

The Language Scholar



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The Leeds Language Scholar Journal

The Language Scholar is an open access and peer-reviewed journal. Its main objective is to provide a platform to promote the scholarship of learning and teaching languages.

Contributions are welcome from practitioners, researchers and students who are involved in language education. Areas of particular interest to this Journal are theories and practices for language teaching and education, including language teaching approaches and methodologies, intercultural communication, the psychology of language learning, research-led teaching, student-led practices, communicative strategies and experimental teaching.

The Language Scholar is hosted by the Centre for Excellence in Language Teaching within the School of Languages, Cultures and Societies at the University of Leeds. It considers international contributions in multimedia formats, in and about any language (including ancient languages). It aims to provide a space for the development of scholarship in language education, and to provide a platform for pieces which highlight the potential of multimodality to enhance communication, including a supportive and developmental approach to peer review.

Alongside the annual printed issue, the Language Scholar's digital space hosts and showcases contributions, facilitating the sharing and exchange of ideas. Submissions can be sent to the journal at any time, although there will be deadlines announced for specific printed issues.

If you would like to get in touch or submit a piece, you can contact us on the journal's email: languagescholar@leeds.ac.uk or Tweet us at [@LangScholar](https://twitter.com/LangScholar)

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Editorial

Martin Ward and Jeanne Godfrey

Welcome to Issue 11 of the Language Scholar.

The Language Scholar is currently undergoing an exciting transformation as we further develop the journal to draw on the valuable expertise of the advisory board more intentionally. This issue is the final one with the present constitution of the board. We would like to take this opportunity to acknowledge and thank all advisory board members who are moving on to new adventures, as well as those who are continuing to serve in this capacity. Please look out for further details on the newly constituted advisory board in our next issue.

Reflecting the diversity of submission categories for the Language Scholar, we begin this issue with a discursive duoethnography by Chiara Bruzzano and Marc Jones on listening pedagogy and how it relates to authentic listening courses. Recalling and analysing experiences from their teaching experience in Italy and Japan, the authors bring particular insights into authenticity, purposes for listening, formative experiences, impostor syndrome, and implications. They conclude with firm agreement regarding the benefits of using authentic texts in their teaching and assisting learners in overcoming the difficulties associated with understanding 'natural' language, whilst raising lingering doubts regarding how helpful process-based teaching is for listening development.

Next, Matthew Ketteringham presents his research into a needs analysis of assessed writing genres of a transnational education (TNE) undergraduate engineering programme at the Leeds-partnered South-West Jiaotong University (SWJTU) based in Chengdu, China. Through the collection of institutional artefacts, and qualitative data from interviews with faculty and a student questionnaire, he identifies possible areas for development including increased cooperation between EAP specialists and subject specialists to further develop students' academic literacy.

Continuing on the theme of TNE and disseminating further research fruit from the above-mentioned Leeds-SWJTU partnership, Alister Drury, Rachel Perkins, and Warren Sheard present their creation of a pedagogic corpus and wordlist from a series of maths lectures. Setting out to help students with the high vocabulary load of their mathematics lectures, the authors conclude that combining the New

General Service List (NGSL) with their own composed wordlist can provide the coverage needed to enable learners to understand the lectures.

Debora Catavello concludes this issue by exploring teachers' beliefs and practices associated with written feedback on EAP student writing. She finds that most teachers in her study adopt a 'contextualised' view of feedback and that teachers conceptualise feedback as a dialogue. This type of dialogic feedback, however, was not always visible. She also notes the influence of teachers' prior teaching and learning experiences on their views surrounding feedback.

One clear theme which stands out from the above articles is the value of collaborative pedagogy and collaborative scholarship, as well as open dialogue and exploration. The editors hope that a close reading of the research presented here will inspire colleagues to new scholarship and collaborative practice.

Papers



Reflecting Dialogically on Listening Pedagogy: A Duoethnography

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ABSTRACT

The authors conduct a duoethnographic exploration of listening pedagogy relating to authentic listening courses they taught in Italy and Japan respectively. Themes explored include how authenticity is operationalised and how it relates to the politics of text selection. Whether the Comprehension Approach (CA) (Field, 2008) is actually rejected by teachers is examined and discussed in relation to the difficulties and feasibility of teaching listening with a process approach. Learner motivation and how to manage and mitigate demotivation is discussed, while attribution theory (Weiner, 1985) is used to illustrate ways that learners may be taught to approach difficulty in texts. Additionally, feelings of ‘impostor syndrome’ and the generalizability of listening research to classroom instruction are considered. Implications relate to the accessibility of research to teachers, and whether partially implemented research recommendations are pedagogically viable. The duoethnography concludes by noting the potential of learner autonomy in mitigating instruction time constraints, the conflicts between skill instruction and listening for language acquisition and the possibilities of attribution theory for improved toleration of listening difficulties. The viability or otherwise of a process approach to listening instruction is discussed but left unsolved.

KEYWORDS: authenticity, duoethnography, listening, process approach, attribution theory

INTRODUCTION

The listening literature has increased in the past decade, to the extent that listening probably no longer deserves the name ‘Cinderella skill’ (cf. Vandergrift, 1997). Despite this growth in interest, however, much of the research remains focused on the idea of rejecting the Comprehension Approach (CA) (Field, 2008). One repeated assumption (e.g. Field, 2019; Goh, 2010), is that when teaching listening, teachers depend on a CA, whereby they fail to focus on developing the processes of listening and instead focus on the product of listening, in the form of correct answers to comprehension questions. However, aside from a few valuable exceptions (e.g. Siegel, 2014), little empirical, observational evidence exists showing that this is the case. As Graham et al. (2014) argue, this label may be inadequate in capturing the complexity of teachers’ practices and more nuanced accounts are needed that go beyond the focus on comprehension. This is the first reason that has led us to this duoethnography, in which we analyse and reflect on our own practice and knowledge as experienced listening teachers and researchers.

The existing research offers little account of how listening can be taught. Therefore, we wish to contribute to the growing knowledge about listening pedagogy through reflexive accounts of our teaching and pedagogy to address the gap between academic and teaching communities. This work foregrounds our experiences designing and leading two listening courses in two university contexts in Italy and Japan. While much has been written about supplanting the CA through process-based instruction, accounts of using this knowledge to structure a course are limited. We discuss course design and instruction, including the challenges, self-doubt and unresolved issues that innovations in listening pedagogy entail.

To explore the issues faced in our professional lives, we conducted a duoethnography (Sawyer and Norris, 2013). Lowe and Lawrence (2020, p.2) define duoethnography as ‘a qualitative research methodology in which two researchers utilise dialogue to juxtapose their individual life histories in order to come to new understandings of the world’. Thus, duoethnography is a collaborative, dialogic process of writing, where each author explores their beliefs, history, and practices. The dialogic process and exploration were some of the reasons for choosing duoethnography, along with a more direct style resulting from ‘its own stylistic direction as the conversations unfold naturally’ (Sitter and Hall, 2012, p.243). Duoethnography captures the lived experiences of each author and provides a rigorous ‘reality check’ through the coauthor’s critical engagement, though ‘Rather than

uncovering the meanings that people give to their lived experiences, duoethnography embraces the belief that meanings can be and often are transformed through the research act' (Norris and Sawyer, 2012, p.9). It is therefore imperative that we position ourselves as early-career researchers and teachers seeking to build upon our knowledge and create something new.

The methods that we used in creating our duoethnography were straightforward. We met on video chat several times and made notes of themes that came out of our discussions, and reconstructed our discussions for cohesion, logic and scope. If we had produced a document of around seven hours of discussion, this may have filled a book, albeit one with several tangents. Therefore, while the presented dialogue is realistic rather than real, it is formed from the actual conversations that we had, which we then edited and continued probing at in the creation of the document.

The text is organised according to the themes we identified in our discussions: authenticity, purposes for listening, formative experiences, impostor syndrome, and implications. We then provide our conclusion, with caveats and limitations.

AUTHENTICITY

MJ: When we think about 'authenticity' in language teaching, I am drawn into the circular thinking on it. There is Widdowson's (1996) notion that texts intended for L1 audiences are not authentic for L2 learners, which takes me into how teachers and learners decide what is or is not 'authentic'. Consider teachers selecting texts: if learner-centred teaching is our goal, is it attainable if we contradict learner decisions by providing what we think is a good choice? I try to accommodate difficult texts by using short extracts, but this raises the issue of inauthentic practices. Therefore, for me 'authenticity', in general listening courses and my Authentic Listening courses I taught at a university, is based on what learners might plausibly encounter outside of the course. I disregard the language background of the text's assumed audience but consider whether my learners are likely to encounter it. What do you think about 'authenticity' and what is 'authentic'?

CB: This is particularly interesting for me as I called my course "Authentic Listening: Understanding Real Spoken English" to ensure that my learners knew it would probably be different from their previous experiences. You and I both run 'authentic listening' courses, yet how 'authentic' is it to

consciously work on developing L2 listening through, for example, strategy instruction or micro-exercises focusing on sound recognition? Is ‘authenticity’ just defined as ‘coming into contact with unscripted English spoken in real life’? The issue of the authenticity in a listening course has always troubled me. Prior to the Needs Analysis for my course, I assumed a need common to all my students was understanding academic lectures. However, I was told that they did not *want* to practise understanding lectures and that they wanted to do more ‘informal’ listening.

In terms of texts, I agree that it is not about which sort of speaker a text was intended for, but whether it was made for pedagogical purposes. Materials made for pedagogical purposes are often characterised by slow, artificial speech (Cauldwell, 2018) and learners as young as sixteen realise this and find textbook materials artificial (Bruzano, 2021). The problem thus seems threefold: authenticity of tasks, authenticity of purposes and authenticity of texts. Do you aim for authenticity in these three domains? If so, would you say you achieve it?

MJ: I feel that teachers select listening texts (other than those accompanying a textbook) based on what they think are ‘worthy’ texts, which might explain the popularity of TED Talks (TED, n.d.). I have also picked TED Talks because of their similarity to lectures. A balance between what is best and what is possible is required: showing a full lecture is time consuming and impractical. However, the lecture is only a single genre that university students encounter outside my classroom. Other genres, while also difficult, do not always require such time considerations so I feel less like I am compromising in those cases. I only select texts based upon student needs and knowledge of stakeholder expectations. Listening materials I have provided include transport announcements, promotional videos, dramas and informative interviews. I endeavour to provide some level of authenticity within all three domains you mentioned above. With authenticity of tasks, authenticity of purposes likely occurs automatically; I cannot think of an occasion where they are likely to be apart. The difficulty here is authenticity of texts because I see natural texts as authentic and graded recorded material as inauthentic. For me, it is much more authentic to use live listening with learners checking meaning throughout than to listen to a recording of a stereotypical ‘native speaker’ speaking slowly. I appreciate that I am often in a minority in my thinking here.

CB: You make some good points about projecting your opinions and balancing different purposes for listening activities. Regarding the first, there is no way that your beliefs and background will not manifest in the selection of materials. ‘Political neutrality’ is something many might aspire to in

language teaching, and this is reflected in 'neutral' textbook topics (Brown, 2020) - but really, is anything devoid of ideology? Is choosing 'apolitical' materials not also a political choice, which is far from neutral? I embrace my positionality and bring it into the classroom, as I do not think language teaching can only be seen in a utilitarian light (i.e. only for proficiency) but it has a strong emancipatory power.

