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Motivations, Rationale and Expected Outcomes of Foundation Bioscience Students Pursuing a Bioscience Degree

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Numerous UK higher education institutions (HEIs) offer bioscience foundation years to assist students who may not meet standard entry requirements, thereby aiding widening participation initiatives. This paper aims to explore the motivations, rationale, and expectations of students in a biosciences foundation programme, to support understanding and subsequent development of this student group. The study revealed that students are primarily driven to pursue a bioscience foundation year to enhance their career prospects and foster intellectual development. These motivations were also evident in their decision to choose a foundation bioscience degree, where career opportunities and genuine interest in the subject matter played significant roles. The findings from this study may assist educators and institutions in providing better support to help students achieve their academic and career aspirations.

Introduction

The transition to higher education is a significant event in a student's life. In the UK 2,862,620 students entered HE in 2022 (HESA, no date). However, the changes in the economic and cultural landscape have altered the motivations for undertaking a degree. Brexit, along with the COVID-19 pandemic have been described as a 'double jeopardy' for the UK economy, and this has been reflected in the shift of applicant focus to domestic as opposed to international opportunity (Aristovnik et al., 2020; Highman et al., 2023). The cost of living crisis has been indicated by many students as affecting their studies, with an increase in students in paid employment (Schofield, 2024). However, up to now, the choice to pursue HE is a risk that students have been willing to take, with applications being made before the release of their final school qualification grades, and no guarantee of a place on a course, financial aid to

complete this, or confirmed employment upon completion (Callender and Melis, 2022). The perceived risk of selecting, attending and completing a course continues throughout the chosen degree, with a potential risk of non-completion (Yorke, 1999).

In the biosciences, as in other areas, the motivations to undergo this process from before application to attendance at university, can be intrinsic or extrinsic (Rytkönen et al., 2012). Extrinsic motivation is characterised by learning to achieve external rewards or avoid punishment, often resulting in more passive learners whose primary focus is simply completing the course requirements (Dev, 1997; Entwistle, 1998; Donald, 1999). In contrast, intrinsic motivation involves learning for understanding, driven by a desire for personal growth and intellectual challenge (Lepper, 1988; Paulsen & Gentry, 1995). Such learners adopt a deep approach to understanding and remain self-motivated without the need for external incentives (Entwistle, 1998; Fazey & Fazey, 2001). However, while research indicates that intrinsic motivations facilitate active engagement, it should be noted that this alone cannot guarantee success (Saeed & Zyngier, 2012). Therefore, understanding students' reasons for choosing a degree is essential when considering programme design and the subsequent teaching and learning methods employed by educators. Research has suggested that students' expectations play a strong role in their subsequent success (Jansen, Williams & Lateif, 2022), with students who have unrealistic expectations often being less prepared and therefore less successful.

In some previous studies, the selections made by friends was identified as a motivator for course choice, but in others this has not been the case (Moogan, Baron & Harris, 1999; Brooks, 2003; Byrne & Flood, 2005). An increased emphasis placed on students as consumers, whether correctly or incorrectly, has also changed the way in which potential students interact with the degree programmes they wish to apply to and therefore the relative weight they place on the overall motivations for attending such a programme (Woodall, Hiller & Resnick, 2014; Tomlinson, 2017).

With an increased importance placed on education by potential employers, students may be more inclined to follow a degree pathway that can ensure good employment prospects (Tomlinson, 2008). The career paths of bioscience graduates can vary, from working in government and public health, to carrying out the role of a laboratory scientist. For the biosciences, students must choose from over ninety higher education institutions offering a degree in the subject area. For students without the traditional entry qualifications for bioscience courses, a foundation year can bridge knowledge gaps in fundamental topics in biology, chemistry, maths, and study skills before students move on to their chosen degree.

The Biosciences Foundation Year at the University of Surrey allows students to progress to a first-year bioscience degree programme (Biochemistry, Biological Sciences, Biomedical Science,

Food Science and Nutrition, Microbiology, Nutrition, Nutrition and Dietetics, Sport and Exercise Science, or Veterinary Bioscience) after passing their one-year foundation course.

