A framework for delivering multimedia assessments in health & social care higher education: empowering university lecturers.

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Abstract:

This paper presents a comprehensive framework for implementing multimedia assessments in health and social care higher education, aiming to equip university lecturers with practical tools and strategies. Student- generated multimedia assessments offer great potential for enhancing student learning and engagement. Despite the recognised benefits and increasing usage, a pragmatic framework is notable absent from the literature.

The framework leverages educational theories such as student-centred learning and active learning, and multimodal learning and assessment principles to enhance student engagement and skill development. A thorough literature review was conducted to identify existing frameworks and models. Additionally, the framework's development was informed by an ongoing student feedback on the support received since 2021.

Drawing from existing literature review and empirical data, this framework addresses key aspects of multimedia assessments, including the rationale, detailed assessment requirements, assessment processes, student preparation, feedback provision and evaluation. The results highlight the importance of integrating educational technology and supportive practices to improve student outcomes and experiences in multimedia assessments.

This paper concludes that the proposed framework not only facilitates effective multimedia assessments but also contributes to the ongoing evolution of assessment practices in higher education.

Background

Student-generated multimedia content such as audio podcasts, digital video has been identified by some researchers to provide opportunities for student engagement, reflection on a topic of interest, active group participation encouragement and developing students into autonomous leaners, including development of digital and communication skills that are relevant to the students' profession (Schuck & Kearney, 2006; Richelle & Erik 2014; Georgiou, H & Wendy, N. 2021). Cham et al. (2021) acknowledged health students studying in higher education need to improve their digital skills and competencies.

Hawley & Allen (2018) highlight the existence of other issues involved with student multimedia projects. For example, students not having access to the right software, equipment, compatibility between different devices. Hawley & Allen (2018) also highlight a

key literature search observation regarding the lack of implementation of rigor and quality control measures by academic staff when delivering student multimedia projects. Despite these limitations or problems, Hawley & Allen still believe student-generated multimedia content creation assessments are an innovative method of assessment and a good way of enhancing learning.

Definitions

Multimedia: Multimedia refers to the integration of multiple types of media—such as images, illustrations, text, video, audio, and animations—to create a cohesive final product (Mayer, 2009). An example is a narrated presentation video, combining text, images, and voice narration.

Multimodal learning: Multimodal learning involves using various modes of learning to teach a concept and enhance the learning experience. This approach incorporates different learning styles, such as visual, auditory, kinaesthetic, and reading/writing (Tham, 2015), to tailor diverse ways people learn.

Multimodal assessment: Multimodal assessment uses a blend of different learning styles or modes. By employing multimedia assignments instead of traditional written essays or presentations, it increases student engagement by allowing them to use their preferred learning styles (Lauer, 2009; Pirhonen & Rasi, 2017).

Student-generated digital media: Student-generated digital media, such as audio podcasts and digital videos, have been identified by researchers as valuable tools for enhancing student engagement, promoting reflection on topics of interest, encouraging active group participation, and fostering the development of autonomous learners (Schuck & Kearney, 2006; Richelle & Erik, 2014; Georgiou & Wendy, 2021). These media formats provide students with the opportunity to actively create content, which can deepen their understanding and facilitate a more interactive and participatory learning experience.

Issues with multimedia assessments in higher education settings

The rise of multimedia assessments, such as narrated PowerPoint presentations and digital stories, offers new ways for students to demonstrate their knowledge, especially in non-technical disciplines (Cox et al., 2010). However, these assessments also introduce challenges for both students and staff.

Research by Arvidsson and Delfanti (2019), Earnshaw (2017), and Martin and Zahrndt (2017) highlights that multimedia assessments require specific skills that students often lack without formal training, leading to potential difficulties in creating and submitting their work. Cham et al. (2021) emphasise that health students need to improve their digital competencies to succeed in these assessments.

Overall, while multimedia assessments can enhance student engagement, they also demand increased digital literacy and support, underscoring the need for integrating digital skills training into the curriculum.

Why should we adopt multimedia assessments in higher education?

According to the recent literature, multimedia assignments can provide opportunity for students to develop visual presentation skills in conjunction with writing and promote the sharing of knowledge (Riordan et al., 2020).

