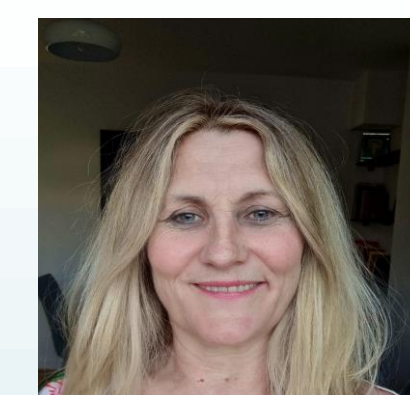


# 'Bridging the gap between academic learning and practical skills' Developing a professional competencies module for 2nd-year undergraduate Biomedical Science students



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## Introduction

The UK is facing a workforce crisis in the field of Biomedical Science due to a shortage of qualified professionals. The NHS Long Term Workforce Plan<sup>1</sup> published in 2023 aims to ensure the NHS has the workforce it needs for the future and commits to increasing training places for Healthcare Scientists by 32%. The plan has 3 core principles 'Train, Retain and Reform'. To ensure we reach this target we will need to 'Reform' how we educate and train scientists of the future. It is therefore imperative that we provide appropriate training to undergraduate biomedical science students to equip them with the necessary skills, competencies and confidence required for the complex and interdisciplinary challenges of the workforce. At London South Bank University we have addressed this gap by the development of a professional competencies' module for 2nd-year undergraduate Biomedical Science students.

## Module Development

A collaborative approach was taken which included practicing Biomedical Scientists, Pathology Practice Educators and industry partners to address the 'skills gap' most frequently seen in graduates. Module content was designed to complement the IBMS registration portfolio familiarising students with HCPC standards. Professional, subject-specific, and transferable skills were included, with a focus on quality assurance, workflow, and data analysis (figure 1).