On a practical level, this means not shying away from difficult topics and actively seeking out materials that cover them. Recently, I have used videos about the role of women in science, the history of Gay Pride, and the Cambridge Analytica affair. Although research is done and used primarily in university spaces, the interdisciplinary potential of listening as a tool is also clear to a lot of school teachers. This leads me to your second point, purposes for listening activities. Obviously, I do not wish to indoctrinate my students, but I think the materials we use can spur discussion and reflection. I share this belief with the secondary school teachers I interviewed in my doctoral research: they saw listening as part of an interdisciplinary approach and some of them used listening materials primarily for their content.

MJ: This might be the same way I think about it, but also comprising genres and communicative functions. 'Politically neutral' materials are so asinine that when learners are taught to listen to/with something more substantial, they enjoy it, even when it is more difficult. I am not sure whether many commercial materials make the transition from graded, unnatural language to ungraded, natural language; I hope so, but I remain doubtful. However, any guidance on how to transition from graded language to ungraded natural language in teacher-accessible literature is scarce, so it often comes down to enthusiasts working alone and learning through trial and error.

Materials that 'spur discussion and reflection' should be integral to our pedagogy because one would hope we are not just playing media extracts without any reaction or interaction. When I am at this stage of a lesson, I remain neutral, at least momentarily, which causes friction with some students because they see it as question avoidance. I explain that I want them to get the most out of the discussion first, but that I will share my opinion later. Teachers have greater social capital (Bourdieu, 1986) than students, therefore it is easy to create a climate where the teacher's opinion is the *de-facto* 'correct opinion'. The videos I used were all mainstream and uncontroversial; the lack of consensus on action stimulates discussion, and this is deliberate. While I was previously precarious in employment, I did not want to risk student complaints. In the past, at different

workplaces misunderstandings between colleagues and students resulted in non-renewal of contracts. While I am not shy of stating my beliefs, I have tempered them to maintain my career and I am not alone in this.

CB: I do not think I have seen many commercially available materials that transition from graded, unnatural language to ungraded, natural language. This relates to the limitations of 'global ELT' and its McDonaldisation (Littlejohn, 2012; Ritzer, 2013): there is a delusion that English language learning can be packaged into easily followed steps, which defies the way languages are learned. This is also reflected in how listening is packaged in some commercial materials, with little space for unpredictable natural speech. However, we are approaching a moment of reckoning, because students encounter real English outside of classrooms: the secondary school students I interviewed for my doctoral research called the English in the textbook 'artificial' and 'annoying'.

PURPOSES FOR LISTENING

CB: While I am aware that listening can have a myriad of purposes, in the 'listening pedagogy' community, we have perhaps overemphasised our wish to reject the CA (Field, 2008) – i.e. listen/answer comprehension questions/check - and embrace process-oriented listening instruction. This has also led us to overlook the fact that in many contexts, listening cannot just be for the process, and it also has potential on a content level. I am not claiming that focusing on the processes of listening is useless, but I am saying this reaction against the CA may have been taken to the extreme and led the academic community to forget that listening is a powerful tool to do many other things than just listen for the sake of developing listening.

MJ: Regarding the dominance of the CA, many teachers seem to believe that they follow an implicit listening orthodoxy (Jones, 2017). While there are overlaps between the participants' statements, what actually emerged was a diverse array of practices. These were mainly top-down skills, and teaching bottom-up skills was only a stated classroom practice for a minority of teachers. The reasons were not explicit, but it could be a lack of phonology knowledge, a lack of knowledge of learners' L1s, or that they had not considered it as valid. Perhaps people believe that 'good practice' is found in pre-service education or is the norm in commercial materials. However, it is worth reminding ourselves as a global profession that there are local differences in both teacher education

and commercial materials, and these have effects on what teachers believe about teaching, which holds true for listening, too.

There has to be a point in listening to and understanding speech, such as to be entertained, to be informed, and to use what is learned to discuss, synthesise ideas and understand one another. This may be idealistic, but if we focus on how difficulties arise in parsing and how to overcome them, we are doing what needs to be done

CB: This may be true for your classes and mine, at university level. Can it be just as applicable in schools or in university classes where students have low proficiency levels or low motivation? In other words, do they not need some motivation, perhaps carefully structured comprehension questions? I wonder how feasible it is to abandon the mindset that students 'need a reason to listen' (beyond trying to understand), which in common practice means assigning comprehension questions.

MJ: I feel that my philosophy should hold for other settings and abilities, at least as an ultimate destination. However, in 'lower proficiency' classes the majority of students need help to reach the destination. Metacognitive and cognitive strategies need to be fostered while building bottom-up skills to develop as full a phonological inventory for the language as possible. As they develop we can set more naturalistic tasks. Despite this, I still believe it is possible to source texts that interest students and use short sections of difficult texts to facilitate successful listening.

With compelling materials and tasks the need for contrived comprehension questions is bypassed. An example may be to decide whether to buy concert tickets based on information from a television interview. If learners select texts, then a reason to listen is present, and teachers only need to provide guidance about whether the text is too difficult at the learners' current state of proficiency, and how to deal with difficulties in the text itself. However, this requires use of either non-contact time, which teachers often lack, or requires use of teaching time for syllabus negotiation, which may not be welcomed by learners (Bloom, 2007).

Working with less-motivated students can be difficult. They need practice to develop skills to access more interesting, intrinsically motivating tasks. Unfortunately, they are unmotivated to practise

sufficiently, and their situation becomes a cycle, requiring reliance upon extrinsic motivation to break it. Here, educational *realpolitik* comes into play: nobody wants students to fail a class, so negotiating a contract with them – do X amount of practice, Y times a week and you will at least pass – is necessary. It is likely to lead to greater learning gains for those learners, because it is better to have students making some progress toward an extrinsic goal than to have them disengaged due to having no intrinsic goals, or because they are working toward fictional ones to meet teacher expectations. Comprehension questions can be useful here: students listen, attempt the question, get a right or wrong answer, and that is something they can cross off their list. For the more motivated students there must be something meaningful, to prevent demotivation, and with some luck, perhaps the less motivated take interest in what the more motivated students are doing.

CB: That's a good point about students 'copying' what other students do, as vicarious experiences are one of the precursors of self-efficacy beliefs. Self-efficacy, or one's belief in one's ability to accomplish tasks, is determined by a number of factors, including previous experiences of success and failure, verbal persuasion (e.g. a mentor telling us that we can succeed) and emotional and physiological states (e.g. listening anxiety may not be conducive to high self-efficacy beliefs about listening). Another key source of self-efficacy beliefs is vicarious experiences: having good role models, whether in teachers, guardians or peers, helps us form good self-efficacy beliefs about ourselves (Bandura, 1997). What is harder is fostering this in an online environment.

MJ: I believe reflection is necessary, about what did and did not work in the listening process, and what kinds of practice students do outside the classroom. Sharing ideas and self-study materials is one way of doing this. This might be dismissed as unworkable due to time constraints, but it is possible to structure some of this as homework, and if done meaningfully at the start, can lead to learning and motivation gains by the end of a course. Doing this online is tricky due to the time required to build rapport necessary for learners sharing experiences with peers. Most learners have had both success and failure in language learning. Building on these experiences by learning from peers as well as teachers can develop learners' reflective practices (Schon, 2008) related to their language learning.

CB: Individual and group reflection should become more central if we are to teach listening 'properly'. What you say about the feasibility is true, but only insofar as 'listening for acquisition' (Richards, 2005) is prioritised over listening for developing listening. There is this belief that listening

is mostly “for something else” (Bruzano, 2021), such as vocabulary learning, speaking or grammar. I am not saying that listening for acquisition has no place in the classroom: on the contrary, recent findings show that listening helps, for example, with the acquisition of formulaic language (Lin, 2021).

However, if we only carry out listening activities “for something else”, we run various risks. The first is that our students think of listening as a subservient activity and not something worth doing in its own right. The second is that students focus overwhelmingly on catching words or grammar structures when they listen (Yeldham, 2016). In my own research, this was true especially when learners expected to be tested on the vocabulary and grammar from the listening (and I would imagine it is more likely to happen in a school context). Third, and perhaps most importantly, if we do not focus on the processes of listening and on understanding difficulties therein, how do learners understand that there is a way to improve? If they do not understand, how can they progress? Listening development may be perceived as different from, for example, vocabulary acquisition: if we think like our learners, improvements in vocabulary acquisition and techniques to enhance one’s vocabulary may be more tangible than those related to listening. In conclusion, I would say that post-listening discussion should be a key activity in the language learning classroom.

While I understand what you say about creating rapport, the feasibility of this can be severely restricted by the number of students online. I recently conducted an *Authentic Listening* course with six students. The course was entirely online, so we never met in person, yet we created an environment where everyone could share their views fairly easily. Based on end-of-course feedback, these discussions were useful to them as they had started thinking about listening in a different way. For example, one student said her perception of her difficulties had changed radically: before, she did not normally stop to consider that her difficulties may be related to her lack of contextual knowledge. This was a proficient learner whose bottom-up decoding was highly developed; what was sometimes missing was background knowledge. Throughout the course, she claimed that she started to notice that her small breakdowns in comprehension were often due to this and now she knows not to panic. To me, this is a huge success.

This is also related to the reasons to which learners attribute their successes and failures. The more they connect their performance to external uncontrollable factors, the less likely they will be to persevere in the face of difficulty (Weiner, 1985). There are studies on attribution retraining in fields

other than ELT that suggest that training learners to re-think their attributions may be beneficial (Hilt, 2004). This may be an avenue to pursue when it comes to listening, where learners often hold maladaptive attributions. In your experience, is this something that might be useful to learners, or does it require too much self-awareness and/or willingness to share one's beliefs with others?

MJ: Giving rationales for the work that we set could help learners forge connections between their skills and knowledge, or at least understand their difficulties. It is tempting for both teachers and learners to blame the text, like 'it's too fast' or 'it's too difficult'. Conversely, focussing on individuals' skills and knowledge may provide a sense of hope. Examples of doing this from the learners' point of view may be akin to 'I am not used to processing this much information at once, so I need to listen in chunks then rest'. From the teacher's perspective, an example may be 'A lot of students are lost from the text after a matter of seconds. If I try to build up the amount they listen to little by little, they might be able to handle it better'. If we focus on things that can change (i.e. people's actions, thoughts and behaviours) rather than things that cannot (i.e. recorded texts), then handling expectations may become easier. Students sometimes expect to be able to listen to anything they select and get frustrated when they have difficulties after a semester or even a year of lessons. By understanding themselves and how they approach texts with bottom-up and top-down skills together, more realistic goals can be set and possibly even faster progress can be made.

FORMATIVE EXPERIENCES

CB: A few years ago, I took a pre-intermediate German class, and I was stunned to find I could use many of the same strategies even in a language I was not very proficient in. I think this helps me when it comes to teaching listening – not only because I can model strategies, but also because I am a non-native speaker, so I can often predict what will be difficult for fellow non-native speakers (especially if we share our L1), using what Field (2008) calls a prognostic approach. I have wondered whether this is different for native speaker teachers and whether you struggle to predict learners' difficulties or gauge the difficulty of materials before using them in the classroom?

MJ: I think I pitch things too hard most of the time, which Ryan and Deci (2017) state is likely to demotivate students. However, I feel my job is to make the difficult accessible: by providing skills and tactics, making sense of a difficult recording or interaction comes to be possible. There is then a

development of confidence and competence in overall listening skills. I do take L1 differences into account, though, mainly when I think about how/what to revisit for listening Focus on Form (Long, 1991).