Traditionally, a foundation year acts as an opportunity to assist students in developing skills to prepare them for their desired course. However, limiting the effects of foundation years to a deficit model overlooks evidence that suggests they are often a deliberate choice. As suggested by Craven and Sharp (2025), there can be a period of acculturation attached to a foundation year, which can help mitigate the shock of entering higher education noted by Webber and Austin (2025). This positions foundation years as useful tools in widening participation; however, student motivations for their uptake are complex. The number of students in foundation year programmes in the UK between 2013 and 2016 almost tripled, but this increase in students undertaking such a degree pathway is not fully understood (Sanders et al., 2016; Wint, 2023).

Methods

Aim

This study aims to provide an understanding of the motivations of Biosciences Foundation Year students to undertake their degree programme.

Research Participants

All participants were on the Biosciences Foundation Year (a single programme) at the University of Surrey. The study utilised a census sampling approach, targeting the entire cohort (N=77). A total of 72 students responded to the questionnaire (a response rate of 94%) with all participants enrolled in the same academic year.

Measuring Instruments

Data for this study was collected using an adapted version of the 'Motives, Expectations and Preparedness for Higher Education Questionnaire' (Byrne & Flood, 2005; Byrne et al., 2014). The questionnaire was adapted slightly by rewording discipline-specific items to reflect a bioscience degree rather than accounting.

The questionnaire was constructed with open and closed questions and was split into three sections that used a five-point Likert scale (see Appendix). Section one gathered data relating to students' intrinsic and extrinsic motivations for deciding to come to university and explored peer influence. Section two investigated students' reasons for studying a bioscience degree. Finally, section three explored students' expected outcomes from taking a bioscience degree.

The motivations question began with the phrase 'Indicate the importance of the following motives on your decision to come to University' and followed with a list of potential motivations. Options were not exclusive so participants could rate as many options as they wanted with the same score (e.g. all motivations as 'important' or as 'very important').

Data handling

As the data were qualitative, they have been presented in decreasing order of importance to support the identification of coherent themes.

Research Procedure and Ethical Considerations

The questionnaire (see Appendix) was administered to Biosciences Foundation Year students at the University of Surrey, during the first week of the 2022-23 academic year. A member of the research team communicated the objectives of the questionnaire, the confidentiality of information provided and ethical considerations to the prospective participants. All participants were provided with an information sheet and informed consent was required, prior to starting the questionnaire. Approval for administration of this survey was obtained from the University of Surrey Ethics Committee.

Results

There was a good response rate for all questions although response rates varied by question as not all students answered every question (mean response rate 71 students per question; range 69-72).

The motivations with the strongest positive responses were related to development and future opportunities (Figure 1).

