

# A Student's Perspective of Engagement through Innovative Teaching Techniques

**Amelia Greig**

The University of Adelaide  
valerie.linton@adelaide.edu.au

**Colin Kestell**

The University of Adelaide  
colin.kestell@adelaide.edu.au

***Abstract:** From first-hand experience students need to be able to be attentive during a lecture amidst a multitude of stresses and personal problems that can affect concentration and attention spans. If a lecture is enjoyable it is far easier to put aside these external issues (if only for a relatively short time) and immerse oneself into the excitement of the education. There is strong neurological evidence to support the fact that the use of innovative lecturing styles and having fun in teaching helps the cognitive process and the ability to retain and retrieve knowledge. A number of fun lectures at the University of Adelaide have been reviewed and analysed from a student's perspective and their outcomes discussed. In conclusion it can be seen that while humour may sometimes produce unexpected sometimes negative reactions, or that it might also distract students from the lesson of the lecture, if used wisely it is an extremely powerful aid to learning.*

## Introduction

Regardless of a student's interest in a topic, factors such as fatigue, stress and personal problems can affect the student's attention span, resulting in irregular concentration. This wavering of concentration during a lecture can severely deplete the quantity and quality of knowledge gained from the presentation, resulting in a lesser understanding of the topics presented. A lack of understanding of the topic affects not only the student's results but also their ability to work on projects in a related field. Many techniques have been used to capture and maintain the students' attention to effectively convey the required information have been researched, with the most effective route to lecture enjoyment involving the use of humour. This paper examines some alternative teaching techniques involving humour used by lecturers within the School of Mechanical Engineering at the University of Adelaide to combat the issue of student attention deficits and lack of information retention.

## Remembering Stuff - A background of learning and memory consolidation

The limbic system is a fundamental processing centre in the sub-cortex of the brain that makes us aware of our environment, processes our sensory experiences and determines our needs (Ward, 2006). Parts of these primal functions include the consolidation of memories, learning, the processing of cognitive conflicts and emotional responses (Sousa, 2001). The three components of the limbic system involved in learning and memory are the thalamus, hippocampus and the amygdala. Initially, all of the sensory data (except that pertaining to smell) is received and processed (via neuron and synapse pathways) by the thalamus, which redirects it to an appropriate section of the brain (dependant upon the nature of the stimuli). The hippocampus consolidates the information and moves it from the working (short-term) memory to the long-term memory as part of the learning process. The hippocampus is also believed to responsible for detecting "novelty" experiences (Bear et al, 2006 and Knight, 1996). The amygdala then determines the appropriate emotional responses to the information (Tucker, 2004) in which joyful experiences release hormones that strengthen the ability of the brain to

retain information. Research therefore suggests that all declarative (explicit) memories have attached emotions that are also recalled with the memory; hence happy memories (Sousa, 2001). Lectures that invoke positive emotional responses therefore assist in the transfer and recall of knowledge from the long-term memory.

Sousa (2001) states the order of processing data from the working (short-term) memory to long-term memory, occurs in a hierarchy with data related to survival processed first. Next in importance is data from events that evoke emotions, which is then followed by new information. Thus, students need to feel safe and emotionally secure before they can focus on the curriculum. A non-threatening environment (in which students do not feel intimidated or scared), which is comfortable and enjoyable is therefore an important aspect of a positive learning environment.

Humour helps to achieve all of this. As a teaching aid it is effective in relaxing the students and helps to eliminate any nervous feelings. Laughter has numerous benefits, both physiologically and psychologically (Sousa 2001). Physiologically laughter both increases the level of oxygen in the bloodstream and releases endorphins. Increased oxygen in the blood increases the rate of fuel delivery to the brain while endorphins give both pain relief and a feeling of enjoyment freeing the body and mind of any internal distractions. As previously mentioned, this in turn has a positive effect upon the learning process of the limbic system. Psychologically laughter is contagious and quickly spreads around the whole class. The source of laughter grabs the attention of the whole class and quickly contributes to the previously mentioned benefits on a very wide scale (Sousa, 2001).

### **Through the students' eyes**

Boring lectures can send you to sleep and you don't learn anything if you are asleep. Some lecturers recognise this and endeavour to view their lecture presentation from the perspective of the student. Making lectures interesting with demonstrations, by using a variety of media, humour or including unexpected, unanticipated occurrences make them far more enjoyable and therefore much easier to remember. Imagining the lecture from the student's perspective increases the likeliness that the lecture will appeal to the students, in turn allowing them to more easily recall the presented information. A general consensus amongst students is that humour in a class creates a positive view of the lecturer and students prefer lecturers who use humour (Torok et al, 2004). The following sections of this paper provide a number of examples in which good humour has helped to make lectures interesting and in which the author has clearly remembered the education as well as the fun.

