37] and demonstrates that even in a classroom environment, mentoring is a very valuable activity and mechanism for developing students' self-efficacy, potentially reducing levels of self-criticism. However, some of the open comments demonstrate that mentors may still struggle with relating their skills to higher-level terminology frequently used within job application or interview questions so is further explored in section 3.2. Also, it is important to further consider mentors' perceptions of their individual skills and attributes (section 3.3) and whether mentors felt they positively impacted the learning environment (section 3.4). It is beyond the scope of this paper to explore the alignment between mentor and mentee perspectives, however, the author intends to publish this at a later date.

3.2. Demonstrating employability

Graduate attributes (GAs) are skills/attributes embedded into a university course that students can develop, use to identify their personal qualities and enable them stand out in the job market [16,38,39]. In the author's institution at the time of the evaluation and in the context of this research, the GAs were broken down into six areas; Professional, Global Citizen, Teamwork and Communication, Life Long Learner, Reflective and Critical, and Discipline Expert. However, there is little research that explores whether students can assign appropriate skills/attributes to these over-arching GAs. Therefore in 2015/16 mentors were asked about their awareness of the institution's GAs and to identify examples that align to the most appropriate GA categories (Q24-26 in Appendix 1).

Six of seven mentors stated that they had heard of the GAs and there was very strong agreement that demonstrating examples of the GAs would help them improve their employability (Figure 3). However, mentors demonstrated a much greater spread of opinion towards knowing what the six overarching GAs were and understanding what these meant. Increased variation is likely to be attributed to lower self-confidences of the mentors [40] to correctly recall the specific names of the six GA categories and example skills/attributes that fall into these categories.

<Insert Figure 3 here>

Figure 3 - The mean and standard deviation of self-rated scores provided by six mentors regarding their perceived knowledge, understanding and application of GA (Q25 in Appendix 1). Note – higher scores indicate stronger agreement with each statement.

As shown in Figure 3, mentors appear to be self-aware in how their own skillset fits with the GA and feel they know how to apply the GA to themselves. However, when mentors were asked to identify specific examples of the Professional attributes from a pre-coded list containing examples of Reflective and Critical, Professional and Life Long Learner attributes, there was relatively little ability to categorise these examples correctly. Mentors were more likely to specify Reflective and Critical skills/attributes that fell under the Professional GA category. This suggests the undergraduate mentors may not understand the differences

between the GA and therefore cannot apply specific attributes as the most relevant examples in GA subgroups. Alternatively, they did not fully read the GA specified in the question. Either way this preliminary study suggests that developing such attributes and generic, transferable skills alone is therefore insufficient to demonstrate enhanced employability. In addition, this study has identified a potential deficiency in the ability of the mentors to identify the most appropriate evidence when demonstrating examples of key employer competencies during application and/or interview. Such deficiencies may therefore have a significant impact on their potential to be short listed and/or selected as the choice candidate, especially if the job vacancy is within a highly competitive field, such as forensic science and policing. In the author's opinion, this finding may also be true for the wider (non-mentor) undergraduate student population, but further research would be needed to investigate this.

Jackson and Wilton [41] highlight the need to develop approaches that enhance perceived employability, which will lead to more effective recruitment of new graduates and increased success in the labour market. Bidgood [42] suggests individuals need to improve self-development and career management skills [42], although others argue it is more important to focus on improving self-esteem, confidence and aspirations [42,41]. Based on the results of this research and experience of working with undergraduate mentors in forensic science and policing disciplines, the author is more inclined to agree with the latter. Without learners first establishing self-confidence in their own abilities and belief that they will succeed (self-efficacy), learners may struggle to identify and subsequently evidence their skills in job applications. As a result, to assist future mentors, Table 1 suggests an alignment between the anticipated learning objectives, activities, skills [43,44] and GAs which the author observed mentors developing during this scheme.

<Insert Table 1 here>

Table 1 – Learning objectives and author perceived skills that senior learners developed through mentoring in two specific workshops with suggestions for alignment with author's institutional GAs. Note – as the list of workshops progress in the table only new activities and learning objectives are provided.

As outlined by Bryce, Rankin and Hunt [1], those working in crime scenes or forensic laboratories for example, need to demonstrate both general transferable skills and key practical skills to employers. To further increase the awareness and association between skills, GAs and employability as learners progress through their university course, the author proposes a framework (Table 2) to connect mentor, HE and employer perspectives in the sector [1,4,5,45]. The framework provides examples for how mentor-developed and employer-sought skills may be attributed to a set of GAs. The intention is that scheme leads, HE careers advisors, graduates and mentors may utilise this framework as a support mechanism during job application preparation. As many of the skills mentors develop are transversal across professional domains, this framework could also be applied by sector graduates in job roles outside the criminal justice sector.

<Insert Table 2 here>

Table 2 - Suggested framework to interpret GAs and support identification of mentor-developed and employer-sought skills/competencies. Note – information is listed alphabetically.

