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What can cognitive linguistics do for the EAP community?

Introduction

One of the key challenges faced by students in any academic discipline is the expectation that they will be able to understand, apply and communicate subject-specific concepts. These concepts can be concrete (equipment used in experiments), or more abstract, for example, concepts of small entities that we cannot see (microbes, thoughts) or very abstract (motivation, social justice, energy). All these subject-specific concepts are created and represented in and through the spoken and written academic language that our students interact with. Generally speaking, the more abstract a concept is, the harder it is for us to come to a shared consensus of what it is (Bolognesi & Steen, 2019).

Scaffolding learners' understandings of how they, as academic language users, can critically engage with the subject matter of written and spoken texts, at a conceptual level, should be a key concern of any EAP practitioner. Critical engagement with a text can be seen as part of what Davis and Barnett (2015) term a critical disposition to the world, which includes an openness to new ideas and a willingness to consider other points of view. In this paper, I propose that one approach to developing a critical disposition is *how* we, as EAP practitioners, encourage our students to engage with academic language. This paper introduces an approach to thinking about language and discourse from a cognitive perspective that can potentially provide both EAP practitioners and their students a pedagogical toolkit to help them adopt a more concept-driven, critical approach when engaging with academic texts. By introducing a key cognitive linguistic phenomena, namely, metaphorical reasoning, and using authentic examples of academic discourse, this paper sets out to show that it is *how* language users approach and engage with academic texts, at a conceptual level, that affects the

development of conceptual thinking and disciplinary knowledge. Practical suggestions of how some of the key principles could be embedded into current EAP teaching practice will be briefly highlighted.

Cognitive linguistics and the language user

Language reflects how we conceptualise the world. Through the language we have available to us, we are able to convey to others how we conceptually relate to, organise and categorise the world around us. This assumption is best articulated in a sub-field of Applied Linguistics known as cognitive linguistics, an approach to studying natural language that had its origins in the late seventies and eighties (e.g., Lakoff & Johnson, 1980, Langacker 1987, Talmy 1985). In line with functional approaches to language (Halliday, 1994), cognitive linguists view all aspects of language (lexico-grammatical structures, phonology) as usage-based and inherently meaningful (Giovanelli, 2014). Crucially, and relevant for purpose of this paper, meaning does not reside in a text (either spoken or written) which then has to be retrieved by the language user, nor does the language user impose meaning on a text, rather meaning is created as the reader, or listener, critically engages with the words and grammatical patterns within that text. In any context, but in an EAP context most particularly, students come with a diverse range of learning experiences, cultural expectations and habits of thought already shaped through the languages they have previously been exposed to. The words on the page they read, or listen to in a conversation, activate and dynamically interact with these schemas to create meaning.

Cognitive linguists claim that our cognitive processes are embedded in all aspects of language, knowledge building and learning (Giovanelli, 2014). One central cognitive process, which features throughout all these aspects, is the notion of construal: our conceptions are not neutral, but are always taken from a particular perspective (Langacker, 2008). This idea will be exemplified more fully in the following section, but essentially, this means that language provides an array of different lenses through which we can conceptualise the world around us (Boroditsky, 2001). The better EAP practitioners and their students understand how language and our minds interact with language to construct different perspectives, conceptual thought and meaning, the more resources they have available to help them to engage critically, at a conceptual level, with written and spoken texts in an EAP context. This paper sets out to provide the reader with a brief insight into thinking about academic language from a cognitive perspective. A word of warning, it does not offer a set of off-the-shelf resources, but instead suggests how cognitive linguistic principles could be eventually applied to EAP contexts, by inviting the reader to engage with some examples of authentic academic language. The following introduces one of the most important cognitive linguistic phenomena involved in the development of abstract thought, namely, metaphorical reasoning.

Metaphorical reasoning

Metaphorical reasoning abounds in pedagogical settings as metaphors are used to make sense of and communicate hard-to-understand, subject-specific abstract concepts that often have no clear referent in the physical world. A metaphor is when

one idea (normally an abstract one: the target) is understood in terms of another (a concrete one: the source). The two things are different, but some form of similarity can be perceived between them. One of the key claims made by Lakoff and Johnson (1980) in their book *Metaphors we live by* is that metaphors are powerful in that they shape the way we think, communicate and act in the world. Importantly, for students aiming to develop a critical disposition, they are ideological, in that they construe a situation from a particular perspective (Semino, 2008).

