THE USES OF STORYTELLING
IN UNIVERSITY ENGINEERING LECTURES

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Abstract

The Engineering Lecture Corpus (ELC) is a growing corpus of English-medium lectures from across the world, currently including transcripts from Malaysia, New Zealand and the UK (www.coventry.ac.uk/elc). Unusually, the ELC encodes functions that recur across large numbers of transcripts, using what we call 'pragmatic annotation'. Recurrent functions in ELC transcripts have been found to include 'storytelling', 'housekeeping', 'summarizing' and 'defining'. Sub-categories have been assigned to some of these functions; for example storytelling is marked as either an 'anecdote', 'exemplum', 'narrative' or 'recount' (cf. Martin 2008). The paper argues that although engineering lecturers around the world may use a common language to deliver the same kind of syllabus for the same broad purpose, engineering lectures are likely to remain both context- and culture-specific. Lectures of all kinds often include story elements, to entertain, instruct, and make key information more memorable. The way stories are presented varies from place to place, however, and regional differences may represent a challenge both to those who attend lectures and to those who deliver them. Such variation should be taken into account when designing ESP and staff development programmes. The analysis looks at the purposes of storytelling in Engineering lectures, and the ways in which various types of stories are realized linguistically. The discussion draws on Labov & Waletzky's (1967) structural model for oral narratives of personal experience, and Martin's (2008) four categories of 'story'.

1. Introduction

The structure and purpose of stories have long been topics of sociolinguistic discussion, often with reference to models of narrative structure. The often-cited Labovian model divides 'narratives of personal experience' into the following six stages: 1) abstract, 2) orientation, 3) complication, 4) evaluation, 5) resolution, and 6) coda. According to this model the 'abstract' is a summary of the events and the 'orientation' functions "to orient the listener in respect to person, place, time, and behavioural situation". The 'complication' stage describes the series of events that comprise the complicating action, possibly over a number of cycles (Labov & Waletzky 1967: 93), and the 'resolution' concludes the narrative. The floating 'evaluation' stage can come before or after the 'resolution' or coincide with it, and is regarded as "the significance or the point" of the narrative (*ibid.*: 94). These three stages are obligatory. An optional 'coda' acts as "a functional device for returning the verbal perspective to the present

moment" (*ibid*.: 100). Figure 1 illustrates these stages in an excerpt from our Engineering Lecture Corpus.

```
<orientation>
        once there was a really great story
        it happened in my in this class in the first year
        a student said to me
        well I said to the students
        I said
        I was talking about DC motors
        and I said you can't make a DC motor which doesn't have a commutator
        it has to have segments to make it work
        we'll see about that in the second semester
</orientation>
<complication>
        and a student said
        well he came to me the next week
        and he said I don't think that's true what you said last week
        and he um showed me a diagram
        and I said oh that will never work
        that's no good
        the next week he turns up
        and he's built one
        and he says look
        and um take it into the lab
</complication>
<evaluation>
        and sure enough he was right
        I was wrong
        and it was a completely new idea that he'd thought of
</evaluation>
<resolution>
        and it turned over
        it worked
</resolution>
<coda>
        and if he'd get a patent on it that's an amazing story
</coda>
```

Figure 1. An example of a Labovian narrative (NZ 3010)

Martin (2008) has developed Labov & Waletzky's notion of the narrative, identifying a network of possible pathways through the events to differentiate four possible story genres, as shown in Figure 2.

In Martin's system only the 'narrative' genre is associated with disturbed and restored equilibrium, as described in the Labovian model. 'Recounts' narrate unproblematic events, and 'anecdotes' and 'exempla' narrate problematic events which are not resolved. Table 1 illustrates Martin's (*ibid.* 2008: 43) model of the different story genres, and his claim that "the structure and function of the different stories derives from the relations between events and feelings".
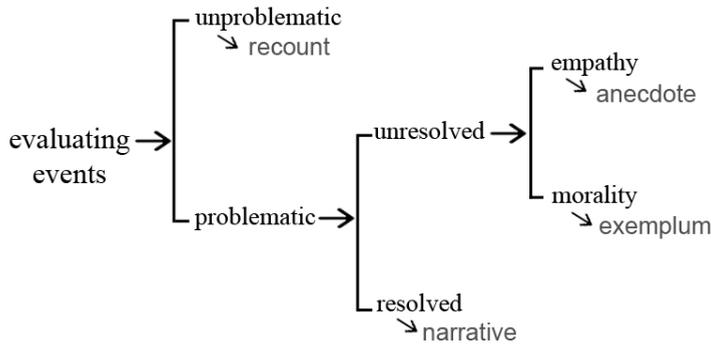
Figure 2. Comparing story genres – a choice network (Martin 2008: 45)