In the author's experience, mentors develop a much broader range of skills than they can initially self-identify. This initial evaluation therefore demonstrates the importance and need to more frequently advertise to students the key skills embedded in all aspects of their course through our andragogic practice. During mentor training in 2016/17, the author embedded relevant coloured badges [46] and presented the key outcomes of this paper to aid mentors in identifying skills and GAs linked to this scheme. The author therefore supports Ifenthaler, Bellin-Mularski, and Mah [46] and recommends that universities adopt visual aids, such as coloured badges, to increase visibility of key learning skills. Additionally, tutors/academics should frequently ask all students to link individual skills to multiple GA categories developed in a single initiative/scheme/opportunity and reflect on their skill development. In the authors' opinion, such practice should be adopted across all HE curricula, not just that of forensic and policing students. A university-wide approach with subject-specific applications could more effectively support students to be more confident and competent in evidencing mentoring as an example under industry specific terminology used in employer's job and person specifications. More effective skills communication could subsequently maximise scores/ratings assigned during application and interview processes and thus maximise students' success when seeking degree-related, post-graduation employment.

3.3. Mentors' perceptions of their skills and attributes

Terrion and Leonard [47] identified a taxonomy of mentoring between individuals of same level of experience stating 10 characteristics that typically result in creating a positive mentor relationship and resulting in a successful mentoring scheme. Of the 10 characteristics two were career-related functions, i.e. being on a similar programme of study and having self-enhancement motivation; eight were psychosocial functions i.e. demonstrating good communication skills, supportiveness, trustworthiness, empathy, enthusiasm and flexibility, additionally having an interdependent attitude to mentoring, mentee and scheme staff and having a similar personality to the mentee. Within the context of this research, the top two themes coded from open comments (Table 3) align to the characteristics of supportiveness and experience from being on a similar programme of study. As shown in Figure 4, mentors felt they were approachable, knowledgeable and professional, explaining information in a way the mentees could understand and giving mentees the opportunity to ask about future course modules and career choices. With growing confidence and familiarity in their role (see section 3.1), mentors also feel their external mentoring competencies have grown over time. As a result, engaging as a mentor in this scheme could be considered as a form of authentic learning, developing teaching-related skills whist at university and enhancing student preparedness for work [48-50].

<Insert Table 3 here>

Table 3. Ranked coded reasons why mentors believed mentees benefited from their involvement in class. Note – base response indicates the number of participants that responded to this question.

<Insert Figure 4 here>

Figure 4. Self-perspectives of mentor attributes for a series of pre-coded statements.

Whilst these findings are very encouraging, it is important for us to be aware that there may be differences between mentor and mentee perspectives. It is beyond the scope of this paper to explore these within; however, such differences may be caused by variations in individuals' mentoring styles, effectiveness and the understanding of the definition of a 'role model' for example [34,47,51]. Whilst the author reflects on the behaviour and attitude of some mentors and the impact this could have had on mentees in section 3.4, further research is needed to explore mentor and mentee perspectives in more detail.

3.4. Perception of mentor impact on the learning environment

Generally, mentors felt they had a positive overall effect on the learning environment in the classroom (Figure 5). This opinion was also supported by discussions with lead tutors/academics, strongly supporting scheme continuation. Mentors indicated they knew the mentees' session learning outcomes, focused on tasks learners needed to complete and provided good academic support making them an asset to the learning environment. Mentors typically felt that the relationship between themselves and the lead tutor/academic also created a positive learning environment and that mentees were confident in their contributions (section 3.3, Figure 4), even though some mentors may only be 12 months further on in their studies. Mentor presence therefore enabled learners to have greater opportunities to ask questions and thus gain more feedback and support during workshops.

<Insert Figure 5 here>

Figure 5. Self-rated perspectives of mentor presence and input from pre-coded statements.

During mentor training, senior learners were asked to take on a more coaching based approach [52] where possible, to help mentees become more independent and problem solve through mentor guided questioning. Although training initially provided the opportunity for mentors to suggest approaches to adopt in example scenarios, this research highlighted the importance of embedding additional opportunities for mentors to physically practice coaching methods. Such role play was therefore adopted in mentor training post-2016. From verbal feedback, this active problem-based approach improved mentors' initial confidence and the experience of the mentees to some extent, although a formal evaluation was not undertaken. To further enhance the personal growth of mentors and their openness with others, the author agrees it is important to share and discuss mentees' evaluations and feedback with mentors as part of the scheme lifecycle [53].

After training each year, mentors were provided with detailed lesson plans to enable them to prepare for workshops and respond to questions/tasks accordingly. Although the majority of mentors prepared appropriately and were professional in their engagement from the start, the author observed this was not so for all mentors over the three-year period. Occasionally mentors would turn up tired, distracted and/or less prepared, with a few

mentors being overly confident as they 'had learnt all this before'. Conversely, some mentors were naturally introverted, using this mentoring opportunity to specifically target, challenge and develop their communication skills. As the author aimed to provide a nurturing opportunity for mentors to develop personal and employability-focussed skills in a synonymous learning environment, mentors could contribute in sessions if they arrived on time, irrespective of their arrival state. Such an inclusive approach may inadvertently cause mentees to experience disruption in the classroom and need greater input from the lead tutor/academic to more effectively manage mentor engagement. However, reiterating scheme expectations during workshops for example often provided some adjustment to inappropriate mentor behaviours.

