

Case Study

Engaging Students

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Subject area: Inspiring Lectures, Plant Identification Skills

This case study has been developed from data gathered through observations of the teaching component, interviews with the tutor, and a student focus group.

Background

This case study reports on two aspects: firstly the tutor's approach of maximising the use of visual aids to get his points across and secondly a unique approach he has developed to teach plant identification. He comes from the standpoint that in order to learn students need first to be engaged with the topic. Within science there are a number of foundational topics that are frequently perceived by students to be boring. The lecturer does everything he can to inject energy, excitement and most of all enthusiasm into his teaching and where possible approach topics from a novel perspective, for example he uses evolutionary history to make plant anatomy more engaging. The theme of engagement also comes through with the plant identification materials he has produced. Plant identification is an essential skill for field biologists, yet rarely taught effectively at school or university.

Reasons for introducing this teaching method

Student dissatisfaction with lectures is a common concern across higher education yet for many students lectures remain the primary teaching mode. By working with the constraints of the lecture system he is able to make the student experience exciting and engaging for as many students as possible. Plant identification is often taught via botanical keys. Unfortunately for beginners this approach is slow and leaves the impression that even the identification of a common plant is a slow and painstaking process. Using an approach that starts with the recognition of plant families allows faster identification, builds confidence in the beginner and has the added bonus that botanical keys become less intimidating.

Lecturer Perspective

The tutor has a long-standing interest in engaging students in plant sciences. Besides his personal passion for the topic, he also believes that scientists trained in plant sciences will be absolutely vital to meeting future challenges regarding food security and threats to our environment, and that the current unfashionability of the topic makes it all the more essential to promote it among students.

A vital component of plant science teaching is in field skills: how plants interact with their environment, and what they can tell us about it. The cornerstone of such skills is identification, yet effective use of botanical keys requires knowledge and experience: they are not a suitable starting point for beginners. Moreover, it is essential that students go away with the confidence to keep using and improving their identification skills once a taught course has finished. A new means of teaching identification was needed: one that would work within a very short timeframe, and which taught student to identify plants quickly and without the need for a tutor to keep popping up to give hints.

Students' perspective

One thing that came across very strongly from the students is that here we have a lecturer who wants to be there [in contrast to the impression given by some of his colleagues]. He was described as the complete "opposite of dull" and able to not only attract attention but explain complex topics in a structured way.

His approach works and key concepts are planted visually in his audience's head. For example, the students in the group will always remember the basics of orchid pollination thanks to much running about and the judicious use of the OHP and a banana! "He makes you interested in unexpected things" was a typical student comment and this engagement also manifests itself in consistently high lecture attendance. In fact, students not enrolled on the course come to his lectures to learn. It was also clear that the students like their lecturer and because of this work harder — "because you like him you want to impress by doing good work".

Issues

The lecturer has a strong focus on the use of diagrams, pictures and animations to get his point across and this may not appeal to all types of learner. However, these are not the sole components of his teaching style. He harnesses the power of the narrative through careful use of anecdotes and he also adds humour to the mix, although he always ties jokes tightly to specific teaching points that he wants students to remember. Perhaps very few people will have the personality to directly mimic what he does but that is not to say they cannot adopt an enthusiastic approach, make their examples relevant to students and their lives and in doing so reap the benefits.

The plant ID workshop comprises an exercise in sorting families, and a then training in using an innovative and beginner-friendly family finding key. The latter is easily organised, but the former involves a big effort to set up, requiring collection of 60 or more species of wild plants (often in quadruplicate if the class is big), all of which need to be brought into a lab together, and in good condition. For this to work the teacher must know the British flora fairly well, and also be aware of which plants it is OK to pick. The last is less of a problem than it seems, because weedy species are easily accessible in urban areas and most are introduced and/or quite common. One further problem is that the workshop must be run in the summer months (mid May-mid September) to get enough plants, and this is often outside of normal teaching periods, especially in fully semesterised universities.

Benefits

The students benefit via a more enjoyable learning experience and also from having their pre-conceptions challenged — "he makes plants interesting". The subject benefits from having young, talented individuals working in the field the number of students taking Plant Science honours has doubled since the lecturer began teaching in this area. Finally the lecturer benefits from having engaged students and the satisfaction of watching them develop as questioning scientists. For example one student listed "The ability to scrutinize scientific writing with respect to any ulterior motive of the author and understand the political and motivation behind certain published scientific texts" as a key skill gained from the lectures.

Reflections

In the modern world, information is readily available and answers to most questions are just a few clicks away on the Internet. University lecturers need to adapt to this and teach students to navigate this sea of information. That means supplying clarity and showing how everything fits together. The lecturer believes his role should be to first tell students which questions to ask and then train them to formulate even better questions themselves. Equally, he believes all lecturers need to engage and excite students within a chosen topic, telling them why they should want to learn more about it. For him teaching is far more exciting than research because he is contributing to the development of the next generation of scientists, some of whom (if he does his job well!) will surpass his own achievements. Equally, however, field skills seem to be dwindling from one generation to the next, with fewer and fewer scientists able to recognise even the commonest plants, while most amateur botanists are past retirement age. A new generation of scientifically trained field botanists is badly needed and in his unique way the lecturer hopes to help meet that need.



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