Genre	Events	Reaction
recount	unproblematic	running commentary
anecdote	unexpected disruption	emotional empathy
exemplum	noteworthy incident	moral judgement
narrative	complication resolved	build and release tension

Table 1. Martin's table of events and feelings in four story genres (2008: 44)

This model suggests that storytelling might realize a variety of pedagogical purposes, and indeed a number of researchers have identified the story as an important pedagogical feature in spoken academic discourse (Dyer & Keller-Cohen 2000; Simpson-Vlach & Leicher 2006; Maynard & Leicher 2007; Deroey & Taverniers 2011). Neither the British Academic Spoken English (BASE) corpus nor the Michigan Corpus of Academic Spoken English (MICASE) has been systematically annotated for textual functions, but attempts have been made to isolate and define story elements in small samples taken from both these corpora; Deroey & Taverniers (2011) consider 'recounts' in their functional analysis of 12 BASE lectures, for example, and Maynard & Leicher (2007) include 'narrative' as a pedagogically interesting pragmatic feature to encode in the header metadata for a small selection of MICASE speech events.

According to Labov & Waletzky (1967: 81, 84) strict temporal sequence is "the defining feature of narrative", because it can "recapitulate past experience in the same order as the original events". Temporal sequence is thus often used as a formal means of identifying story elements within larger units of discourse such as the lecture. Simpson-Vlach & Leicher (2006: 69) define 'narrative' in MICASE as a "story of two or more sequential clauses using the past tense or the historical present", and Deroey & Taverniers (2011: 6) class as 'recounts' those sections of the lecture where, often using past tenses and time indications, "the lecturer presents information about past actions, events or situations". Stories can also be described in terms of the speaker's role. Story elements in the lectures analysed by Dyer & Keller-Cohen (2000), for example, are defined not only as reports of events in the past, but also as reports of events in which

the lecturer (the first person narrator) partook. Dyer & Keller-Cohen describe such narratives as a means by which lecturers position themselves as experts, and distance themselves from non-expert 'other' characters.

This paper describes our attempts to identify, categorize and analyse story elements in an international Engineering Lecture Corpus (the ELC), drawing on the prior studies of narrative in academic and non-academic contexts.

2. Methodology

So far the ELC contains videos and transcripts of English-medium lectures from the UK, New Zealand, Malaysia and Italy[1]; most of these are in the fields of civil, mechanical and electrical engineering, and similar topics are often covered in the different cultural contexts. The transcripts have been annotated to identify functions of lecture discourse that we consider to be important but which may be difficult for corpus linguists to interpret, especially within the reduced context of the standard concordance line. Following the use of the term by MICASE researchers, we have called this 'pragmatic' annotation.

Our starting point for pragmatic annotation was a list of 14 pragmatic categories, including 'personal narrative', compiled by Nesi, Ahmad & Ibrahim (2009). The list did not attempt to cover *all* pragmatic possibilities, but was compiled in accordance with four selection criteria: the categories could not be realized by a single predictable form, and had to shed light on the specific nature of lecture discourse, identify features which were not easily recoverable from context, and occur more than once in the corpus (Nesi & Ahmed 2009). These rules continue to underpin the current 2011 working list outlined in Table 2. Some possible pragmatic categories such as 'evaluation' are not on this working list because in our corpus they occur as stages within broader categories such as 'story' (in the judgement stage of the 'exemplum', for example). However it is likely that as the corpus grows more pragmatic categories will be added, in response to the analysis of other engineering lectures delivered in other contexts.

explaining	where lecturers define, demonstrate or translate concepts or terms
housekeeping	where lecturers talk about academic commitments and events external to the lecture
humour	where lecturers use irony, mock threats, teasing, sarcasm, self-denigration, word play, or bawdy, black or playful humour
prayer	self-explanatory (only occurs in the Malaysian component of the corpus)
story	where lecturers tell personal or work-related stories in the form of anecdotes, exempla, narratives or recounts
summary	where lecturers preview the content of current and future lectures, or review the content of current and past lectures

Table 2. A working list of pragmatic categories in the ELC

[1] The discussion in this paper does not include the Italian component of the ELC, which was compiled at Università degli Studi di Napoli 'Federico II'.