To help us describe and communicate abstract ideas we use concrete domains of knowledge, that are easier to conceptualise, to structure and give meaning to the target domain through a process of mapping. For example, we frequently talk about our lives as being a journey: 'It was a real dilemma, I didn't know which way to turn'. As metaphors can help us understand new ideas, they are an important pedagogical device (Low, Littlemore & Koester, 2008). However, as learners come with their own set of knowledge frames, these metaphors can be often misinterpreted in pedagogical contexts (Low et al., 2008; Deignan, Semino & Paul, 2017). Therefore, as EAP practitioners, it is important that we develop an understanding of how metaphors function and construct abstract conceptual knowledge. The following explores two types of metaphor that I and others have shown to play an important role in developing abstract thought in academic settings: image schemas and conceptual metaphors (Low et al., 2008; Zacharias, 2019; Zacharias, 2020).

Image schemas

Image schemas are one of our most basic metaphorical conceptual structures that underpin much of our thought and language. Through our daily interaction with our physical environment we develop conceptual schemas that reflect and shape our understanding of the physical world and how we relate to it. We understand objects (and ourselves) as containers, we travel through space to reach a destination and we experience a resistance as we try to push open a door. These image schemas metaphorically structure much of our thinking and language we use to talk about abstract ideas and concepts (Kövecses, 2010, p. 43). Despite some variation in how they manifest themselves across different languages, image schemas are believed to be near universal. The following two extracts set out to exemplify how image schemas structure our thinking. In the first extract, two tutors are talking about a written assignment that they have to assign a grade to:

Extract one: Talking about writing

A: What do you think about this one then?

B: It's quite good. Her writing flows, uhh, it had direction. Yeah, she argues her points quite well.

A: Mmm, yeah, it was quite coherent, wasn't it? One thing I had some issues with though was the section on traditional verses progressive pedagogies. She tended to see things in a very either–or way. It wasn't very nuanced, she didn't really look at the potential drawbacks of some of the progressive methodologies she was talking about.

Tutors A and B start their discussion by giving their initial response to the essay as shown in extract one. They are focused at this point in the discussion on the overall effect the assignment had on them as readers. There are at least two

image schemas at work here: SOURCE–PATH–GOAL (her writing *flows*, it *had direction*) and the CONTAINER image schema (see things in an *either–or way*). Tutor B describes her experience of reading the assignment as one that induced a sense of flow and direction. Here, I propose that the abstract concept of coherence is being expressed in more concrete terms as something fluid, such as water, that moves along a path to its goal.

With the expression 'in an *either–or way*', Tutor A expresses her reaction to a section of the student's work in which the student construes the concept of traditional and progressive pedagogies as a discrete entities, such as a container: either a lesson is traditional or it is not. This binary logic has been shown to be prevalent in social and educational research, and that implied in this logic is a hierarchy of ideas, in which one of the ideas is more powerful and superior to the other (Singh, 2011). Conceptualising the pedagogies as discrete entities has meant the student has not been open to viewing the relationship between traditional and progressive pedagogies in a more nuanced way. An awareness of how our beliefs and arguments are shaped and constrained by our image-schematic structures can help students be more open to different perspectives and see beyond their initial, 'common sense' view of an issue.

The following extract is part of a discussion between a researcher (myself) and a science tutor discussing a group of students' understanding of the scientific abstract term 'heat energy'. The analysis shows how language shapes and is shaped by subject-specific concepts, a universal phenomenon that applies to any learning context, including an EAP one. Both the research and tutor infer from the learners' language use in the lesson prior to the interview that they conceptualise heat energy as an object:

Extract two: Talking about heat energy

R: It was how they were talking about the heat energy.

T: Yeah, they talk about heat travelling along the metal [

R:] almost through the particles they see it as a kind of substance

T: Yeah

R: And when it hits the insulator it's blocked, like a traffic jam.

T: I would agree I get that sense as well they are not linking the idea necessarily that heat is actually particles vibrating you are absolutely right. It's not a thing.