In the context of forensic science and policing, the need to maintain a professional demeanour with colleagues, clients and the public regardless of our personal circumstances is vital. Likewise, it is important that learners can enhance or moderate their confidence and skills in public speaking, for example to competently deliver testimony in court. While mentors may be overly self-critical and we may be unsure of the true impact of their presence from the mentees' perspective, in the author's opinion it is important we trust and encourage undergraduate learners to adopt professional roles whilst in a 'safe' learning environment. The opportunity to self-reflect and critically analyse discipline specific and technical skills by observing and supporting their junior counterparts is currently rare in forensic science and policing degree programmes. However, this research suggests it could be a fundamental opportunity for learners to accelerate their personal and professional development, become lifelong learners and succeed in their chosen career.

Of slight concern, was that four mentors did not know why they were in the classroom. This uncertainty may have been caused by involving these mentors in all 11 workshops in the first pilot year. As some workshops were conducted as a single, tutor-led group rather than sub-dividing into multiple smaller groups, mentors may have felt there was less benefit for them to be there. The uncertainties evidenced in this research further illustrate the importance of scheme leads implementing mentoring in classes where there is sufficient opportunity for mentor-mentee engagement, and explaining the findings of this research to mentors during formal training.

All mentors agreed/strongly agreed that future students would benefit from scheme continuation, fostering networking opportunities between learners and positively supporting transition into HE [54,55]. Mentoring and working in smaller groups appears to be particularly useful when more challenging topics and concepts are being practiced, or where mentees may have minimal prior knowledge. Examples include documenting and searching mock crime scenes (5), sampling and packaging evidence (5) and academic referencing (3). Thus, providing additional support and/or opportunity to ask questions in these sessions is more beneficial, particularly if mentees were more nervous to ask in front of the whole class. The workshop content delivered on this module was designed to holistically support the academic transition into HE and provide insights into the experiences of a wide variety of roles operating in the criminal justice system. As none of the module assessments linked only to workshop content there was no conclusive evidence to support whether the mentoring approach significantly improved assessment marks for either mentors or mentees. As a result, additional research that aims to quantify the impact of adopting academic-focussed mentoring as a teaching and learning initiative should be undertaken using a pre-and post-testing research method.

3.5. Scheme sustainability and future implementation

Bower [56] identified three career-focused reasons that may explain the rationale for students becoming mentors; the benefit the individual previously received as a mentee, the desire to help others succeed and the benefit the individual themselves would gain from mentoring. Over the three-year evaluation period, between 3 and 10% of each academic cohort became mentors on the scheme and all those not graduating that year offered to mentor again. Similar proportions of senior learners have continued to volunteer as mentors on this module since 2016, even during the COVID-19 pandemic (2020/21) where workshops were synchronously and remotely delivered from home through Microsoft Teams and the Top Hat® virtual learning environment. Achieving such consistency in mentor recruitment suggests that voluntary mentor participation is a sustainable model in the context of forensic science and police-related undergraduate degrees, providing an academic/tutor leads on workshop delivery and the opportunity is adequately promoted to prospective mentors. Institutions may also consider adopting a credit-bearing or financial incentive for example to create sustainable mentor recruitment. However, further research would be needed to ascertain the impact of such an approach on mentor development and engagement. While scheme management and leadership were also provided by the same academic (the author) in this case, other institutions may decide those working in academic development for example, may be more appropriate.

Since this evaluative research was originally conducted, there has been a transformative change in HE practice [57]. Even during the COVID-19 pandemic the author was committed to implementing the mentoring scheme for the benefit of their learners. During 2020/21, mentors worked collaboratively with the author to redesign, co-develop, co-create and test a number of delivery mechanisms and e-learning platforms to enable mentees to successfully achieve the same learning objectives during the workshops evaluated in this research as pre-COVID. As a team, we were able to synchronously deliver engaging and interactive activities and provide real-time feedback to mentees during all online workshops. Whilst this approach took considerably more time and resource, it was vital to train mentors to be confident in using the tools, technologies and their own devices to enable them to explain, problem-solve and holistically support mentees to complete the tasks and engage throughout the synchronous online sessions (Table 1). Based on the author's observations and informal student feedback, it is believed that senior learners have developed a more diverse set of transferable skills through remote mentoring than they would have done through face-to-face mentoring pre-COVID. Clearly further research is needed to evidence and validate these claims, however, initial feedback suggests that adopting mentoring within forensic and criminal justice contexts could be viable through both remote distance learning and on-campus provisions. Such delivery mechanisms could further enhance digital competencies and increase inclusivity in and accessibility of the initiative to more learners. Additionally, greater numbers of criminal justice-related organisations are employing video-communication platforms such as Microsoft Teams and moving towards the adoption of more digital approaches within their standard practice post-COVID. As a result, it is increasingly important that all learners have the opportunity to develop and evidence their digital competencies to meet employer expectations within the sector before graduation.