CB: I suppose if you ask teachers whether they think they pitch things too hard, many would answer that they do, if they work with 'authentic' materials. I also think that it is precisely dealing with difficulty that we need to embrace more in our classes. Listening is perceived as unpredictable (Bruzzano, 2021) and uncontrollable (Santos and Graham, 2014), so we should help students manage that unpredictability and uncontrollability. Plus, Graham (2014) makes the point about 'instrumentality', i.e. the connection perceived by students between their efforts and their results. If students continue thinking that when a recording is 'too difficult', they can have no impact on it and no way of understanding even a little, then they are unlikely to see much point in making an effort at all (Ryan and Deci, 2017).

MJ: Teachers can create a trap for themselves if they avoid working within the difficulty, unpredictability and uncontrollability of authentic texts. This is where repetition and modelling how to work through the difficulties of a text can help. Stimulating students to question themselves about what they hear, and what is a reasonable guess based on the context of the text, and the phonemes, morphemes and whole words they heard, builds autonomy. Obviously, this depends on the time available for teaching listening, and other priorities that learners and other stakeholders have.

CB: Yes, but this returns to the issue of priorities and of how teachers conceptualise 'teaching listening'. If teaching listening means using listening for acquisition, or for other purposes, then activities like giving feedback on listening processes or modelling strategies will be among the first to be cut because they are perceived as less important.

There are few studies about how teachers may hold collective beliefs, especially when they work in the same institution: Breen et al. (2001) investigated precisely this and found that teachers working in the same context and with similar levels of experience held some shared 'pedagogic principles', which they realised through different sets of practices. Conversely, the same teaching practice was ascribed to different pedagogic principles by different teachers. In our case, would it be unfair to say

that listening is perceived by many as being subservient to other skills and systems, and thus given less time and priority in classroom instruction?

This was the case with the four experienced teachers in my research. They made a claim that I suspect may be common if you interview language teachers: that due to time and curriculum constraints, they could not give listening the time they would have liked to. However, when probing further, I found that no strict requirements existed for syllabi or course contents and the teachers enjoyed great freedom when deciding on materials, contents and assessment. In this scenario, they originally framed the lack of time and curriculum constraints as external impediments of sorts; nevertheless, upon further probing, they realised that they had internalised some tacit, common understandings in their context, which had led them to establish certain priorities for themselves (for example, teaching L2 literature). Can we assume that most teachers will internalise the belief *there are more important things than listening*, even when they ostensibly claim that listening is important?

MJ: There are various things that teachers feel are important, but which are deprioritised due to a perceived lack of time or perceived beliefs of managers. Given the previous focus on English for university entrance exams in high school English classes (Underwood, 2012), I cannot imagine that changes have occurred in the practices of most teachers in the last decade. I imagine that the backbone of many teachers' listening syllabi is based on Japan's Eiken English test, given its familiarity. Whether this is a matter of practising test questions or teaching of how to listen and facilitating language acquisition, I do not know. All that I see is that there is a gradual improvement in the baseline proficiency of the least able students entering the programmes I have taught at universities over the past few years, but that their listening skills have been consistently the same and that most students had not been taught listening skills, only listening practice, prior to entering the programmes.

IMPOSTOR SYNDROME

CB: Impostor syndrome is a big theme for me. Even after studying listening for almost ten years, training teachers on it and teaching whole courses about it, there is still a part of me that wonders whether there is a point to it. Research (e.g. Graham, 2011) and my experience show that listening

instruction that focuses on listening processes and developing metacognition helps learners develop self-efficacy and possibly metacognitive awareness (Siegel, 2015). I am fairly confident that this can be achieved. However, if we turn to whether what students learn can be transferred to real life listening on a long-term, sustainable basis, I am sometimes doubtful. Field (2008) maintains that listening can have a diagnostic role, whereby teachers deal with listening problems as they arise and provide remedial micro-exercises. However, in practice this is problematic, as it is often difficult to pinpoint the origin of a comprehension breakdown. Sheppard and Butler (2017) do this for bottom-up problems, and it is a fascinating study; but how feasible is it in a real-life classroom? How do we know that we are not making wrong assumptions about why learners did not understand? Further, even assuming that we 'correctly' identify the source of a learner's mishearing or misunderstanding, and we deal with it, how useful is this for learners?

MJ: I agree that it is difficult, but I think there is a point to instruction. However, like everything else in language teaching, learners need to engage deeply with what is being taught; unfortunately, because listening is difficult, I find that students in my contexts have been less willing to invest time and attention as deeply as they might with other skills, possibly because listening is seen as less academically relevant than reading and writing, and improvements are not easily observable.

I also share your pessimism regarding the feasibility of teaching listening. It should be possible to teach the same methods, strategies and tactics across lessons to enable practice and consolidation. Segmental and suprasegmental phonology can be taught as a Focus on Form (Long, 1991) at the point of need, with items selected as needed by learners rather than sequenced for teacher convenience. Teaching at the point of need should make items more salient, and lead to greater noticing (Schmidt, 1990) and then, over time, acquired. However, whether this is possible under current neoliberal conditions in ELT (Gray and Block, 2012) is debatable, due to the high contact time and low preparation time.

CB: I am convinced of the value of Focus on Form, though I do worry about students understanding this value. My philosophy is that learners need to know the basics of how language learning works, then how and why I work with emergent language. I fear that if I fail to do this, they will think my teaching is haphazard and lose motivation and focus. Do you think your learners understand why you do what you do?

MJ: I have had pushback from students, ignoring instructions or treating them as optional, so I had to give a rationale to illustrate that they were spontaneous ideas, but there were valid theoretical foundations. This rationale has not always helped students to feel more motivated, but it has seemed to help with engagement in lesson activities because students do not feel that they are wasting their time when they work hard.

IMPLICATIONS

MJ: Earlier we discussed having time for meaningful work with listening and how this can deter teachers from enacting recommendations from research. If you only have an hour a week with a class, then you are limited in the interventions you can provide. This was a reality for me a few years ago, with other teachers at a school I worked at providing mainly reading instruction in 'listening lessons' due to perceived test washback (Bachman and Palmer, 2010). However, many recommendations seem like all-or-nothing, when most of the time *something* is preferable to nothing, and easier to build upon than a botched attempt at everything due to a lack of time.

The jargon-heavy names given to constructs are rarely teacher friendly, and I am as guilty as anyone about their overuse. While convenient for researchers, do the terms metacognitive strategies, top-down/bottom-up processing, suprasegmental phonology mean much to teachers? Borg (2009) says that teachers do not read research because they do not have time. If they do not have time to read research, they likely do not have time to do a few web searches for definitions of terms that different researchers operationalise differently.

CB: I agree with much of what you say but have two qualms. The first is to do with 'most of the time *something* is preferable to nothing': are we sure it is? One of the problems with listening pedagogy is that teachers are unaware of how listening *works*, hence they are unaware of how listening can and should be 'taught'. Doing 'something' sounds to me like incorporating a few activities here and there without fully understanding their purpose: as Borg (2006) also reports, these types of teacher development interventions are not accommodated within the teacher's existing belief system; therefore, they may ultimately be short-lived innovations. This leads me to my second point: how do we ensure that teachers understand the fundamentals of how listening works and can be taught?

You mention that much jargon exists and that it is not teacher-friendly. I would agree, but I would also say that in my experience, jargon can be kept to a minimum and it can also be stimulating for teachers. Teachers have been deskilled for decades: is presenting them with a 'dumbed down' version of 'best practices' not another way of deskilling them?

MJ: As for incorporating activities based upon evidence, there needs to be at least partial buy-in from teachers when they are incorporating activities that are evidence based. So, yes, you and Borg (2006) are both right, because what we do not want to see is 'short-lived innovations' or a lack of teaching proficiency, which will occur if new techniques are not tried out and practised sufficiently.

I am glad that you got to the topic of deskilling teachers, too, but I think that jargon might be an obstacle to mitigating the deskilling. If we as a field keep on writing articles that are rich in content but are undecipherable without a huge amount of internet searching, I think the deskilling will continue because there will be less motivation, and less time to attempt to read for continuing professional development (CPD). There is a need for familiarity with common professional terms, but it needs to be facilitated. Teachers are not stupid, they just lack time, and the amount of articles that claim to be aimed at practitioners but seem to require postgraduate-level study as a prerequisite for understanding only leads to gatekeeping, whether this is the intention or not.

CB: I can see what you mean about gatekeeping, even when unintentional. We may have to disagree about 'jargon', however: in my experience leading in-service professional development initiatives, the use of limited and useful jargon was well-received, and it gave teachers a tool to begin to understand listening (especially if they decided to read up about it afterwards). Understanding basic terminology related to listening may simply mean understanding bottom-up and top-down listening processing, metacognition and listening strategies. Without this basic knowledge, I wonder why teachers should think to introduce process-based instruction: they might simply do it because they have been told to, but without properly understanding why.

CONCLUSION

While both authors largely agree in the discussion above, it is clear that there is also some disagreement when attempting to explore good practice. However divergent ideas about this reflect the reality that our practices are contextualised and locally situated.

Our understanding of the terms 'authentic' and 'authenticity' are reassuringly in accord, even as the term can be operationalised differently to describe texts, tasks and purposes. We hope that others will recognise the potential of using authentic texts in their teaching and assist their learners in overcoming the difficulties associated with understanding 'natural' language. With greater tolerance of difficulty comes greater autonomy and in turn greater gains in skill development and language acquisition. Additionally, autonomy can mitigate the lack of time for classroom instruction.

However, one must think about the purposes for listening. It may be useful to conceive two different concepts: listening skills development, and language acquisition through listening. Rather than dictate practices to teachers, it may aid professional development to consider whether skills development or language acquisition tends to be the goal of one's lessons. If there is a skew in one direction it may be beneficial to rectify the balance. We suspect that most teachers skew toward the use of listening for learning grammar and vocabulary items, thus bringing in more listening skill development is likely to be more rewarding.

Furthermore, in teaching more listening skills development, learners can face their listening difficulties and confront them, and teachers can facilitate reflection among learners. By using reflection and also metacognitive strategies, it is possible that learners will attribute difficulties to their behaviours and focus on what can be changed, rather than sticking with maladaptive strategies such as blaming the text for being too fast or too dense with unknown vocabulary. Such adaptive attributions are also likely to be helpful with reading, writing and speaking.

In spite of our exploration, one question that remains unanswered is how helpful process-based teaching is for listening development. While both authors see the merits in the process-based approach, we wonder whether there is sufficient time available for teachers to use it. As stated above, if autonomy is fostered, then available classroom time increases. However, if there are

conflicting priorities, real or merely perceived, it is likely that process-based activities will be short-lived novelties with little effect on learning. Time constraints also cause doubts regarding the efficacy of instruction. Additionally, we concur that where teachers are unaware of the foundations of listening, process-based instruction may remain a short-lived innovation. Both authors plan further research on listening pedagogy and practices, and we welcome further research in teacher cognition regarding listening pedagogy and the efficacy of process-based instruction.