They can be used to deepen students' active learning (Coulson & Frawley, 2017; Pirhonen & Rasi, 2016) also allow students to demonstrate their assessed skills using new and engaging methods of working (Cox et al., 2010, Ledonne, 2014).

Multimedia assignments can provide opportunity to develop graduate attributes such as planning skills, time management, communication skills (Frawley et al., 2015; Morel & Keahey, 2016). They also provide the opportunity to test students' ability to relate with information in a different way than they would with just written assignments. This boosts the way they deal with the given content hence providing the opportunity to extend the students' learning experience (Ledonne, 2014). Multimedia assignments can boost teamwork which produces a setting favourable to reflection and deep learning (Cox et al., Pirhonen & Rasi, 2016).

Pedagogy underpinning multimedia assessment.

The multimedia assessment method proposed is deeply rooted in student-centred learning theories, which emphasise active engagement and practical application of knowledge. Active learning, as highlighted by Coulson and Frawley (2017), encourages students to participate actively in their learning process, enhancing understanding and retention. This is achieved in multimedia assessment through critical thinking and creativity. Laverty's (2016) 'Learning by Doing' is directly applicable, as students create as can be seen a learning resource, thereby learning through direct experience. Furthermore, multimedia assignments develop visual presentation skills, a crucial competency in digital age, and promote sharing knowledge, as Riodan et al. (2020) suggest, by encouraging students to present and disseminate their work.

Collaboration learning, supported by Cox et al. (2010), is also an integral part of this approach. Students sometimes work in teams, fostering communication, and the ability to learn from peers. Reyna (2018) added that students feel empowered when showcasing what they learned to others. The assessment method is therefore aligned with the cognitivism theory because the learners have to organise, synthetise the material to present the information for producing a multimedia assessment.

The multimedia assessment method also aligns with Edgar Dale's Cone of Learning, which illustrates how different learning experiences impact retention rates (Figure 4).
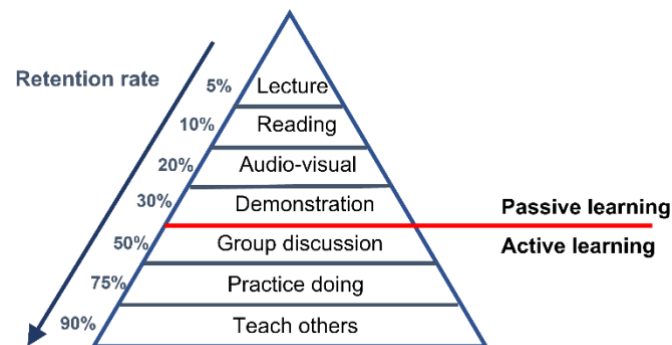
Figure 4: Cone of Learning

By engaging students in creating multimedia projects, the assessment method places them in the 'doing' and 'teach others' stages of the Dale's cone, hereby enhancing retention and deep learning. This hands-on approach ensures that students are not merely passive recipients of information but active participants.

By incorporating these theories, multimedia assessments not only evaluate student's understanding but also develop essential skills that prepare them for real-world challenges.

Aims of this article

This article aims to present a multimedia assessment framework designed for university lecturers, offering guidance on effectively implementing multimedia assessments in health and social care higher education settigs. Additionally, practical strategies for academic staff to transform their assessment approaches toward multimedia assignments will be shared.

Literature review

Eligibility criteria

Three selection criteria relating to this study were used. These provided the necessary parameters for searching and assessing the published evidence for this study. The following criteria were used to select studies: (1) articles had to describe the details about a framework or a model or a theory in order to develop a new framework for multimedia assessment. (2) the setting had to be applicable for a higher education setting.

Search strategy for a framework

A four-phase search strategy for identifying the current literature in multimedia assessment framework was adopted (Moher et al. 2009). This approach is based on the PRISMA Statement. The first phase involved the development of a search strategy that incorporated

a variety of terms. The search was restricted to peer-reviewed publications written in English and less 10 years old.

The primary research question guiding this literature search is: "What models exist for assessing media assessments in educational contexts?" To address this question, the research was broken down into three key concepts: media assessment and model. A comprehensive list of search terms was developed for each concept, including synonyms, related terms, and variations in spelling. Boolean operators were used to combine these terms effectively. For media assessment, the search terms included: media assessment and multimodal assessment. For model, the terms included: model and framework.