4. Conclusion

The aim of this research was for the first time to evaluate the impact of participating in a voluntary, extra-curricular undergraduate student mentoring scheme from a mentor perspective within a forensic and criminal justice context. Mentors (senior undergraduate students) were surveyed anonymously during a three-year evaluation period (2013-2015) to investigate their individual opinions and perceptions on the benefits, limitations and potential future of the scheme.

Introducing mentors in module workshops clearly had a positive effect. Every responding mentor felt their self-confidence, self-efficacy and personal development were enhanced across numerous employability-based skills including mentoring, listening and verbal communication, particularly with small groups of individuals. Mentor self-development also continued for those volunteering in subsequent years of the scheme, gaining wider leadership skills and some attaining sufficient confidence and self-efficacy to successfully deliver aspects of the workshop scheme to larger audiences of up to 40 students. Wood and Smith [48] suggest that 'teaching-related' skills are commonly required by recent graduates in the workplace. Therefore, offering students opportunities to participate in on-campus schemes would provide mentors with subject-related experiences to develop and evidence their skills to future employers. While mentors were aware of the university's graduate attributes and felt they could use this mentoring experience as an example to demonstrate key competencies and skills, additional interventions are needed to enable students to appropriately categorise and promote their graduate attributes during job applications and interviews. To try to bridge this gap, the author has proposed a framework to help mentors, educators, HE professionals and employers to associate skill development with graduate attributes and sector-relevant skills and competencies. Further investigation is now needed to establish whether such additional support and other relevant initiatives would maximise students' potential for gaining career-related graduate employment.

Adopting such a classroom-based, small group mentoring scheme has been shown to provide an accessible and inclusive introduction to mentoring at undergraduate level. A deeper theoretical underpinning can be built on this foundation with more advanced mentoring skills developed during a postgraduate degree or within the workplace. The author strongly supports that such initiatives are more widely implemented within HE institutions as a sustainable mechanism for mentors to safely develop a wider selection of more advanced, subconscious competencies and increased self-confidence in their skills/attributes. However, significant consideration and planning is required to manage such schemes, especially with increasing numbers of lead tutors/academics and mentors across a wider spectrum of modules/courses. For readers interested in adopting similar mentoring schemes in their own institutions, the author intends to share their wider experience and support through #RemoteForensicCSI, an effective network for professional development in the sector [57]. It is hoped that this paper and wider dissemination activities initiate further research into the use and value of undergraduate mentoring. In particular research which evaluates and quantifies the extent to which engaging in mentoring initiatives and other extra-curricular activities may improve the rate of success in gaining graduate employability within the forensic science and criminal justice sector and in institutions across the globe.

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Appendix 1 – Mentor questionnaire

Q1 Please give your biological sex.

- ○ Male
- ○ Female
- ○ Prefer not to answer

Q2 Which type of award are you studying towards?

- ○ BSc (Hons)
- ○ MSci

Q3 Which award are you currently studying towards at <information redacted for peer-review> University?

- ○ Policing and Criminal Investigation
- ○ Forensic Investigation
- ○ Forensic Science
- ○ Forensic Science & Criminology

Q4 Which Level are you currently in on your award?

- ○ Second year
- ○ Third year
- ○ Fourth year

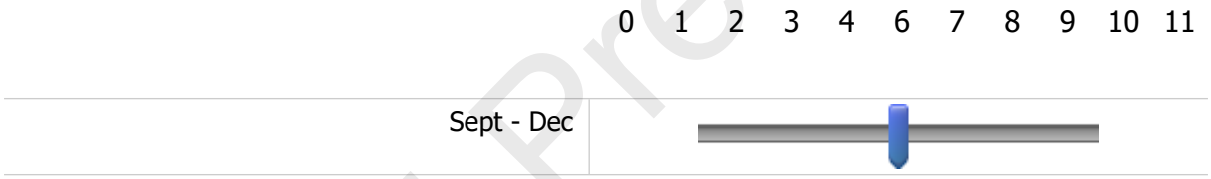
Q5 Is this the first year you have been a student volunteer during the workshops?

- ○ Yes
- ○ No

Q6 Did you complete this survey **last year** after volunteering as a mentor?

- ○ Yes
- ○ No
- ○ Cannot remember

Q7 How many WEEKS were you able to volunteer during the Semester 1 workshops this year?



Q8 On average, how many 1 hour SESSIONS did you volunteer EACH WEEK YOU WERE ABLE TO ATTEND this year?

Q9 Within the 1 hour workshops where you supported small groups/tables of students, did you TYPICALLY:

- ○ Work with the same group of first year students each week
- ○ Work with different groups of first year students each week

Q10 Which of the workshops do you think the students most benefited from your presence and why?