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A Needs Analysis of the Assessed Writing Genres of a 2nd Year Transnational Undergraduate Engineering Programme

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ABSTRACT

The purpose of this research was to carry out a needs analysis (NA) of the assessed writing genres on a second-year transnational education (TNE) undergraduate engineering programme. A case study approach was used to gain a deeper understanding of the writing requirements of second year engineers and to inform course design on an English for Specific Academic Purposes (ESAP) in-session writing module. The methodology used to carry out the NA included genre analysis of institutional artefacts, interviews with faculty, and a student questionnaire. Based on Nesi and Gardner's (2012) thirteen genre classification of the British Academic Written English (BAWE) corpus, the results of the analysis highlighted eight writing genres used for assessed coursework. The Exercise genre was found the most, with the use of the Narrative genre through reflection as the third most common genre. The Narrative Genre, Design Specification and Exercise were the only genres found across all four disciplines highlighting the importance of specificity in ESAP provision. The results of faculty interviews and the student questionnaire both found writing was perceived as especially important for engineers. However, some faculty expressed that the students found critical analysis and argumentation difficult. Genre expectations are mostly expressed through structured assignments and marking rubrics, but only explicitly taught in one module. This is mostly reflected by students, although some highlighted the need for independent study or reference to past writing instruction outside engineering when interpreting assessment tasks. This case study has highlighted areas to develop for in-session support, particularly the need for writing instruction on a variety of assessed writing genres across the programme at all levels.

KEYWORDS: ESP, TNE, needs analysis, genre analysis, reflection

INTRODUCTION

English for Specific Academic Purposes (ESAP) targets a group of learners from the same discipline and concentrates on discipline-specific communication and language use (Richards and Schmidt, 2002; Anthony, 2019). To address these discipline specific needs, ESAP courses should be designed around students' needs, and a key tool in understanding these needs is a detailed Needs Analysis (NA). However, Serafini et al. (2015) and Woodrow (2018) report inadequate analysis of student needs when designing courses due to methodological issues or instructor inexperience. These inadequacies may in turn impact student learning through flawed ESAP course design (Du and Shi, 2018).

The 'single most defining feature' of ESAP course design is that they are developed from the analysis of learner needs (Woodrow, 2018, p.5). NA as defined by Brown (2016, p.4) is 'the systematic collection and analysis of all information necessary for defining and validating a defensible curriculum'. NA is a broad term which is primarily based on the analysis of all stakeholder needs, not just the learners, in a particular localised context and often includes other analysis such as discourse, corpus, and genre analysis (Chambers, 1980; West, 1994). The localised context in this study is a new ESAP in-session writing module to support undergraduate engineering students studying at the Southwest Jiaotong – Leeds Joint School. This transnational education (TNE) programme uses English as a Medium of Instruction (EMI) and enrolls students located in Chengdu, China, on University of Leeds Engineering degrees. Davies et al. (2020) state that well designed English for Academic Purposes (EAP) support needs to be provided to learners studying in an EMI context, and that this is particularly true in a TNE programme where students are adapting to new academic expectations and the academic literacies needed to meet them.

The aim of this research is to conduct a NA of a second year TNE undergraduate engineering programme and the results of the study will directly inform course design on the ESAP in-session module described above. The case study aims to create a taxonomy of student writing tasks based on Nesi and Garner's (2012) Genre Family Classification by analysing the assessment instructions given to students. Then, the views of engineering faculty on disciplinary expectations for these genres are compared with students' current understanding of these genres. This study therefore continues an established EAP tradition of investigating written genres (Swales, 1990; Nesi and

Gardner, 2012) to help students better understand how to communicate as a member of their chosen discourse community (Lave and Wenger, 1991; Hyland and Hamp-Lyons, 2002; Hyland 2018).

LITERATURE REVIEW

Needs analysis

The systematic investigation of needs requires the collection and analysis of the necessary data to conduct the assessment of these needs (Bocanegra-Valle, 2016). Wilkins (1976) states that defining objectives is the first step in course design. These objectives should be based on the analysis of the communicative needs of the learner (cited in West, 1994, p.2). These needs are 'determined by the demands of the target situation, that is, what the learner has to know in order to function effectively in the target situation' (Hutchinson and Waters, 1987, p.55). This part of the analysis is more commonly known as the 'Target Situation Analysis' (TSA) (Dudley-Evans and St. John, 1998, p.123). The TSA is seen as the end product, which is compared with a 'Present Situation Analysis' (PSA) that analyses what the learners currently know or 'lack' (Richterich and Chanercl, 1980 cited in Songhori, 2008). Finally, the local teaching context and external factors relevant to learning should be considered. Holliday (1994) termed this 'means analysis'. These early approaches to NA have evolved and are interwoven but they are still central to traditional NA, although critical and ethnographic approaches may now also be considered (Bocanegra-Valle, 2016). This section discussed the key investigations that may be considered in a NA, and the following section discusses how the communicative writing needs of the students are determined.

Genre analysis

Genre is a central concept in ESAP course design because these genres relate to the 'target contexts' that students wish to study (Hyon, 2018, p.4). Swales (1990) describes genres as 'communicative events' that are constructed for a particular discourse community and are composed of patterns of 'structure, style, content and intended audience' (p.58). Therefore, genre analysis can be used as a framework to help students understand and produce what is expected of them in their chosen discipline. Genre analysis may be done in a number of ways. Firstly, it can be conducted by collecting the genres students may have to produce within the target discipline, for example research reports or case studies (Woodrow, 2018), and secondly, by structural move analysis to see how these genres are organised. Swales' (1990) influential 'creating a research space' (CARS) model is an early example

of move analysis that has influenced ESAP research. Finally, it can be conducted by identifying lexicogrammatical features such as the use of hedges and personal pronouns (Hyon, 2018).

Needs analysis of academic writing

Genre in EAP has mainly focussed on written texts to identify the variation of genres across disciplines, and to analyse similarities and differences between genres, within and across different disciplines. (Horowitz, 1986; Leki and Carson, 1994; 1997; Hyon, 1996; Zhu, 2004b; Gimenez, 2008; Hyland, 2009; Hyland and Tse, 2009; Nesi and Gardner, 2012). However, one criticism is by offering texts as rigid forms that can be taught prescriptively, we are ignoring the social and cultural context of how the texts are formed. The concept of discourses as communities (Swales, 1990) has been explored to address this argument. By focusing on specific genres written by an insider of a discourse community, of which a student wishes to earn membership, students can explicitly see what is required to communicate within that community (Lave and Wenger, 1991). Moreover, to learn this 'new way of knowing' students need to develop their academic literacy (Lea and Street, 1998, p.157).

Research on academic writing has increased as a response to this understanding that students need a discipline-specific specialised literacy. This research has highlighted the 'sociocultural dimension of academic writing' and that disciplines are governed by a shared communicative purpose of knowledge creation (Swales, 1990; Berkenkotter and Huckin, 1995 cited in Zhu, 2004a, p.29; Hyland, 2000; Wardle, 2009). A large amount of research has been done on academic genres, including genre text types, structures, and features within genres. The research shows variation of genres between and across academic disciplines and this variation highlights the difference in values and beliefs in academic communities (Conrad, 1996; Hyland, 1997; Chang and Swales, 1999 cited in Zhu, 2004a; Peacock, 2002; Hyland, 2009). However, there are some criticisms that genre analysis exposes students to texts written by accomplished writers or 'experts', and not texts that they themselves will be asked to produce (Paltridge, 2004). Consequently, research on genre families of student writing has been carried out to identify the writing tasks students need to complete in higher education. An early study by Horowitz (1986) identified seven categories of writing genres across seventeen departments at an American university. A more recent and comprehensive study was carried out by Nesi and Gardner (2012) which was based on the analysis of the British Academic Written English (BAWE) corpus of student writing. Their study highlighted thirteen genre families which were used to classify genres in this study (see Appendix 1). They believe these genres are

applicable to all university contexts; however, they do concede that further investigation of disciplinary contexts may reveal genres not identified, and genres of the same name may have different linguistic features in different disciplines.

Further research has been carried out on student writing tasks at both the undergraduate and graduate level. Some studies concentrated on genres across a wide range of disciplines (Braine, 1995; Hale et al., 1996; Nesi and Gardner, 2006; Cooper and Bikowski, 2007; Gardner, 2008; Gillet and Hammond, 2009; Gardner et al., 2019). While other research has been carried out on student writing in a particular discipline and these include: Zhu (2004b), who investigated assignment types within a business course and what skills were required to complete them; Gimenez (2008), who investigated discipline writing in Nursing and Midwifery and the difficulties students faced writing these genres; and Webster (2021), who investigated the written discourse of digital media studies and found five separate genre families. Student writing in the sciences has concentrated on: Jackson et al. (2006), who found the laboratory report as the most important genre for undergraduate students at a South African university; Rahman et al. (2009), who investigated genre to create an ESAP postgraduate writing course for Science and Technology students in Malaysia; Parkinson (2017), who carried out a genre analysis of student laboratory reports in Science and Engineering; and Doody and Artemeva (2021), who investigated the multimodal nature of student writing in Medical Physics. Little research has been carried out on student writing within Engineering. The research that has been carried out tends to focus on corpus analysis and the development of engineering word lists (Ward, 2009; Shamsudin et al., 2013; Hsu, 2014) or analysis of an engineering in-session writing coursebook (Bozdogan and Kasap, 2019). Therefore, this study attempts to address this gap by analysing the writing genres in a second year engineering programme and combining this with analysis of both faculty and student views on academic writing, and how these views contrast.

Previous studies have been undertaken by analysing students' writing needs from different perspectives: tutor expectations (Vardi, 2000; Zhu, 2004a; Nesi and Gardner, 2006); and students' understanding and perception of writing needs (Leki and Carson, 1994; Asaoka and Usui, 2003; Wu and Lou, 2018). One possible weakness of these studies is the lack of cross-analysis between faculty and students. However, one study contrasted the views of both tutors and students (Bacha and Bahous, 2008), but this was based more on the perception of language proficiency, rather than taking what Lea (2004) terms an academic literacies approach of analysing the differences between

faculty and students' understanding of the writing process, and what is required for a particular genre. This study aims to identify these differences and as a result improve the teaching and learning on an ESAP insessional writing module. The next section discusses the research methodology used for the NA and how the data was collected and analysed.

METHODOLOGY

This research uses a case study approach with the collection of institutional artefacts, and qualitative data from interviews with faculty and a student questionnaire to conduct a NA of a second-year engineering degree programme. A case study approach was chosen as case studies are characterised by an in-depth study of one setting (Denscombe, 2014). The following research questions were investigated:

1. What are the assessed writing genres across year two of an undergraduate engineering programme?
2. What are the disciplinary expectations for these genres and how are these expressed?
3. What are the students' prior knowledge & experience of these genres?

Context and participants

The research was conducted in a TNE joint engineering school and the school offers engineering degrees in Civil Engineering (CE), Computer Science (CS), Mechanical Engineering (ME), and Electronic and Electrical Engineering (EE). Initially, the Head of School for each programme was approached to ask for permission to speak to Module Leaders and access assessment information via the Virtual Learning Environment (VLE). In total, 34 Module Leaders were emailed with positive responses from 22 (65%). Two Module Leaders from each school (CE, CS, ME, EE) were invited to interview and all eight responded positively. The Module Leaders were all specialists in their subject area with PhDs, and most with industry experience.

The students in the study were close to completing their first year of undergraduate study in one of the schools highlighted above. The students ages ranged from 18 to 22 and most had been studying English for over 10 years, with the past two years within an EMI engineering context. Initially, all 281 year-one students across the four schools were invited to take part in a focus group, but only six

responded. Consequently, a questionnaire was sent to all students, with 72 (26%) responses in total. The students or 'in-service learners' were included as they are useful sources of information (Long, 2005, p.20) and should be aware of some of the meta-language used to describe academic writing as they have completed a Foundation Year before entering their disciplines.

