

A PRELIMINARY STUDY OF HUMOUR IN ENGINEERING EDUCATION

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Abstract

It is commonly known that humour has an implication on the process of teaching and learning. However, there is still limited study done on the implication of humour in teaching and learning engineering courses. This paper studies the perception and experience of engineering lecturers and students towards the incorporation of sense of humour in the teaching and learning of engineering courses. Online and offline surveys were conducted on the students and lecturers from the school of engineering, Taylors' University respectively. Several interesting insights were drawn from the responses with the general consensus from both students and lecturers that humour helps in enhancing the teaching and learning process. Real case examples of how the lecturers deliver their lectures with humour were also presented.

Keywords: Humour; Engineering lecturers; Engineering students; Teaching and learning; Engineering education.

1. Introduction

There are various definitions of humour but it is generally understood that it is an act which induces positive response such as laughter and joy [1] as the receivers got amused. Humour was found to be effective stress-reliever as it could spark positive mood and simmer off negative tension [2-5]. From the instructional or teaching's perspective, a comprehensive summary of all related previous research was concluded with a remark that appropriate injection of humour results in better learning skills among students especially in terms of recalling lecture materials [6]. However, it is noticeable that almost all of the related researches were targeted on teachers and students at schools' and colleges' levels [7-9]. One of Teslow's conclusions concurs with this observation that instructional humour

research prevalently involves of only young children and rarely on undergraduates who are mostly young adults and adults [10]. There is still limited amount of study being done at a university's level and more so in engineering programmes. For clarification, as well as being consistent with the terminological norms in Malaysia, college students are defined as students are at the pre-university stage. In this article, the perception and practice of humour among lecturers in engineering degree programmes will be outlined to provide interesting insights as additions to the existing literature.

Engineering course is highly regarded as one of the most challenging course with relatively higher admission requirements [11]. For an engineering graduate to be recognized by the Board of Engineering Malaysia, the students have to complete 4 years of studies while accumulating a minimum of 120 credit hours in the process [12]. Delivering lectures of modules which are heavily theoretical such as Electromagnetics, Thermodynamics and Heat Transfer can be a daunting task for lecturers. The challenge potentially lies in creatively engaging with the students and one of the ways which is perceived to be able to do just that is by humour. A humorous lecturer tends to appear to be more approachable to the students and study has shown that good relationship between students and lecturers has significant benefit in preparing the students to face challenging courses [13]. As based on the literature, humour does facilitate teaching and learning process by improving retention of materials among students [6]. Therefore, it is of interest to study on the perception and experience of students and lecturers with the incorporation of humour in teaching and learning of engineering courses. This pilot case study only involved students and lecturers of School of Engineering, Taylor's University.

2. Methodology

This research consists of two categories of respondents namely the lecturers and the students. Each category has its own set of questionnaires to be answered respectively and they are attached in Appendices A to D. 26 lecturers of various numbers of years of experience in teaching engineering courses were selected as respondents to a questionnaire which is used to gauge their practice and perception towards humour in engineering education. The questionnaire was developed based on several aspects summarized from several related research articles [2, 6, 14]. These aspects are tied to the relief theory and the incongruity theory.

Relief theory defines humour as a pleasant feeling that replaces a person's negative feelings such as sadness, fear, and tension. For instance, innovative word plays and leveraging puns are techniques which can relieve the tension amongst students by eliciting chuckles or laughters. Incongruity theory stipulates that humour must contain elements of surprise or contradiction. Spontaneity of lecturers in answering students' queries in an unexpected way is an example which can attract attention of students. As can be seen Table 1, all the types of humour applicable in engineering education is derived from the two aforementioned theories.

The questionnaire consists of both close-ended and open-ended sections for the lecturers to respond to according to the two aforementioned categories of perception and practice. The aspects that were accounted for in developing the

questionnaires are mainly the style of instructional humour as well as their perception on humour. Printed copies were distributed to the lecturers to ensure that response rate is higher and timely. Furthermore, there are few non-IT-savvy senior lecturers who will definitely appreciate filling up survey forms rather than virtual forms. Collection of the survey forms were done within a week after the disseminations and 26 of 30 responded. This is a pilot study which considers the engineering lecturers at Taylor's University. Note that the lecturers sampled are from the foundation as well as the degree level respectively.