_____

Q11 Please can you indicate the level of agreement for the following statements with respect to YOUR INVOLVEMENT/ENGAGEMENT WITH THE FIRST YEAR STUDENTS as well as THEIR INVOLVEMENT/ENGAGEMENT WITH YOU in the workshop sessions:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
The students were confident in approaching you to ask questions	○	○	○	○	○
The students were confident in the response you gave and knowledge you had	○	○	○	○	○
Students were focused on the tasks that the academic wanted the class to complete	○	○	○	○	○
Students felt having you there was an asset to the classroom learning environment	○	○	○	○	○
The students were distracted by having you in the classroom	○	○	○	○	○
Students had more confidence to ask you questions rather than the academic/tutor	○	○	○	○	○
Students had more opportunity to ask questions/get support and feedback by having you present	○	○	○	○	○
The relationship between myself and the academic created a positive learning environment for the first year students	○	○	○	○	○
I felt I generated a positive learning environment for the first year students	○	○	○	○	○
I was confident in the content of the academic support I provided to the students	○	○	○	○	○
I was able to explain information in a way the students could understand	○	○	○	○	○
I was always professional in my role when interacting with the students	○	○	○	○	○
My level of professionalism and support provided to the students improved when I delivered repeat sessions	○	○	○	○	○

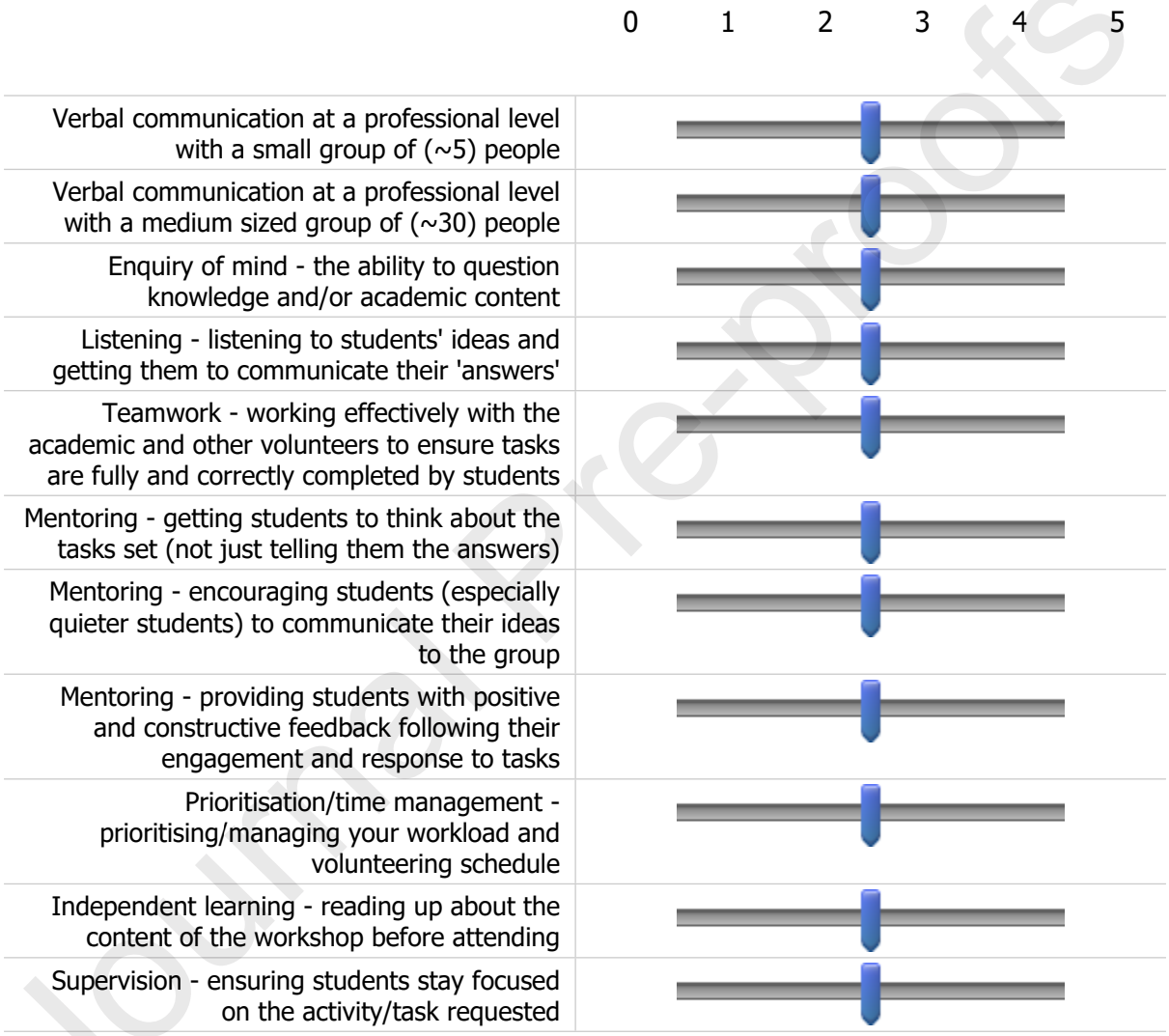
My level of professionalism and support provided to the students improved over the semester	○	○	○	○	○
There were workshops when I did not know why I was in the classroom - I did not feel I was a benefit to the students	○	○	○	○	○
The academic could have managed my interactions with students more effectively	○	○	○	○	○
Students asked me about later modules/career choices	○	○	○	○	○
The students typically just wanted to know the actual answers to questions/tasks rather than wanting advice with how to get to the answer	○	○	○	○	○
When working with the students I typically just gave them the answers to the questions/tasks	○	○	○	○	○
Both myself and the students knew what the learning outcome(s) were for each workshop	○	○	○	○	○
Both myself and the students achieved the learning outcome(s) for each workshop	○	○	○	○	○
I was a good role model for the students	○	○	○	○	○
I was confident that the students appreciated me being present	○	○	○	○	○
I think that future first year students will benefit from having volunteer students in the workshops	○	○	○	○	○
I was told by first year students that they would appreciate other modules having student volunteers present in their tutorials	○	○	○	○	○
I got a positive experience from working with the first year students	○	○	○	○	○
I learnt new things about forensic and/or crime science from the first year students	○	○	○	○	○