The Educational Resources Information Center (ERIC), Education Research Complete databases and Scopus were used. In the second phase, the titles and abstracts of publications identified by the searches were screened to identify articles that met the selection criteria. The third phase, the full text of all publications retained from phase two was reviewed to ensure that articles met all selection criteria. Lastly, after excluding irrelevant studies from phase three, the articles identified were extracted. Figure 5 illustrates the flow diagram of the literature search.
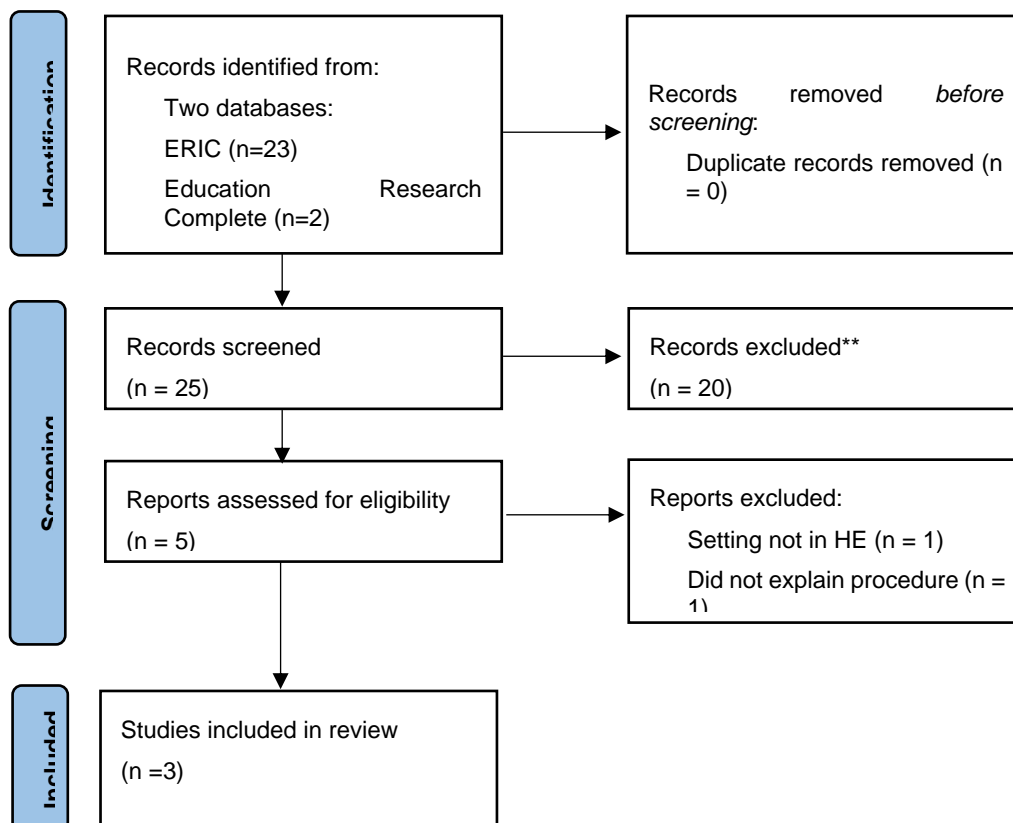
Figure 5: flow diagram of the literature search

Literature review findings

After completing the four phases outlined above, three articles were obtained (see Figure 5). Only five articles were included to the eligibility stage. The reasons for excluding the two articles were: did not explain procedures of multimedia assessment (n=1) and did not focus on higher education setting (n=1). Table 1 provides a summary of the characteristics of the included publications.

Table 1: Summary of the characteristics of the publications

	Location	Approach used to develop a framework	Characteristics of frameworks focused on
Blum & Barger, 2018	USA	Pragmatic approach emphasising on non-written assignments outside the classroom	Assessment design model which effectively facilitate the design and the implementation of multimodal assignments
Reyna & Meier, 2018	Australia and UK	Pragmatic approach	Practical framework to guide academics the implementation of digital presentations as assessment tools in tertiary science education
Ross et al., 2020	UK	Empirical approach supported with a qualitative approach	Multimodal assessment framework providing guidance for lecturers who are designing, supporting and assessing multimodal work

Reyna and Meier (2018) developed the Learner-Generated Digital Media (LGDM) framework to guide the implementation of summative digital media projects in tertiary science education. While comprehensive in covering elements like student training, video hosting, and feedback mechanisms, the framework could benefit from a stronger emphasis on assignment guidance and marking criteria, as well as addressing challenges like technological barriers and accessibility issues.