Data collection instruments

The collection of institutional artefacts was used to answer research question one and involved accessing and analysing assessment instructions, guidance notes and marking criteria to identify the writing tasks the students had to complete. Access was gained to 38 out of 55 (69%) assessments. The remaining 17 (31%) were classified from the Module Handbooks that are given to students. The second instrument used to answer research question two were interviews of faculty. Qualitative interviews were used with a main question and follow-up semi structured interview design. This takes a naturalist paradigm and 'interpretive constructionism' approach to research which aims to understand the interviewees' views and interpretations of the context under study (Rubin and Rubin, 2012). The main questions were based on the aims of the study to investigate the faculty's view on the importance of writing in Engineering, their view on the faculty's role in helping students develop academic writing skills, and to discuss the genre expectations for one of their assessments. A core set of six questions were asked with the only change dependant on which assessment was being discussed. Follow-up questions were asked if necessary. The interviews were conducted on Microsoft Teams and lasted between 18 and 37 minutes. The interviews were transcribed, and member checked for accuracy. Finally, a questionnaire was used to answer research question three and analyse students' prior experience of writing in engineering. Questionnaires can provide information on the language attitude and abilities of a given population (Codó, 2008). Students were asked comparable questions to faculty on the importance of writing in Engineering, who they think should be responsible for teaching writing in engineering, and genre expectations for each of the genres found in their relevant discipline. The anonymous 20 question questionnaire was administered through Microsoft Forms and the average time taken to complete the survey was 13 minutes. Triangulation of both methods (interviews, document analysis, and surveys) and sources (students, course artefacts, and faculty) was used to increase the reliability of data analysis (Long, 2005; Serafini et al., 2015).

Data analysis

First, examinations and assessed coursework were divided using the module syllabus. The exams and non-written coursework were removed from the analysis. Then the assessed coursework instructions, guidance and marking criteria were analysed and coded into 13 genre families based on Nesi and Gardner's (2012) classification. The majority of the instructions had clear descriptions of the task and included marking criteria. One possible weakness of only analysing the instructions without student examples is that the genre may not be clear from the prompt and the 'faculty member or course developers' genre expectations may differ (Nesi and Gardner, 2012, p.7). To overcome this, faculties' genre expectations were included in the research design to check the assessment was correctly categorized and access to the completed student assessment was available if required. However, this was not needed and the assessment instructions, as Wingate (2018, p. 352) notes, are often the only 'explicit advice' students receive on how to write coursework genres. Next, the interviews and questionnaire responses were coded around the themes from the questions and other 'Examples, Events and Topical Markers, and Concepts and Themes' were applied and analysed across the eight interview and questionnaire responses (Cohen et al., 2011, p.565; Rubin and Rubin, 2012, p.193). Responses were analysed for similarities and differences across and between faculty and student responses.

Research ethics

Institutional ethical approval was granted for this research and informed consent was obtained from all participants through a detailed participant information sheet. All responses were anonymised, and all data was held securely. As I was a colleague of the Module Leads, and the teacher of the student participants, ethical issues surrounding these relationships were considered, particularly 'free consent' (Hammersley and Traianou, 2012). However, no institutional authority was exercised, and students' responses were completely anonymous. All faculty approached for an interview accepted with the implicit understanding the results would inform course design on a ESAP module which may impact student learning on their modules.

RESULTS

Results of the Genre Analysis

The following section details the results from the genre analysis to form part of the NA in response to research question one:

1. What are the assessed writing genres across year two of an undergraduate engineering programme?

117 assessments in total were found across the four programmes and 106 were written assessments. 51 of these were exams and a total of 55 were assessed written coursework. Within these 55 writing assignments, eight of Nesi and Gardner's (2012) genre classes were identified (see Figure 1 below): Exercise, Methodology Recount, Narrative Recount, Design Specification, Case Study, Explanation, Problem Question. For an overview of the Nesi and Gardner's (2012) Genre Classifications see Appendix 1.

The Narrative Recount was the joint third most common genre and at least one Narrative Recount was found in each degree programme. The only other genres found across all programmes were the Design Specification and Exercise. Also, perhaps indicative of year two study, Nesi and Gardner's (2012, p.170) 'Preparing for Professional Practice' genres, specifically the Design Specification was prominent across all four degree programmes. The Methodology Recount was only found in Electronic & Electrical Engineering and Mechanical Engineering. However, assessed laboratory work was also classified as Exercise in some instances with just the experimental data required rather than a full report for submission. Also, through informal discussion laboratory reports are found in other degree programmes but they are not assessed. Finally, the Research Report was only found in Computer Science and Civil Engineering, and the Case Study was only found in Mechanical Engineering.

Results of the faculty interviews

The following section details the results from the faculty semi-structured interviews to form part of the NA in response to research question two:

2. What are the disciplinary expectations for these genres and how are these expressed?

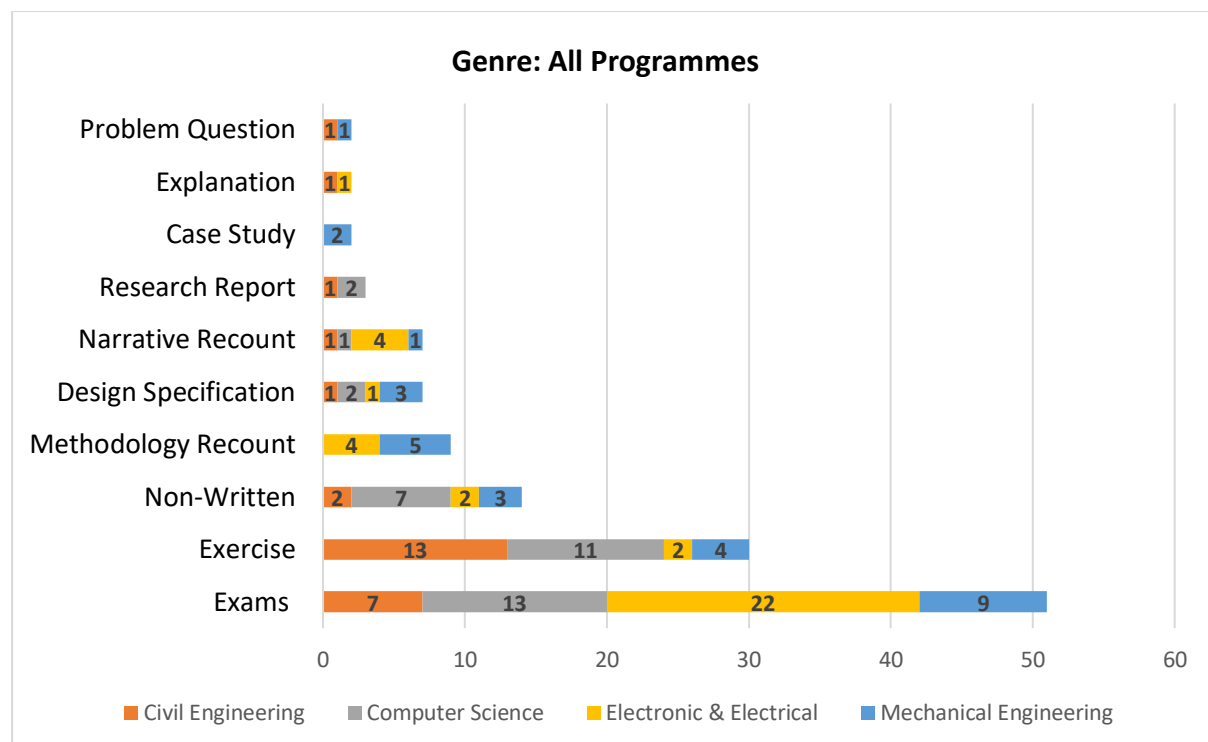


Figure 1: Genre classifications found across all four programmes

The view of English within the discipline

The first interview question explored the importance of English in the faculty members' course, their engineering field, and also whether English plays a role when grading coursework. All faculty agreed that English was important both in their course and within the profession of engineering. Reference to future careers was mentioned by two faculty members:

It is important and when students begin engineering, they think they will spend all day doing maths [...] but as you move through the industry you do lots of report writing, managing projects, letters. Communication is essential. The people who rise to the top in industry are not the ones strong in maths but the communicators. (CE2)

It is critically important. Documentation in industry is just as essential as it was years ago. [...] We need to get this through to our students. Their English language needs to be refined if they want to work in industry. (EE1)

However, when discussing the role of English when evaluating student work responses differed. One participant in CS noted 'I think it is secondary to technical skills,' and communication, 'as long I can understand the student' (ME2), over accuracy, was mentioned on numerous occasions:

We are accredited by the JBM and that is one of their core objectives that we cover that [communication] in our course. (CE2)

This is a really good question, as I think this is changing. If you went back 20 years, it would be of a higher requirement. We still have marking rubrics which feature spelling etc, but it is only found in the Level Three Final Project. So, the quality of written English is not considered to be that significant. We are becoming more inclusive...We have kept it due to accreditation. [...] Technical communication is a learning outcome but not writing accuracy. (EE2)

Explanation more than grammatical expression' [is more important]. (CS1)

Thus, although it is considered important, only two faculty members stated writing accuracy was graded. Interestingly, the first comment below is from an Economics faculty member teaching an interdisciplinary module in Mechanical Engineering:

Yes, extremely important. From Year One this is emphasised right from the beginning and is part of the marking criteria [In Economics]. Academic writing skill and critical review is important'.[...] but not included in the marking criteria' [In Mechanical Engineering]. (ME1)

English is part of the marking criteria. If the report is 100% the language is 10%. [...] Even though the writing is only 10% if it is rubbish it will drag the mark down. (CE1)

Mostly, language is combined with 'Presentation' to include other criteria, (EE1) states '*Presentation is classed as 10%, so not just language.*' However, it was noted that language is important in the final year report:

MK: *Does English play a role in evaluating students?*

EE1: *Not hugely. Only in our final year reports.*

This perhaps presents a gap in experience with (CS1) stating '*A lot of students don't appreciate the importance of writing and they often stumble in the final year project*' and (CS2) notes '*At Level One they are just doing programming. In the final year, they write the full report, and it is the first of its kind*'.

The transnational education context

The second question focussed on how or if the transnational education context has affected how the modules are taught or assessed. All faculty expressed that the TNE context had not influenced what is taught or how it is assessed to a large degree:

Very little particularly due to covid. Almost exactly the same. (CS1)

The degrees are accredited, so the content is the same. (CE1)

However, subtle changes have occurred to adapt to the local context:

In subtle ways, but the effect has been light. Embarking on the Joint School has made us reflect on how we do things. For example, cultural terminology. (EE2)

Changed lots of examples to Chinese examples. UK specific transport to a local context. (CE1)

But we have tweaked some of the content by adding more local context examples. (ME1)

Also, one member of faculty noted a change in teaching style:

The only difference is perhaps I created vocabulary sheets and I also deliver my lectures slower, and I am more careful with colloquialisms. (EE1)

Finally, one faculty member noted a more structured approach was now taken which will be revisited in the *Disciplinary Expectations of the Genres Identified in Research Question One* section below:

Scaled back the assessment and much more structured approach. (CS2)

Faculty role in learning how to write within the discipline

The next question considered how students know how to write a particular genre when given an assessment, how it is taught, and whose responsibility is it to teach students how to write as engineers. All eight faculty members stated that students were given a clear assessment brief, with a clear structure to follow, and a marking rubric. Also, there were often lessons to explain what is expected:

[I have] One session on how to use the programme [used in the assessment]. Specific brief on what students need to do. [...] Clear structure and rubric given. (CE1)

They are not tutored but the brief has a structure and is detailed with each mark.
(CE2)

Clear criteria and I have a separate Q & A session. (ME1)

Clear guidelines and rubrics. (EE1)

However, only one faculty member explicitly tries to teach students how to write:

Writing is explicitly taught. This was taught to both cohorts. (CS2)

One faculty member discussed the use of exemplars/models:

Students are given examples, [this is the] same for all students. (EE2)

Also, it was mentioned by one faculty member that students do get support on their final year project discussed above in *The View of English Within the Discipline*:

Students are given support for their final year reports. (EE1)

There appeared to be an assumption that at year-two students should already be able to write within their discipline:

Learning through experience across the years. (CS1)

The early years are critical in building their writing skills. (EE1)

Students are already at Level Two and have been taught for two years so they should have developed some academic writing skills. (CE1)

However, faculty were very aware this may not be the case:

Somehow the students are expected to express what they know in a technical fluid way. (CS2)

You are assessing students on knowledge you think they already have. However, they may not due to cultural or other issues. [...] From the outset we don't often give an example. This perhaps highlights a deficient and we make assumptions. Perhaps this is about the buzz phrase the 'hidden curriculum'. We make assumptions about students' basic terminology, and we put in the assessments questions we expect students to know what we mean by them. (EE2).

