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Alsop, S. , Moreton, E. and Nesi, H.

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The uses of storytelling in university Engineering lectures

Siân Alsop, Emma Moreton & Hilary Nesi
Coventry University, UK

Abstract

The Engineering Lecture Corpus (ELC) is a growing corpus of English-medium lectures from across the world, currently including transcripts from Italy, 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 this 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.

This paper 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 structural model for oral narratives of personal experience (1967), and Martin's four categories of Story (2008).

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 five stages: 1) Abstract, 2) Orientation, 3) Complication, 4) Resolution, and 5) Coda. According to this model the Orientation stage functions “to orient the listener in respect to person, place, time, and behavioural situation”, and the Complication stage describes the series of events that comprise the complicating action, possibly over a number of cycles (Labov & Waletzky 1967: 93). The Resolution concludes the narrative, while an optional Coda acts as “a functional device for returning the verbal perspective to the present moment” (*ibid.*: 100). The Orientation, Complication and Resolution stages are regarded as compulsory, but the narrative is not regarded as complete without an Evaluation section lying between the complicating and resolving action. Evaluation is regarded as ‘the significance or the point’ of the narrative (*ibid.*: 94).

Martin (2008) has developed Labov & Waletzky’s notion of the narrative as a means of evaluation, identifying a network of possible pathways through the narrative events to differentiate four possible story genres, as shown in Figure 1.

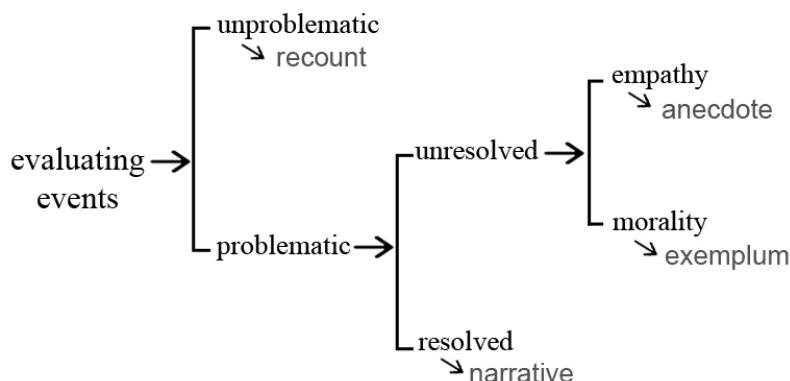


Figure 1. Comparing story genres – a choice network (Martin 2008: 45)

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 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” (Martin 2008: 43).

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 4 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 Engineering Lecture Corpus contains videos and transcripts of English-medium lectures from the UK, New Zealand, Malaysia and Italy; 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, 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 & Ahmed (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, work through or translate concepts or terms
House keeping	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. (Prayer 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 Engineering Lecture Corpus

The current working list emerged gradually, during the process of annotation¹. Throughout this process NVivo was used to organize and annotate 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 compared² 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 Oxygen³. We annotated chunks of text that performed a storytelling function, taking a liberal approach to annotation. As far as possible start and end 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 narrative 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 then reviewed the entire corpus to

¹ 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.

² Including a relatively recent Italian component compiled at Università degli Studi di Napoli ‘Federico II’.

³ <http://www.oxygenxml.com/>. The pragmatic annotation is not currently TEI compliant as these tags often overlap both each other and different utterances. We are currently looking into options for converting all pragmatic annotation into stand-off markup, which is stored in a separate file.

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. This is particularly true of the ELC for two reasons. Firstly, the subjective nature of pragmatic category identification means that inter-rater 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 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 76 lectures were analysed: 30 from the United Kingdom (UK, ID series 1xxx, approximately 243,000 words), 20 from Malaysia (MS, ID series 2xxx, approximately 117,000 words) and 26 from New Zealand (NZ, ID series 3xxx, approximately 150,000 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 shown in Figure 2:

```
<abstract>
    it's not as embarrassing as the one I saw on You Tube
    where some guy I presume it was a guy drove his little Ford Fiesta into the harbour off a quayside
</abstract>
<orientation>
    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
    have a look on You Tube
    see if you can find the video
    it's a hoot
</resolution>
<coda>
    so things should be in moment equilibrium
    if they don't nasty things start to happen
    and this is okay a little bit of a joke
    and think yeah only a small crane
```

but its unfortunately very common
 </coda>

Figure 2. 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 3 feels like a Story, it lacks a resolution stage.