Q12 Out of 5, please rate the extent of YOUR PERSONAL ATTRIBUTE & SKILLS DEVELOPMENT, ONLY acquired from assisting with the series of workshops **THIS** year. Help with interpreting the rating:

0 = no self-development of the specified skill/attribute

3 = some self-development but opportunity to further develop this skill/attribute

5 = maximum/significant self-development of the specified skill/attribute



Q13 You indicated in an earlier question that you have volunteered in the workshops in a previous year. Do you think your skills/attributes developed to a greater or lesser extent this year than when you volunteered previously?

○ No development/improvement to my skills/attributes this year compared to previous year

○ Minor development/improvement to my skills/attributes from those acquired in a previous year

○ Significant development/improvement to my skills/attributes from those acquired in a previous year

Q14 You indicated in an earlier question that you have volunteered in the workshops in a previous year. Out of 5, please rate the extent of YOUR PERSONAL ATTRIBUTE & SKILLS DEVELOPMENT, ONLY acquired from assisting with the series of workshops **LAST** year. Help with interpreting the rating:

0 = no self-development of the specified skill/attribute

3 = some self-development but opportunity to further develop this skill/attribute

5 = maximum/significant self-development of the specified skill/attribute

0 1 2 3 4 5

Verbal communication at a professional level with a small group of (~5) people	
Verbal communication at a professional level with a medium sized group of (~30) people	
Enquiry of mind - the ability to question knowledge and/or academic content	
Listening - listening to students' ideas and getting them to communicate their 'answers'	
Teamwork - working effectively with the academic and other volunteers to ensure tasks are fully and correctly completed by students	
Mentoring - getting students to think about the tasks set (not just telling them the answers)	
Mentoring - encouraging students (especially quieter students) to communicate their ideas to the group	
Mentoring - providing students with positive and constructive feedback following their engagement and response to tasks	
Prioritisation/time management - prioritising/managing your workload and volunteering schedule	
Independent learning - reading up about the content of the workshop before attending	
Supervision - ensuring students stay focused on the activity/task requested	

Q15 With respect to the following statement, to what extent do you agree with the following statement:

Mentoring in the workshops has benefitted assessments I have submitted in my subsequent year(s) of study

- ○ Strongly Disagree
- ○ Disagree
- ○ Neither Agree nor Disagree
- ○ Agree
- ○ Strongly Agree

Q16 Are there any other personal attributes and/or professional skills that you have developed by volunteering in the workshops?

- ○ Yes
- ○ No

Q17 You answered 'Yes' to the last question; please provide details of the specific skills and/or attributes that you have developed by volunteering with the workshops.

_____

Q18 Are there any particular skills/attributes you would have liked to be given the opportunity to develop while you volunteered in the workshops but the opportunity was not available to you? If you can think of how I may have been able to incorporate these into the sessions then please detail example(s) here.

_____

Q19 Would there be anything you would change about your level of involvement and/or my management of you as volunteers during the workshop sessions?

- ○ Yes
- ○ No

Q20 You answered 'Yes' to Q19; please explain what would you change and why?

_____

Q21 If you have time in your timetable, would you want to volunteer again during the workshops next year?

- ○ Yes
- ○ No
- ○ I will graduate this year so this won't be possible

Q22 You answered 'No' to Q19; please explain why you do not want to be a volunteer again.

_____

Q23 Are there any particular skills/attributes you would like to develop next year while you volunteer during the workshops? If you can think of how I may be able to incorporate these into the sessions please detail example(s) here.