They have not really done lengthy reports. (ME1)

Also, it was felt it was not faculty's role to teach students to write:

It is not our role, and it is assumed that they already have them [The skills to write in engineering]. [It is] Beyond the scope of the module. (EE2)

I think that there should be clear guidance from the teacher, but language should be pointed to [Library services]. (EE1)

I can't spend too much time on those aspects. (ME1)

However, it was noted that students do need extra help learning to write in their discipline:

No [students are given writing instruction], that is the same in the UK. Students who come in with a BTEC do extra Maths, but there are no extra lessons in English...The Foundation [Year] keeps them well drilled. The students who do Year One in [China] are better prepared than a Chinese student who comes direct to the UK. (CE2)

After teaching the module I see I need to help them, but it is not part of our module. (CE1)

[This is a] Challenging area [teaching students how to write] in both contexts. (CS2)

Some UK students English is terrible. (CE2)

Also, some expressed an expansion of ESAP to all cohorts, both the UK students and the TNE students:

It is something that goes across all modules [Lack of teaching students to write in their discipline]. What you do in China should be replicated in the UK. If we had the time...it would be OK. External help is the most effective. (CE2)

Right now, [the insessional module] is just for the Joint School. Is there the possibility that in future it will also be done for the [Home cohort]? (ME1)

They would probably benefit from doing your course, except it is not open to them. (CS1)

However, one faculty member noted:

English teachers may not have had the experience of writing professional genres. (EE1)

Disciplinary expectations of the genres identified in research question 1

The final group of questions discussed one assessment identified in research question one for each respective faculty member. The questions include: what is considered a good submission? does structure, style, referencing, and language play a role? and, finally, what do students find the most difficult? The task explanation and what is considered a good submission helped to clarify the genre type in research question one and to help the course design on the insessional ESAP module. One key aspect that emerged was authentic assessment with audience awareness being important with students taking the role of an engineer:

Evaluating as a company manager. Considering multiple stakeholders. (ME 1) [Case Study]

Students need to draft a report and clearly explain what they are trying to do and show why they are a qualified transport planner. (CE1) [Problem Question]

The structure of the assessment was seen as important. As previously discussed, students are given clear briefs often with a detailed structure and they are expected to follow that. Two faculty members noted this increased structure of assessments can help students, but also perhaps stifle creativity:

Because the brief is very explicit it is hard for them to do it badly...It is always that thing you are trying to give them structure without spoon feeding them. Because you do want those bright ones to shine, but you don't want those that struggle to be held back. (CE2) [Design Specification]

The best students would do better without it [Given structure], but the average student is significantly helped. (CS2) [Design Specification]

The importance of language is discussed above. Interestingly the use of sources and referencing is largely ignored:

Have to include but no marks are given. This is the first piece of work that they have done where they have to reference. (CE2) [Design Specification]

No references' [in this assessment]. (CE1) [Problem Question]

Referencing ideally would be included but it isn't now. (EE2) [Explanation]

I do not ask them to reference. (CS2) [Design Specification]

However, genre conventions need to be considered and for some assessment it would not be expected:

In a journal or blog, you don't need to reference. They can hyperlink. (EE1) [Mixed: Methodology Recount / Narrative]

The importance of referencing and source use was only discussed by two faculty:

Included as ACL format [For an ACL Format Research Report]. (CS1) [Research Report]

Referencing is important. Sources can come from company reports etc. I do check to see if they have referenced it. (ME1) [Case Study]

Finally, the faculty were asked what students find the most difficult when completing this assessment. This varied from understanding the question (EE2) '*Comprehension issues, what is this question really asking me to do*' and writing concisely (CS1) '*they struggle to be concise and stick to the word limit*' to developing arguments and critical reflection:

They struggle to compare and analyse between sections. (ME1) [Case Study]

Critical analysis – even home students miss out the critical analysis. (ME2) [Methodology Recount]

The majority of the material is assessed through this essay. They need to work in these theoretical ideas and include arguments...I am still struggling to get these arguments out of these students. Being able to form cohesive arguments at the sentence, paragraph and essay level. I am struggling to get this. (CS2) [Design Specification]

Not used to looking back and how effectively have I done it and how can I improve. (EE1) [Mixed: Methodology Recount / Narrative]

Results of the student questionnaire

The following section details the results from the student questionnaire to form part of the NA in response to research question three:

3. What are the student's prior knowledge & experience of these genres?

The questions were similar to the faculty semi structured interview questions to allow for comparison across faculty and student perceptions.

The importance of writing in the students' discipline

Students were asked about how long they had been studying English and their motivations for studying Engineering. Students were also asked how important writing is in their chosen discipline. Only two students out of 72 respondents perceived writing to be '*not very important*' and these were from CS and CE respectively. The majority of students felt it was '*very important*' with reference to the importance of writing to show knowledge and complete reports.

Students experience and understanding of the genres identified in research question 1

The next questions asked students about their previous experience writing the genres identified in research question one for their discipline and asked them what their current understanding is for that particular genre. Overall, approximately 50% of students had some experience of the genres that they were required to complete and had a basic understanding of what was expected. The genre with the least experience was the Research Report genre as previously discussed above, and also the Problem Question genre, particularly in Mechanical Engineering (see Table 1 below).

Genre	Computer Science	Electronic & Electrical	Mechanical Engineering	Civil Engineering
Methodology Recount		50% Yes 50% No	69% Yes 31% No	
Narrative Recount	55% Yes 45% No	66% Yes 34% No	78% Yes 22% No	55% Yes 45% No
Design Specification	82% Yes 18% No	27% Yes 73% No	78% Yes 22% No	35% Yes 65% No
Case Study			29% Yes 71% No	
Problem Question			14% Yes 86% No	36% Yes 64% No

Table 1: Students' previous writing experience

Learning to write in engineering

These final questions asked students how these engineering genres are taught and how they know what to include for a particular genre. Also, students were asked who they think should be responsible for teaching them to write as engineers. The majority of students stated they knew how to complete a particular assessment by analysing the writing brief, and through lectures. Past writing experience and independent study were also common answers (see Figure 2 below):

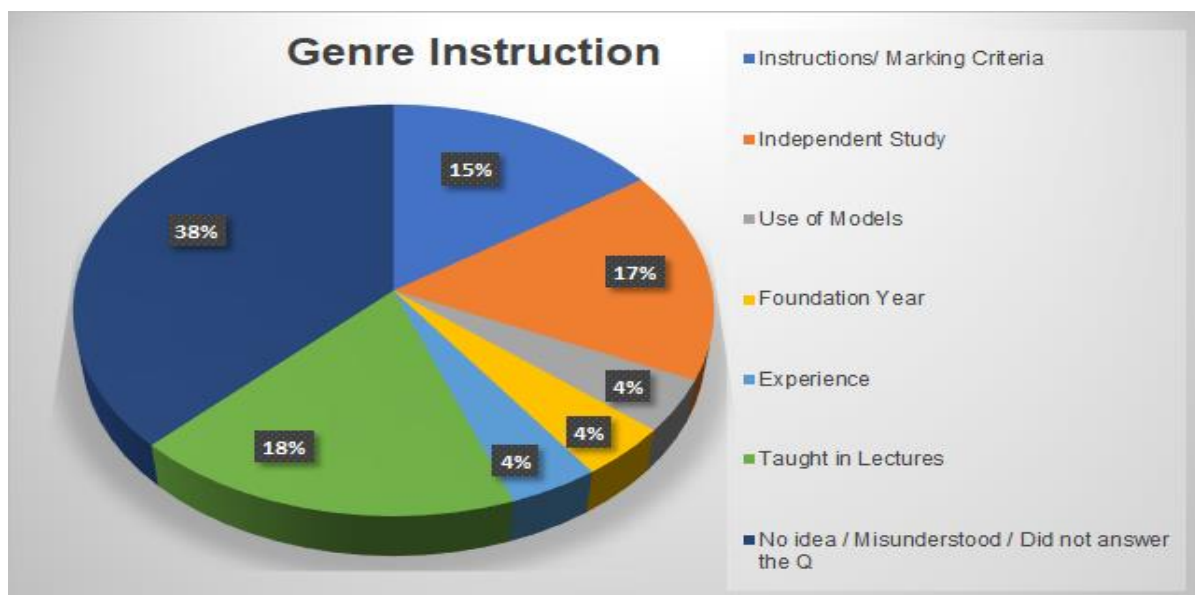


Figure 2: Genre instruction of assessed coursework

Finally, 49% of students responded that '*the teacher*' should be responsible for teaching how to write in engineering. It is not clear if that teacher is an engineering or EAP teacher, but a few comments suggest the use of both:

Co-taught by professional teacher and English teacher.

English teacher and the teacher who teach engineering.

Both English teachers in charge of writing and engineering lecturers for professional courses. The former has a better understanding of the various literary techniques and theories of English writing than others, and the latter has a detailed knowledge of the norms of writing in specific engineering fields.

DISCUSSION

Genre analysis

This first discussion section considers the results of the genre analysis which was part of the target situation analysis (West, 1994). The results of the genre analysis found eight assessed writing genres across the Joint Engineering School. The Exercise genre (26%) was the most common with the Methodology Recount (9%) the second most common genre, and the Design Specification and Narrative Recount genre (6%) third, respectively. These frequencies correspond to Nesi and Gardner's (2012) results found at Level Two in the Physical Sciences. The Methodology Recount (42.4%) was the most common with Design Specification (12.6%), Explanation and Critique (9.3%), Essay and Exercise (6%) and Narrative Recount (5.3%) genres the most frequent.

However, genre variation was found across the different disciplines. This is expected as each discipline 'develops its own way of formulating and negotiating knowledge' and how that may be expressed (Hyland, 2006b, p.21). The Narrative Recount, Exercise, and Design Specification were the only genres found across all four disciplines. Nesi and Gardner (2012, p.39) group the Design Specification genre within the 'Preparing for Professional Practice' social function, along with Case Studies, Problem Questions and Proposals, and found they were concentrated in 'areas of manufacturing and computing'. This is reflected in these results, with engineering being vocational in nature and these students studying at year two of three of their undergraduate degree programme. Also, although Nesi and Gardner (2012) do not group the Narrative Recount genre within this social function, reflective writing can help students develop career skills, such as decision making, and professional judgment (Morrison, 1996; Gillett et al., 2009; Minnes et al., 2017). Interestingly, the Case Study genre was only found in Mechanical Engineering which mirrors Gillett and Hammond's (2009, p.129) study of assessment at a UK university that found the 'case studies appear to be underused given their relevance for employability.' The Research Report genre was only used for three assessments (3%) and was only found in two of the four disciplines, Computer Science and Civil Engineering. However, students are expected to complete a final year research project and it was noted by faculty that students struggle with this genre. This may be due to the lack of experience in earlier years and will be discussed further below.

