



## Are science students' missing classes for the reasons we think?

R. Ian Menz, Karen Burke da Silva and Narelle Hunter, School of Biological Sciences, Flinders University, South Australia Australia

ian.menz@flinders.edu.au karen.burkedasilva@flinders.edu.au narelle.hunter@flinders.edu.au

**Abstract:** *At the university level lectures are the principle means by which subject information is conveyed to students. However, across many disciplines throughout Australian universities, lecture attendance remains low. Specifically, we found student attendance in a second year Molecular Biology course at Flinders University to be only 50%. In response to this, we surveyed students to determine why they were not attending. We also surveyed lecturers to determine what their beliefs were about student non-attendance. Survey results revealed that the primary reasons that students claim they missed lectures were; the need to do work for other classes, long periods of non-contact time prior to lecture and the provision of comprehensive lecture notes provided outside of the lecture. Interestingly, lecturers believed the primary reason for students not attending lectures was due to paid employment. Analysis of the two surveys suggests that academics could increase student attendance in classes, and potentially improve student learning outcomes by appreciating other demands on student time both within and external to the university and addressing the balance between providing comprehensive lecture notes and engaging lectures.*

### Introduction

Recently, the value of traditional lectures has been questioned (Kewley 2005). As university class sizes increase, the efficiency and economic value that lectures provide assures that they will remain part of tertiary education in the 21<sup>st</sup> century. Pedagogically, lectures do allow for the presentation of large amounts of information, but they generally do so without regard for student engagement and learning. McLaughlin and Mandin (2001) found that students only incorporate about one tenth of the information provided in lectures, and clearly as lecturers' abilities decrease so would student understanding.

In response to evidence of this kind, there have been attempts to change the way traditional lectures are given. Personal response devices, problem based learning, large group tutorials (Burke da Silva, Wood and Menz 2007) have all been introduced to decrease the problems associated with large class size and the lack of student engagement in lectures. However, the number of lecturers who have taken on the greater responsibility and more time consuming effort of improving their lectures is assuredly quite low (Burke da Silva, Wood and Menz 2007). In fact, while student numbers have remained high there seemed little need to question the effectiveness of lectures. As student numbers in the sciences at Australian universities dropped over the decade to 2004 (Krause, Hartley, James and McInnis 2005), there is now ample reason to consider methods to improve student engagement in a hope of retaining students in science degree programs.

Lecture attendance has been correlated with higher achievement in examinations (Gatherer and Manning 1998) and while this does not guarantee academic success (Moore 2003), it follows that students will gain a deeper understanding by listening to lecturers' interpretations of material as well as having the opportunity to ask questions for clarification of concepts.

### Methods

Students enrolled in BIOL2220: Molecular Biology, at Flinders University in 2004 were invited to complete a non-anonymous online survey hosted by *SurveyMonkey.com*. In order to maximise participation, students who completed the survey were entered in to a draw for a \$100 book voucher. This resulted in 83 students responding out of 255 students enrolled in the class, a participation rate of 33%. Prior to developing the survey questions, a focus group was held with five, fourth year students studying in the School of Biological Sciences to identify potential reasons why students may not attend lectures. The survey developed was based on their suggestions.

Students were asked to rank the significance of each reason for not attending lecture as either, major, moderate or minor and they were given the opportunity to list alternative (not listed) reasons and also rank their significance. A total significance value for each reason was weighted by assigning four points for major, three points for moderate, two points for minor and one point if a reason was selected but not rated.

A survey of Biology academics from Flinders University was conducted by phone; participants were randomly selected and were asked to score reasons they thought students weren't attending lectures from one to ten with one being a major reason and ten being a minor reason. For comparison with the student survey a score between one and three was considered a major reason.

