Using student conferences as a form of authentic assessment to develop and enhance transferable communication skills in quantitative and data-driven disciplines: Evidence from a postgraduate public health program

Sharon Greenwood [1]

Corresponding author: Sharon Greenwood (Sharon.Greenwood@glasgow.ac.uk)

[1] School of Health and Wellbeing, College of Medical, Veterinary and Life Sciences, University of Glasgow, Glasgow.

Abstract

Globally, the volume and availability of data has grown exponentially over the last few decades. In turn, workforces are looking for graduates to be well versed in working effectively with data, with the skills needed to work both efficiently and creatively within data-driven environments. This has been reflected within the context of higher education through the increased demand for specialist training and development in quantitative and data-driven (QDD) disciplines – particularly within postgraduate study. Graduates are expected not only to possess technical skills, but also 'softer skills', including multifaceted communication skills to communicate complex concepts with non-expert audiences. This paper considers how the environment of a student conference might amplify the authenticity and meaningfulness of oral presentations as an assessment format, while helping QDD students to develop and enhance their transferable communication skills. Following the introduction of an additional assessment to a postgraduate public health program, surveys were carried out with staff (n=11) and students (n=31). Data were analysed using descriptive statistics and content analysis. Results showed that the student conference environment assessment was meaningful for students and supported their communication skills development through the authentic delivery of oral presentations. The conference environment helped students build confidence, with 88% (n=22) finding it useful to practice presenting to peers, and 100% (n=26) feeling more confident about their work. This study, thus, illustrates a transferable and implementable approach for educators wishing to integrate a student conference assessment to develop students' communication skills, particularly in QDD disciplines.

Keywords

authentic assessment, graduate skills, higher education, meaningful assessment, postgraduate degrees, public health, quantitative methods

Introduction

The need for training within quantitative and data-driven (QDD) disciplines has increased exponentially in response to the volume of data being generated globally (Han & Ren, 2024). QDD disciplines are united in their use of numerical and statistical data, and span the natural sciences (e.g.,

biology, chemistry), formal sciences (e.g., mathematics) and social sciences (e.g., sociology, psychology). They are particularly prevalent within interdisciplinary areas; one example is public health (PH), defined as 'the science and art of preventing disease, prolonging life and promoting health through the organized efforts and informed choices of society, organizations, public and private, communities and individuals' (Winslow, 1920, p. 30). Public health (PH) affects many areas of life, from communicable diseases, such as COVID-19 and mpox (monkeypox), to non-communicable diseases, including cancer and diabetes, to mental health and wellbeing. These issues are compounded by wider, global concerns connected to social, political, economic and environmental issues, such as the climate crisis (Nugent & Fottrell, 2019). The increased availability of quantitative data relating to health presents a useful avenue to investigate complex and multifaceted PH problems. Thus, PH graduates must be supported in developing appropriate data analysis skills to support their journey to graduate employment. However, as exhibited throughout the COVID-19 pandemic (McClaughlin et al., 2023; Nan et al., 2021), PH graduates must also be able to effectively communicate key messages about their work to a variety of non-expert audiences. This paper details how using a student conference environment provides an innovative and effective platform for meaningful and authentic assessment in QDD disciplines (such as PH). It supports the development of communication skills frequently desired by graduate employers but often underdeveloped within QDD curricula in lieu of focusing on practical data skills.

Examining tertiary education provision and workforce demands in public health

The PH workforce encompasses a vast and diverse range of roles and, consequently, routes into working in the sector are varied (Otok et al., 2018). While many PH employees will hold some level of tertiary level qualification, it is not routine to hold a specific PH qualification, such as a Bachelor of Public Health or a Masters in Public Health (MPH). A survey of the PH workforce in the USA found only 17% of the 19,000 respondents held any level of PH qualification (Leider et al., 2015). As the sector has grown throughout the last few decades, educational provision has been noted as a particular workforce challenge for prospective and current employees, particularly with the advancement of technology in the sector (Drehobl et al., 2014). This led to an expansion of PH education within the Global North throughout the 2010s (Beck & Boulton, 2016; Leider et al., 2015). Despite this increased provision, workforce shortages persisted, leading some to argue there was a disconnect between the 'educational pipeline' and workforce needs (Yeager et al., 2016). Partially this is attributable to the expansive nature of the discipline; at a higher education level, PH curricula are typically a blend of established disciplines, such as medicine, statistics and social sciences. There is no universal agreement about what should be covered, and decisions about curriculum content are typically culturally defined and context-driven (Furman & Bochenek, 2023).

The COVID-19 pandemic has been the widest-reaching PH emergency faced in contemporary times, highlighting the important role of the PH workforce in everyday life. The pandemic highlighted fundamental, structural issues within healthcare systems globally, particularly in countries with the highest levels of healthcare expenditure globally (Abdalla et al., 2020; Maani & Galea, 2020). The pandemic put a particular strain on PH workforces, reducing their ability to proactively engage in prevention strategies connected to other aspects of health (Williams et al., 2024). Countries have since been grappling with a 'post-pandemic 'permacrisis'' (Burau et al., 2024, para. 1), affected by factors such as climate change, escalating global tensions (i.e., conflict in Ukraine, Palestine) and responding to unmet healthcare needs (e.g., mental health, non-communicable diseases), which were considered less of a priority during the pandemic.

Part of the global response has been to increase the 'preparedness' and resilience for future PH emergencies, ensuring the workforce includes more data analysts and data scientists (Plepys et al., 2021), equipped with training in epidemiology and health protection, and bolstered with expertise in

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specific areas of PH (e.g., data science, health economics, health promotion). Increased demand for PH education began in the early stages of the pandemic (Dong & Bouey, 2020) and has since risen exponentially; for example, Leider et al. (2023a) identified increased demand for undergraduate PH education in the USA. Table 1 highlights the increase in the numbers of UK postgraduate taught (PGT) student learners within subjects allied to medicine (including PH) since the start of the COVID-19 pandemic.

Table 1: No. of UK postgraduate students registered on programs allied to medicine (including PH) from 2019/20 to 2021/22 compared to numbers of all UK PGT students (HESA, 2023)

Measure	2019/20	2020/21	2021/22
UK students studying subjects allied to medicine	66,985	81,270	93,175
Change in student numbers from previous academic year		↑ 14,285	↑ 11,905
Total (all UK postgraduate taught students)	531,270	628,940	706,995
Percentage (all UK postgraduate taught students)	12.6%	12.9%	13.2%

Note: Adapted from "Figure 13 - HE student enrolments by CAH level 1 subject and sex: Academic years 2019/20 to 2021/22" by Higher Education Statistics Agency, 2023 (https://www.hesa.ac.uk/news/19-01-2023/sb265-higher-education-student-statistics/subjects).

Graduate attributes and capabilities in public health

Graduate attributes are the qualities, skills, and attributes that HEIs believe a graduate should possess upon conferment of their qualification (Wong et al., 2021a). Critical pedagogues argue this discourse around ensuring graduates enter the workforce with set skills raises particular tensions around the value of education, adding weight to the belief education has been neoliberalised, and intellectual growth constructed as a commodity (Tomlinson & Watermeyer, 2022). Much of the literature on graduate attributes refers to 'skills' or 'skill building'; for example, Niman & Chagnon (2023, p. 195) argued that the concept of 'capabilities' more accurately represents what we should be enhancing within students and arguably challenges the notion of commodification. Identifying what is a 'desired' work-ready capability is largely subjective and context-driven, meaning it can be hard to identify and quantify these skills (Niman & Chagnon, 2023). Research from a UK-based perspective (Wong et al., 2021a, 2021b) has demonstrated four key areas where students can 'expect to embody' capabilities: self-awareness and lifelong learning; employability and professional development; global citizenship and engagement; and academic and research literacy. These vary depending on geographical and cultural context, and are influenced by changing landscapes raising new issues, including the rise of Artificial Intelligence (AI) use (Chamboko-Mpotaringa & Manditereza, 2024).

Despite the need for an increased workforce, studies show PH graduates experience barriers to employment (Yeager et al., 2021). Additionally, there is a lack of knowledge around the first destinations of PH graduates. Reflecting on pre-COVID-19 data, Plepys et al. (2021) found PH graduates from the USA transition to a range of destinations: 27% to healthcare; 24% to corporations; 19% to academia; 17% to government; and 12% to non-profit organisations. Similar results are observed in a pre-pandemic Australian study, which captured a similar breadth of graduate occupations (Watts et al., 2021). While the diversity in graduate destinations can reflect the interdisciplinary nature of a PH degree, it can also suggest a mismatch between education and employment; Watts et al. (2021, p. 1) found PH graduates typically had 'average or lower-than-average rates of mismatch'. This mismatch has been recognised elsewhere. For instance, in a review of PH curricula in the USA (Meredith et al., 2022), researchers interviewed program leads who saw the role of their programs as providing a broad education in the subject area, whilst retaining a focus on enhancing professional values and professionalism skills. PH graduates also recognise this; Furman and Bochenek (2023) found Polish graduates recognised the value of being able to critically engage with salient topics, such as health technology assessment and evidence-based medicine. This was

particularly important for PH graduates from low- and middle-income countries who felt their degree positively impacted their ability to showcase specific capabilities in their careers, such as developing context-sensitive competencies, leadership and communication skills (Buunaaisie et al., 2018; Zwanikken et al., 2014). Grounding curricula in a competency-based approach facilitates a closer match between graduate capabilities and workforce needs (Abelha et al., 2020) and enhances higher levels of career satisfaction (Plepys et al., 2021). For wider society, it provides additional protection against the potential introduction of further public spending cuts and, in some cases, the introduction of austerity measures – both of which may proportionally reduce the size of the workforce and negatively affect their ability to respond to PH emergencies (Leider et al., 2023b; Stuckler et al., 2017).