<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>
 <coda>
 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
 </coda>

Figure 3. Segmentation of a Story (MS 2010)

Although the event in Figure 3 is problematized (as the crane falls into the water), it is not resolved. This is in contrast to the example in Figure 2, where the crane is retrieved. The chunk cannot therefore be classified as a Labovian narrative. It does, however, accord with Martin’s (2008) exemplum pathway, illustrated in Figure 4. 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”.

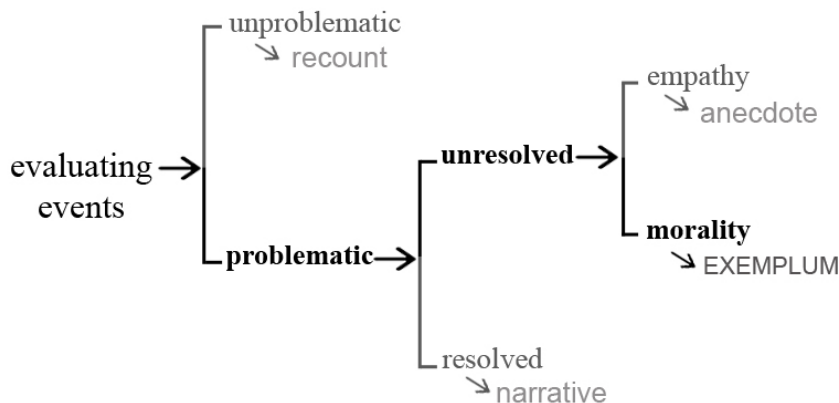


Figure 4. Choice network (Martin 2008) showing the path of an exemplum

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 59 instances of Story. In Figure 5 this information has been translated into graphic form to show the breakdown of story genres across the ELC cultural components.

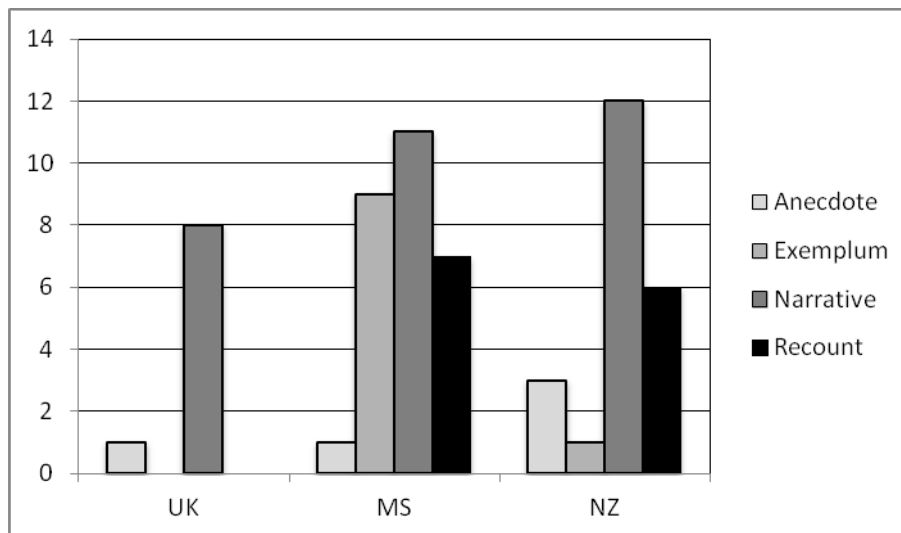


Figure 5. Breakdown of story genres across three components of the Engineering Lecture Corpus: UK, Malaysian (MS) and New Zealand (NZ)

Although present in each cultural component, it can be seen that anecdote is by far the least common form of storytelling. According to Martin, both anecdotes and exempla are Stories that contain an event(s) 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 are twice as many exempla as anecdotes in the corpus (10:5). 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, 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).

```
<abstract></abstract>
<orientation>
  so from the video you can see
  that the the girl was hit by the forklift
</orientation>
<complication>
  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
</complication>
<coda>
  this type of accident actually occur sometimes
</coda>
```

Figure 6. An exemplum from a Health and Safety lecture (MS 2010)

In their sample of lectures from the BASE corpus Deroey & Taverniers describe a “stark contrast” in the use of story genres between the disciplines (2011: 6). They report that there were few recounts in the physical sciences, but numerous instances in the arts and humanities. As indicated in Figure 5, there are no recounts in the UK component of the ELC, but there are six in the NZ component and seven in the MS component⁴. In contrast, UK lecturers seem more likely to use the narrative genre. Deroey & Tavernier (2011) 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 in the NZ component and those in the MS component. Recounts in the lectures from New Zealand are mainly used to explain how something was carried out or achieved (NZ 3016, NZ 3018, NZ 3019, NZ 3021). In only one of these occurrences is the recount based on personal experience (NZ 3018); 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 (Legoland in MS 2005; an accident report in MS 2010; and an assembly line in MS 2010). As

⁴ It should be noted, however, that all the MS recounts come from just two lectures, and these characteristics may not apply to Malaysian lectures more generally.

with the New Zealand lectures, 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 Legoland and the various structures.