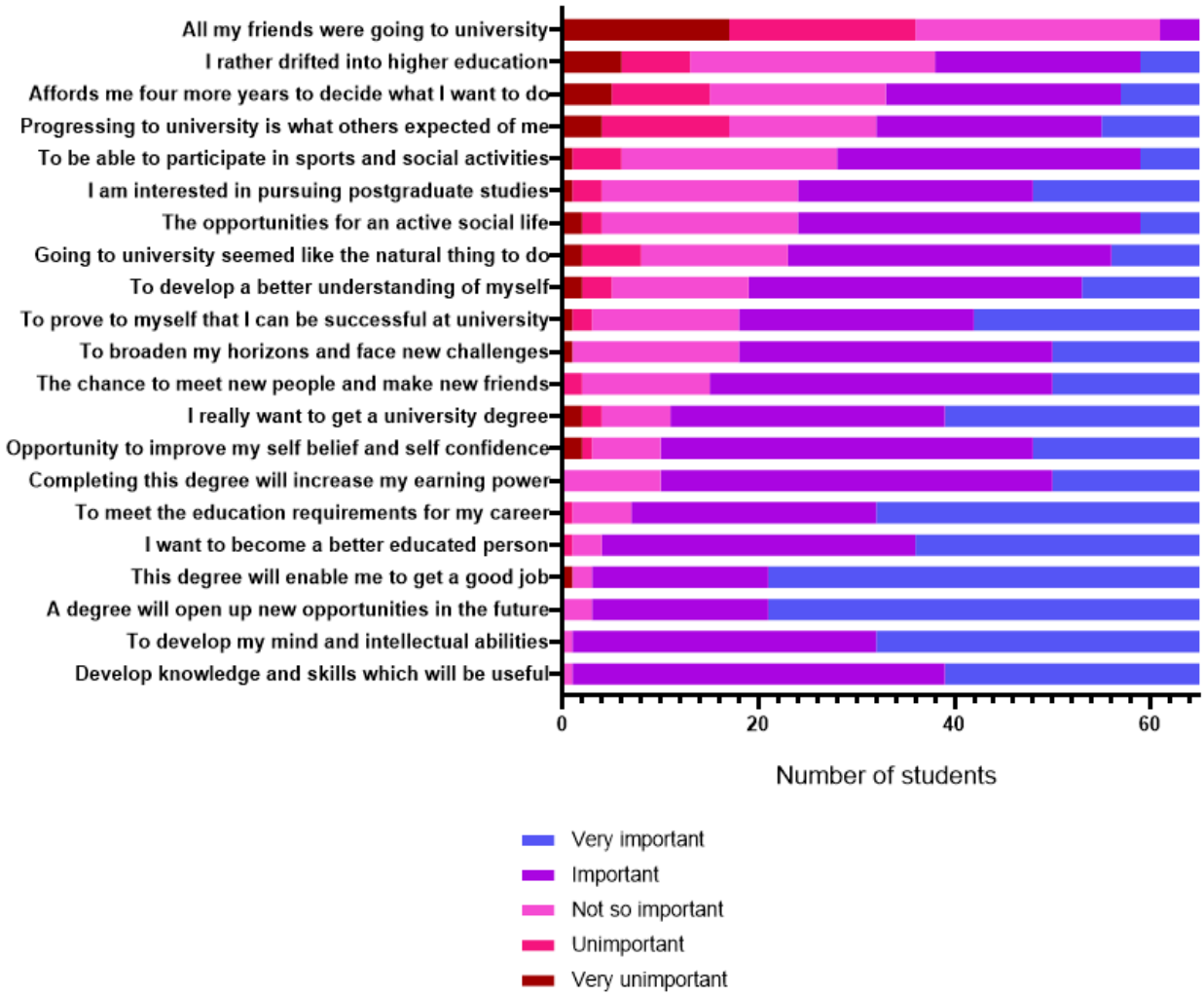

Fig 1. The motivations for students to come to university. Y-axis sorted with highest positive responses (Very important and Important) running bottom to top (n=72).

Knowledge and skill development as well as job prospects came out highest in importance as a reason to come to university. Perhaps equally interesting are the statements that did not elicit a strong positive response, considering that participants could have selected positive responses for all options. The less important statements all indicate that coming to university was an active decision and not something that happened because it was the path of least resistance.

The reasons for choosing a bioscience degree question began with a statement ‘To what extent do you agree with the following statements, for the reason why you choose a Bioscience degree’ and then a series of reasons participants could agree or disagree with. Participants could agree with all of the options if they wished, as agreement with any one option was not exclusive. Again, the responses that elicited the strongest positive response were active decisions showing a deliberate selection of bioscience due to the topic and career prospects

(Figure 2). The strongest negative responses were the ones suggesting a passive move to university such as following friends or family to the subject.