Meaningful and authentic assessments as a route to skills development

Educators can support student skills development through designing and developing meaningful assessments targeting specific skills (Griffin & Care, 2015). While assessment should meet the needs of the qualification being sought, some critics have argued that 'assessment conducted merely for accountability reasons is not instructionally sound' (Travis, 1996, p. 309). Instead, assessment should help equip students with a set of skills to become active learners and assess their own learning throughout their lives (Boud & Falchikov, 2016). Transforming assessment to be more sustainable (Boud, 2000) requires careful consideration and design by facilitators, focusing on enhancing participation and skills development in a 'meaningful' and 'authentic' way (Travis, 1996; Villarroel et al., 2018). Following Travis' (1996, p. 310) definition, meaningful assessments are those 'designed to reflect the behaviour and skills required in real-world situations' and focus on a student's ability to respond to the set task, allowing students to grapple with contemporary issues they may face in graduate employment (Kuh et al., 2015). For those embarking on a career in PH, this may include working with 'messy', complex data or enhancing written and oral communication skills.

Using authentic and meaningful assessments can help to challenge the 'hegemonic status quo' (Forsyth & Evans, 2019; McArthur, 2023), embedding principles of inclusivity (e.g., Hanafin et al., 2007) and decolonial approaches within learning and teaching. McArthur (2023, p. 93) believes authentic assessments can help 'validate the social belonging of the student', echoing Dall'Alba and Barnacle's (2007, p. 691) earlier perspective that the approach needs to 'engage the whole person: what they know, how they act and who they are'. However, the key strength for McArthur (2023) is how the approach helps students to embrace creative and utopian approaches to problem solving, emphasising the importance that creative minds have in 'propelling us on to a better future' (p. 93). However, there are barriers to successfully implementing this approach. It requires educators to have the skills, time and space to rethink their practice; and workload pressures, coupled with limited institutional recognition for teaching innovation can reduce the attractiveness of engaging with professional development opportunities (Hughes & Barrie, 2010). This results in a reliance on existing ways of 'doing', in turn fostering a culture of 'inertia or resistance to the assessment innovation needed for effective assessment of graduate attributes' (Hughes & Barrie, 2010, p. 331). In addition, the increases to student numbers witnessed since the early 2000s, particularly within postgraduate study, has had an impact on staff workloads; Gregory and Lodge (2015) noted this was a significant barrier to staff embracing technology-enhanced learning to improve their teaching practice. Implementing authentic and meaningful assessments can involve a large administrative workload (Macandrew & Edwards, 2002) and, while suggestions have been made around streamlining the approach – involving different members of the teaching team to spread the workload and focusing on making small but flexible changes (Massa & Kasimatis, 2017) – barriers to implementation persist.
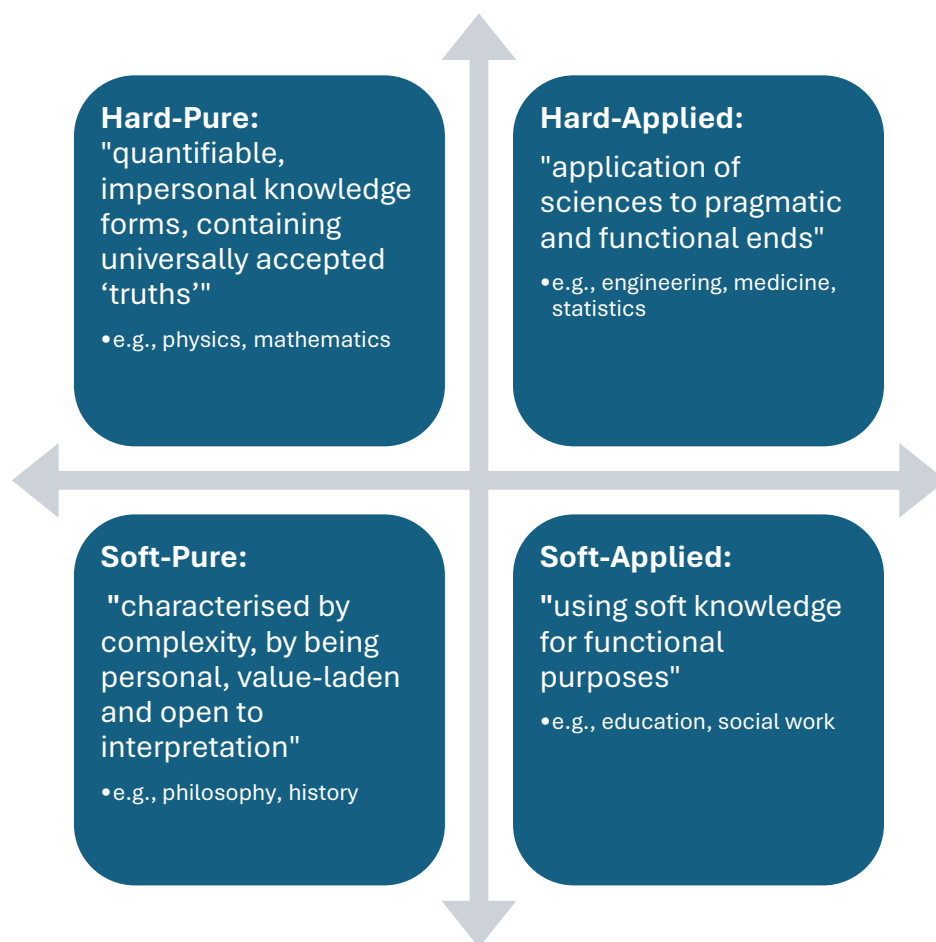
Students can similarly face barriers around engaging with authentic assessments, particularly if their prior experiences with assessment have focused on establishing and re-telling 'facts', rather than embracing critical thinking; in the words of Boud and Falchikov (2016, p. 403) 'if students are always attending to the judgements of others, they may not acquire the broader set of skills that enable them to do this for themselves'. Part of this relies upon how authentic and meaningful assessments are

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designed. Guilkers et al. (2004) emphasised the importance of considering the task, which should 'confront students with activities […] also carried out in professional practice' (p. 71); the context, which should be realistic and involve interdependency and individual accountability; and the result, which should resemble a 'quality product or performance that students can be asked to produce in real life' (p. 75), encompassing an array of tasks to allow the assessment of underlying competencies, based upon authentic criteria. Enhancing opportunities for building assessment literacy should be embedded within design and involve space for self-reflection and evaluation (Chan & Luo, 2020; Hannigan et al., 2022), to ensure students get the most from the task and recognise the important, transferable skills they are developing.

Designing authentic, meaningful assessments to support skills development in QDD disciplines

Decisions about learning, teaching, and assessment are typically informed by underpinning disciplinary traditions. Building on previous work by Biglan (1973) and Bechar (1989), Neumann and colleagues (2002) outlined the ways disciplines can be defined using the hard/soft and pure/applied knowledge taxonomy, and the relationship to teaching, learning and assessment practices (Figure 1, based on Jessop and Maleckar's [2016] interpretation of Becher's typology framework [1989]).

Figure 1: Author's representation of Becher's (1989) disciplinary typology framework, as interpreted by Jessop and Maleckar's (2016)

Hard-Pure:
"quantifiable, impersonal knowledge forms, containing universally accepted 'truths'"
•e.g., physics, mathematics

Hard-Applied:
"application of sciences to pragmatic and functional ends"
•e.g., engineering, medicine, statistics

Soft-Pure:
"characterised by complexity, by being personal, value-laden and open to interpretation"
•e.g., philosophy, history

Soft-Applied:
"using soft knowledge for functional purposes"
•e.g., education, social work

As an interdisciplinary area, PH occupies various positions within this taxonomy. Therefore, considering the discipline using this framework helps to disentangle the various approaches to

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learning and teaching that may be present throughout the program. QDD elements of the PH curriculum are more frequently associated with 'hard' fields of study, varying across the hard-pure and hard-applied spectra; assessment in this space is 'more knowledge-driven, content-focused, cumulative and quantitative, and teacher-centered', and less focused on 'interpretive, divergent, critical approaches' (Sin & Soares, 2020, p. 291). This means that students who are focusing primarily on QDD aspects of the PH curricula (e.g., data science, epidemiology, statistics) may lack the 'softer' skills connected to interpretation, critical thinking and communication. This gap presents a useful opportunity to develop an authentic, meaningful assessment to support the development of underdeveloped communication skills within QDD disciplines (Marti & Smith, 2023).