The current working list emerged gradually, during the process of annotation[2]. Throughout this process NVivo was used to organize the transcripts and accompanying video files. Facial expressions and phonological features could be accessed in the video component, and sometimes helped us to construe pragmatic meaning. Initially, the process involved identifying features in a selection of files, checking the resulting long list of features against our four rules, and collapsing the list to remove instances of inefficient and overlapping description. Where it was felt that a feature was important and interesting but not frequent enough to warrant a distinct category, sub-categories (or attributes) were created. 'Teasing', 'self-deprecation' and 'black humour', for example, were subsumed as attributes under the umbrella element 'humour'. The original category 'personal narrative', on the other hand, was found to be too specific and was expanded so that the category of 'story' could include both personal and professional narratives.

The 'story' category was revised again when narrative extracts from across the entire corpus were compared and it became clear that a level of annotation had been missed. Martin's (2008) story genres were then added to our descriptive system.

The TEI-compliant structural markup and pragmatic annotation of the ELC files was performed using the XML editor Oxygen[3]. We annotated chunks of text that performed a storytelling function, taking a liberal approach to annotation. As far as possible opening and closing tags were encoded according to the following principles:

1. enough contextual data should be captured so that the story makes sense as a standalone chunk
2. summative and evaluative sections that enclose the core should be included
3. when in doubt, more rather than less of the transcript should be included within the annotation.

The first phase of coding was performed by language experts with markup experience and knowledge of the culture of the relevant component. General practices and unclear examples were discussed in project workshops. A single coder reviewed the entire corpus to ensure the accuracy of the transcriptions, the validity of the TEI-compliant markup, and the consistency of annotation.

As with any corpus of spoken discourse, however, we continue to spot errors and make adjustments to our files, particularly in relation to category boundaries and attributed types. This is especially true of the ELC for two reasons. Firstly, the subjective nature of pragmatic category identification means that inter-coder reliability checking continues to result in minor revisions. Secondly, in order to increase representativeness, the ELC is constantly growing, and the addition of new cultural components may introduce new categories for inclusion, or shift the balance between

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[2] In recognition of the subjective nature of pragmatic categories, we will use the term 'annotation' in reference to their identification, as distinguished from the TEI-compliant 'markup' of the stable structural components of the document. The use of 'annotation' assumes that markup is pre-existing.

[3] http://www.oxygenxml.com/. The pragmatic annotation is not currently TEI-compliant as the XML tags often overlap both each other and different utterances. We are exploring options for converting all pragmatic annotation into stand-off form, which is stored in a separate file.

the existing elements and attributes. The tagset therefore remains dynamic and adjustable to account for any further unpredictable data features or changes in our approach.

For this study 78 lectures were analysed: 30 from the United Kingdom (UK, ID series 1, approximately 252,000 words), 20 from Malaysia (MS, ID series 2, approximately 127,000 words) and 28 from New Zealand (NZ, ID series 3, approximately 169,000 words). To extract all chunks of text identified as 'story' for the purposes of comparison, a Python script was used to loop through a directory of all the annotated files, identify the text contained within the XML 'story' tags, append the original filename to each chunk for identification purposes, and write out the results to a new file. Once identified, each instance of 'story' was manually broken into sections according to Labovian rules, as exemplified in Figure 3.

```
<orientation>
        it's not as embarrassing as the one I saw on YouTube
        where some guy I presume it was a guy drove his little Ford Fiesta into the harbour off a quayside
        that's not the funny bit
        that's just sad
</orientation>
<complication>
        some guy brings along a crane like this
        tries to lift the car out
        doesn't think about the fact
        that if the car doors are shut the car will be heavier
        because it's carrying water
        so the crane topples into the harbour
</complication>
<resolution>
        so they then have to bring another crane in to get the first crane and the car out
        that they actually didn't make the same mistake twice
<evaluation >
        have a look on YouTube
        see if you can find the video
        it's a hoot
        so things should be in moment equilibrium
        if they don't nasty things start to happen
</evaluation>
<coda>
        and this is okay a little bit of a joke
        and think yeah only a small crane
        but it's unfortunately very common
```

Figure 3. Segmentation of a 'story' (UK 1001)

As noted previously, however, the traditional Labovian model did not map comfortably onto every instance of 'story' we identified. For example, although the extract in Figure 4 feels like a 'story', it lacks a resolution stage.