## Results

Anecdotal data from academics teaching in BIOL2220: Molecular Biology, in 2004 indicated that lecture attendance fluctuated dramatically and on several occasions was less than 50% of the class. To ensure that the student survey participants were representative of the entire class, they were asked to nominate the percentage of lectures they attended. The lecture attendance of the survey participants was widely distributed from those that attended only 1–10% of lectures to those that attended all lectures (Figure 1). The distribution was skewed towards higher lecture attendance with 54% reporting attendance at more than 81% of the lectures (Figure 1). Alarming, nearly one in five students reported attending less than 50% of lectures.

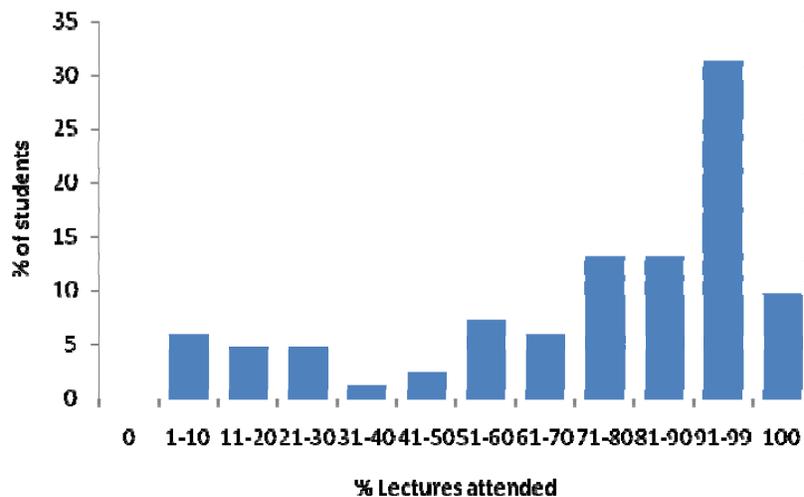


Figure 1. Percentage of lectures attended by students

## Why do students attend lectures?

In order to increase attendance levels in lectures it is not only important to understand why students don't attend lectures but also why they do attend. It was found that irrespective of whether the data was analysed for only major reasons (Figure 4) or for all reasons weighted (Figure 5) the distribution of reasons for attending lectures was similar. The two major reasons for attending lectures were to aid in understanding the lecture notes and to get advice and information relating to assessment exercises.

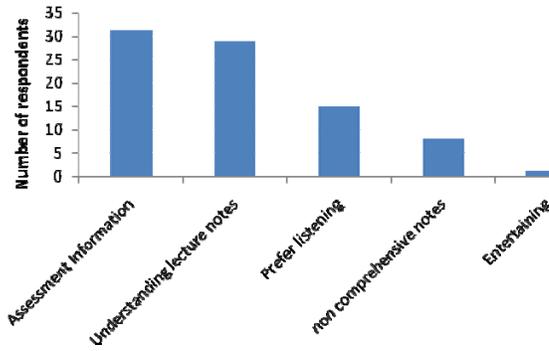


Figure 2. Primary reasons students attend lectures

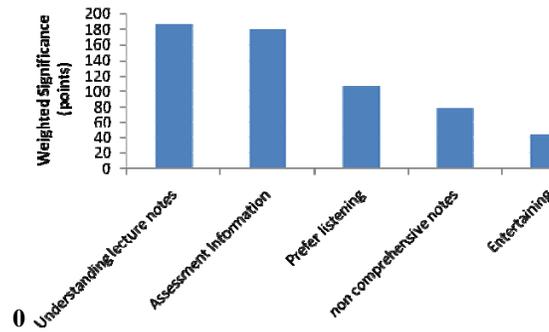


Figure 3. All reasons students attend lecture, weighted for significance

### Why don't students attend lectures?

The distributions of reasons for not attending lectures is again similar whether data is analysed on the basis of primary reason (Figure 2) or summed using the index of importance (Figure 3). In both cases the need to complete work for other topics and large blocks of non-contact time prior to the lecture were the most prominent reasons for not attending lectures. Surprisingly, paid employment ranked fourth behind these reasons and the provision of comprehensive lecture notes. When the responses to the 'other' reasons were analysed it was noted that more than one respondent identified medical problems, child care and boring lectures as reasons for not attending lectures.