Oral presentations are commonly used as assessments across all disciplines and connect well with enhancing graduate attributes around communication in a meaningful way. Competency in oral communication is typically demonstrated through 'the combination of knowledge, skills, and attitudes needed to speak in public in order to inform, self-express, to relate and to persuade' (De Grez, 2009, as cited in van Ginkel et al., 2015, p. 63). Using presentations as a form of meaningful assessment can be a way for students to demonstrate oral and visual communication skills (i.e., through slide design) and, depending on the brief, can help students to showcase their skills in critical thinking, adaptability, resourcefulness, and in being reflexive and autonomous learners (Sander et al., 2002); all highly desired, transferable skills when entering the graduate workplace (Sonnenschein & Ferguson, 2020; Tushar & Sooraksa, 2023). Oral presentations are used less often in QDD disciplines, and often understood by STEM (science, technology, engineering and mathematics) students to be an 'alternative' form of assessment, rather than a core approach (Antera et al., 2019). Employers within these sectors have noted a lack of competency among graduates in oral presentations (Chan, 2011; Van Ginkel et al., 2015). Building this skill is particularly important within the PH discipline, given the increasing prominence and visibility of the PH workforce within society (Sullivan et al., 2018).

However, despite the benefits, students may be reluctant to the assessment approach due to the anxiety and fear associated with public speaking. Grieve et al. (2021) conducted a study examining student apprehension around delivering presentations, with many students reporting anxiety around undertaking this form of assessment, holding fears about 'being judged', and concern about the impact that poor performance in a presentation assessment could have on their wider university experience and degree attainment. Based on their results, Grieve et al. (2021) recommended strategies to mitigate student discomfort, including providing appropriate support and preparation, and facilitating opportunities for practicing delivery. Moreover, to ensure students with additional support needs are appropriately supported, presentation assessments should be feasible to implement with student-led adjustments, to ensure all students can have a meaningful, and not distressing, experience (Nieminen, 2023; Tigert & Miller, 2022). Involving students in determining the marking criteria via rubric creation is also a meaningful way to help mitigate some of the unease experienced (Rouse, 2024). This strategy has the added benefit of allowing students to claim a sense of ownership over the process, in addition to being able to claim ownership over the final 'product'.

Authenticity can be enhanced through designing an assessment brief that models a 'real-life' situation that students may encounter within graduate employment. Part of this could be considering the task the assessment requires students to respond to, or considering the environment or mode of delivery. For most students within PH, and indeed QDD disciplines, it is a reasonable assumption they will attend professional events, such as conferences, where they may be expected to present or participate in some form. Interestingly, there is a notable gap within scholarly literature around using conference-style formats as assessment environments within learning and teaching spaces, with much of the literature either focusing on preparing an assessment output that could be delivered at a conference, or the social benefits of attending a conference. In 2003, Worsley published details about their use of a student-led mini-conference with undergraduate geography students, allowing students to deliver group presentations to an invited audience, comprised of potential employers in their sector. Students were positive about this approach, recognising the benefits to their professional

development, as well as enhancing their confidence and self-esteem (Worsley, 2003). More recently, Lund (2013) shared reflections on using presentations at a student conference as final assessment with final year psychology undergraduates. Lund (2013) reported similar results to Worsley (2003) but specifically noted the positive impact and value of enhancing student's ability to present complex information – a skill of particular importance to future graduates of QDD disciplines.

Looking specifically at the value of conference attendance as a student, Walkington et al. (2017) considered the benefits to undergraduate students who attended a national, multidisciplinary conference, targeted at undergraduate research. Through interviews, this research found students benefitted from the intellectual engagement that conference spaces provide. In their analysis, the authors used Foucault's concept of 'reciprocal elucidation', permitting students to engage with 'divergent perspectives, questions and frames of reference' (Walkington et al., 2017, p. 416) and to understand research as an iterative, often 'unfinished' process. Similar results were found in Davidson and Lyons' (2018) work with undergraduate psychology students, where students reported a positive impact on their career aspirations after presenting their work at an academic conference, and feelings of 'belonging' within the academic community. The ability to use conference formats to foster belonging was also noted in a Canadian study by Stiwich and Ross (2022). This study considered student conferences to enhance belonging within minoritised groups – in this case, Indigenous students. Specifically, they argued that student conferences can provide a platform for relational enhancement between all parties, conducted in a respectful, meaningful and culturally appropriate way.

In summary, while oral presentations are increasing in frequency within QDD disciplines, there is a dearth of evidence around the strengths and limitations of using student conferences as an assessment environment. Success has been reported in using the conference scenario to curate a meaningful assessment, helping students develop skills in communicating complex information (Larkin, 2014, 2015; Lund, 2013; Worsley, 2003). Others have demonstrated the value in exposing students to the environment for professional development (Davidson & Lyons, 2018; Walkington et al., 2017) and for enhancing belonging within academia for marginalised groups (Stiwich & Ross, 2022). To date, there are no studies considering the overlap of all three elements. Therefore, this study aims to fill the gap by considering the use of oral presentations delivered at a student conference as a form of meaningful and authentic assessment.

Study context: Introducing an authentic, meaningful assessment

This study arose from a wider change to the postgraduate MPH program at the University of Glasgow, following a leadership change in 2022. All masters-level students at the university are required to undertake an independent piece of research, comprising one third of their qualification. Prior to 2022, the MPH Project was a high-stakes assessment, with 100% of the grade reliant upon a written dissertation of 12,000–15,000 words. When I took on leadership of the program in 2022, the written submission word count was reduced to 10,000–12,000 words (reflecting 80% of the grade), and an oral presentation (worth 20% of the overall grade) was introduced to help reduce the 'high-stakes' assessment. It was also intended to be a move towards curating a more meaningful assessment, supporting the development of graduate skills that many PH students were lacking at that time. However, considerations had to be made due to the cohort size – on average, an MPH cohort at this institution comprises around 90 students per academic year.

How to adequately resource this change to practice was a key concern prior to embedding change. This change had to embed an approach to assessment that amplified authenticity; however, it also had to be sustainable, considering the availability of physical space to conduct assessment, as well as staff availability to grade presentations. Forgoing the focus on authenticity, a sustainable approach appeared to be asking students to pre-record presentations that could be submitted for marking. While this approach helps students to prepare and deliver presentations – a useful graduate skill – it

missed the relational aspect of learning and of building confidence talking about ideas with peers. Considering the practice-based evidence and reflecting on the concerns around sustainability, I decided to opt for a two-day student conference for students to deliver presentations on their projects. The conference was scheduled to take place around two months before the submission deadline for the written dissertation, allowing the feedback from this assessment to meaningfully contribute towards their final project. These presentations were intended to be a snapshot of their project 'in-progress'. The marking criteria focused on communication rather than research results. Students were invited to participate in an optional workshop prior to the conference to help identify what they considered important to the assessment rubric. While not full co-production, their priorities and perceptions of a 'good presentation' were considered, ensuring their views were synthesised with the underpinning Intended Learning Outcomes (ILOs). Assessment rubrics for presentations have been shown to be useful (Ferrer-Pardo et al., 2022) for enhancing inclusivity and 'demystifying' assessment.

The conference format allowed for the authenticity of the assessment to be enhanced; students were required to submit a short title, which helped to organise different conference streams that were shared with attendees in a conference program prior to the event. When students were not presenting, they were encouraged to attend sessions that interested them. The conference also included 'added extras' to help support their professional development, such as keynote talks from PH professionals, sessions with the careers service and a question-and-answer session with MPH alumni. Breaks were built into the schedule, providing space for the normal 'networking' that would happen at traditional conferences.

Methods

This research aimed to evaluate the impact of introducing a piece of meaningful, authentic assessment – an oral presentation, delivered during a student conference – on developing graduate capabilities for students in PH. Specifically, I sought to examine the extent to which:

i. Students understood the relevance of the assessment task in developing graduate attributes (assessment literacy).

ii. Students and staff saw delivering an oral presentation within a conference environment as contributing towards the intended 'meaningfulness' and 'authenticity' of the assessment task.

iii. The transferability of the approach to other QDD disciplines.

The first iteration of the student conference ran in June 2023. Following the conference, students and staff were surveyed using questionnaires comprised of multiple choice and open-ended questions to capture quantitative and qualitative data. Ethical approval was obtained from the University's College Ethics Committee (200220423) prior to data collection. Surveys were created using Qualtrics, a web-based platform that is General Data Protection Regulation (GDPR) compliant and provides researchers with the appropriate tools to maximise accessibility for those with visual impairments. The relevant survey link was directly emailed to students on three separate occasions following the MPH Conference in June 2023. In total, 65 students were emailed and 31 responded, providing a response rate of 48%. Staff who supported marking at the MPH conference in June 2023 were emailed a link to the staff survey. In total, 14 staff were emailed and 11 responded, providing a response rate of 79%. By comparison, a meta-analysis conducted by Wu et al. (2022) examined the response rates to over 1,000 education-related studies and established an average of 44.1%. While the reviewed studies typically had larger sample sizes, both the student and staff response rates in this study exceeded the average established by Wu et al. (2022).

Both quantitative and qualitative data were gathered as part of this study and were analysed using Excel. Descriptive statistics provided an overview of trends within the gathered quantitative data,

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while qualitative data were analysed using a content analysis approach (Neuendorf, 2017). This approach closely aligns with 'interpretive' (Fink & Gantz, 1996) and 'conventional' (Hsieh & Shannon, 2005) content analysis, where codes are defined during analysis and derived directly from interpreting the data. Thematic analysis, as per Braun and Clarke's (2006) approach, was ruled out due to the small amount of qualitative data gathered.