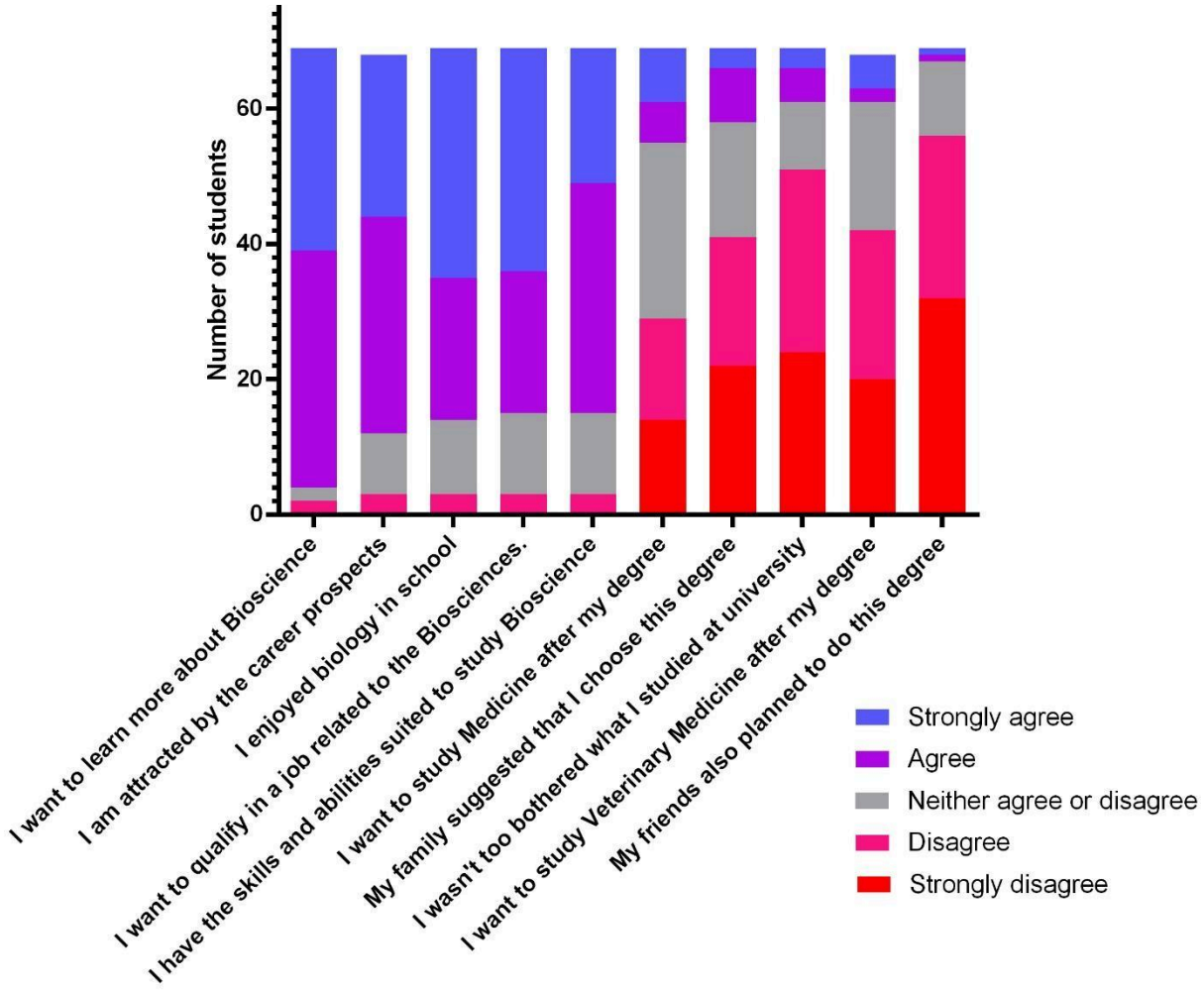

Fig 2. The reason why participants chose a bioscience degree. X-axis sorted with highest positive responses (Strongly agree and agree) running left to right (n=71).