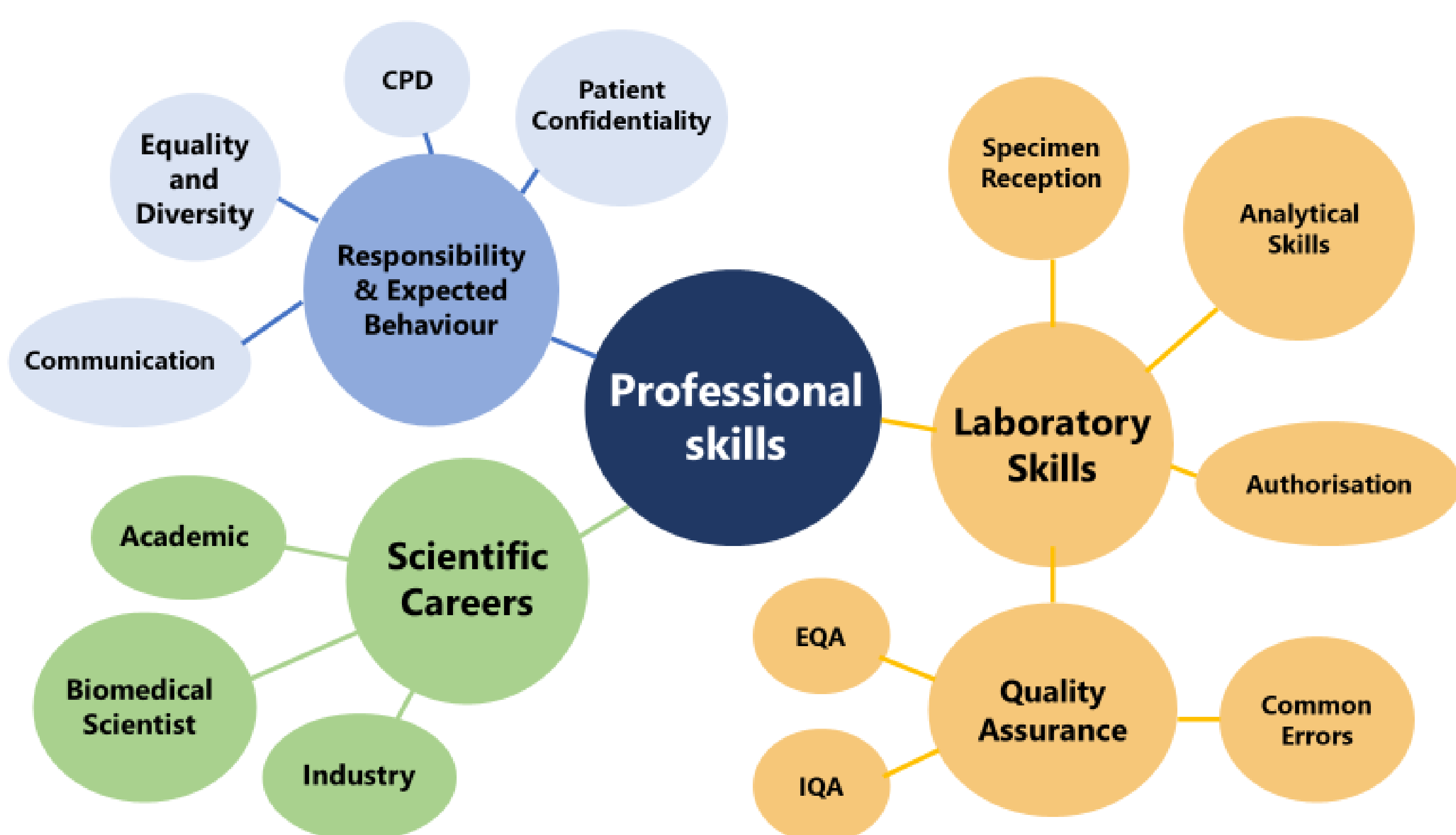


Figure 1. Concept Map to show module design

## Module Delivery

Module delivery mirrored development and was taught collaboratively by practicing Biomedical Scientists, Pathology Practice Educators, and industrial partners. It focused on student confidence building and included interactive lectures, tutorials, simulation training, access virtual labs on the FutureNHS platform and hands on laboratory practical sessions.

## Module Assessment

The assessment consisted of two components:

- an E-portfolio, reflecting the knowledge gained through the teaching. This e-portfolio encompassed various clinical case scenarios, spanning pre-analytical to post-analytical testing phases in the laboratory.
- an oral assessment conducted in an Objective Structured Clinical Examination (OSCE) format. This face-to-face evaluation covered a comprehensive spectrum of knowledge, including the pre-analytical, analytical, and post-analytical processes, as well as aspects related to health and safety and quality control.

The OSCE aims to provide a fair and standardised approach for evaluating clinical skills and knowledge, ensuring that healthcare professionals are fully prepared to deliver safe and proficient care. This method closely mirrors the one utilised in the IBMS verification process for assessing trainee biomedical scientists completing the Certificate of Competency<sup>2</sup>.

## Module Feedback

Students who had completed module were invited to participate in feedback. An anonymous questionnaire was used to gather overall experience and student views of the module. The questionnaire included open (free text) and closed dichotomous (fixed answer) questions. 5 point Likert scale questions were also included to measure student's attitudes to a particular question or statement.

Likert Scale questions were coded as follows:

- 1 = Very Poor • 2 = Poor • 3 = Satisfactory • 4 = Good • 5 = Very Good

## Results

50 students responded to the questionnaire. Feedback showed positive responses to the module's content and delivery (Figure 2). Overall 90% of students rated the teaching as good/very good and 88% of students thought it was a valuable learning experience. Students acknowledged the value of practical sessions and the interactive nature of the module with 94% of responses saying that the module had given them skills required for future employment.