Although the event in Figure 4 is problematized (as the crane falls into the water), it is not resolved. This is in contrast to the example in Figure 3, where the crane is retrieved. The chunk cannot therefore be classified as a Labovian narrative. It does,

```
<abstract>
        this video sh- show the crane accidents
</abstract>
<orientation>
        you notice this crane
        err actually the workers were doing some lifting
        I think there's a bit okay
</orientation>
<complication>
        as what you can see here
        start to tilt and splash into the water
</complication>
<evaluation>
        okay so because of overloading that mean the the crane is not in equilibrium
        that is why you have to know your free body diagram before you do anything
</evaluation>
```

Figure 4. Segmentation of a 'story' (MS 2010)

however, accord with Martin's (2008) exemplum pathway, highlighted in Figure 5. The intended reaction to the event is judgement, rather than empathy, as emphasis is put on the need to "know your free body diagram before you do anything".
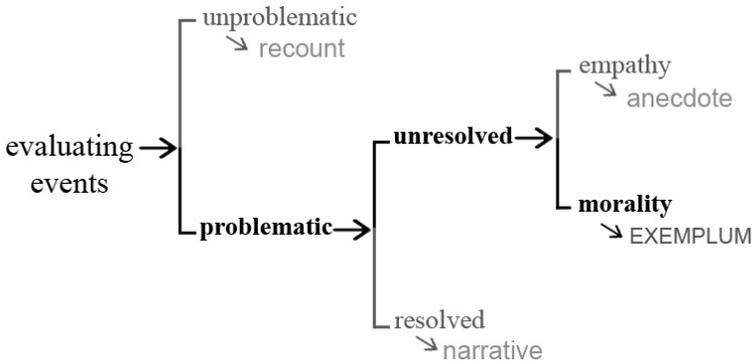

Figure 5. Choice network (Martin 2008) showing the path of an exemplum in bold type

As the stories in the ELC are often used to illustrate an engineering principle rather than a 'moral', we have adjusted Martin's definition of exempla to refer, in our analysis, to a reaction of scientific judgement.

4. Results

We identified 170 instances of 'story'. Table 3 shows both the raw occurrence and normalised occurrence (per lecture) of story genres in each cultural component.

In Figure 6 the normalized information has been translated into graphic form to show the breakdown of story genres across the ELC.

	UK		MS		NZ		total	
	raw	normalized	raw	normalized	raw	normalized	raw	normalized
anecdote	25	0.83	2	0.10	10	0.36	37	0.47
exemplum	19	0.63	14	0.70	3	0.11	36	0.46
narrative	19	0.63	11	0.55	16	0.57	46	0.59
recount	22	0.73	12	0.60	17	0.61	51	0.65
total	85	2.83	39	1.95	46	1.64	170	2.18

Table 3. Normalized occurrence of story genres per lecture in three cultural components of the ELC
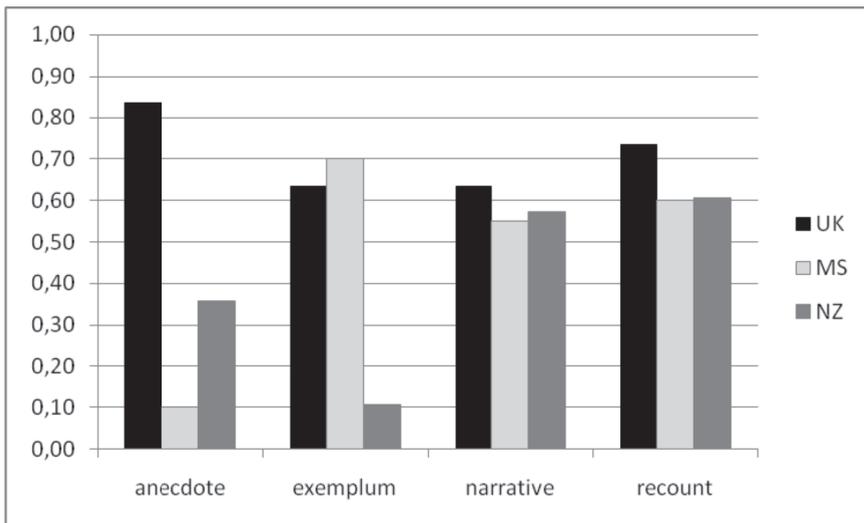

Figure 6. Normalized breakdown of story genres across three components of the ELC

Table 4 shows the average token length of each instance of the four genres of storytelling identified in the ELC. Recounts tend to be the shortest of the story genres and narratives are uniformly the longest, reflecting the number of stages they typically contain. Narratives must include a 'complication' and a 'resolution' stage and can optionally include evaluation, recounts are unproblematized and therefore the story events are not resolved or evaluated.