Blum and Barger (2018) introduced the CASPA model (Consume, Analyze, Scaffold, Produce, Assess) to support students in designing and implementing multimedia projects. However, it falls short as an overall implementation guide for academic staff, lacking practical applicability in a broader context.

Ross et al. (2020) offer a detailed framework for assessing multimodal student work, integrating visual, digital, and textual communication. While it emphasises critical thinking and creativity, the framework does not fully address the practical challenges of implementation, such as resource limitations and consistent application across diverse educational contexts.

Each of these models offers valuable insights for improving multimedia assessments, with Reyna and Meier's learner-centred approach and CASPA's scaffolding support being particularly strong. However, their practical limitations suggest a need for a more applicable model. Therefore, an adapted model, building on Reyna and Meier's work, was developed to serve as a practical guide for academics in health education.

Empirical development of the framework

The development of the multimedia assignment framework is grounded not only in existing educational models but also in empirical data gathered through continuous student survey conducted since 2021. This survey has provided critical insights into the students' experience and the efficacy of the support provided. With 69 responses informing the framework, the feedback has been instrumental in refining the approach. Notably, 100% of students who attended the practice sessions with an educational technologist acknowledged their usefulness in preparing for the summative assignment.

Analysing the responses to the question, "Explain how the practice session with the Educational Technologist helped you with your summative assessment", revealed six themes:

1. Skill development: students reported significant improvement in the necessary skills for creating narrated PowerPoint presentations and academic posters. Comments included: "Develop required skills" and "It helped me in developing the required skills to academic poster".

2. Understanding the assignment: the sessions clarified assignment requirements and provided step-by-step guidance. Students appreciated the "better understanding of the assignment", the "step-by-step tutorial with the opportunity to ask questions" and "It enabled me to understand what I was supposed to do".

3. Confidence: practising beforehand increased students' confidence and reduced feelings of being overwhelmed. They expressed that "I felt more confident when doing the summative".

4. Practical application: hands-on practice and useful feedback allowed students to refine their work. They highlighted that "the formative practice assignment helped me to practice" and "the feedback provided enabled me to prepare".

5. Technical guidance: the sessions helped students develop relevant technical skills, including software usage and correct assignment upload procedures. Students noted, "Better understanding how to upload" and "It was explained how to create the narrated PowerPoint".

6. Support and patience: the technologist's patience and supportive instruction were highly valued. Feedback included, "He exhibited patience," and "The assistance provided was quite beneficial."

Overall, the practice sessions with the educational technologists were highly valued for their roles in skill development, enhancing understanding of the assignment requirements, boosting confidence, offering technical guidance and delivering supportive instructions.

The Multimedia Assessment Framework

The proposed framework is specifically tailored for health and social care staff in higher education, providing structured guidance on the essential steps for designing, delivering, and evaluating multimedia assessments.

Inspired by Reyna and Meier (2018), the framework comprises eight elements, developed through observations and experiences gained while supporting health and social care staff at our institution. It begins with establishing the rationale for the multimedia assessment and concludes with an evaluative phase designed to inform future improvements (Figure 6).

Figure 6: Framework for delivering multimedia assessments

The stages are designed to guide academics in delivering this type of assessment.

Stage 1 - Explain why you are using a multimedia assessment

In the initial stage of the eight-stage multimedia assignment framework, the focus is on justifying the use of multimedia assessments. Traditional assessment methods, like essays and exams, primarily assess text-based responses, which may not fully capture the diverse skills students possess. In contrast, multimedia assessments allow students to demonstrate understanding and creativity through various media, such as narrated PowerPoint presentations, digital posters, and video recordings. This approach caters to different learning styles and better reflects students' capabilities in the digital age.

The rationale for multimedia assessments is grounded in educational theories that emphasise student-centred learning, active engagement, and skill development. For example:

- Active Learning (Coulson & Frawley, 2017)

- Learning by Doing (Laverty, 2016)

- Visual Presentation Skills and Knowledge Sharing (Riordan et al., 2020)

- Collaborative Learning (Cox et al., 2010)

Multimedia assessments can effectively address higher levels of Miller's pyramid, such as a narrated PowerPoint (Shows How) or a video demonstration (Does), providing a comprehensive evaluation of student abilities.