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. Seven out of the eight UK narratives refer to first-hand experiences – typically events that took place on a site visit or during testing (UK 1012, UK 1012, UK 1013, UK 1021), or more mundane events that took place at the university (UK 1021, UK 1014, UK 1021). The UK narratives also tend to make greater use of the personal pronouns, particularly ‘we’ and ‘they’, as shown in Table 3. In recounts the first person pronouns ‘I’ and ‘we’ tend to collocate with a mental verbs of cognition, functioning as subjective modality markers in expressions such as ‘I think’, ‘I believe’, ‘I guess’ and ‘I would say’. These expressions are used when the speaker is interpreting or describing a past action or situation. In narratives, on the other hand, these pronouns tend to collocate with action verbs in expressions such as ‘I took’, ‘I was running’, ‘we split’, ‘we poured’ and ‘we deliver’, indicating the speaker’s personal involvement in the events that are being described.

	Recount - MS	Recount - NZ	Narrative - UK
I	17 (1.3)	10 (1.7)	19 (1.35)
We	5 (0.38)	3 (0.51)	24 (1.7)
You	11 (0.84)	10 (0.17)	6 (0.43)
They	3 (0.23)	10 (0.17)	17 (1.21)

Table 3. Personal pronouns in recounts and narratives (figures in brackets are normalized to show the average number of occurrences per 100 words)

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 7), and narratives about the experience of others, such as UK 3004 (Figure 8).

```

<abstract>
  I hate to admit to this one
  but one site I was on we had cube failures
</abstract>
<orientation>
  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
  
```

</orientation>
 <complication>
 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 see what
 had gone wrong
 it was all wired in and working fine
 and we said oh no no problem with that
 would we do a thing like that
 </resolution>
 <coda>
 and ah but okay sort of nevertheless it caused endless hassle
 the fact that we'd had these cube failures
 if you keep them too cold they'll go down a low strength
 </coda>

Figure 7. A narrative of personal experience from the UK (1012)

<abstract>
 a long time ago
 sort of fifty sixty years ago
 they used to call capacitors tanks
 </abstract>
 <orientation>
 because the comparison was
 a tank of water is very strong
 so here's a tank of water
 so that's now a you know a little tank of water that everybody has in their house
 to heat up the water you have with a hot water tank
 </orientation>
 <complication>
 now the um the area of the tank the area of the tank at the bottom
 that's actually like the capacitance
 and the height that you fill the water up to
 that's actually like the voltage
 that can be compared with the voltage
 </complication>
 <resolution>
 and then you see the area times the height equals the volume
 and the volume of water is like the quantity of electricity
 the volume of the water is like the quantity of electricity
 </resolution>
 <coda>
 so it's a very strong analogy with this
 </coda>

Figure 8. A narrative about the experience of others from NZ (3004)

Table 4 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.

	Narratives of personal experience	Narratives of the experience of others
UK	8	1
MS	1	10
NZ	7	5

Table 4. Types of experience within the narrative story genre

5. Discussion

The findings indicate that anecdotes are the least common story genre in engineering lectures. This is not surprising as lectures are intended to inform rather than entertain or appeal to the emotions. It is harder to explain the greater use of recounts and exempla in the MS and NZ components, and the greater use of narratives in the UK component, but these differences may possibly be due to differing concepts of the role of lectures. Recounts inform, and exempla illustrate points of information, so are more likely to be used when the lecture has a primarily informing role. 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. Narratives in lectures offer students something they are unlikely to find in their written course materials: a vicarious experience of real-world engineering problems. Personal narratives also 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 lectures are considered more formal occasions in the Malaysian context.

These findings have implications for ESP practitioners. Students from contexts where the informing is the prime purpose of lectures may have difficulty adapting to the freer narrative style of UK lectures, 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 particular exposure 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. Examples of narratives of this type 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). Narratives can be discussed in the ESP 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.

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