Participants were asked to project forward and predict how well they thought their time at university would help them achieve certain goals (Figure 3). Interestingly the highest negative responses were around self-esteem and confidence and having a good time. Concerningly perhaps, there were a few responses indicating that university would not help participants learn about new ideas so well.

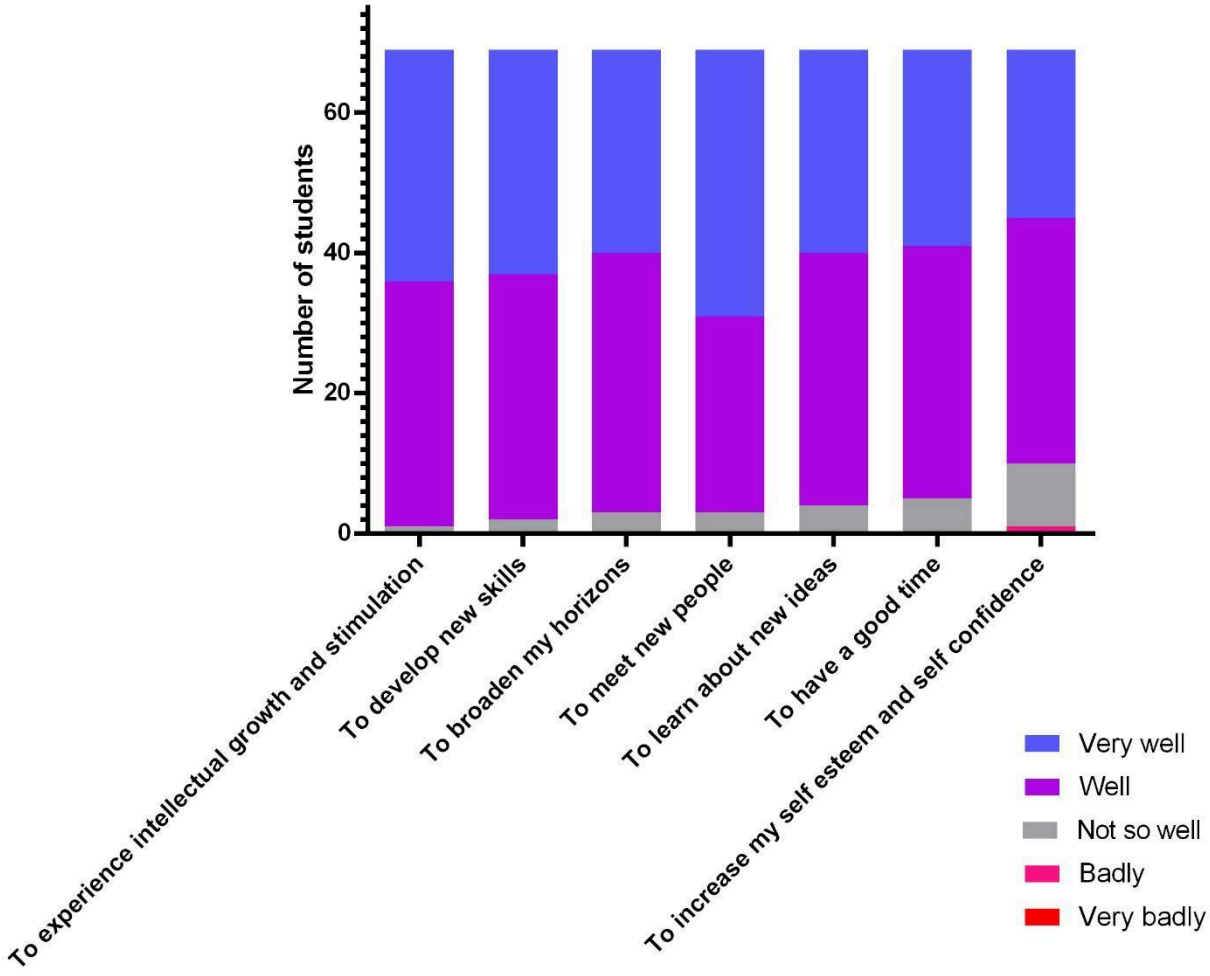

Fig 3. How well participants thought their time at university would help achieve certain goals. X-axis sorted with highest positive responses (very well and well) running left to right (n=71).