However, before adopting multimedia assessments, the teaching team should critically assess their necessity by considering:

- Why is a multimedia assessment needed?

- How does it enhance student learning compared to traditional assessment methods?

- What added value does it provide?

If the added value is unclear, traditional assessment methods, such as essays or presentations, may be more appropriate.

Stage 2: Set the assessment requirements and marking criteria

Before the module delivery begins, the teaching team must establish the assessment requirements and marking criteria for evaluating the students' work. This stage focuses on determining how the students' multimedia assessment will be assessed. Hence, the module teaching team must develop the assessment criteria before starting to teach the students and ensure that the criteria is shared with both students and staff. This ensures that everyone involved has a consistent understanding of the assessment standards

Its therefore crucial to provide students with a clear and detailed understanding of what is expected from them in the assessment and how their wok is to be marked. This stage sets students up for success by aligning their efforts with the assessment goal. It should be clear to the students on what success and failure should look like. The module teaching team should provide detailed instructions on the length and the format of the assessment as well as the content requirements such as the inclusion of an introduction, main content segments and a conclusion, long with the references.

The marking criteria may take the form of rubrics, which must be specific for this type of assessment, different from written assessments. The rubrics may include components on the creativity and the content originality. The presentation and delivery component are important to assess the clarity and the effectiveness of the communication. A clear timeline for the assessment including a milestone for a practice submission and the submission deadline must be provided. Students need to be encouraged to manage their time effectively and aim to submit a few days before the deadline to seek technical support if needed.

Stage 3: Set the assessment submission portal

Submitting a multimedia assessment differs significantly from traditional written assessments. Unlike text-based submissions, multimedia assessments involve larger file sizes and diverse formats, which strain university learning management systems (LMS) like Canvas, especially when handling large file uploads from large student cohorts. To address this, integrating third-party tools like Panopto with the LMS can be essential. This allows examiners to easily access student submissions without the need to download files, ensuring that the LMS storage is not overwhelmed and that the work is securely stored.

The assignment portal should provide not only the assessment brief and marking rubrics but also detailed instructions or tutorial videos on how to upload multimedia files. These resources should cover key aspects of the assessment to support students effectively.

When choosing a storage medium, avoid platforms like YouTube and OneDrive, as students can alter access permissions, potentially causing examiners to lose access. Instead, use secure, long-term storage solutions such as Panopto that meet auditing and regulatory requirements.

Stage 4 - Prepare your students

This stage focuses on the skills and knowledge students need to use the various technologies required for completing the multimedia assessment. The teaching team should not assume all students possess these skills. Our observations from working with various cohorts revealed that students often struggle with multimedia assessments due to a lack of ICT skills and preparation. Therefore, it is crucial to teach these skills before starting the summative multimedia assessment.

The preparation may begin by a dedicated session led by an Educational Technologist, who will explain the technical requirements in detail. During this session, students will receive a demonstration that encapsulates the entire process from creation to submission.

Additionally, students are encouraged to practise creating and submitting multimedia files using a formative exercise and submission portal. This hands-on practice helps the students to familiarise themselves with the various required technologies and procedures, reducing anxiety and technical difficulties. Teaching team should avoid the traditional lecture style delivery method when teaching the skills. A hands-one approach is better as it gives the students to practice and acquire the relevant skills. Before the practice sessions, students should be sent preparatory exercises to ensure they come to the sessions with necessary resources such as a computer and software.

To support students' post formative sessions, they should also be informed where to find the step-by-step help written instructions alongside the screen-recorded help videos.

Creating a help page with guides and video tutorials on the module site is a good thing to put in place for the students.

Stage 5: Provide feedback on formative submission

Timely, specific, and constructive feedback is crucial for enhancing student understanding and skills. Hattie and Timperley (2007) emphasise feedback's significant impact on student achievement and learning outcomes. Black and Wiliam (1998) highlight the role of formative assessment in guiding learning, while Nicol and Macfarlane-Dick (2006) underscore its importance in fostering self-regulated learning. Yorke (2003) also stresses formative assessment's value in helping students understand evaluation standards and achieve learning outcomes.