Adapted from Zacharias (2018, p. 213)

As in the first extract, the image schema SOURCE–PATH–GOAL structures the learners' thinking in extract two. The verb *travelling* is used to talk about the movement of heat along the metal. Prototypically, *travelling* is associated with the concept of transport, the movement of cars and buses along a road. The learners appear to have mapped their knowledge of transport to their understanding of the abstract concept of heat energy in which energy is conceptualised as an object moving along a path. This image runs contrary to the image of energy that aligns with the scientific view held by the tutor, and one that he was hoping to install in his learners. By understanding how image schemas shape and structure our thinking through language we are in a stronger position to help our students use and engage with language to

unpack, understand and communicate their conceptualisations to each other.

Conceptual metaphor

The following section explores how students could engage with a written text and understand how the conceptual metaphor of war is used to frame our understanding of disease and how we treat it. The text comes from a call for a symposium 'Re-Imagining AMR (antimicrobial resistance): Beyond the Military Metaphor' held at the University of Edinburgh in 2019. The aim of the event was to bring together medical scientists, general practitioners (GPs), social scientists, linguists and artists to discuss and consider ways in which the issue of microbial resistance can be tackled. Microbes can be classified as semi-abstract and although they are physical entities, they are very small, so difficult to conceptualise. Therefore, microbes are frequently conceptualised in school and undergraduate textbooks, and in health journals metaphorically. The text contains a number of metaphors (e.g., *fight* disease) that are part of the conceptual metaphor DISEASE IS THE ENEMY AT WAR. The key point that the text is making is that pharmaceutical companies, health professionals and the public habitually refer to microbes as the *enemy* in a war, which has consequences for how we treat the disease.

> *The language we use to frame our relationship with microbes has profound effects. 'Crises' are imminent with the rise of microbial resistance; we face a looming 'apocalypse' as the antibiotics fail to work; we 'fight' disease, and structure public health campaigns around 'military style' campaigns. As we divide microbes into those that are friendly, and those 'superbugs' that are 'enemies' we barely think of the impact that this language has. Yet we as humans are comprised of viruses, bacteria and fungi such that our bodies are inseparable from these. This way we understand human–microbe relations has had profound effects; but as the antibiotic era draws to an end, we now need new ways of reconceptualising our relationship with microbes.*
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> Re-Imagining AMR (antimicrobial resistance): Beyond the Military Metaphor (Edinburgh Infectious Diseases, 2019)

The subject matter of this text makes it ideally suited for in-sessional courses designed for students studying medical or biological science degrees. As the topic is accessible to most students, however, I chose to use this text for a group of international students in a Descriptions of Language workshop seminar on a TESOL programme within the institution where I work. Many of the students had just completed the university's pre-sessional course and were just starting their master's degrees. The focus of the session was to look at how readers engage with the metaphors in texts to create meaning. The tasks set in the seminar have a dual purpose: 1. to learn principles and skills that can then be applied to the students' own teaching, and 2. to learn principles and skills that will be helpful when they read and write in a university context. The students were introduced to the main features of conceptual metaphors in a lecture prior to the seminar and were using the seminar to practise applying the concepts and metalanguage of metaphor. Although the students were required to learn the metalanguage to be able to communicate within the seminar, they were also expected to apply the terms accurately to pass their assessment. Despite this, the approach was a concept-driven one, with the emphasis on understanding and applying the ideas, instead of an activity which simply focused on spotting features in the text and labelling them.

The key conceptual idea in the text is the conceptual linguistic notion of construal. This concept was introduced by asking the students to think about the following two terms: a *freedom fighter* and a *terrorist*. The students were made aware that these two terms refer to the same person, but depending on your political beliefs, you *choose* to call that person either a freedom fighter or a terrorist.

Using the whiteboard, students saw how our understanding of our relationship to microbes is construed in the text as a war by populating the target abstract domain column with words and phrases found in the text (disease, microbe, etc.).

Once the metaphors in the text were identified and analysed, I then turned to the final sentence of the text which acts as a warning. At this point, I asked the students if they knew of alternative methods of treating infections or had heard any advice given to doctors and patients to help tackle the issue. From the discussion, I asked the students to think of alternative metaphors, introducing the metaphor DISEASE IS A STATE OF IMBALANCE, if they needed a prompt. As a follow-up, the students carried out their own mapping and wrote a short piece in which the microbe–human relationship had been reconceptualised.