A total of 26 lecturers from the school of engineering at Taylors' University were involved in this study. There are 46 lecturers in the entire school at the particular point of time of research. It is worth mentioning that only three programmes of Electrical & Electronic Engineering, Mechanical Engineering and Chemical Engineering were offered in School of Engineering, Taylor's University. The range of years of experience in teaching engineering courses is from 0.5 up to 33 years. Exactly half of them are considered as junior lecturers with teaching experience of at most 5 years. This is unsurprising considering that the school itself is still relatively new. The aim of Malaysia to produce 60000 doctorate students by the year 2020 has also contributed to the ready supply of young academicians. Two of them actually have less than 1 year of teaching experience. Slightly more than one-third of the senior lecturers have 10 years of experience.

On the other hand, the students were questioned on their experience as well as perception of humour during their lectures throughout their studies. Online forms which consist of open-ended and close-ended sections were utilized to conduct this survey and they were again made available for one month. The rationale of using this paperless and online approach is to ensure anonymity as well as accommodating the IT-savviness of the students. The Google forms were mainly targeted to the third year and above engineering students across all three engineering degree programmes of Electrical & Electronic Engineering, Mechanical Engineering and Chemical Engineering offered at Taylor's University. Students who have completed at least three years of study would have been taught by at least half of the lecturers from their own discipline. Relevance and reliability of the survey results are enhanced by accomplishing the aforementioned.

Majority of the participants are third year engineering students. Almost 70% of the total respondents of 29 have completed three years of their studies. Only 5 final year students responded. It is acknowledged that the total number of respondents of 29 maybe under-representative of the total targeted population of 150 students. The survey was conducted on a voluntary basis.

3. Results and Discussions

The results will be presented in two main categories namely the lecturers and the students.

3.1. Lecturers

The lecturers' perception towards humour as well as the practices that they perceived they have implemented which are considered humorous will be presented.

3.1.1. Perception towards humour

Slightly more than half (54%) of the respondents perceived themselves as being naturally. It is of interest for social scientists to attempt to quantify the percentage of people who think that they are naturally humorous. It is acknowledged that some people may perceive themselves to be naturally humorous to various extents. However, the current study is more focused on whether the lecturers see themselves as naturally humorous or otherwise.

Surprisingly 83% of the respondents are confident that humour plays an important role in enhancing the teaching and learning process. Despite the common impression that engineering lectures are mostly too technical and dull, 22 lecturers actually acknowledged that humour is one of the ways which can improve the delivery of lecture. Only 6% of the respondents do not think that humour will be of any assistance to them with the remaining 11% not having any idea of the potential role that humour can play in enhancing the teaching and learning process.

Despite the fact that half of the respondents perceived themselves as not being naturally humorous, none of them opines that humour could be totally distracting in class. 68% of them think that humour will capture the attention of students. Understandably 8 of the lecturers are of the thought that humour can both be attractive and distractive to the students.

It is also observed that 56% of the respondents implied that their sense of humour is well received by the students. This percentage is close to the proportion of respondents who think that they are naturally humorous. 11 out of the 14 respondents who perceived themselves as naturally humorous also thought that sense of humour is appreciated and understood well by their students. The remaining 3 were of the opinion that students sometimes receive their sense of humour well but could not understand them well on other occasions. This seems to suggest that lecturers who perceive themselves as naturally humorous are mostly confident that their sense of humour would be received well by their students. However, such impression may be false from the students' perspective and it would be interesting indeed to dedicate a quantitative study with respect to this which is beyond the scope of this work.

There is an equal number of lecturers who find it easy and challenging respectively. On closer probe, 7 out of 12 lecturers who perceived themselves as not being naturally humorous also finds being humorous in teaching to be challenging. What is interesting is that the remaining 5 of them actually thought that humorous can be intentionally induced and implemented in lecture with least effort. On the other hand, 6 out of 14 lecturers who thought they are naturally humorous actually concurred that incorporating humour into teaching is actually a challenging task. Such significant proportion is indeed intriguing because it suggests that almost half of them opined that more effort is needed to be humorous in lecture yet this is understandable as most of engineering courses are highly technical in nature. More interesting insights can be drawn in the next section.