With regards to Diener and Crandall's (1978) criteria (harm to participants; informed consent; invasion of privacy; use of deception), this study posed low risk to all participants. However, careful consideration was made in considering the dependent relationship between researcher and participants. The British Educational Research Association (BERA, 2019) emphasised the need to acknowledge power relationships within dual relationships; in this context, the roles of educator/student and researcher/participant. This research involved surveying students who were enrolled in the academic program I lead. This dependent relationship holds potential concerns around coercion. Additionally, staff who acted as markers were also surveyed; most of these staff are colleagues I frequently interact with, thus may be apprehensive about being critical about the initiative. All participants were reminded that participation was optional and anonymous; students were reassured that their choice to participate or not would not impact on their studies.

Results

In total, 42 people participated – 31 students and 11 staff members. Student participants did not answer every question, and the most responses received per question was 28 (90% of the student sample). Staff participants responded to all questions. The data presented in this article is a subset of all data gathered to focus on the ways this approach to assessment – delivering presentations during a student conference – was meaningful, authentic and supported the development of graduate capabilities.
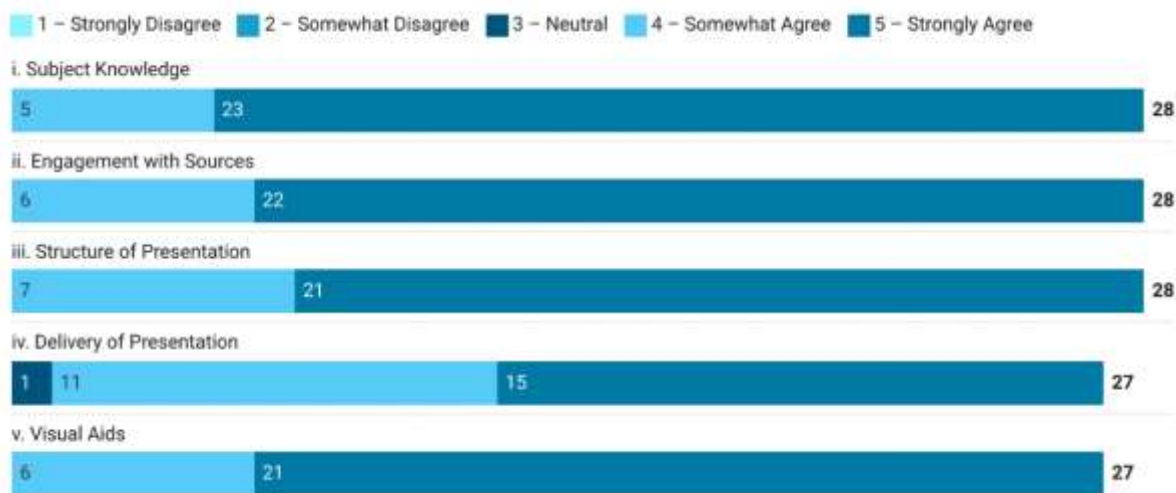
Meaningful assessment: Scaffolding learning

During an optional preparatory workshop student participants were asked their views on what was 'important' to include in the assessment rubric. The following list was generated through synthesising their views with the intended learning outcomes (ILOs) for the project and the underpinning focus on nurturing communication skills:

- Subject Knowledge – how well can the student communicate subject knowledge?

- Engagement with Sources – is there substantial engagement with appropriate sources? Is this evidenced throughout the presentation?

- Structure of Presentation – does the presentation structure enhance the student's ability to communicate?

- Delivery of Presentation – does the student consider pacing, timing, and their physical presence during delivery?

- Visual Aids – do the slides contribute towards effective communication? Are they easy to follow and free from errors?

The post-conference survey asked students to reflect on the extent to which they agreed with the inclusion of these elements in the rubric, charting their response on a five-point Likert scale. On average, students agreed with the inclusion of the five categories in the rubric, with the majority 'strongly agreeing' (Figure 2). No participant disagreed with the inclusion of the five categories, while only one person was ambivalent to the inclusion of 'Delivery of Presentation'.

Figure 2: Student agreeability of rubric criteria inclusion

Enhancing assessment literacy has been proven to scaffold meaningful assessment. Prior to the conference, students were provided with a written brief, marking rubric, online session (and recording), which could be accessed using a virtual learning environment (VLE), Moodle. The survey asked students to consider the usefulness of these resources in preparing for their assessment (Figure 3).

Figure 3: Student perception of usefulness of assessment preparation resources

Most respondents reported using all provided resources, highlighting they were 'useful' or 'very useful'. Four respondents (15%) disclosed not using the rubric when preparing for their assessment, while one respondent did not use the brief. The importance of engaging with these resources was stressed during the live session, and a lack of engagement suggests limited assessment literacy within this subsection. Given the anonymous nature of the survey, a direct impact on grades could not be established.

Meaningful assessment: Student and staff perceptions

Student respondents were asked to reflect on the presentation task, and how they felt it benefitted them (Figure 4). Most (n=22; 88%) found it useful, with only two students (8%) disagreeing. They were also asked to consider the feedback received during their presentation from other students; 80% (n=20) described peer feedback as useful, while one student 'somewhat disagreed'. This finding suggests that students understood the rationale behind the assessment, and that they saw the

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conference environment as a supportive space – where students could practice providing feedback, as well as receiving it.

Figure 4: Student perceptions on usefulness of presentation task

Students were asked to reflect on the challenges encountered when preparing their presentation via a free-text question. Eight students highlighted the challenge in 'being concise', given the time limit of ten minutes. One stated:

> *Making sure that I was able to cover and communicate all the necessary points within the given time and slide limit. Although, I wouldn't suggest changing either because I learned a useful skill in being able to condense and summarise a lot of information succinctly.*

Seven respondents mentioned 'stage fright' and anxiety around presenting being a considerable challenge for them. Of these, two mentioned English as a second language being a factor, for example, 'delivering the presentation as I forget English when I am nervous'.

Students were also asked if they had advice for future cohorts. The concerns highlighted in the previous free-text responses were reflected here, with 'being confident' mentioned four times, and a typical response advising future students to 'not panic' and 'be confident'. Some respondents highlighted the value of the questions they were asked, advising future students to write them down for useful points to reflect on when writing up their work; one response stated:

> *The presentation is meant to serve as a learning tool for you, no one is trying to trip you up with tough questions. It is okay to not know the answer to something, as long as you display that you are willing to learn and have a grasp on the general concepts.*

Some of the advice focused on practical tips, concerning slide design ('Have less text on the slides') to how to structure the presentation, for example, 'Think about it as a story you are telling someone who does not know anything about your topic. Your key to successfully deliver the presentation is to inform people and engage them in a simple and effective way.'

Several participants spoke about the benefit that performing well in the presentation had upon the final mark ('it's a great way to better grades'), while others found benefit in constructing the final dissertation submission: 'I also found it very helpful for giving myself a thorough overview of my own research from another perspectives. A condensed and concise summary of my work made it somewhat easier to tackle the full write-up of the dissertation.'

There was evidence within these responses of students connecting the task with broader, transferable skills around communication – both spoken and written.

Staff respondents were asked to reflect on the strengths, weaknesses, and potential improvements for the student presentations. Seven respondents (64%) commented on students being 'well prepared', with students being ready to present and respond to questions from the audience. One respondent stated this task showcased an 'important transferable employment skill'. Collegiality between students was also noted by staff respondents, exhibited through encouragement of their

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classmates through attending sessions, and engaging meaningfully in the post-presentation discussion. Limited weaknesses were identified by staff, signifying a broad level of acceptability of the approach among this group. Two respondents questioned the focus of the presentation, and suggested the conference could be scheduled later to allow students to present their findings. While a useful suggestion, the presentations were intended to provide students with important feedback on the structural foundations of their project, thus moving it later would remove this benefit.

Authentic assessment: Student and staff perceptions of the conference environment

The survey also sought to elicit views on the authenticity of the assessment approach (i.e., student conference environment). Students were asked to reflect on their experience of the setting; responses are provided in Figure 5. All respondents (n=26) agreed with the statement 'I enjoyed hearing about my peers' research', with 85% (n=22) strongly agreeing. All students valued the space to connect with their peers informally, with 80% (n=20) strongly agreeing. These responses suggest students valued the ability to connect with others in both professional and social environments. Students also flagged the value of having staff present; the wider program network, including student supervisors, were invited to attend any part of the conference – including the social breaks. While not many additional staff attended, 96% (n=25) of respondents agreed with the statement 'I enjoyed having staff there throughout', suggesting students benefitted from the support of university staff in this environment.