Marshall and Drummond (2006) argue that effective assessment requires well-designed tasks that align with key module topics to enhance engagement and understanding. To maximise feedback effectiveness, markers should use rubrics to align feedback with assessment criteria, ensuring consistency and clarity (Looney, 2011). This approach reinforces learning objectives and encourages students to reflect on and apply feedback, promoting continuous learning.

Stage 6: Provide ongoing support during the Summative Assessment period

Research and experience indicate that many students fail to effectively act on formative feedback, a challenge highlighted by Nicol (2010) and Crisp (2007). These studies reveal that students often struggle to understand and apply feedback, while teachers feel their detailed feedback does not always lead to significant learning improvements. Glazzard et al. (2023) also found that students frequently do not engage with or appreciate the value of feedback, further complicating its effectiveness.

To address these issues, it is crucial to provide continuous support during the summative assessment period. As Evans (2013) suggests, teachers should actively guide students rather than waiting until submission to identify areas of need.

Specific recommendations include:

- Encourage students to use formative feedback and resources and remind them not to delay starting their assignments (Nicol, 2010; Crisp, 2007; Evans, 2013).

- Promote the use of assessment rubrics and checklists to foster self-regulation and independence (Klenowski, 2009).

- Facilitate student engagement with feedback through staff-student discussions, peer reviews, and face-to-face sessions (Nicol, 2010; Crisp, 2007; Glazzard et al., 2023).

- Organise workshops to help students understand and apply feedback, and to address any technical issues close to submission deadlines (Nicol, 2010; Crisp, 2007).

- Implement checkpoints in course design to monitor progress, identify at-risk students early, and ensure timely interventions (Henri et al., 2021).

Overall, incorporating these strategies can help bridge the gap between formative feedback and successful summative assessment completion, improving student engagement and learning outcomes.

Stage 7: Mark the Summative submission and provide feedback

In this stage, academics assess and moderate students' submitted work using the agreed-upon marking criteria. Providing relevant and effective feedback is a critical element of the multimedia assessment framework, emphasising the importance of feedback in enhancing students' understanding and skills. Feedback should be timely, specific, and constructive, enabling students to identify both their strengths and areas for improvement.

Effective feedback also enhances transparency in grading by clearly articulating the reasons behind the marks awarded. This transparency reduces ambiguity and builds trust in the evaluation process (Haughney et al., 2020).

Markers use the marking rubrics to ensure that feedback aligns with predefined criteria, including content knowledge and application, critical, analytical, and evaluative thinking, synthesis of information, as well as creativity and presentation skills. This method not only reinforces the learning objectives but also encourages students to reflect on their work and apply the feedback to future assignments, thus fostering a continuous learning process.

Stage 8: Evaluate the assessment and its delivery

In the final stage, evaluating this assessment method and its delivery approach involves lecturers adopting the role of reflective practitioners to assess the effectiveness of the multimedia assessment and identify areas for improvement. Reflective practice, as outlined by Schön (1983), encourages continuous learning and adaptation through critical reflection on one's teaching methods. Lecturers should review both the overall success and specific challenges encountered by students. Incorporating specific questions into the module feedback questionnaire can provide valuable insights from the students' perspectives, focusing on their experiences with the technical aspects, as well as the perceived value of the feedback received. Analysing the feedback allows lecturers to make informed adjustments to the assessment structure, marking criteria, assessment delivery, or support received. The reflective process ensures that the multimedia assessment continues to involve, enhancing its effectiveness and relevance in fostering student learning and engagement (Brookfield, 1995).

Conclusion

The framework presented in this paper offers a structured approach for implementing multimedia assessments in health and social care higher education. By aligning with educational technologies and incorporating practical strategies, the framework addresses both pedagogical and technical challenges, ensuring that multimedia assessments are not only feasible but also beneficial to students and academic staff. The proposed framework empowers lecturers by providing a clear, practical guide to seamlessly integrate multimedia assessments into the existing curriculum.

Further research should focus on the long-term impact of multimedia assessments on student learning and professional readiness. Additionally, exploring the scalability of this framework across different disciplines can provide broader applicability.

In conclusion, this framework not only facilitates the effective use of multimedia assessments but also contributes to the ongoing evaluation of assessment practices in higher education. By fostering active learning and skill development, it prepares students for digital demands of their future careers, thereby enhancing the overall quality of health and social care education.

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