On their perception of whether sense of humour is born or can be nurtured, there is again an almost equal divide. At first glance, this seems to suggest that there is a strong correlation with the number of respondents who think

that they are either humorous or not. Upon analysis of data, 8 of the lecturers who perceived themselves as not being naturally humorous also thought that sense of humour can never be developed intentionally. The key takeaway is that there is still significant number of lecturers who are willing to develop their sense of humour although they perceived themselves as not being humorous in nature.

3.1.2. Practice

As this is merely a survey of their perception of their own practices, it is acknowledged that input from students are complementarily vital. This serves as the rationale of the discussion at section 3.2 which follows immediately after this.

The first item of the questionnaire for this category is to elicit response from the lecturers with regards to which style or type of humour that they have used. The list of relevant styles was adopted and adapted from [6] as summarised in Table 1.

Table 1. Descriptions of types of humour [6].

Type of Humour	Description
Telling funny stories/jokes	Events or activities connected in a single event related as a tale
Self-disparaging	Making one's self the target of the humour
Spontaneous	Unintentional and unplanned
Impersonation	Doing impressions or mimicking voices to deliver lectures
Puns	Structurally or phonetically words or phrases having two or more meanings were used simultaneously to play on the multiple meanings
Props	Use of funny props related to the lecture

As depicted in Fig. 1, most of the lecturers used spontaneity when trying to be humorous in delivering a lecture. This is closely followed by telling jokes and stories. Note that lecturers can select more than one type of humour that they have used in delivering the lectures. Other types of humour registered significantly lower usage with only 2 of them made use of themselves as the subject of humour when teaching a particular engineering course. When years of experience is taken into account, interestingly the lecturers with 10 years of experience and above only practiced telling stories and rely on their spontaneity to crack humour when lecturing. At the other end of spectrum, lecturers with 3 years or less of teaching experience actually have attempted all types of the humour while lecturing. This seems to suggest that the relatively inexperienced lecturers experimented with more ways from the humour perspective with the hope of improving the teaching effectiveness. On the other hand, the more experienced lecturers are already comfortable and confident with how they have been teaching and see no need to try other types of humour.

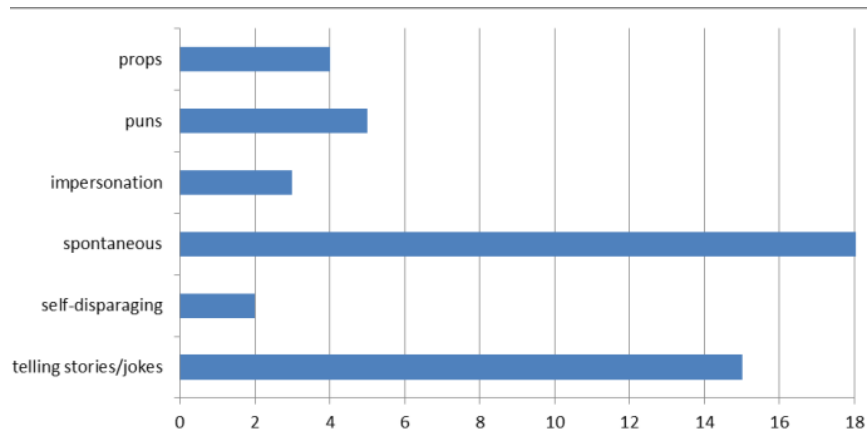


Fig. 1. Types of humour used.

On the average, almost half of the respondents spend less than 5 minutes of a one hour lecture teaching in a humorous manner. Only one of the lecturers spends more than 10 minutes for the same purpose whereas three of them claimed that they never inject humour into their teaching. This finding is despite the fact that almost half of the lecturers claimed that they are not naturally humorous. The vivid conclusion here is that the lecturers tried to be humorous despite the odds against them. They see the benefit of humour in teaching.

With regards to the relevance of the humorous instances with respect to the course, unsurprisingly none of the lecturers claimed that there is absolutely no relation between the instance and the course. Majority of them ensured that the humorous instances are partially related to the course and only 31% thought that they manage to keep the relevance at 100% level. As engineering courses are typically technical in nature, these figures seem to suggest the challenge in being both humorous and relevant at the same time can be daunting.