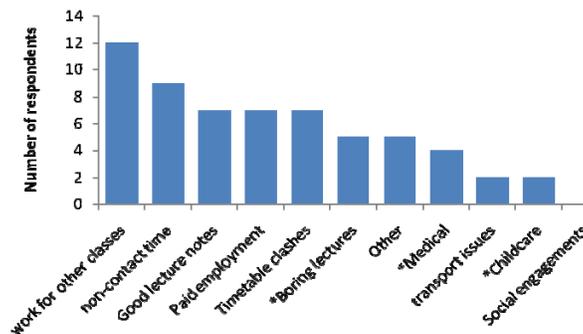


Figure 4. Primary reasons students don't attend lectures

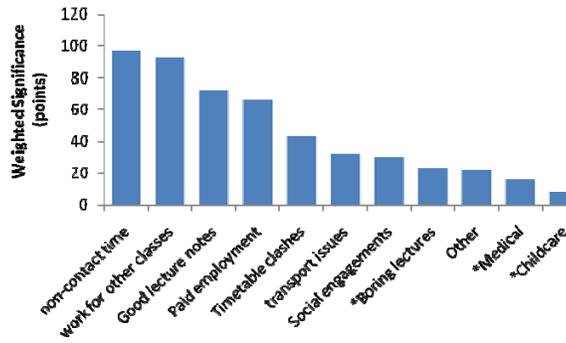


Figure 5. All reasons students don't attend lecture, weighted for significance

### Why do academics think students don't attend lectures?

When the academic responses were analysed by either major reason (Figure 6) or for all reasons weighted (Figure 7), it was clear that they believed that the most prominent reason students did not attend lectures was because of paid employment and that this significantly outweighed other reasons. This was in contrast to the students who reported it as the fourth most prominent reason (Figure 2). The second most common reason as perceived by lecturers was timetable clashes (Figures 6 and 7) which was reported by students as fifth most important reason for not attending lectures. The significance of the remainder of the reasons were all considered low by the academics. The differences in responses between academics and students highlights that academics are unaware of the factors that influence the way students learn.

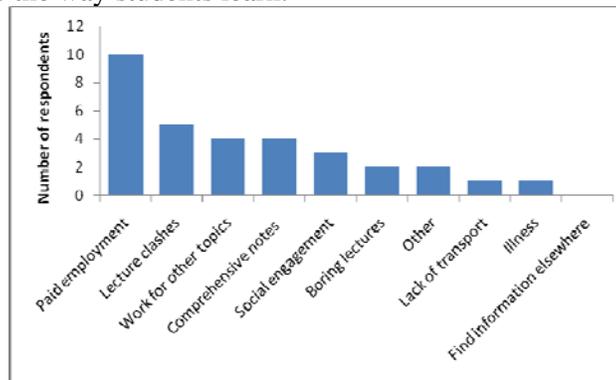


Figure 6. Primary reasons academics believe students don't attend lectures

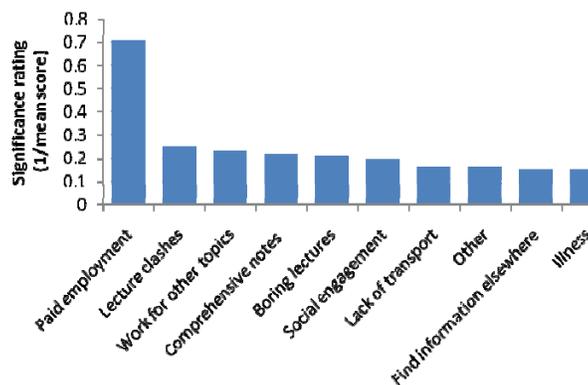


Figure 7. All reasons academics believe students don't attend lectures, weighted for significance