_____

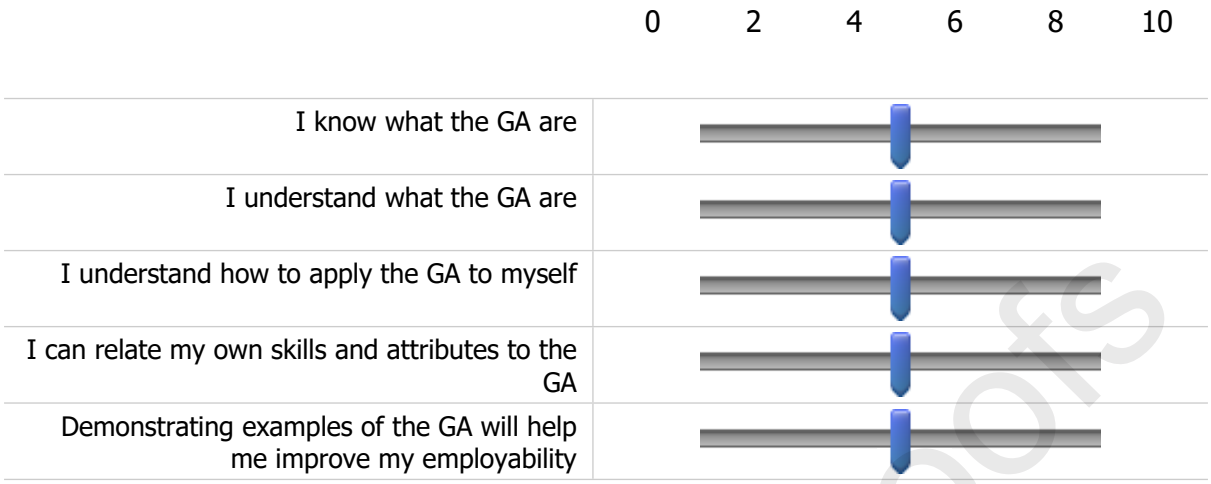
Q24 Have you heard of the University's Graduate Attributes?

- ○ Yes
- ○ No

Q25 With respect to the University's Graduate Attributes (GA), on a scale of 0 to 10, please indicate the extent to which you agree with each of the following statements.

0 = Strongly disagree

5 = Neither agree nor disagree
10 = Strongly agree



Q26 Which of the following skills and attributes do you are specific examples of the University's Graduate Attribute titled 'Professional'? Select as many as you think apply.

- ☐ Being reliable, willing and honest
- ☐ Paying attention to detail
- ☐ Understanding the importance of keeping up-to-date with the latest approaches and technology
- ☐ Listening to others
- ☐ Reaching well-considered decisions
- ☐ Maintaining a positive attitude
- ☐ Challenging convention
- ☐ Evaluating information
- ☐ Being open to new ideas and opportunities
- ☐ Being self-motivated and competent

Q27 Over the years you have studied at the university, please indicate in the space below if there are any other modules (at any level) where you think such a mentoring initiative may have benefitted your learning:

_____

Q28 If you have any other comments regarding your involvement as a student volunteer in the workshops in Semester 1, please detail these in the space below.

_____

Highlights

~~Engaging as an undergraduate student mentor significantly develops learners' self-confidence and self-efficacy~~

~~Mentoring predominantly developed students' interpersonal and communication skills~~

~~Additional interventions are needed to maximise mentors' employability potential~~

- A novel mentoring scheme was adopted in undergraduate forensic and policing curricula
- Mentors were senior (second to fourth year) undergraduate students
- Actively mentoring others significantly developed self-confidence and self-efficacy
- A framework is proposed to link mentor and employer skills with graduate attributes
- Multiple initiatives are needed to maximise mentors' employability potential

Table 1. Learning objectives and author perceived skills that senior learners developed through mentoring in two specific workshops with suggestions for alignment with author's institutional GAs. Note – as the list of workshops progress in the table only new activities and learning objectives are provided.

Workshop	Delivery Mechanism	Mentor Activities and Learning Objectives
Attending the Crime Scene	Face-to-face	Assists lead tutor/academic setting up mock crime scenes in rooms of the crime scene house
		Complies with scheme lead's and lead tutor/academics' instructions for the workshop, preparing appropriately
		Facilitates mentor-mentee and mentee-mentee introductions small groups (6 mentees) in mock crime scene
		Theorises/imagines mentees' interpretations of what may ha happened at mock crime scenes based on physical evidence