Figure 5: Student perceptions on the conference environment
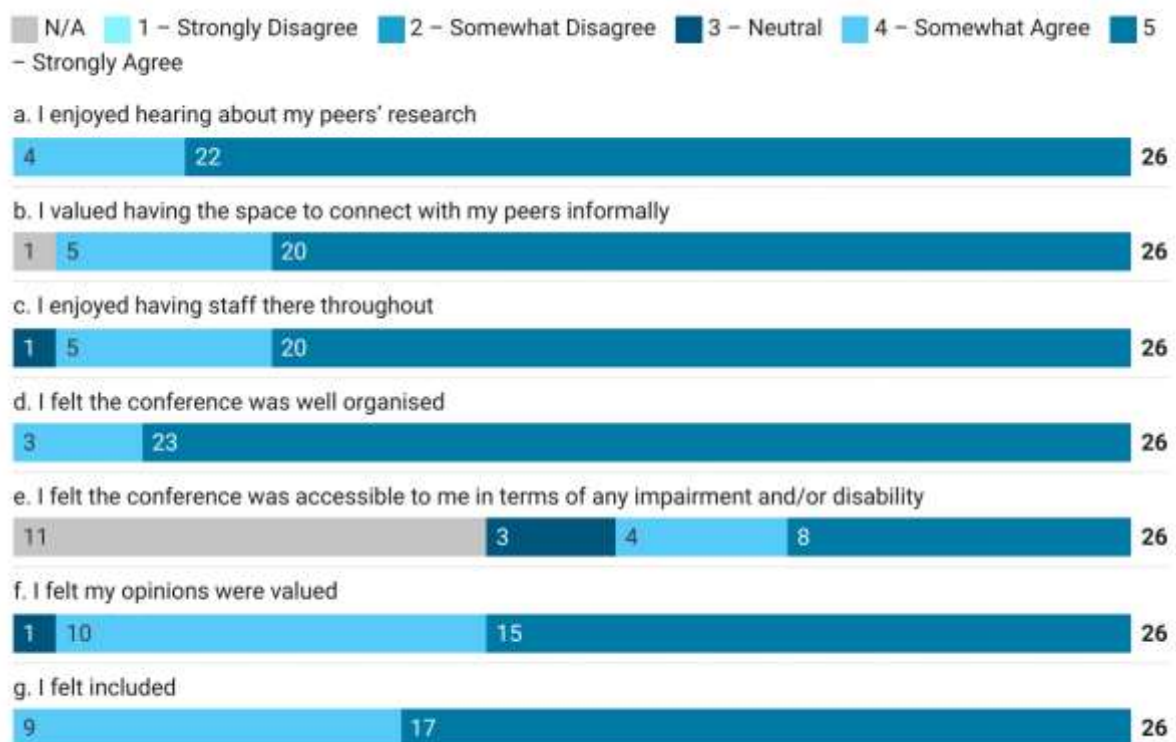
Regarding accessibility, no negative responses were received; in total, 15 people provided a response, with an additional 11 people specifying it was not applicable to them. Of the responses, over half (53%; n=8) strongly agreed and almost one third (26%; n=4) agreed that it was an accessible space. Three people (20%) responded neutrally, neither agreeing nor disagreeing with the statement. However, accessibility is more than considering barriers associated with impairments and disabilities, thus students were asked about inclusion. In response to 'I felt my opinions were valued', 96% (n=26) indicated they agreed, with one person adopting a neutral stance. All respondents stated they felt included, with 17 (65%) strongly agreeing and 9 (35%) agreeing with the statement.

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Staff were asked different questions around attending the student conference (Figure 6). All staff reported enjoying student presentations, with 82% (n=9) strongly agreeing with the statement. All staff recognised the preparation students had put in in advance of the conference, with 82% (n=9) strongly agreeing. Staff were also asked to respond to the statement 'I learnt something new'; all staff agreed, with 55% (n=6) strongly agreeing and 45% (n=5) agreeing with the statement, highlighting the opportunity of learning from students.

Figure 6: Staff perceptions on the conference

Figure 6: Staff perceptions on the conference
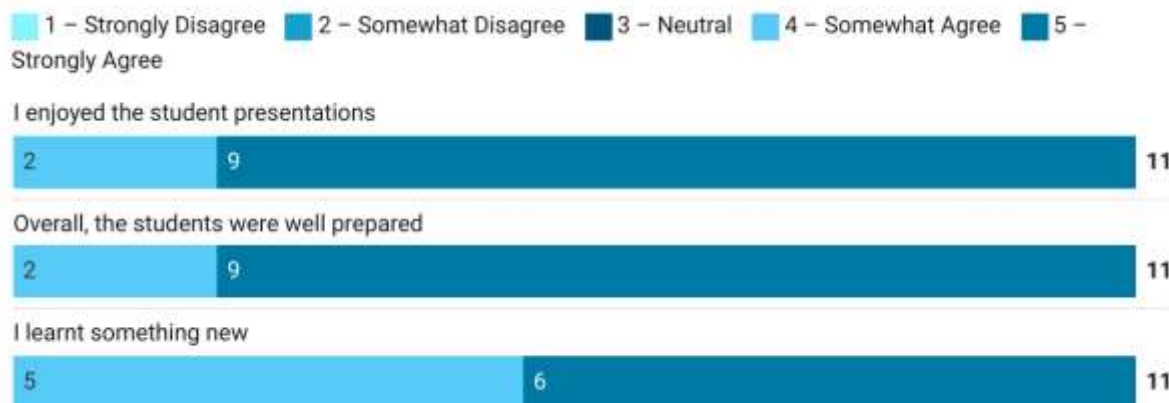
Authentic assessment: Student conference environment to develop graduate skills

Staff were asked how useful they thought exposing students to a conference environment was for developing graduate skills (Figure 7). All staff responded positively, with 64% (n=7) describing it as 'extremely useful' and the remaining 36% (n=4) describing it as 'very useful'.

Figure 7: Staff perceptions on the usefulness of conference for developing graduate skills

Student respondents were asked to respond to more specific statements, ranging from the impact on confidence and enthusiasm, to the development of new skills (Figure 8). Reflecting on the conference, all student respondents agreed they felt more confident talking about their work; 16 respondents (62%) strongly agreed, with the remaining 10 somewhat agreeing (38%). Almost all respondents disclosed feeling more confident about preparing a presentation, with the majority strongly agreeing (62%; n=16). Only one person responded neutrally, neither agreeing nor disagreeing with the statement. All participants felt more confident in delivering a presentation, with almost two-thirds strongly agreeing (62%; n=16).

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Figure 8: Student perceptions on the conference for developing graduate skills

Approximately 92% of respondents (n=24) agreed with the statement 'I feel more enthusiastic about my project'. One person was neutral, while one disagreed. Student respondents were also asked about the extent to which they gained confidence in answering questions related to their project; 88% (n=23) agreed, one person neither agreed or disagreed, and one person disagreed.

Students were also prompted to reflect on some longer-term impacts of presenting at the conference. Like staff respondents, students saw the conference space to learn new things, with 96% (n=25) agreeing. The same number of respondents (96%; n=25) felt they developed new, transferable skills. Notably, all respondents stated that they would be more likely to take up the opportunity to present their work in the future, with the majority (73%; n=19) strongly agreeing.

Discussion

Overall, staff and students participating in this study held positive views about introducing presentations, delivered via a student conference, to the student project as an authentic and meaningful assessment within PH – a QDD discipline. Effective practice change within higher education involves collaboration with interested parties from the beginning (e.g., Kemmis et al., 2014; Kezar, 2005). To enhance the 'learner-centred' nature of this project, students were involved in designing the marking rubric. The criteria, as determined by a synthesis of the program and project ILOs, focused largely on communication, and how essential pieces of information, central to the research process, can be relayed to different audiences. High levels of student agreeability with the rubric (Figure 2) suggests this approach was successful, demonstrating and contributing to the growing evidence base about the value of staff-student partnerships (e.g., Dickerson et al., 2016; Laville et al., 2023). Arguably, negotiating outcomes in accordance with set expectations and briefs (in this case,

the ILOs) equips students with communication skills useful to graduate employment – particularly around QDD disciplines (Martin-Raugh et al., 2020).

Previous studies have demonstrated that appropriately supporting and scaffolding assessment preparation has a positive impact upon engagement with assessment tasks (Smith et al., 2013). Specifically, maximising the success of *meaningful* assessment involves providing clear and unambiguous communication to students (Gonsalves & Lin, 2024; Massa & Kasimatis, 2017). In this study, students reported high rates of 'usefulness' in the material (Figure 3) coupled with the agreement exhibited in relation to the brief (Figure 2), suggesting the measures taken to amplify assessment literacy were positively received by students. Students understood the rationale behind incorporating oral presentations as an assessment; 88% (n=22) of students valued presenting to their peers, seeing the value of the task beyond completing an assessment. In their work on assessment literacy, Hannigan and colleagues (2022) explicitly connect student understanding with clear communication. This is further reflected in in this study through the numbers of students reporting feeling more confident about their work (Figure 8), and strongly agreeing that they developed new skills that would benefit their careers (70%; n=18). The importance of supporting the constructive alignment (Biggs, 1996) between graduate attributes and meaningful assessment has been argued within the literature (Radloff et al., 2008; Jolly et al., 2013), and data from this study adds weight to this argument.