3.1.3. Feedback

The lecturers were also asked to illustrate how they teach a particular engineering concept in a humorous way. This section is made optional to ensure that the lecturers' responses are genuine. Slightly more than half or 15 of them responded while none of the lecturers with teaching experience exceeding 10 years answered this question with the common reason that they found being humorous in class to be challenging despite perceiving themselves to be naturally humorous. Two of them commented that they face difficulty in putting their practices into words. Table 2 exemplifies the responses. It is interesting to note that there were no specific examples of humorous instances which are Chemical Engineering based. The examples are either Electrical and Electronic Engineering or Mechanical Engineering by nature and the more notable ones include those relevant to the concept of electrostatic, entropy and engineering drawing. Two examples given were specifically related to project-based modules which all engineering students at Taylor's University must complete upon graduation [15].

Table 2. Humorous practices in teaching engineering courses.

Years of teaching	Response
1.5	<p>When we were discussing about charges in Physics II for Foundation in Engineering, I relate positive charge with guys because they are bigger in size and negative charge with girls. Attraction between girls and guys happened by nature. We can relate prettier girls to particle with higher charge (quantitatively).</p> <hr/> <p>Make sure the joke/pun must be related to the subject and their background so that it is impactful.</p>
3	<p>Asking students to explain or I teach by giving/using examples that can relate to their games or anything that is popular among students. When doing that, some jokes or funny expressions can be engaged to make the learning more exciting and attractive. Engineering Design or anything too theoretical requires more think out of the box fun way of teaching and learning.</p> <hr/> <p>I just explain the concept and theory with an example.</p> <hr/> <p>During the Electromagnetics course, there is a topic on Electrostatics and the fundamental law which governs electrostatics is Coulomb's Law. It states that opposite charges attract and the attractive force acting between a pair of point charges is inversely proportional to the squared distance between the two charges and also directly proportional to the product of magnitudes of both charges. This law is analogous to the relationship between men and women. Woman attracts man and vice versa and hence opposite attracts. The bond between a man and a woman in a couple will also weakens as they are separated further apart.</p>
4.5	<p>I have once brought in the song by Olaf from the movie Frozen to the class to convey message that there is no cold but only heat transferred in many ways.</p>
5	<p>If I were to teach Newton's 3 laws of motions, then I would ask the students "why did the chicken cross the road?" My answer would be as below:</p> <p>Law 1: Chicken at rest tend to stay at rest. Chicken in motion tend to cross the road.</p> <p>Law 2: It was pushed on the road.</p> <p>Law 3: It was pushed on the road by another chicken which went away from the road.</p>
6	<p>Computer Aided Design Course: in the 3D modelling lesson, besides modelling mechanical parts, students can be taught something non-related engineering 3D model such as cartoon character.</p> <hr/> <p>Relating principle of voltage as high and low hill and labelling someone cycling along as the electrons.</p>
7	<p>Tell jokes and personal encounters spontaneously to make the whole</p>

	class interesting.
8	Don't pressure me. I have enough of pressure. Car is not working in the morning, late at work, forgot to comb my hair and now I apply pressure on the heads of students to catch up or to learn. Remember that pressure is different from stress. Don't every say: "I am stressed" to imply that you are pressured. Pressure is over the head. Stress is in the level of your eyes. It comes to you horizontally or face-to-face.
10	Binary joke: Why do mathematicians always confuse Halloween and Christmas? Because 31 October = 25 December
	I share videos/photos of products that have been created without using ergonomics. I also include comic strips into my slides.
	In thermodynamics, there is a concept called "entropy" which is very difficult to explain to the student. I simplify it for them by saying "entropy is energy which is not available to do work" or "it is the measure of disorder". So whenever students make noise of someone coming late and disturb my class, I tell them that you have increased my entropy because part of energy that I have to teach is used to try to make order in the class. So students are laughing at the same time they hopefully understand the concept in a humorous way.

3.2. Students

The students' perception towards humour as well as their experience with humour in class will be presented.

3.2.1. Perception and experience

All but 2 of the students see the advantage of humour in improving the efficiency of the teaching and learning process. On the perception of the students towards the influence of humour on their attention towards the lecture, despite two of them thought that humour is of no help towards their learning process, none of them actually thinks that humour is distractive in nature when being applied in the class. 76% of the students find humour to be contributory towards capturing their attention during lecture. Predictably the same 22 students who thought that humours captivate their attention towards lectures also finds learning from a humorous lecture to be easy.