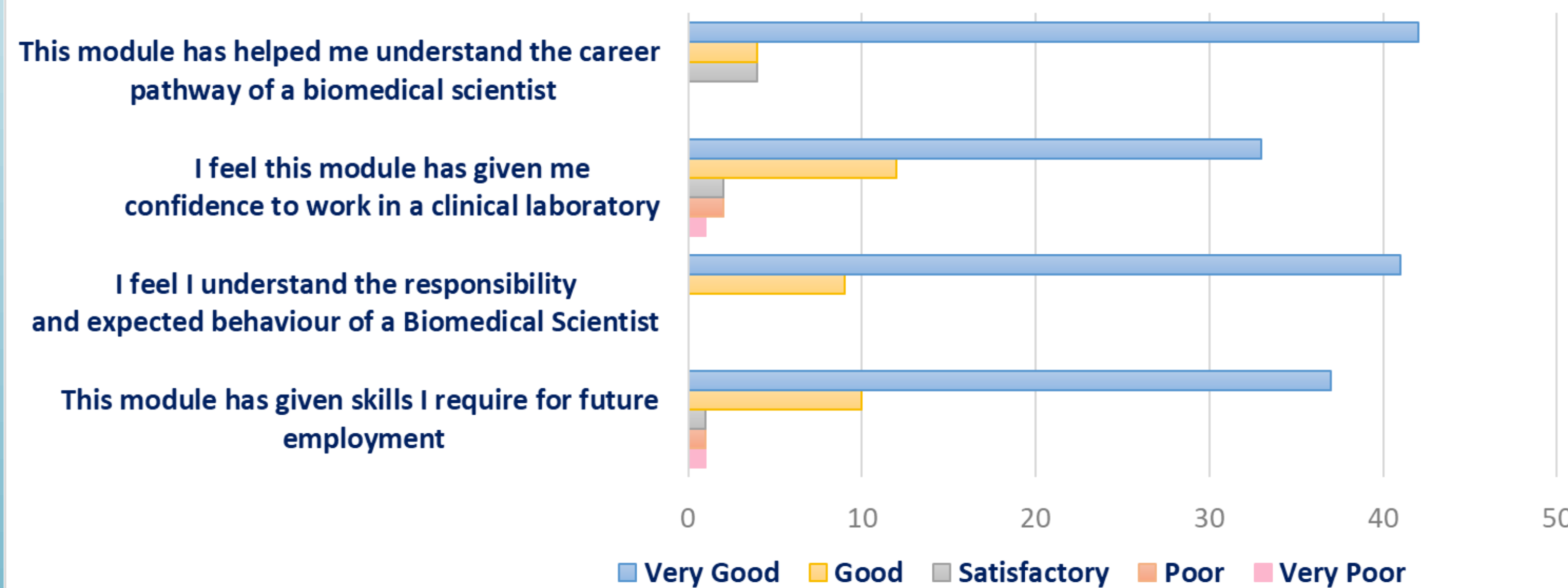


Figure 2. Student module feedback questionnaire results

100% of students understood the responsibility and expected behaviour's of a biomedical scientist.

The OSCE assessment was particularly well received, with students expressing increased confidence in applying for placement positions in clinical laboratories.

The module successfully developed students' professional competencies and provided them with the necessary skills for the workforce with 74% of students considering a career as a biomedical scientist in a clinical pathology laboratory (figure 3).

**STUDENT COMMENT'S**

- I really liked the oral assessment. This is the first time I have done such an assessment. This has increased my confidence to attend & perform well in the interviews. Recently I had an interview for bank MLA and I had excellent feedback from the NHS staff. If it was not for this module I could have not gotten the job.
- I gained very good practical skills e.g how to interpret IQC and EQA results, the process of patient samples in the specimen reception, how to interpret basic clinical tests, troubleshoot results, the importance of Health & Safety
- Preparation of the e-portfolio very helpful. I would like to work in NHS as a Biomedical Scientist in the future and some of the evidences that I have included in the portfolio I can use for the IBMS portfolio
- I liked that the whole module was coursework. Less stressful
- Gives you info about future prospects. You can ask questions to the professionals to know how that field is. Helps to start thinking about the future
- Introduction to the wide range of careers, career progression explained clearly, virtual experience of the real work environment given by visitors currently working in the industry
- Although I'm not thinking of pursuing a career as a scientist in the NHS, I think the skills and knowledge gained will be beneficial in my future career.