The assessment submission platform was designed to be a student conference to enhance the overarching authenticity of the task. Given the diverse career destinations for PH graduates (Buunaaisie et al., 2018), it is reasonable to assume they would attend and present at professional conferences; this was recognised by staff, who all agreed with the statement that exposing students to a conference environment was beneficial for developing graduate skills. The timing of the conference (two months before final submission) provided students with a useful prompt to evaluate the narrative they were presenting, and to get input from staff and other students, in turn helping them to respond to potential critiques and strengthen their work. Encouraging peer feedback helps students build confidence in finding their 'academic voice' and supports lifelong learning (Simonsmeier et al., 2020). While peer feedback was not expected to be a formal part of the conference or of the assessment process, student attendees were invited to share thoughts or ask questions following student presentations. This process aligns with the ethos of authentic and meaningful assessment by creating an active learning space through replicating the conference environment, thus, in turn, helping students to realise and exercise their ability to engage professionally in the discipline. Previous studies have demonstrated the value students place on practicing presentations with peers (Grieve et al., 2021). Within the context of this study, this 'safer' space where the emphasis is on learning, could be viewed as a way to practice asking and responding to questions, ahead of attending professional events, which hold implications for their careers.

Presentations as a form of assessment can raise concerns about inclusion and accessibility; existing research has demonstrated students report fears about being judged and experience physiological stress responses (Greive et al., 2021). This is particularly heightened for learners who have English as a second language and for students with disabilities. However, as presentation skills continue to be highly sought after skills by employers (Tushar & Sooraksa, 2023), supporting students to build these skills in a supportive and collegiate environment is a clear example of meaningful, authentic assessment. Staff considered accessibility of the assessment as more of an issue than student respondents; on average, staff aligned with a neutral/somewhat agree stance, with more staff (54%; n=6) agreeing that it was an accessible assessment than disagreeing (18%; n=2). Contrastingly, students were more in agreement with the accessibility of the conference, with 80% (n=12) of those who responded agreeing that it was an accessible space. Students also noted that they felt valued (96%; n=25) and included (100%; n=26). Greive et al. (2021) noted that students needed to be more adequately supported with oral presentations; within this context, it could be argued the positive student response to assessment literacy helped mitigate some of the fears around presenting.

There are limitations to the direct transferability of results from this study. Compared to other evaluation studies, this study involved smaller numbers of respondents (n=42), thus impacting what can be meaningfully derived and applied to other contexts. This initiative was specifically designed to respond to a skills gap observed within students undertaking an MPH. While PH can be understood as a QDD discipline, there may be barriers affecting other disciplines, for example, the need to develop and assess specific practical skills. Educational practitioners wishing to embed something similar are encouraged to engage in careful planning in consultation with all interested parties (i.e., students, staff). This study also does not present multi-year feedback about this initiative, nor does it consider the long-lasting impact on graduates. These avenues for further development are currently underway, particularly, as locally, student numbers remain steady and, globally, PH grows as a profession and the numbers of graduates increase.

Conclusion

This study examined how using a student conference environment to deliver oral presentations curated an innovative, meaningful and authentic approach to assessment. Within QDD disciplines, such as PH, this approach can help the development of key, transferable graduate skills around communication. Communication skills are highly valued skills by graduate employers and are increasing in importance for those working within QDD disciplines. The results of this study add weight to the importance of enhancing student assessment literacy, particularly in instances where there is a desire to embed authentic and meaningful approaches to assessment. Providing different routes to build assessment literacy was beneficial within this study, and the survey results demonstrated a high use of different resources by participants. Both students and staffs noted the value of delivering 'in progress' project presentations in the conference environment, particularly for building students' confidence in talking about their research, and for giving and receiving constructive feedback among peers. Notably, all students in this study highlighted they would be more likely to take up future opportunities to present – illustrating the success of the approach. Importantly, this study demonstrated the value of supporting students in QDD disciplines to build proficiency in different forms of communication, helping to better prepare them to enter the graduate workforce. Given the importance of communication in employment, it is likely the student conference approach would benefit students in other cognate disciplines.

Acknowledgements

References

Abdalla, S. M., Maani, N., Ettman, C. K., & Galea, S. (2020). Claiming health as a public good in the post-COVID-19 era. *Development, 63*(1), 200–204. https://doi.org/10.1057/s41301-020-00255-z

Abelha, M., Fernandes, S., Mesquita, D., Seabra, F., & Ferreira-Oliveira, A. T. (2020). Graduate employability and competence development in higher education – A systematic literature review using PRISMA. *Sustainability*, *12*(15), 5900. https://doi.org/10.3390/su12155900

Antera, S., Costa, R., Kalfa, V., Mendes, P. (2019). Assessment in higher STEM education: The now and the future from the students' perspective. In Auer, M., Tsiatsos, T. (Eds.) *The challenges of the digital transformation in education*. ICL 2018. *Advances in Intelligent Systems and Computing*, vol 917. Springer, Cham. https://doi.org/10.1007/978-3-030-11935-5_73

Becher, T. (1989). *Academic Tribes and Territories: Intellectual enquiry and the culture of disciplines*. 1st ed. The Society for Research into Higher Education & Open University Press.

Beck, A. J., & Boulton, M. L. (2016). The public health nurse workforce in U.S. state and local health departments, 2012. *Public Health Reports, 131*(1), 145–152. https://doi.org/10.1177/003335491613100121

Greenwood, S. (2025). Using student conferences as a form of authentic assessment to develop and enhance transferable communication skills in quantitative and data-driven disciplines: Evidence from a postgraduate public health program. *Journal of Teaching and Learning for Graduate Employability, 16(*1), 18–38.

33

Biggs, J. (1996). Enhancing teaching through constructive alignment. *Higher Education, 32*(3), 347–364. https://doi.org/10.1007/bf00138871

Biglan, A. (1973). Relationships between subject matter characteristics and the structure and output of university departments. *Journal of Applied Psychology, 57*(3), 204–213. https://doi.org/10.1037/h0034699

Boud, D. (2000). Sustainable assessment: Rethinking assessment for the learning society. *Studies in Continuing Education, 22*(2), 151–167. https://doi.org/10.1080/713695728

Boud, D., & Falchikov, N. (2006). Aligning assessment with long-term learning. *Assessment & Evaluation in Higher Education*, *31*(4), 399–413. https://doi.org/10.1080/02602930600679050

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. https://doi.org/10.1191/1478088706qp063oa

British Educational Research Association. (2019). *Ethical guidelines for educational research*, 4th Ed (2018). https://www.bera.ac.uk/publication/ethical-guidelines-for-educational-research-2018-online.

Burau, V., Mejsner, S. B., Falkenbach, M., Fehsenfeld, M., Kotherová, Z., Neri, S., Wallenburg, I., & Kuhlmann, E. (2024). Post-COVID health policy responses to healthcare workforce capacities: A comparative analysis of health system resilience in six European countries. *Health Policy, 139*, 104962. https://doi.org/10.1016/j.healthpol.2023.104962

Buunaaisie, C., Manyara, A. M., Annett, H., Bird, E. L., Bray, I., Ige, J., Jones, M., Orme, J., Pilkington, P., & Evans, D. (2018). Employability and career experiences of international graduates of MSc Public Health: A mixed methods study. *Public Health, 160*, 62–69. https://doi.org/10.1016/j.puhe.2018.03.032

Chamboko-Mpotaringa, M., & Manditereza, B. (2024). Artificial intelligence in higher education: A decade's bibliometric snapshot, emerging themes and future research. *International Journal of Research in Business & Social Science (2147–4478)*, *13*(8), 192–202. https://doi.org/10.20525/ijrbs.v13i8.3708

Chan, V. (2011). Teaching oral communication in undergraduate science: Are we doing enough and doing it right? *Journal of learning design, 4*(3), 71–79. https://doi.org/10.5204/jld.v4i3.82

Chan, C. K. Y., & Luo, J. (2021). A four-dimensional conceptual framework for student assessment literacy in holistic competency development. *Assessment & Evaluation in Higher Education*, *46*(3), 451–466. https://doi.org/10.1080/02602938.2020.1777388

Dall'Alba, G., & Barnacle, R. (2007). An ontological turn for higher education. *Studies in higher education*, *32*(6), 679–691. https://doi.org/10.1080/03075070701685130

Davidson, J. M., & Lyons, M. (2018). Undergraduates as researchers – the impact of active participation in research and conference presentation on psychology undergraduate identity and career aspirations. *Journal of Perspectives in Applied Academic Practice, 6*(1), 39–46. https://doi.org/10.14297/jpaap.v6i1.320

Dickerson, C., Jarvis, J., & Stockwell, L. (2016). Staff–student collaboration: student learning from working together to enhance educational practice in higher education. *Teaching in Higher Education*, *21*(3), 249–265. https://doi.org/10.1080/13562517.2015.1136279

Diener, E., & Crandall, R. (1978). *Ethics in social and behavioral research*. University of Chicago Press.