Discussion

Graduate employability is a core attribute of the HE agenda, where student motivators and career aspirations play a crucial role in not only shaping their degree attainment but also influencing future job possibilities (Atkins & Ebdon, 2014). This study aimed to evaluate the motivations of Foundation Year Biology students pursuing bioscience-related degrees. Previous studies have shown that motivation and expectation are intricately linked to academic success in such degree programmes (Byrne & Flood, 2004) and therefore by understanding these

factors, educators and institutions can better design programmes and support students in achieving their academic and career goals.

The decision to pursue higher education and subsequent academic performance are influenced by varied motivational factors (Pintrich & Schunk, 1996). In this research, participants were provided with a comprehensive list of different intrinsic and extrinsic motives and were asked to express the significance of each of these factors in their choice to come to university. Results show the importance of both internal and external motives in students' decisions to come to university. Opening up future opportunities, job prospects and economic expectations were highly rated external factors (agreement of > 65% of the sample). Many internal motives, such as broadening horizons and facing new challenges, improving self-belief and confidence, and developing a better understanding of themselves were also significant in influencing students' decisions (agreement of > 50% of the sample). Passive motives, such as being influenced by friends' decisions, allowing more time to decide on their future, and drifting into higher education received the lowest scores.

These findings are in line with two studies conducted with accounting students in Ireland and South Africa, which found that students were generally not inclined to undertake a degree just because their friends were doing so (Byrne & Flood, 2004; Arquero et al., 2009). Moreover, a study conducted among pharmaceutical science and chemistry students revealed that the primary motivations for attending university were to enhance career prospects, acquire advanced knowledge, and foster academic development, whereas the least popular motivator was 'my friends were attending', which is very similar to the findings in this study (Page et al., 2016). This is perhaps unsurprising, partly because these are foundation year students who have had to think and actively choose their current course (Braisby, 2019).

Upon being asked their reasons for choosing their degree, responses amongst this cohort have demonstrated a strong link to subject choice and future career prospects. Similar findings have been found across other subjects (Arquero et al., 2009) with students across different disciplines also citing subject interest and career development as primary factors in their decision making. This information is key when considering how to best support students with not only subject specific knowledge but also the key transferable skills so highly valued by industry. In many institutions the structure of foundation years may not allow for high levels of programme specific sessions, often covering numerous programmes under one subject umbrella. Therefore, with interest in their subject area being a primary factor in students' decision making, it is essential to consider how universities can foster a sense of belonging amongst foundation year students.

When exploring both the motivations and reasons behind their choice of degree we see similar outcome related responses as discussed above. When asked to consider the outcomes of their time at university, a high proportion of students expect their studies will support development of new skills. The majority of students believe their time in higher education will support them in broadening their horizons, help them to meet new people, increase their ability to learn about new ideas, and allow them to have a good time. No respondents selected either 'very badly' or 'badly' for any question in this section, suggesting that overall Biosciences Foundation Year students feel positively about how university will help them achieve these outcomes. This questionnaire had previously been used for a similar survey of year one accountancy students (Byrne & Flood, 2005). Here and in Byrne and Flood's study it was observed that most participants agreed that most of the goals would be met during their time at university. This could reflect that the options given in the questionnaire were well selected as the most common responses students give for their goals at university. Our findings, similar to those of Byrne & Flood (2005), suggest that foundation year students across different subjects all have high expectations for the outcomes following their chosen degree. It is interesting to note that the highest proportion of negative responses was linked to improving confidence and having a good time. Responses to this question perhaps reflect that the questionnaire was given out very early on in a foundation year course, before students had sufficient experience of university life. At this stage, students may not yet perceive confidence-building or relationship-building as key priorities, as their primary focus is likely to be on adjusting to their new environment and meeting course requirements. This is consistent with Balloo et al. (2015) who found that making friends was the least important reason for attending university, indicating students are not choosing to attend university for social reasons. A few participants believed that university would not allow them to learn about new ideas. Perhaps a stronger emphasis on the research-led teaching on the course could counteract this view, or maybe participants were so early on in their course they did not see this aspect of the degree yet.