	UK	MS	NZ
anecdote	118	91	59
exemplum	159	131	82
narrative	170	154	112
recount	87	112	81

Table 4. Average token length of storytelling chunks in the ELC

According to Martin, both anecdotes and exempla are stories that contain an event (or events) that is problematized, but not resolved. The distinction is made at the level of reaction: anecdotes elicit emotional empathy, whereas exempla elicit a "moral

judgment" (Martin 2008: 44). According to our broader definition of the exemplum, which extends judgement to matters which are scientific, there is approximately the same number of anecdotes as exempla in the corpus (36:37). However, anecdotes occur significantly more frequently in the UK subcorpus, with a probability of occurrence in 0.83 lectures compared to 0.1 in the Malaysian subcorpus. A closer look at the themes of the two genre types reveals that the anecdotes do not report very serious negative consequences: a lump of concrete exploding and destroying a microwave (UK 1014), for example, or the use of light switches to create visual effects (NZ 3014). The exempla, however, often have markedly negative consequences; the stories in a lecture on health and safety, MS 1010, for example, draw on scenarios such as a fatal fall from a lift shaft, severe burns from a pot of boiling dalca, and an accident with a forklift truck (see Figure 6).

<orientation>
           so from the video you can see
</orientation>
<complication>
           that the the girl was hit by the forklift
</complication>
<evaluation>
           because because of very very simple reason
           she did not hear anything
           because of her i-Tune normally when you use i-Tune you listen the music very very loud
           so it will cut you off anything from outside
           so even though the forklift driver he use the horn or whatever
           so the the the girl in this video yeah even though it's acting she did not hear anything
           and hence she was hit by the forklift
</evaluation>
<coda>
           this type of accident actually occur sometimes
</coda>

Figure 7. An exemplum from a Health and Safety lecture (MS 2010)

In their sample of lectures from the BASE corpus Deroey & Taverniers (2011: 6) describe a "stark contrast" in the use of story genres between the disciplines. They report that there were few recounts in the physical sciences, but numerous instances in the arts and humanities. As indicated in Figure 6, recounts are used most uniformly across the ELC. Deroey & Tavernier (*ibid.*) broadly define recounting as a subfunction of informing. Although all of the recounts identified in the ELC seem to fit this definition, there were some differences noted between the recounts across subcorpora. Recounts in the lectures from New Zealand are mainly used to explain how something was carried out or achieved. In only two out of 17 instances is the recount based on personal experience; in most instances it describes or explains a process typically used in a specific industry, for example the steel industry (NZ 3019), or the shipping industry (NZ 3021). Recounts in the Malaysian lectures, on the other hand, often accompany a visual aid and provide further contextual information relating to the situation depicted in the image (for example, Legoland in MS 2005; an accident report in MS 2010; and an assembly line in MS 2010). As with the New Zealand lectures,

```
<complication>
        I hate to admit to this one
        but one site I was on we had cube failures
        and the reason was that
        when I'd been sending the cubes off
        I'd been having to break the ice on the top of the tank
        before I could get them out
        and um the tank had a heater in
        we just hadn't bothered to get the spark to wire it in
</complication>
<resolution>
        and ah fairly obviously by the time the area manager appeared to ah come and have a look and s
        what had gone wrong
        it was all wired in and working fine
        and we said oh no problem with that
        would we do a thing like that
</resolution>
<evaluation>
        and ah but okay sort of nevertheless it caused endless hassle
        the fact that we'd had these cube failures
</evaluation>
<coda>
        if you keep them too cold they'll go down a low strength
</coda>
```

Figure 8. A narrative of personal experience from the UK (1012)

these recounts are not expressing personal experience. Even where the lecturer is referring to pictures he has personally taken at Legoland (MS 2005), the purpose of the recount is not to talk about the visit itself or what happened there, but to describe the layout of the place and its various structures. More of the UK recounts are based on relating personal experience (nine out of 22 instances). The relation of 'personal' experience in these examples, however, predominantly describes first-hand experience of the behaviour of students and colleagues – what they do and say – in the immediate context of engineering lectures (UK 1016, 1028, 1029, 1030).