Dong, L., & Bouey, J. (2020). Public mental health crisis during COVID-19 pandemic, China. *Emerging Infectious Diseases, 26*(7). https://doi.org/10.3201/eid2607.202407

Drehobl, P., Stover, B. H., & Koo, D. (2014). On the road to a stronger public health workforce. *American Journal of Preventive Medicine, 47*(5S3), S280–S285. https://doi.org/10.1016/j.amepre.2014.07.013

Ferrer-Pardo, V. R., Jimenez-Perez, I., Gil-Calvo, M., Pérez-Soriano, P., & Priego-Quesada, J. I. (2022). Relationship between students' perception of a rubric for oral presentations and their academic characteristics. *Education Sciences, 12*(11), 765. https://doi.org/10.3390/educsci12110765

Fink, E. J., & Gantz, W. (1996). A content analysis of three mass communication research traditions: Social science, interpretive studies, and critical analysis. *Journalism & Mass Communication Quarterly, 73*(1), 114–134. https://doi.org/10.1177/107769909607300111

Forsyth, H., & Evans, J. (2019). Authentic assessment for a more inclusive history. *Higher Education Research and Development, 38*(4), 748–761. https://doi.org/10.1080/07294360.2019.1581140

Furman, M., & Bochenek, T. (2023). A qualitative analysis of reasons for satisfying professional career after completing higher education studies of public health. *Polish Journal of Public Health, 133*, 16–21. https://doi.org/10.12923/2083-4829/2023-0004

Gonsalves, C., & Lin, Z. (2024). Clear in advance to whom? Exploring 'transparency' of assessment practices in UK higher education institution assessment policy. *Studies in Higher Education*. Advance online publication. 1–17. https://doi.org/10.1080/03075079.2024.2381124

Greenwood, S. (2025). Using student conferences as a form of authentic assessment to develop and enhance transferable communication skills in quantitative and data-driven disciplines: Evidence from a postgraduate public health program. *Journal of Teaching and Learning for Graduate Employability, 16(*1), 18–38.

34

Gregory, M. S-J., & Lodge, J. M. (2015). Academic workload: The silent barrier to the implementation of technology-enhanced learning strategies in higher education. *Distance Education*, *36*(2), 210–230. https://doi.org/10.1080/01587919.2015.1055056

Grieve, R., Woodley, J., Hunt, S. E., & McKay, A. (2021). Student fears of oral presentations and public speaking in higher education: A qualitative survey. *Journal of Further and Higher Education, 45*(9), 1281–1293. https://doi.org/10.1080/0309877x.2021.1948509

Griffin, P., & Care, E. (Eds.). (2015). *Assessment and teaching of 21st century skills: Methods and approach*. © Springer Science+Business Media Dordrecht. https://doi.org/10.1007/978-94-017-9395-7

Gulikers, J. T., Bastiaens, T. J., & Kirschner, P. A. (2004). A five-dimensional framework for authentic assessment. *Educational technology research and development*, *52*(3), 67–86. https://doi.org/10.1007/BF02504676

Han, F., & Ren, J. (2024). Analyzing big data professionals: Cultivating holistic skills through university education and market demands. *IEEE Access, 12*, 23568–23577. https://doi.org/10.1109/access.2024.3363876

Hanafin, J., Shevlin, M., Kenny, M., & McNeela, E. (2007). Including young people with disabilities: Assessment challenges in higher education. *Higher Education, 54*, 435–448. https://doi.org/10.1007/s10734-006-9005-9

Hannigan, C., Alonzo, D., & Oo, C. Z. (2022). Student assessment literacy: Indicators and domains from the literature. *Assessment in Education: Principles, Policy & Practice, 29*(4), 482–504. https://doi.org/10.1080/0969594x.2022.2121911

Higher Education Statistics Agency. (2023). *Higher education student statistics: UK, 2021/22 - subjects studied*. https://www.hesa.ac.uk/news/19-01-2023/sb265-higher-education-student-statistics/subjects.

Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative Health Research, 15*(9), 1277–1288. https://doi.org/10.1177/1049732305276687

Hughes, C., & Barrie, S. (2010). Influences on the assessment of graduate attributes in higher education. *Assessment & Evaluation in Higher Education, 35*(3), 325–334. https://doi.org/10.1080/02602930903221485

Jessop, T., & Maleckar, B. (2016). The influence of disciplinary assessment patterns on student learning: A comparative study. *Studies in Higher Education, 41*(4), 696–711. https://doi.org/10.1080/03075079.2014.943170

Jolly, L., Kavanagh, L., & Howard, P. (2013). Meaningful assessment: distinguishing learning outcome from product output in constructive alignment. In *Proceedings of the 2013 AAEE Conference, Gold Coast, Queensland, Australia*. AAEE. https://tinyurl.com/mdrzkkc3

Kemmis, S., Wilkinson, J., Edwards-Groves, C., Hardy, I., Grootenboer, P., & Bristol, L. (2014). *Changing practices, changing education*. Springer Science+Business Media Singapore. https://doi.org/10.1007/978-981-4560-47-4

Kezar, A. (2005). Moving from I to we: Reorganizing for collaboration in higher education. *Change: The Magazine of Higher Learning, 37*(6), 50–57. https://doi.org/10.3200/CHNG.37.6.50-57

Kuh, G. D., Ikenberry, S. O., Jankowski, N. A., Cain, T. R., Ewell, P. T., Hutchings, P., & Kinzie, J. (2015). *Using evidence of student learning to improve higher education*. John Wiley & Sons.

Larkin, T. L. (2014). The student conference: A model of authentic assessment. *International Journal of Engineering Pedagogy, 4*(2), 36. https://doi.org/10.3991/ijep.v4i2.3445

Larkin, T. L. (2015). A rubric to enrich student writing and understanding. *International Journal of Engineering Pedagogy, 5*(2), 12. https://doi.org/10.3991/ijep.v5i2.4587

Laville, A. S., Thompson, L., Yue, Y., Hayward, A. J., & Grace-Bland, V. (2023). The importance of student partnership in rubric construction, discussion, and evaluation. In C. Gonsalves & J. Pearson (Eds.), *Improving learning through assessment rubrics: Student awareness of what and how they learn* (pp. 109–130). IGI Global. https://doi.org/10.4018/978-1-6684-6086-3.ch007

Leider, J. P., Burke, E., Nguyen, R. H. N., Plepys, C., Kirkland, C., Resnick, B., & Magaña, L. (2023a). Trends in degree conferrals, degree-associated debt, and employment outcomes among undergraduate public health degree graduates, 2001–2020. *American Journal of Public Health, 113*(1), 115–123. https://doi.org/10.2105/ajph.2022.307113

Leider, J. P., Harper, E., Bharthapudi, K., & Castrucci, B. C. (2015). Educational attainment of the public health workforce and its implications for workforce development. *Journal of Public Health Management and Practice, 21*(Supplement 6), S56–S68. https://doi.org/10.1097/phh.0000000000000306

Leider, J. P., Yeager, V. A., Kirkland, C., Krasna, H., Hare Bork, R., & Resnick, B. (2023b). The state of the US public health workforce: Ongoing challenges and future directions. *Annual Review of Public Health, 44(*1), 323–341. https://doi.org/10.1146/annurev-publhealth-071421-032830

Lund, N. (2013). Ten years of using presentations at a student conference as a final assessment. *Psychology Learning & Teaching, 12*(2), 185–188. https://doi.org/10.2304/plat.2013.12.2.185

Maani, N., & Galea, S. (2020). COVID-19 and underinvestment in the public health infrastructure of the United States. *The Milbank Quarterly, 98*(2), 250–259. https://doi.org/10.1111/1468-0009.12463

Macandrew, S. B., & Edwards, K. (2002). Essays are not the only way: A case report on the benefits of authentic assessment. *Psychology Learning & Teaching*, *2*(2), 134–139. https://doi.org/10.2304/plat.2002.2.2.134

Marti, D., & Smith, M. D. (2023). Motivating data science students to participate and learn. *Harvard Data Science Review, 5*(1). https://doi.org/10.1162/99608f92.d3b2eadd

Martin-Raugh, M. P., Kyllonen, P. C., Hao, J., Bacall, A., Becker, D., Kurzum, C., Yang, Z., Yan, F., & Barnwell, P. (2020). Negotiation as an interpersonal skill: Generalizability of negotiation outcomes and tactics across contexts at the individual and collective levels. *Computers in Human Behavior, 104*, 105966. https://doi.org/10.1016/j.chb.2019.03.030

Massa, L.J., & Kasimatis, M. (2017). *Meaningful and manageable program assessment: A how-to guide for higher education faculty* (1st ed.). Routledge. https://doi.org/10.4324/9781003445968

McArthur, J. (2023). Rethinking authentic assessment: Work, well-being, and society. *Higher Education, 85*(1), 85–101. https://doi.org/10.1007/s10734-022-00822-y

McClaughlin, E., Vilar-Lluch, S., Parnell, T., Knight, D., Nichele, E., Adolphs, S., Clos, J., & Schiazza, G. (2023). The reception of public health messages during the COVID-19 pandemic. *Applied Corpus Linguistics, 3*(1), 100037. https://doi.org/10.1016/j.acorp.2022.100037

Meredith, G. R., Welter, C. R., Risley, K., Seweryn, S. M., Altfeld, S., & Jarpe-Ratner, E. A. (2022). Master of public health education in the United States today: Building leaders of the future. *Public Health Reports, 138*(5), 829–837. https://doi.org/10.1177/00333549221121669

Nan, X., Iles, I. A., Yang, B., & Ma, Z. (2021). Public health messaging during the COVID-19 pandemic and beyond: Lessons from communication science. *Health Communication, 37*(1), 1–19. https://doi.org/10.1080/10410236.2021.1994910

Neuendorf, K. A. (2017). *The content analysis guidebook*. SAGE Publications Inc. https://doi.org/10.4135/9781071802878