An interesting insight can be drawn by comparing Fig. 1 with Fig. 2. Although half of the lecturers thought that they have spent less than 5 minutes being humorous in a one hour lecture, 69% of the students actually thought otherwise. Majority of the students who thought otherwise actually claimed to have experienced more than 5 minutes of humorous instances in the lecture. 3% of the students cannot recall any humorous instance. It is acknowledged that this is merely an estimation of the students on their experience with humour in lecture but deeper study with regards to this aspect may uncover further reasoning. Furthermore, the validity of the above observation maybe affected by the possible

biasness arising due to the under-representation of sampling size of students. As aforementioned, only approximately 20% of the targeted students responded.

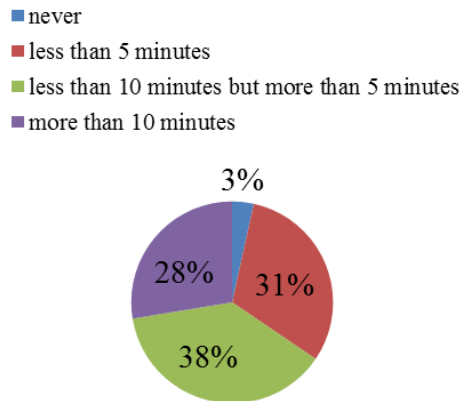


Fig. 2. Students' experience with humour in a 1 hour lecture.

All but one of the students thought that an engineering lecturer should never incorporate humour in their teachings as illustrated in Fig. 3. As one compares Fig. 2 and Fig. 3, most of the students prefer the humorous instances in the lectures to be of longer duration.

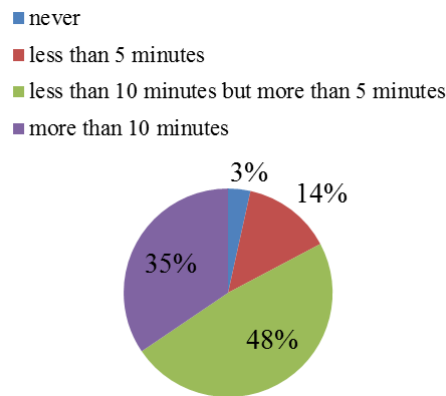


Fig. 3. Students' preference towards duration of humour.

All of the sampled students coherently concur that humour should be implemented in the lecture at least for a short period of time. None of the students thought that humour should never be present in a particular lecture. However almost half of them thought that humour should only be implemented at certain instances.

Upon comparison of Fig. 1 with Fig. 4, there seems to be mismatch between the frequency of types of humour used by the lecturers and the frequency of types of humour experienced by the students. Most of the students experienced humour

in the form of stories and jokes in the lectures although most of the lecturers claimed to have demonstrated humour in a spontaneous manner. Again, the validity of the above observation maybe affected by the possible biasness arising due to the under-representation of sampling size of students. However, the main takeaway here is that spontaneity and story or jokes telling are mostly used and felt by the lecturers and students respectively. This also agrees with previous study which defines a good engineering lecturer as one who is able to makes classes enjoyable as well as able to tell real-world engineering examples backed up by industrial experience [16]. Another study echoes the aforementioned that excellence in engineering education is associated with a lecture being delivered with real life examples and the effectiveness of this initiative can be further enhanced with humorous elements because humorousness aids in improving interaction between lecturers and students [17-18]. It is understandable that the low application of impersonation demonstrates that this particular type of humour is impractical in the teaching and learning of technical courses.

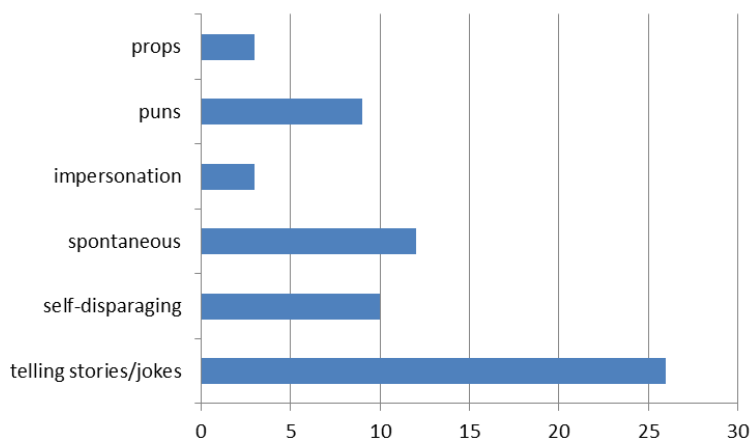


Fig. 4. Type of humour experienced.