### **Some Monkey Business**

In 2009 the School of Mechanical Engineering at the University of Adelaide introduced 'Introduction to Mechanical Engineering' for all first-year students. This was really the first opportunity to get a good idea of what engineering was all about in a fairly lightweight manner. One of the first lectures in this series was "The Engineering Design Process". Students assisted in this and introduced the start of lecture and commenced it with David Attenborough's documentary "Capuchins – The Monkey Puzzle" which showed how a capuchin monkey named Vulcan was given some tools to perform a certain task. He didn't simply use the tools, but modified them to make them more effective. It was basic engineering design in its simplest form. It was however of immense surprise when the lecturer entered from back of the auditorium and presented the remainder of the lecture in a full-body gorilla suit. This obviously immediately attracted the attention of the whole class who were not quite sure if it were a prank. However as it turned out it was simply an innovative approach to engage the students' attention during the lecture. He adopted the persona of a gorilla that was fascinated by the human ability to design and build incredible machines. This was far beyond his own (and Vulcan's) capability and it was so frustrating to him that humans had become better and better at it as they evolved. The Gorilla had therefore enrolled in an engineering degree and gave a third-person reflective on what he had learnt about humans *engineering design*.

Humour can however backfire, as was the case in another lecture (which is somewhat of an urban legend amongst students, told by a friend of a friend of mine) in which a psychology lecturer had planned to give a dramatic demonstration of human responses to difficult situations. Unknown to the class, his daughter was one of the students, and he had organised for her old phone to ring while he

was lecturing. He promptly confiscated it and proceeded to smash it to pieces in a mock rage in front of the whole class. Pausing before he started to make the point (on the psychiatric value) of the exercise, the whole back row of the lecture got up and left in absolute horror and disgust.

In order to gain direct feedback from the students involved in the Gorilla lecture, a survey was later distributed to seek opinions on the value of using humour in an introductory lecture. The students were given five statements relating to different aspects of the lecture and were asked to indicate their agreement on a seven tiered scale, with one being the lowest and seven being the highest. The number of each ranked answer was tallied in which the results were directly converted to a percentage by assigning each tier a percentage from 0% to 100%. The mean results are listed in table 1 below.

**Table 1 Gorilla Lecture Survey Results**

Statement	Agreement (%)
The lecture was enjoyable	87
The lecture held my attention throughout	79
This lecture stimulated my interest in Engineering Design	70
I can remember the required information from this lecture	48
The use of humour is effective in conveying material for an introductory lecture	85

Most students clearly enjoyed the lecture, in which their attention was held throughout and which stimulated their general interest in engineering. They liked the use of humour and believed it is an effective means of conveying material for an introductory lecture.

However, the level of information retention was very poor with only 48% clearly remembering the material. There are two possibilities for this: The survey was conducted approximately six months after the introductory lecture, by which time the students may have either forgotten the knowledge, or perhaps now consider it to be extremely fundamental, very basic and common sense. However, it may also be clear evidence that if *too much* humour is used, the occasion of the humour becomes the primary message which might far overshadow any underlining lesson. It is therefore apparent that it is very important to judge the scale and intensity of the humour extremely carefully.

In addition to the five statements above, the students were also asked to answer two short qualitative response questions, asking for their opinion on what were the best aspects of the lecture and how they believed it could have been improved. A number of responses were in-depth, but the following quote captures the common message that echoed the student opinions:

*"The use of humour made it easier to hold my attention, making it easier to retain the information"*

Another quote from a student brought to light another interesting issue arising from the lecture. Two-third year engineering students had assisted with Gorilla Lecture prompting the following response:

*"The humour showed that the lecturer was an interesting one. This encouraged me to endeavour to be respected like the students who were allowed to make the lecture"*

This latter remark perhaps demonstrates that student involvement helps to provide a feeling of familiarity and comfort which stimulates others to want to become far more integrated in to the community of learning.

## **Deal or no deal?**

The final lecture of a 2008 first-year subject, Design Graphics and Communication involved another innovative technique to encourage student revision. Earlier in the semester students were asked in a test, what was the most difficult part of the course? The responses formed the questions of a mock quiz-show in which six students from the course were selected to be contestants and the remaining students the interactive audience (encouraged to heckle and shout out answers). The contestants were split into two teams of three, to introduce some fun rivalry. Through an intense use of Multimedia

(loud noises, colourful PowerPoint slides etc), a series of questions were asked which were based on various topics covered in the lecture material. Prizes (Chuppa Chups) were thrown to those giving the correct answer and even to students in the back rows that shouted them out. Everybody seemed to have fun. When the lecturer was interviewed he mentioned that:

*“I’ve done the quiz-show lecture a number of years before because it seemed to be a novel way to include revision and that making it fun apparently fits in with some educational theories”.*

However, he had dropped it from his course after a number of repeats because it no longer seemed novel to him. This suggests that lecturers also need to enjoy the learning experience and that the students’ experiences can be affected by the enjoyment of the lecturer. He had only re-introduced the lecture upon the request of students.

From a student perspective the quiz-show allowed the students to be asked various questions regarding different aspects of the course, in a manner invoking thought and discussion amongst classmates whilst maintaining concentration, attention and enthusiasm. By introducing an aspect of active participation, students were encouraged to think about the answer and the audience had the further advantage of judging their colleagues answers thus providing further active thought.