Neumann, R., Parry, S., & Becher, T. (2002). Teaching and learning in their disciplinary contexts: A conceptual analysis. *Studies in Higher Education*, *27*(4), 405–417. https://doi.org/10.1080/0307507022000011525

Nieminen, J. H. (2023). Unveiling ableism and disablism in assessment: A critical analysis of disabled students' experiences of assessment and assessment accommodations. *Higher Education, 85*(3), 613–636. https://doi.org/10.1007/s10734-022-00857-1

Niman, N. B., & Chagnon, J. R. (2023). *The work-ready graduate: Preparing tomorrow's workforce*. Springer Nature Switzerland AG. https://doi.org/10.1007/978-3-031-33910-3

Nugent, R., & Fottrell, E. (2019). Non-communicable diseases and climate change: Linked global emergencies. *The Lancet*, *394*(10199), 622–623. https://doi.org/10.1016/S0140-6736(19)31762-3

Otok, R., Richardson, E., Czabanowska, K., & Middleton, J. (2018). The public health workforce. In B. Rechel, E. Jakubowski, M. McKee, & E. Nolte (Eds.), *Organization and financing of public health services in Europe*. World Health Organisation. https://europepmc.org/article/MED/30620513/NBK535727#free-full-text

Plepys, C. M., Krasna, H., Leider, J. P., Burke, E. M., Blakely, C. H., & Magaña, L. (2021). First-destination outcomes for 2015–2018 public health graduates: Focus on employment. *American Journal of Public Health, 111*(3), 475–484. https://doi.org/10.2105/ajph.2020.306038

Radloff, A., De La Harpe, B., Dalton, H., Thomas, J., & Lawson, A. (2008). Assessing graduate attributes: Engaging academic staff and their students. *ATN Assessment 08*. https://ojs.unisa.edu.au/index.php/atna/article/view/342/279.

Rouse, M.N. (2024). Assessment 'ResponsAbilities' in the basic course: evaluating public speaking rubrics. *Basic Communication Course Annual, 36*(5), 29–54. https://ecommons.udayton.edu/bcca/vol36/iss1/5

Sander, P., Sanders, L., & Stevenson, K. (2002). Engaging the learner: Reflections on the use of student presentations. *Psychology Teaching Review, 10*(1), 76–89. https://doi.org/10.53841/bpsptr.2002.10.1.76

Greenwood, S. (2025). Using student conferences as a form of authentic assessment to develop and enhance transferable communication skills in quantitative and data-driven disciplines: Evidence from a postgraduate public health program. *Journal of Teaching and Learning for Graduate Employability, 16(*1), 18–38.

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Simonsmeier, B. A., Peiffer, H., Flaig, M., & Schneider, M. (2020). Peer feedback improves students' academic self-concept in higher education. *Research in Higher Education, 61*(6), 706–724. https://doi.org/10.1007/s11162-020-09591-y

Sin, C., & Soares, D. (2020). Disciplinary differences in university teaching. *The International Encyclopedia of Higher Education Systems and Institutions* (pp. 288–293). Springer Nature B.V. https://doi.org/10.1007/978-94-017-8905-9_329

Smith, C. D., Worsfold, K., Davies, L., Fisher, R., & McPhail, R. (2013). Assessment literacy and student learning: The case for explicitly developing students 'assessment literacy'. *Assessment & Evaluation in Higher Education*, *38*(1), 44–60. https://doi.org/10.1080/02602938.2011.598636

Sonnenschein, K., & Ferguson, J. (2020). Developing professional communication skills: Perceptions and reflections of domestic and international graduates. *Journal of University Teaching and Learning Practice, 17*(3). https://doi.org/10.53761/1.17.3.5

Stiwich, K. D., & Ross, V. (2022). Increasing students' sense of belonging at research conferences. *Scholarship and Practice of Undergraduate Research*, 5(4), 9–15. https://doi.org/10.18833/spur/5/4/5

Stuckler, D., Reeves, A., Loopstra, R., Karanikolos, M., & McKee, M. (2017). Austerity and health: The impact in the UK and Europe. *The European Journal of Public Health*, *27*(suppl_4), 18–21. https://doi.org/10.1093/eurpub/ckx167

Sullivan, L. M., Velez, A., Edouard, V. B., & Galea, S. (2017). Realigning the Master of Public Health (MPH) to meet the evolving needs of the workforce. *Pedagogy in Health Promotion, 4*(4), 301–311. https://doi.org/10.1177/2373379917746698

Tigert, M. K., & Miller, J. H. (2022). Ableism in the classroom: Teaching accessibility and ethos by analyzing rubrics. *Communication Teacher, 36*(4), 264–268. https://doi.org/10.1080/17404622.2021.2006254

Tomlinson, M., & Watermeyer, R. (2022). When masses meet markets: Credentialism and commodification in twenty-first century Higher Education. *Discourse: Studies in the Cultural Politics of Education*, *43*(2), 173–187. https://doi.org/10.1080/01596306.2020.1814996

Travis, J. E. (1996). Meaningful assessment. *The Clearing House*, *69*(5), 308–312. https://doi.org/10.1080/00098655.1996.10114327

Tushar, H., & Sooraksa, N. (2023). Global employability skills in the 21st century workplace: A semi-systematic literature review. *Heliyon, 9*(11), e21023. https://doi.org/10.1016/j.heliyon.2023.e21023

Van Ginkel, S., Gulikers, J., Biemans, H., & Mulder, M. (2015). Towards a set of design principles for developing oral presentation competence: A synthesis of research in higher education. *Educational Research Review*, *14*, 62–80. https://doi.org/10.1016/j.edurev.2015.02.002

Villarroel, V., Bloxham, S., Bruna, D., Bruna, C., & Herrera-Seda, C. (2018). Authentic assessment: Creating a blueprint for course design. *Assessment and Evaluation in Higher Education, 43*(5), 840–854. https://doi.org/10.1080/02602938.2017.1412396

Walkington, H., Hill, J., & Kneale, P. E. (2017). Reciprocal elucidation: A student-led pedagogy in multidisciplinary undergraduate research conferences. *Higher Education Research & Development, 36*(2), 416–429. https://doi.org/10.1080/07294360.2016.1208155

Watts, R. D., Bowles, D. C., Fisher, C., & Li, I. W. (2021). What do public health graduates do and where do they go? An analysis of job destinations and mismatch in Australian public health graduates. *International Journal of Environmental Research and Public Health, 18*(14), 7504. https://doi.org/10.3390/ijerph18147504

Williams, G. A., Ziemann, M., Chen, C., Forman, R., Sagan, A., & Pittman, P. (2024). Global health workforce strategies to address the COVID-19 pandemic: Learning lessons for the future. *International Journal of Health Planning and Management, 39*(3), 888–897. Portico. https://doi.org/10.1002/hpm.3762

Winslow, C-E. A. (1920). The untilled fields of public health. *Science, 51*(1306), 23–33. https://doi.org/10.1126/science.51.1306.23

Wong, B., Chiu, Y.-L. T., Copsey-Blake, M., & Nikolopoulou, M. (2021a). A mapping of graduate attributes: What can we expect from UK university students? *Higher Education Research & Development, 41*(4), 1340–1355. https://doi.org/10.1080/07294360.2021.1882405

Wong, B., DeWitt, J., & Chiu, Y.-L. T. (2021b). Mapping the eight dimensions of the ideal student in higher education. *Educational Review, 75*(2), 153–171. https://doi.org/10.1080/00131911.2021.1909538

Worsley, A. (2003). Developing external links through teaching and learning in geography and environmental science: The use of the mini-conference. *Journal of Geography in Higher Education, 27*(1), 69–78. https://doi.org/10.1080/0309826032000062478

Wu, M.-J., Zhao, K., & Fils-Aime, F. (2022). Response rates of online surveys in published research: A meta-analysis. *Computers in Human Behavior Reports, 7*, 100206. https://doi.org/10.1016/j.chbr.2022.100206

Yeager, V. A., Beitsch, L. M., & Hasbrouck, L. (2016). A mismatch between the educational pipeline and public health workforce: Can it be reconciled? *Public Health Reports, 131*(3), 507–509. https://doi.org/10.1177/003335491613100318

Yeager, V. A., Beitsch, L. M., Johnson, S. M., & Halverson, P. K. (2021). Public health graduates and employment in governmental public health: Factors that facilitate and deter working in this setting. *Journal of Public Health Management and Practice, 27*(1), 4–11. https://doi.org/10.1097/phh.0000000000001052

Zwanikken, P.A., Huong, N.T., Ying, X.H., Alexander, L., Wadidi, M.S.A., Magaña-Valladares, L., Gonzalez-Robledo, M.C., Qian, X., Linh, N.N., Tahir, H. and Leppink, J. (2014). Outcome and impact of Master of Public Health programs across six countries: Education for change. *Human Resources for Health*, *12*, 1–10. https://doi.org/10.1186/1478-4491-12-40

Greenwood, S. (2025). Using student conferences as a form of authentic assessment to develop and enhance transferable communication skills in quantitative and data-driven disciplines: Evidence from a postgraduate public health program. *Journal of Teaching and Learning for Graduate Employability, 16(*1), 18–38.

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