Student experience and understanding and genre instruction

This section considers the present situation analysis, which considers the learners' current genre experience, and the means analysis, which looks at the resources available to students (Ellison et al., 2017). White (1988) suggests this means analysis may be the most important consideration of a NA. The cross-analysis of the target situation analysis and students previous experience and understanding of these genres did not identify any significant 'lacks' in student experience and understanding (West, 1994; Jordan, 1997). Overall, students' experience and understanding were mixed, but only the Research Report and Problem Question were genres that students had not encountered before. In comparison with the means analysis, students were only explicitly taught how to write these genres in one module, and it was mostly assumed they have built experience from previous years of study. Students mostly learned how to write these genres through assignment prompts and marking criteria which confirms Wingate (2018, p.352) suggestion that 'the only explicit advice students receive in their study programmes is writing guidelines' from module handbooks. Other resources students referred to included independent study and completion of the Foundation Year Programme. However, it was noted that the only time explicit writing instruction is given to the students is for the final year project. This lack of genre instruction was also clear when faculty were asked where the responsibility for writing instruction falls, with the faculty view that it was not their responsibility to teach students how to write as engineers. This remedial approach in the final year takes what Lea and Street (1998, pp.158-159) call a 'study skills' approach and attempts to 'fix' student writing problems when required. Bond (2021, p.93) notes that this 'further feeds into both content teachers' and students' beliefs that there is an academic linguistic norm to be met, and that can be met by correction of and learning discrete items, relating to punctuation, spelling, and grammar'. Through raising awareness, student difficulties are not seen as a linguistic deficit, but rather 'new literacy and discourse practices' (Hyland, 2018, p.384) or 'academic literacy' which need to be acquired by all students (Wingate, 2018, p.350). The pedagogical implications of this are discussed further below. On a positive note, the TNE context appears to have improved assessment practices with clear briefs and marking criteria.

Pedagogical implications

The immediate pedagogical implications of the NA have highlighted a need to include a variety of genre instruction on the ESAP in-session writing module. This instruction needs to be discipline-specific due to the variation across disciplines and can be explicit in teaching the structure, communicative purpose, and language choices used to construct the texts (Johns, 1997). Hyland

(2003, p.149) states that grounding courses 'in the texts that students will need to write in occupational, academic, or social contexts' can help students participate effectively in their chosen community. The direct results of the NA have informed course design on the insessional ESAP module by including genre instruction for each of the assessed genres. Also, reflective writing has been included as an assessed genre on the insessional module as reflection was found across all four disciplines. This genre theory instruction at Level Two aims to address the issues related with the final year project by empowering students to develop their academic literacy through genre knowledge and genre-based writing skills. However, the NA has also highlighted the need for further writing instruction across all levels to address the lack of genre instruction and the remedial approach to writing on the final year projects.

Wider pedagogical implications regard the role of language and collaboration across the school. English communication was seen as important across engineering. However, this is not often reflected in how students are graded with few, if any, marks awarded for language. Also, although the assessment briefs are well structured and clear marking criteria are given, these may not always be understood by the students without further explanation which highlights the importance of students' assessment literacy. For example, some faculty expressed the view that students found argumentation and being critical difficult. These concepts are often obscure and vague for students, whereas faculty may view these as simple and easily understood terms used to express expected conventions (Lillis and Turner, 2001; Wingate, 2018). Consequently, this lack of clarity as Caplan (2019) states 'can be challenging for students to correctly identify the purpose, form, conventions, stance, and language demands - that is, the genre - of an effective response'. To overcome these issues Bond (2021, p.126) advocates an 'integrated approach where language becomes visible' to increase the value of language learning to that of content knowledge. To do this, increased collaboration is required between EAP and subject specialists to enhance students' academic literacy development (Wingate, 2018; Bond, 2021). Needs analysis such as this, may help increase this collaboration and highlight the need for increased academic literacy support including increased genre awareness and assessment literacies to help students communicate effectively in their chosen disciplines.

CONCLUSION

This case study carried out a needs analysis of the assessed writing genres of a second-year transnational education engineering programme. The results highlighted eight assessed writing genres across the four engineering disciplines. Analysis of the importance and the role of English within engineering; and students' understanding and experience of these genres, has highlighted areas for curriculum development on the insessional ESAP module. These include raising genre awareness of the assessed writing genres in each discipline and the teaching of reflective writing to help students develop lifelong skills and prepare for professional practice.

Although the case study was based on this particular context, and as disciplines are context-specific, the results may not be generalisable to other contexts, the methodology may be used to conduct NA in other contexts and inform insessional or academic literacy provision in different disciplines. Also, this study has highlighted possible areas for development including increased cooperation between EAP specialists and subject specialists to further develop students' academic literacy. Further research is required within this context including deeper analysis of the genres highlighted in each discipline and also analysis of the assessed writing genres across all levels of study in this context.

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APPENDIX

The Classification of Genre Families (Nesi and Garner, 2012)

Genre Families	Educational Purpose/ Generic Structure/ Genre Network	Genre Examples
1. Case Study	<ul style="list-style-type: none"> - To Demonstrate/develop an understanding or professional practice through the analysis of a single exemplar - Description of a particular case, often multifaceted, with recommendations or suggestions for future action -Typically corresponds to professional genres (e.g. in business, medicine and Engineering) 	<i>Business Start-up</i> <i>Company Report</i> <i>Organisation Analysis</i> <i>Patient Report</i> <i>Single Issue</i>
2. Critique	<ul style="list-style-type: none"> -To demonstrate/develop understanding of the object of study and the ability to evaluate and/or assess the significance of the object of study -Includes descriptive account with optimal explanation and evaluation with optional tests -May correspond to part of a Research Report, professional Design Specification or to an expert evaluation such as a book review 	<i>Academic Paper Review</i> <i>Approach Evaluation</i> <i>Organisation Evaluation</i> <i>Financial Evaluation</i> <i>Interpretation of Results</i> <i>Legislation Evaluation</i> <i>Policy Evaluation</i> <i>Building Evaluation</i> <i>Project Evaluation</i> <i>Book/Film/Website Review</i> <i>System Evaluation</i>
3. Design Specification	<ul style="list-style-type: none"> -To demonstrate/develop the ability to design a product or procedure that could be manufactured or implemented -Typically includes purpose, design development and testing of design -May correspond to a professional design specification, or to part of a Proposal or Research Report 	<i>Application Design</i> <i>Building Design</i> <i>Database Design</i> <i>Game Design</i> <i>Label Design</i> <i>Product Design</i> <i>System Design</i> <i>Website Design</i>
4. Empathy Writing	<ul style="list-style-type: none"> -To demonstrate/develop understanding and appreciation of the relevance of academic ideas by translating them into a non-academic register, to communicate to a non specialist readership -May be formatted as a letter, newspaper article or similar non-academic text 	<i>Expert advice to industry</i> <i>Expert advice to lay person</i> <i>Information Leaflet</i> <i>Job Application</i> <i>Letter to a Friend</i>

	-May correspond to private genres as in personal letters to publically available genres such as information leaflets	<i>News Report</i>
5. Essay	-To demonstrate/develop the ability to construct coherent argument and employ critical thinking skills -Introduction, series of arguments, conclusion -May correspond to a published academic/specialist paper	<i>Challenge Commentary Consequential Discussion Exposition Factorial</i>
6. Exercise	-To provide practice in key skills (e.g. the ability to interrogate a database, perform complex calculations, or explain technical terms or procedures), and to consolidate knowledge of key concepts -Data analysis of a series of responses to questions -May correspond to part of a Methodology Recount or Research Report	<i>Calculations Short Answers Mixed Data Analysis Statistics Exercises</i>
7. Explanation	-To demonstrate/develop understanding of the object of study and the ability to describe and/or account for its significance -Includes descriptive account and explanation -May correspond to a published Explanation, or to part of a Critique or Research Report	<i>Business Explanation Instrument Description Methodology Explanation Organism/Disease Account Site/Environment Report Species/Breed Description System/Process Explanation Account of Phenomenon</i>
8. Literature Review	-To demonstrate/develop familiarity with literature relevant to the focus of study -Includes summary of literature relevant to the focus of study and varying degrees of critical evaluation -May correspond to a published review article or anthology, or to part of a REsearch Report	<i>Analytical Bibliography Annotated Bibliography Anthology Literature Review Literature Overview Research Methods Review Review Article</i>
9. Methodology Recount	-To demonstrate/develop familiarity with disciplinary procedures, methods, and conventions for recording experimental findings	<i>Computer Analysis Report Data Analysis Report Experimental Report Field Report</i>

	<ul style="list-style-type: none"> -Describes procedures undertaken by writer and may include Introduction, Methods, Results, and Discussion sections -May correspond to part of a Research Report or published research article. 	<i>Forensic Report</i> <i>Lab Reports</i> <i>Materials Selection Report</i> <i>Program Development Report</i>
10. Narrative Recount	<ul style="list-style-type: none"> -To demonstrate/develop awareness of motives and/or behaviour in individuals (including self) or organisations -Fictional or factual recount of events, with optional comments -May correspond to published literature, or to part of a Research Report 	<i>Accident Report</i> <i>Account of Literature Search</i> <i>Account of Website Search</i> <i>Biography</i> <i>Character Outline</i> <i>Plot Synopsis</i> <i>Reflective Account</i>
11. Problem Question	<ul style="list-style-type: none"> -To provide practice in applying specific methods in response to professional problems -Problem (may not be stated in assignment), application of relevant arguments or presentation of possible solutions in response to scenario -Problems or situations resemble or are based on real legal, engineering, accounting or other professional cases 	<i>Business Scenario</i> <i>Law Problem Question</i> <i>Logistics Simulation</i>
12. Proposal	<ul style="list-style-type: none"> -To demonstrate/develop ability to make a case for future action -Includes purpose, detailed plan, persuasive argumentation -May correspond to professional or academic proposals 	<i>Book Proposal</i> <i>Building Proposal</i> <i>Business Plan</i> <i>Catering Plan</i> <i>Legislation Reform</i> <i>Marketing Plan</i> <i>Policy Proposal</i> <i>Research Proposal</i>
13. Research Report	<ul style="list-style-type: none"> -To demonstrate/develop ability to undertake a complete piece of research including research design, and an appreciation of its significance in the field -Includes student's research aim/question, investigation, links and relevance to other research in the field -May correspond to a published experimental research article or topic based research paper. 	<i>Research Article</i> <i>Student Research Project</i> <i>Topic-based Dissertation</i>

The Lexis of Maths Lectures: The Creation of a Pedagogic Corpus and Wordlist from a Series of Maths Lectures

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ABSTRACT

Researchers have investigated discipline-specific and academic vocabulary in multiple academic disciplines through the creation of word lists (Dang, 2018; Gilmore and Millar, 2018; Watson Todd, 2017; Valipouri and Nassajii, 2013). However, there are currently no mathematics wordlists based on spoken corpora that are suitable for the context in question. The present study involved the creation of a context-specific corpus to investigate the frequency of technical and sub-technical vocabulary in a series of mathematics lectures through the creation of a keyword list. The keyword list was created using Sketch Engine from a 152,443-word corpus of 46 mathematics lectures. The final wordlist comprised 202 lemmas, covering 12.89% of the corpus. The benefit of creating a context-specific wordlist was clear. The New Academic Word List (NAWL) (Browne et al., 2013a) provided just 4.51% coverage of the corpus. Assuming students have knowledge of the first 2000 word families of the New General Service List (NGSL) (Browne et al., 2013b), which provided 84% coverage, total coverage was nearly 97% with the mathematics wordlist, compared to 88.67% with the general academic list. Of the 202 lemmas in the mathematics wordlist, 116 were sub-technical, meaning that they are polysemous, with both a general meaning and a mathematical meaning. This is a feature of the language of mathematics and may be an added challenge for students.