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## Graduate Student Outcomes 2023 (n=27)

- 5 graduates in full time NHS pathology roles
- Academic – 2 PhD; 5 MSc Biomedical Sciences
- 7 students have MLA roles across various NHS Trusts

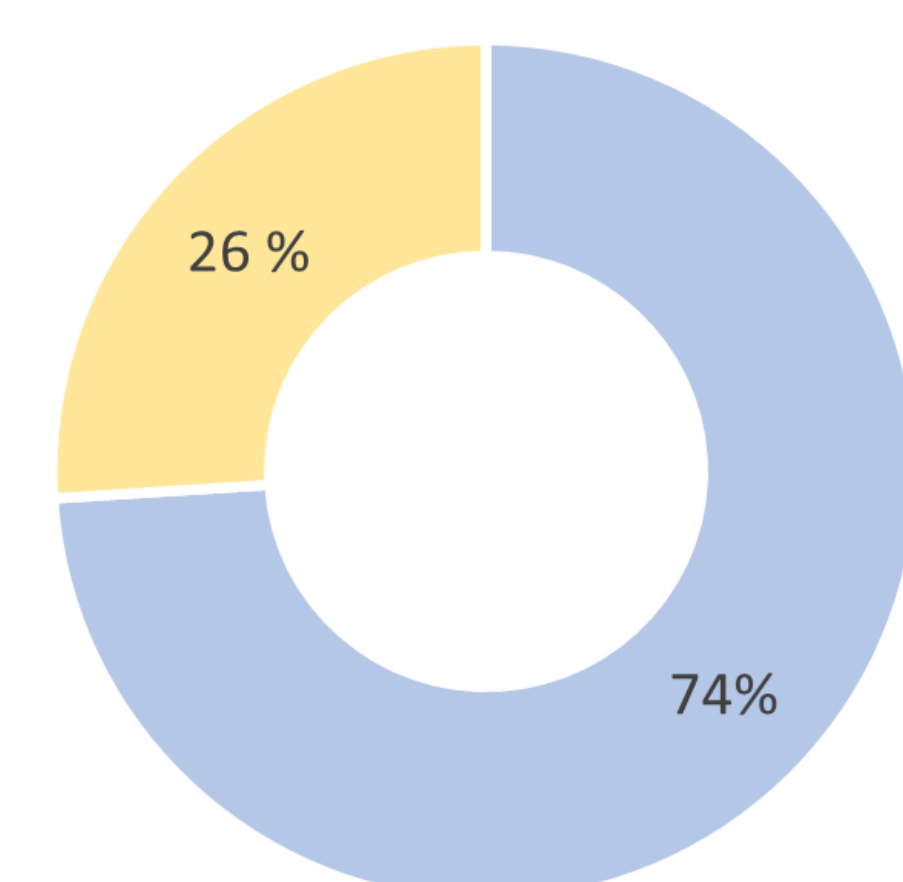


Figure 3. % of students considering a career as a Biomedical Scientist

## Conclusion

The collaborative approach proved effective in equipping undergraduate biomedical science students with essential skills and competencies for the workforce. The positive feedback from students highlights its effectiveness in bridging the gap between academic learning and practical skills in the biomedical sciences. This methodology can serve as a model for other undergraduate programs looking to develop students' professional competencies and prepare them for the workforce.

## Future Developments

We aim to align the module with the new HCPC Standards of competency<sup>3</sup>. To enhance the module's future development, we are planning to integrate pathology service users into the curriculum. Service users will be invited to attend workshops as guest speakers including patients who are willing to share their personal experiences. The workshops will primarily focus on discussing the ways in which pathology services have played a pivotal role in diagnosis and treatment journeys. Meanwhile, service providers will have the opportunity to elucidate their roles and elucidate their interactions with pathology services. Students will be required to complete a reflective report, which will contribute to the assessment.

## References

- <sup>1</sup> <https://www.england.nhs.uk/long-read/accessible-nhs-long-term-workforce-plan/>
- <sup>2</sup> Harden, R.M., Stevenson, M., Downie, W.W. and Wilson, G.M., 1975. Assessment of clinical competence using objective structured examination. Br Med J, 1(5955), pp.447-451.
- <sup>3</sup> [standards-of-proficiency---biomedical-scientists.pdf \(hcpc-uk.org\)](https://standards-of-proficiency---biomedical-scientists.pdf (hcpc-uk.org))