It is important to note that there were some limitations to this study. The responses provided by the participants represent an opinion at a given moment and thus have the potential to change if surveyed at another time. Furthermore, the absence of free text options limited the depth of insight, as students were restricted to Likert-scale responses. One other limitation to note is that our method of sampling was not intended to be a random or representative sample of all foundation year bioscience students. As a result, the findings of this study may not be applicable to other academic institutions.

Future research could investigate the impact of motives, reasons for choosing a foundation year in bioscience, and perceived outcomes, on academic performance. Understanding how these factors interact may contribute to the literature on degree attainment and provide valuable insights for supporting students. Additionally, including demographic data (age, gender and

ethnicity) may help understand who the results of the study might generalise to. Furthermore, incorporating qualitative research methods could offer a comprehensive understanding of the characteristics and experiences of students. Separately, examining the characteristics of students who are more likely to succeed versus those who may face challenges or withdraw, could provide valuable insights into factors that influence progression and retention (Byrne & Flood, 2005). Extending this study to other British universities who offer foundation years for biosciences degrees, and conducting international comparisons could enhance the generalisability of the findings. It is perhaps worth investigating further the questions that were most skipped and why this may have been. Could it be that some questions were too difficult for students to reflect upon at the time they were asked? Or perhaps it was more a result of the length of the questionnaire.

In conclusion, gaining knowledge of the intricate interplay of motivations and factors influencing students' educational choices is crucial for enhancing the quality of higher education and preparing graduates with the necessary skills and confidence for success in their future careers. This study revealed that students were primarily driven to choose a bioscience foundation year by their desire to improve career prospects and foster intellectual growth. This motivation was also evident in their reasons for selecting a bioscience degree, where career opportunities and genuine interest in the subject area played significant roles. By addressing both internal and external influences on students' decisions, educators and institutions can cultivate a more supportive and fulfilling learning environment that emphasises the relevance of course content to future career opportunities.

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Appendix: The Questionnaire

Indicate the importance of the following motives on your decision to come to University

Responses were recorded using a five-point Likert scale:

(1 = Very important, 2 = Important, 3 = Not so important, 4 = Unimportant, 5 = Very unimportant).

MOTIVES
A degree will open up new opportunities in the future
This degree will enable me to get a good job
To develop my mind and intellectual abilities
Completing this degree will increase my earning power

Develop knowledge and skills which will be useful

I want to become a better educated person

To meet the education requirements for my career

To broaden my horizons and face new challenges

I am interested in pursuing postgraduate studies

The chance to meet new people and make new friends

To be able to participate in sports and social activities

To prove to myself that I can be successful at university

I really want to get a university degree

Going to university seemed like the natural thing to do

The opportunities for an active social life

Opportunity to improve my self-belief and self-confidence

Progressing to university is what others expected of me

To develop a better understanding of myself

Affords me four more years to decide what I want to do

All my friends were going to university

I rather drifted into higher education

REASONS FOR CHOOSING A BIOSCIENCE DEGREE

I want to qualify in a job related to the Biosciences.

I have the skills and abilities suited to study Bioscience

I am attracted by the career prospects

I enjoyed biology in school

I want to learn more about Bioscience

My family suggested that I choose this degree

I wasn't too bothered what I studied at university

My friends also planned to do this degree

EXPECTED OUTCOMES FROM DOING A BIOSCIENCE DEGREE
To develop new skills
To broaden my horizons
To meet new people
To have a good time
To experience intellectual growth and stimulation
To learn about new ideas
To increase my self-esteem and self-confidence