	Coaches mentees to observe, interpret and share their thoug and ideas; asks what they see, what may have happened, possible evidence types, approaches for documenting and searching scene etc.
	Motivates all mentees to engage verbally and practically, balancing learners' contributions
	Supervises mentees in scene sketching and searching as a g
	Applies their knowledge to help mentees make decisions and complete tasks
	Evaluates risk dynamically during activities
	Communicates with lead tutor/academic during workshop, ra any issues or concerns
	Assesses and manages behaviour of mentees in group
	Takes responsibility for ensuring mentees complete the tasks
Synchronous remote (online)	Takes time to learn new skills and problem-solve
	Collaborates with scheme lead to design effective real-time interactivity with mentees
	Tests various software and ideas with scheme lead, providin feedback and suggesting alternative approaches or solutions
	Fabricates mock physical evidence e.g. uses flour to mimic s white powder (mock drug evidence)
	Decides where to establish a mock crime scene in own home
	Creates a safe mock crime scene in own home for mentees t interact remotely
	Determines how to use own mobile device(s) to livestream (visual) during workshop e.g. mobile phone, tablet and/or lap
	Discovers how to use new learning platform (Microsoft Team simultaneously livestream their crime scene, engage with me through audio and/or written chat and capture mentors performing mentee-suggested actions e.g. searching for phy evidence
	Solves problems in real-time e.g. uses mobile data if WiFi dr out

	Face-to-face	Initiates discussions between mentees so they suggest, deci and perform tasks appropriately
		Responds sensitively to mentees' ideas and responses e.g. if answer provided is incorrect
		Links workshop tasks to real cases (UK and international) du discussions
		Identifies when to ask/seek support or advice from lead tutor/academic
		Empathises with and relates to mentees, reflecting on prior learning experiences
		Shares knowledge and experience from learning at higher le the degree programme
Sampling and Packaging Evidence	Synchronous remote (online)	Discovers how to use new learning platform (Top Hat®) and devices to engage synchronously in workshops
		Interacts with mentees professionally in Top Hat® digital plat
		Explains to mentees how to use the Top Hat® functions whe needed
		Manages junior learner engagement in an online breakout gr
		Examines images of contemporaneous notes and packaged evidence shared by mentees through Top Hat®
		Supports mentees in performing peer-critique of their packag and suggesting actions for future personal development
		Gives constructive feedback to mentees on their engagemen skills and task performance
		Demonstrates how to package suspected drug evidence corr

Table 2. Suggested framework to interpret GAs and support identification of mentor-developed and employer-sought skills/competencies. Note – information is listed alphabetically.

Graduate Attribute	**Examples of Mentor-Developed Skills/Competencies**	**Examples of Employer-Sought Skills/ Competencies [1,4,5]**
Discipline expert	• Coaches others, poses questions	• Calculates correctly

	• Deep understanding, how and why things work or do not • Observes mentees' practice, suggests improvements and alternative approaches	• Calibrates equipment • Designs experiments • Manipulates trace evidence • Measures accurately and precisely • Technical expertise
Global citizen	• Aware of cultural differences • Shares differences in international practice • Suggests international case examples and resources • Understands global issues in policing and forensic science	• Considers and adapts to different backgrounds and communities
Life long learner	• Actions feedback for personal development • Aware of mentees' needs • Creative, suggests alternative solutions • Learns new technologies • Makes informed decisions • Prepares for workshop, self-study • Self-motivates, engages with extra-curricula activities • Supports mentee learning, advises following self-reflection	• Accountable, takes personal responsibility • Collaborative • Innovative • Makes decisions • Motivates oneself • Selfless, considers others • Thinks laterally
Professional	• Demonstrates commitment • Demonstrates patience with mentees • Demonstrates responsibility, being a role model to mentees • Evaluates risk dynamically within group • Listens and follows instruction • Manages behaviour of group • Manages own workload • Mentors, provides feedback • Pays attention to detail • Task-focused, completes within the timescale • Supports new mentors	• Aware of health and safety, PPE/COSHH • Complies with method/process and follows procedure • Demonstrates integrity and honesty • Fair, unprejudiced and unbiased • Mentors and supervises others • Minimises contamination • Motivates others • Transparent
Reflective and critical	• Adapts and is flexible in real-time • Assesses group dynamics • Challenges assumptions, opinions, myths and ideas • Demonstrates empathy • Develops self-efficacy • Problem-solves in real-time • Self-reflects for personal development • Suggests different viewpoints and perspectives	• Challenges and questions appropriately • Critically and constructively analyses information • Emotionally aware • Encourages reflection in others • Solves problems
Teamwork and communication	• Delivers mentor handovers between repeat workshops	• Clearly and comprehensively communicates with others

	• Develops relationships e.g. mentor-academic, mentor-mentor, mentor-mentee • Encourages mentee and mentor participation • Leads mentees, provides guidance and advice • Listens to mentees and tutors/academics • Speaks publicly, various group sizes and backgrounds • Verbally explains using accessible or simple language	• Communicates with everyone • Creates trusting relationships • Credits others • Leads and takes ownership • Note taking • Tailors communication according to audience

Table 3~~1~~. Ranked coded reasons why mentors believed mentees benefited from their involvement in class. Note – base response indicates the number of participants that responded to this question.

Rank	**Coded reason**	**Response numbers**
1	Helpful, supportive	4
2	Their experience, they have done it before	4
3	Helped with difficult subjects	2
4	Gave confidence to ask questions	1
5	Extra support when academic/tutor was busy	1
	Base response	**(9)**