## Discussion

Academics have been considering the question ‘What’s the use of lectures?’ at least since Bligh (1972) published his classic book by the same name. Although, the subject has been considered for some time, relatively few studies have examined the role that lectures play in student learning and even fewer examining why students do or don’t attend lectures (Hunter and Tetley 1999). It is clear that lectures are an efficient way for informing students what they should know to be successful in their course. However, they are considered by many as educationally inadequate due to their teacher-centred, passive nature and it is apparent that many students can be successful without attending lectures. Furthermore, although it is believed that lectures can facilitate the acquisition of knowledge, the promotion of thought and changing of attitudes, they usually only achieve the first goal of knowledge acquisition (Bligh 1972).

The few studies that have examined why Australian students do or don’t attend lectures (Dolnicar 2005; Herrington 2006; Hunter and Tetley 1999) have all found similar reasons as those uncovered in this study for why students do or don’t attend lectures. However, the rank order of the importance does vary between studies. Of these investigations, the University of Canterbury study of Hunter and Tetley (1999), which contained a significant number of science and engineering students, found similar rates of attendance as observed here with 15% of students attending less than approximately 50% of lectures.

The top four reasons for students missing lectures in this study are: 1) periods of known contact (or poor timing); 2) completing work for other units; 3) lecture notes; and 4) paid employment whereas in the study by Hunter and Tetley (1999), these reasons were ranked fifth, first, third and eighth respectively, demonstrating that the reasons for missing lectures are probably similar across the nation and potentially suggesting that the increase in the number of student undertaking employment (Hayden and Long 2003) since 1999 may have resulted in an increased effect on lecture attendance. Interestingly, the reasons for attending lectures and their relative rank, was quite different to that found by Hunter and Tetley (1999) where the first ranked reason was ‘because I enjoy it’ whilst ‘entertainment’ ranked fifth in this study. In contrast, the study of Dolnicar (2005), with participant from both arts/commerce and science related degrees (approximately 75/25%), was more similar to our findings with ‘find out what I’m supposed to learn’ and ‘find out about assessment tasks’ ranking first and third respectively.

The most pertinent finding of this study is that academics unanimously believe that the number one reason students miss lecture is paid employment and that this significantly outranks other reasons, whilst for students this ranks only fourth. This is particularly significant as paid employment is seen as one of the factors, like illness, that academics cannot change or influence, and hence this misconception may lead the academic to believe that low lecture attendance is a *fait accompli* which they have no power to change. This type of variation in perceptions between student and lecturer have previously been reported with respect to lecture attendance. Killen (1994) found that when lecturers and students were asked to rank factors that effected success in a course, lectures ranked regular lecture attendance as 16 while students ranked it as eight. Similarly, when ranking factors that attributed to failure, irregular lecture attendance was ranked ninth by lecturers and 21 by students. These types of differences in perspective and/or misconception between students and teachers are not new and often relate to the differences in experiences and attitudes between the different generations. These generational differences can result in substantial difference in what constitutes an effective learning environment, but these are rarely considered when new programs or courses are designed (Oblinger 2003).

## Conclusion

Lecturers need to be educated in the factors that they can change which could potentially increase student lecture attendance. Some of these factors may require a more holistic approach and involve the coordination of lectures. For example, the methods used to develop lecture timetables that minimize clashes between lectures could be employed to timetable assignments between different units, in order to evenly distribute the work load of a student taking multiple units. Similarly, the need to minimize non-contact time is another factor that could be considered when time-tabling that could significantly increase student attendance. In contrast, other factors can be controlled by individual academics such as carefully balancing the information available in lecture notes compared with what is provided in the lecture or the use of an interactive lecture format that promotes thought processes and in turn adds value to the lecture or simply making the lecture more interesting or entertaining so students attend because they enjoy it.

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