3.2.2. Feedback

Students were also asked to illustrate how they learned a particular engineering concept from a lecturer who has taught it in a humorous way. Out of the 9 responses received, none of them managed to recall any engineering concept taught in a humorous manner. However, most of them did describe the humorous ways that the lecturers can adopt and apply in teaching.

One of them mentioned about a particular lecturer's style of teaching. According to this student, this particular lecturer is able to retain his or her attention by telling stories at each lecture. He or she is captivated the moment the lecturer started a line with "Now let me tell you a story". This is seconded by another comment which emphasized that students would constantly attend classes taught by a humorous lecturer because it is difficult not to pay attention to them. Three of them concurred that telling real-life application of certain concept by using analogies like human and puns also worked for them.

4. Conclusions

In general, it is observed that optimum presence of humour in lectures in engineering courses is perceived to be beneficial based on the current findings. The most common types of humour used are telling stories or jokes and leveraging on own spontaneity. However, it is also acknowledged that the possibility of biasness due to under-representation of responded students out of the total targeted engineering students may arise. It is of great merit to replicate this novel work with higher sampling size of engineering students across several higher learning institutions for future studies. Only then can a more accurate conclusion be drawn as to the significance and importance of the instructional humour particularly amongst engineering students. A definite boon of the current research is the establishment of the questionnaires which can be conveniently used and adapted for future studies even by faculties of other disciplines especially highly technical disciplines such as medicine and computing to ascertain the implication of instructional humour. It is also of interest to analyse whether engineering courses taught in a humorous manner does results in improvement of the attainment of the learning outcomes of students. The following guideline on incorporating humour into teaching is proposed:

- Know the maturity and background of the students
- Strategize the implementation of humour to be at the beginning and towards the end of a lecture. Students tend to pay more attention at these moments.

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Appendix A

Practice of Lecturers

I have been teaching engineering courses for _____ years.

I use this type of humour in teaching (you may tick more than one):

- telling stories/jokes
- self-disparaging
- spontaneous
- impersonation
- puns
- props

On the average, I spend this amount of time being humorous in a one hour lecture:

- never
- less than 5 minutes
- less than 10 minutes but more than 5 minutes
- more than 10 minutes

Of all the humorous instances in the class, they are:

- totally related to the course
- partially related to the course
- totally unrelated to the course

Please illustrate how you teach a particular engineering principle/concept/theory to your students in a humorous way.

Appendix B

Perception of Lecturers

I am naturally humorous

- yes
- no

I believe that humour:

- will not work in teaching engineering courses
- helps in enhancing the teaching and learning process

I perceive that humour may:

- attract the attention of students
- distract the students from the course materials
- do both the above

I find being humorous in teaching to be:

- easy
- challenging
- not applicable

My sense of humour in the class is (if applicable):

- received well by the students
- not understood well by the students
- ignored by the students

I think that sense of humour:

- is natural and can never be nurtured
- can be nurtured

Appendix C
Experience of Students

I have been studying engineering courses for _____ years.

I have experienced this type of humour in the past lectures (you may tick more than one):

- telling stories/jokes
- self-disparaging
- spontaneous
- impersonation
- puns
- props

On the average, a lecturer spends this amount of time being humorous in a one hour lecture:

- never
- less than 5 minutes
- less than 10 minutes but more than 5 minutes
- more than 10 minutes

Of all the humorous instances in the class, they are:

- totally related to the course
- partially related to the course
- totally unrelated to the course

Please illustrate how you learned a particular engineering principle/concept/theory from a lecturer who has taught it in a humorous way.

Appendix D **Perception of Students**

How many percent of your lecturers are naturally humorous?

- 0%
- Less than 50%
- More than 50%
- 100%

I believe that humour:

- will not work in helping me to learn engineering courses
- helps in enhancing the teaching and learning process

I perceive that humour:

- attracts my attention in the lecture
- distracts my attention from the course materials
- do both the above

I find learning from a humorous lecturer to be:

- easy
- challenging
- not applicable

On the average, I think that a lecturer should spend this amount of time being humorous in a one hour lecture:

- never
- less than 5 minutes
- less than 10 minutes but more than 5 minutes
- more than 10 minutes

I think that the lecturers should incorporate sense of humour in their teaching:

- yes
- no
- sometimes