Conclusion

This brief paper explored how a cognitive approach to thinking about academic language can encourage students to take a more critical approach when engaging with academic texts. In particular, it focused on image schemas and conceptual metaphor, two key concepts in the field of cognitive linguistics which play a central role in the knowledge building process. The aim of the paper was to demonstrate that pedagogies based on an understanding of how our reasoning and conceptual thinking shapes and is shaped by the language we use, from a cognitive perspective, can scaffold EAP students' understanding of subject-specific abstract concepts, thus enabling students to develop a more critical disposition towards the texts they engage with.

Table 1 Mapping of DISEASE IS THE ENEMY AT WAR metaphor

Abstract target domain (human–microbe relationship)	Concrete source domain (war)
disease, microbe, viruses, bacteria, fungi	enemy
antibiotics	weapon
administer medicine, treat disease	attack, fight, campaign, defend/defence, resist/resistance

References

Bolognesi, M., & Steen G. J. (2019). Introduction. In M. Bolognesi, & G. J. Steen (Eds.), *Perspectives on abstract concepts: Cognition, language and communication* (pp. 1–13). Amsterdam: John Benjamins.

Boroditsky, L. (2001). Does language shape thought?: Mandarin and English speakers' conceptions of time. *Cognitive Psychology*, *43*(1), 1–22.

Davies, M., & Barnett, R. (2015). Introduction. In M. Davies, & R. Barnett (Eds.), *The Palgrave handbook of critical thinking in higher education* (pp. 1–25). New York: Palgrave Macmillan.

Deignan, A., Semino, E., & Paul, S. A. (2017). Metaphors of climate science in three genres: Research articles, educational texts, and secondary school student talk. *Applied Linguistics*, *40*(2), 379–403.

Edinburgh Infectious Diseases (2019). *Beyond Resistance AMR network: Re-Imagining AMR: Beyond the Military Metaphor.* Retrieved October 6, 2019, from www.ed.ac.uk/edinburgh-infectious-diseases/news/events-archive/reimagining-amr

Giovanelli, M. (2014). *Teaching grammar, structure and meaning: Exploring theory and practice for post-16 English language teachers*. London: Routledge.

Halliday, M. A. K. (1994). *An introduction to functional grammar* (2nd ed.). London: Edward Arnold.

Kövecses, Z. (2010). *Metaphor: A practical introduction*. Oxford: Oxford University Press.

Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. Chicago: University of Chicago Press.

Langacker, R. W. (1987). *Foundations of cognitive grammar, Volume I: Theoretical prerequisites*, Stanford, CA: Stanford University Press.

Langacker, R. W. (2008). *Cognitive grammar: A basic introduction*. Oxford: Oxford University Press.

Low, G., Littlemore, J., & Koester, A. (2008). Metaphor use in three UK university lectures. *Applied Linguistics*, *29*(3), 428–455.

Semino, E. (2008). *Metaphor in discourse*. Cambridge: Cambridge University Press.

Singh, M. (2011). Renewing the critical function of education research. In W. Midgley, M. A. Tyler, P. A. Danaher, & A. Mander (Eds.), *Beyond binaries in education research* (Vol. 59, pp. xvii–xix). Oxford: Routledge.

Talmy, L. (1985). Lexicalization patterns: Semantic structure in lexical forms. In T. Shopen (Ed.) *Language typology and syntactic description* (Vol. 3, pp. 57–149). Cambridge: Cambridge University Press.

Zacharias, S. (2018). *The linguistic representation of abstract concepts in learning science: A cognitive discursive approach*. [Unpublished doctoral dissertation]. University of Nottingham.

Zacharias, S. (2019). The development of the abstract scientific concept of heat energy in a naturalistic classroom setting. In M. Bolognesi, & G. J. Steen (Eds.), *Perspectives on abstract concepts: Cognition, language and communication* (pp. 263–285). Amsterdam: John Benjamins.

Zacharias, S. (2020). Towards a concept-driven pedagogy: A model of linguistic knowledge for teachers. In M., Giovanelli, C. Harrison, & Nuttall, L. (Eds.), *New directions in cognitive grammar and style*. London: Bloomsbury.