Whereas recounts tend to be more explanatory and descriptive in nature, typically referring to a situation from which the speaker is personally removed, narratives tend to be more personal and involved/involving. Thirteen out of the nineteen UK narratives, for example, refer to first-hand experiences – typically events that took place on a site visit or during testing or more mundane events that took place at the university (see Table 5). Referring back to Martin's genre pathway (see Figure 2), we see that narratives are in a sense the most 'complete' genre of story as events are problematized and then resolved. In terms of average token length (see Table 4), narrative storytelling is markedly longer than other types in each of the cultural subcomponents.

narrative type	UK		MS		NZ	
	raw	%	raw	%	raw	%
personal experience	13	68	1	9.09	8	50
experience of others	6	32	10	90.91	8	50

Table 5. Types of experience within the narrative story genre

```
<orientation>
        this accident occur in Port Dickson in Negeri Sembilan
        so the house is located very close to the T N B transmission line
        and during this time some of the workers were installing the high tension cable
</orientation>
<complication>
        and perhaps the cable that is holding this pulley it was broken
        and hit one of the houses
</complication>
<resolution>
        er luckily nobody got injured in this incident
</resolution>
```

Figure 9. A narrative about the experience of others from MS (2010)

It was mentioned earlier that a valuable, but not critical, distinction can be made between narratives based on 'personal experience', such as UK 1012 (Figure 8), and narratives about the experience of others, such as MS 2010 (Figure 9).

Table 5 shows a clear distinction between the UK and Malaysian narratives, as the former rely heavily on personal experience, whilst the latter largely concern the experience of others. In the New Zealand subcorpus, the inspiration for narrative storytelling is split equally between personal experience and the experience of others.

5. Discussion

Stories in lectures offer students something they are unlikely to find in their written course materials: a vicarious experience of real-world engineering problems. The findings indicate that anecdotes and exempla are on average the least common storytelling genres in engineering lectures, but also subject to the most culture-specific variation. Exempla are used more heavily in the Malaysian lectures, and are notably lacking in the New Zealand component. Anecdotes are far more common in the UK component. Differences may possibly be due to differing concepts of the role of lectures. Exempla illustrate points of information, so are more likely to be used when the lecture has a primarily informing role. Anecdotes perform a more entertaining function and appeal to the emotions; they may serve as a means of modelling attitudes towards incidents that are likely to occur in the professional life of an engineer. In the UK there may be a greater emphasis on student autonomy, and if students are expected to discover key information for themselves, the purpose of the lecture changes; there is more space for the expression of thoughts and opinions more loosely related to the programme of study.

There is no significant difference in the probability that narratives, or recounts, will occur in any particular component. Personal narratives allow the lecturer the opportunity to model the role of an expert engineer, in the manner described by Dyer & Keller-Cohen (2000). It was noted that UK narratives rely heavily on personal experience, whereas Malaysian narratives rely heavily on the experiences of others.

One possible explanation for this, suggested by a Malaysian colleague, is the different career trajectories of lecturers in the two countries. Engineering lecturers in the UK have often spent several years in industry before entering academia, whilst their Malaysian counterparts tend to enter academia at an earlier stage, pre-experience.

It is also possible that the Malaysian lecturers rely more heavily on pre-prepared course materials, perhaps because they are less confident about their own and their students' knowledge of English, and are therefore less willing to extemporize, or because in the Malaysian context there is a greater expectation that different lecturers delivering the same programme will cover the same ground.

These findings have implications for ESP practitioners. Students from contexts where informing is the prime purpose of lectures may have difficulty adapting to a freer story-telling style, for example, because they may be accustomed to treating all parts of the lecture in the same way, making notes when the lecturer provides key facts, and also when he/she tells a story. Such students may benefit from exposure in the EAP classroom to examples of narratives of personal engineering experience, so that they can become acquainted with this genre and learn to interpret its purpose, relating the lecturers' experiences to their own prior knowledge and their future circumstances. Narratives can be discussed in the EAP classroom within a Situation - Problem - Solution - Evaluation framework (Hoey 1983). This is a text pattern commonly taught on pre-sessional courses in UK universities, because it can be applied to the analysis of many genres of spoken and written academic text. Examples of narratives may be difficult to source from published EAP listening materials, however, as lecture extracts in published materials are often scripted, and lack many of the pragmatic features we have noted in authentic lectures (see, for example, Nesi 2012).

Stories of various types seem to play an important role in lectures across a range of cultural contexts, and it is therefore important not to neglect them when teaching academic listening skills in the EAP/ESP classroom.

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