To gain direct feedback from the students involved in this lecture, a survey was also distributed to seek their opinions of the quiz-show lecture as a form of revision. The students were given five statements relating to different aspects of the lecture and were asked to indicate their agreement on the same seven tiered scale used in the previously mentioned gorilla lecture survey. The results were tallied and are listed in table 2 below.

**Table 2 Quiz Show Survey Results**

Statement	Agreement (%)
The lecture was enjoyable	93
The use of humour distracted me from learning what was required from the lecture	25
This lecture assisted my revision for the Design Graphics course	75
The personal involvement in the lecture assisted my learning	76
A quiz show format is a good way to help student revise lecture material	70

It can be seen that nearly all enjoyed the lecture, it wasn’t too distractive and that it was a positive aid to revision.

Student were asked two short qualitative questions asking for their views of the best aspect of the lecture and how they believed it could have been improved.

The first response below was from a student who was one of the ‘six contestants’.

*“Being a participant in the quiz show was a huge amount of fun and such a unique way to run a revision lecture. It was refreshing to be taught in a way that was so entertaining, and I think we would more easily remember what we were revising because we would associate it with something amusing that happened. I wish everyone had the chance to participate like I did because I got so much out of the experience!”*

The second comment was from an *audience member* participant and is typical of what many of the other responses implied:

*"The quiz show only got a few people involved. It could be done so that a question is asked and students are told a student will be picked at random after 30sec to answer the question. Then everyone has to think of the answer. Or you could have randomly picked rows of people in the lecture theatre competing against other rows with 5 questions just to get everyone involved in a lecture which is fun and useful."*

A large response clearly suggested that more direct participation from all of the students was a possible way of improving the lecture. Dividing the entire lecture theatre into two teams, then present the question to the entire lecture and pick a student at random from alternating teams to answer the question could be one way to achieve this. It would actively involve the entire course increasing the potency of the revision material.

### **An alternative use of humour (or simply torture?)**

Halfway through the Design Graphics and Communication course, the lecturer facilitated a formative test during the lecture to gauge the level of understanding of early course material. Questions appeared automatically via a Powerpoint presentation and set times were given for students to write down their answer. However, the lecturer claimed that it was clearly not as stressful as an exam might be and that the students' ability to think calmly and clearly might give them a false impression of how they might perform in an exam environment. The lecturer therefore used humour as a form of distraction to make it harder for students to concentrate by reading aloud a long list of Tommy Cooper jokes while we considered our answers. Despite the dubious sincerity of his reasoning and his justification for reading aloud the (very bad) jokes, higher stress levels do adversely affect the ability to recall information upon demand, even if this information is a long-term memory. Bear et al (2006) state that high-stress situations release of the steroid hormone cortisol which adversely affects the performance of the hippocampus that consolidates the information that we receive. Consequently (even if the jokes simply satisfied the lecturers own sense of humour) the results of the test probably did demonstrate what information the students could recall comfortably and easily without too much thought or hesitation.

### **Conclusion**

From a student's perspective, humour makes the learning experience far more enjoyable and memorable. The lectures on the whole have a far more comfortable feel about them and are an ideal way to sit back, listen, enjoy and learn. A lecturer that enjoys teaching is also fun to listen to and it all helps to retain interest throughout the duration of the lecture. Scientifically there is also strong evidence to suggest that if humour makes us enjoy a lecture then the neurological processes towards long-term memory and memory recall are far more effective. However, the level of the humour needs to be judged extremely carefully because it may sometimes trigger a very negative unexpected reaction, or it may completely overshadow the lesson of the lecture, even if the students are enjoying it. In short though, it is much better to attend a fun lecture than a boring one!

### **References**

- Bera, M.F., Connors, B.W and Paradiso, M.A. *Neuroscience, Exploring the Brain, 3<sup>rd</sup> Edition*. Lippincott Williams and Wilkins.
- Kestell, C.D. and Missingham, D. 2006. *A funny thing happened on the way to the lectern*. 17th Annual Conference of the Australasian Association for Engineering Education.
- Knight, R.T. 1996. *Contribution of the human hippocampal region to novelty detection*. Nature v383, p 256-259.
- Sousa, D. 2001. *How the brain learns: A classroom teacher's guide*. 2<sup>nd</sup> Ed. Thousand Oaks, California. Corwin Press, Inc.
- Tucker, M.L. 2004. *Linking emotions, the brain and communication*. Proceedings of the 2004 Association for Business Communication Annual Convention.
- Torok, S. E., McMorris, R. F. and Lin, W.C. 2004. *Is humor an appreciated teaching tool? Perceptions of professors' teaching styles and use of humor*. College Teaching v52, No.1.
- Ward, J. 2006 *The students guide to cognitive neuroscience*. Psychology Press.

Copyright © 2009 Remains the property of the author(s). The author(s) assign to AaeE and educational non-profit institutions a non-exclusive licence to use this document for personal use and in courses of instruction provided that the article is used in full and this copyright statement is reproduced. The author(s) also grant a non-exclusive licence to AaeE to publish this document in full on the World Wide Web (prime sites and mirrors) on electronic storage and in printed form within the AaeE 2009 conference proceedings. Any other usage is prohibited without the express permission of the author(s).