KEYWORDS: corpora, wordlists, technical vocabulary, maths, EMI, polysemous, sub-technical

INTRODUCTION

A growing number of students whose first language is not English are choosing to study on higher education courses in their own country which are taught in part or exclusively in English. These degree programmes are often provided by universities from English speaking countries that have established branch campuses overseas. The number of these transnational education providers (TNEs) has grown rapidly in recent years, with China being a major centre for this expansion (Fang and Wang, 2014).

Students studying on undergraduate degree programmes in these contexts often report difficulties in understanding their subject lectures due to a lack of discipline specific terminology (Soruç and Griffiths, 2018, p.42). In recent years researchers within the field of English for Specific Purposes have sought to address this challenge by producing word lists of discipline-specific corpora in order to better understand variations in lexis between different disciplines and to aid the development of English language teaching materials and curriculum design. Bondi (2010, p.3) defines keywords as ‘those whose frequency (or infrequency) in a text or corpus is statistically significant, when compared to the standards set by a reference corpus’. While lists have been produced for a number of disciplines such as engineering, medicine and agriculture (Coxhead, 2018), the influence these lists have on curriculum design remains unclear (Nation, 2016, p.172). One reason for this may be that these keyword lists are generally derived from relatively large corpora which aim to represent a whole field of disciplinary study and hence do not adequately address the specific needs of curriculum designers. For example, a list of engineering vocabulary may not be of equal utility to electrical engineering as civil engineering.

The problem of disciplinary lexis can be exacerbated in the case of foundation year programmes in which English language instruction is often separated from content instruction delivered through an English Medium Instruction (EMI) model, meaning English teachers are often left unaware of the language challenges facing their learners in their content modules (Galloway and Ruegg, 2020, pp.5-6). Opportunities to provide language support to these learners who struggle to adapt to the high vocabulary load within the content-based courses can, therefore, be missed.

This study aims to bridge this gap through the creation of a key word list derived from a small corpus (152,443 tokens) of mathematics lectures in order to better understand the nature of the lexical challenge facing the students and to aid in the development of pedagogical materials and interventions in order to aid students' comprehension of these lectures. The corpus and keyword list were based on a series of recorded lectures delivered by an English-speaking lecturer to Chinese students studying at a TNE provider in China.

BACKGROUND

The context of the study

SWJTU-Leeds Joint School is a TNE partnership between the University of Leeds and South-West Jiaotong University based in Chengdu, China. Students study on undergraduate degree programmes in four subjects within the Faculty of Engineering and Physical Sciences (civil engineering with transport, mechanical engineering, computer science and electronic and electrical engineering). At the end of their studies students receive an undergraduate degree from both the University of Leeds and South-West Jiaotong University. Courses last for a period of four years with the first year being common to all strands before students specialise in year 2. During the first year, students study an English for Engineering module taught jointly by English teachers from the University of Leeds and SWJTU as well as content-based modules in physics and mathematics. The content-based modules are taught using English as a medium of instruction (EMI).

The present study focuses on the lectures delivered by a mathematics lecturer from the University of Leeds whose first language is English. Before 2020, this module was taught in person; however, the pandemic has resulted in the replacement of live lectures and classes with recorded lectures through which the content is exclusively delivered. Two of the stated course objectives/learning outcomes of the module are for students to both understand the language of Mathematics and to be able to use this language.

RATIONALE

Lexical Challenge

EMI has seen a rapid expansion in China and indeed throughout the globe in recent years (Dearden, 2015, p.2) and the number of students in transnational education (TNE) is now 1.4 times the number of international students studying in the UK (Universities UK, 2020, p.20). The rationale for EMI/TNE is that through studying a subject in English, students will make gains in both their content knowledge and their language proficiency. However, little research has been done to validate this claim in a HE environment (Macaro et al., 2018, p.57) and the question remains as to what extent studying in a second language impedes content knowledge acquisition (Chang, 2010; Shohamy, 2010, in Doiz et al., 2012). Studies investigating student perceptions of EMI courses have suggested that lack of vocabulary knowledge may be a significant impediment to the comprehension of subject course materials and lectures (Evans and Green, 2007; Chang, 2010; Tatzl, 2011, cited in Harada and Uchihara, 2018).

Moreover, research suggests that adequate comprehension of spoken discourse depends on students knowing a high percentage of the vocabulary in a text. Stær (2009) found that 94% coverage was required to gain a 60% comprehension of advanced level listening texts while 98% coverage was needed for students to obtain a 70% score in a comprehension test. Similarly, van Zeeland and Schmitt (2013) found that adequate comprehension of spoken discourse required students to know between 95% and 98% of the words in a text. Coverage also appears to vary depending on the text type. For example, lower levels of coverage have been found for audio-visual material (Durbahn et al., 2020), dialogues (Giordano, 2021) and texts graded for intermediate level language learners (Noreillie et al., 2018). Another consideration in assessing the difficulty of academic spoken discourse is the number of words learners require to achieve a certain degree of coverage. Dang et al. (2014) found significant variation between disciplines with medical and life sciences requiring 5,000 words to achieve 95% coverage, compared with 3,000 words for social sciences. The present study used screen-capture video lectures. While the visual dimension of the lectures may help to reduce the coverage required for adequate comprehension, the content of the lectures was clearly technical, and they were delivered in the form of monologues. Hence, coverage of between 95% to 98% for the mathematics lectures was assumed would provide adequate comprehension.

Defining General, Academic and Technical Vocabulary

There are different categories of vocabulary in the corpus used in the present study. General, high-frequency vocabulary in English is commonly defined as the most frequent 2000 word families in English, although there is an argument for increasing this to 3000 word families (Schmitt and Schmitt, 2014). A word family consists of the headword (e.g., 'power'), inflected forms (e.g., 'powered') and derived forms (e.g., 'powerless'). Academic vocabulary, defined as words that 'have wide range and high frequency in academic texts' (Dang et al., 2017, p.6), such as 'analyse', has been seen by some researchers as separate from these high-frequency words; for example, Coxhead's Academic Word List (2000), which omitted words included in the General Service List (West, 1953). However, this does not take into account those high frequency words that also have a specialised meaning in a discipline, such as 'interest'. Therefore, some general academic wordlists; for example, the Academic Vocabulary List (Gardner and Davies, 2014) include this high-frequency vocabulary.

General academic vocabulary is distinct from technical vocabulary. As Ha and Hyland (2017) note, there is no single precise definition of technical language, although there is general agreement on a very specialised use within a discipline and infrequency outside the discipline. There are different categories of technical vocabulary (Dang, 2020, p.439); fully technical words that are known and used by specialists in the field (e.g., 'arctangent' in mathematics), lay-technical words that are understood by non-experts (e.g., 'multiply'), and polysemous words with both a general meaning and a specialised meaning in the discipline, like 'factor', whose mathematical meaning is very different from the general meaning. Technical vocabulary is often cited as a barrier to understanding lectures and coursebooks (Evans and Morrison, 2011, p.154; Evans and Green, 2007, p.13). Indeed, being able to understand technical vocabulary is key to understanding of the discipline (Woodward-Kron, 2008, p.246)

As mentioned above, vocabulary items that are commonly found on general service lists of the top 2000 or 3000 most common words in English, or indeed general academic word lists, may also have very specialised meanings in particular disciplines. This type of polysemous lexis, which is referred to as sub-technical (Mudraya, 2006) or crypto-technical (Fraser, 2009), may pose significant difficulties for learners; such technical words may be disregarded by learners if the general meaning is already known (Fraser, 2009, p.157). Accessing the technical meaning of polysemous words may also be problematic (Watson Todd, 2017).

Therefore, in order to fully understand the lexical challenge facing learners, the degree of technicality of vocabulary items in a corpus needs to be analysed (Ha and Hyland, 2017, p.36) in addition to consideration of the number of lexical items or word families that students need to know to achieve sufficient coverage of a text or corpus. An example of a study that has done this would be Fraser (2009), who identified and produced counts for what he termed crypto-technical vocabulary across the various sections of IMRaD-style (introduction, methods, results and discussion) medical research articles.

Identifying technical vocabulary

A number of methods have been employed to identify technical vocabulary in a corpus (Ha and Hyland, 2017). One way is to use the corpus-comparison approach. This method involves comparing a specialised corpus with a general English corpus. Words appearing only in the specialised corpus are assumed to be technical and words that meet a certain threshold of comparative frequency are likely to be technical (Coxhead, 2018, p.8). However, some technical words may not be included using this approach, as polysemous words that have a technical meaning but also have a general high-frequency meaning may not be identified as relatively frequent in a discipline (Ha and Hyland, 2017, p.37). Collocations with a technical meaning may also be omitted (Kwary, 2011). Another method for identifying technical vocabulary is to conduct a keyword analysis. This method also involves the comparison of two corpora. However, in the case of keyword analysis a statistical measure is used to compare the frequencies of words in order to determine words that occur with an unusually high frequency (Coxhead, 2018, p.9). This method generates a keyness score which allows vocabulary items to be ranked. A further method involves making reference to specialised vocabulary knowledge. This may involve consulting specialists in the field or referring to specialist dictionaries in order to distinguish between technical and general or sub-technical vocabulary (Coxhead, 2018; Ha and Hyland, 2017). However, the criteria for inclusion of a word may not be transparent (Nation et al., 2016, p.147), and is subjective (Ha and Hyland, 2017).

The current study used a combination of keyword analysis and consulting specialist vocabulary knowledge. A key word list was first generated to broadly identify likely technical vocabulary before the list was categorised into different subtypes (technical, sub-technical and lay technical vocabulary). It was felt this method was efficient and was sufficiently objective.

Technical and sub-technical language in the discourse of mathematics

While polysemous language is a feature of academic texts in general (Coxhead, 2016, p.181), it is particularly relevant to the discourse of mathematics. O'Halloran (2015) characterises this discourse as multimodal, integrating the language of mathematics, its symbolic notation (including superscript and subscript notation), and its graphs and diagrams. While symbols and diagrams may be universally understood, the complexity and technicality of the language of mathematics may present a greater challenge. Grammatical aspects of mathematical discourse include the way that logical relationships are expressed, using conjunctions in a precise way and the use of complex noun phrases, resulting in lexical density (Wilkinson, 2019, p.88). Regarding lexis, Halliday (1975, cited in Wilkinson, 2019, p.88) described the mathematical register as including phrases, such as 'complete the square', compound words, such as 'output', and words of Greek and Latin origin such as 'parabola'. Most significantly for the current study, there are also 'everyday words interpreted in the context of mathematics' (Wilkinson, 2019, p.88).

It is important to provide support regarding technical and sub-technical language. Students who are not proficient speakers and who may not have a good understanding of technical vocabulary in the context of mathematics may face difficulties on their university courses (Bedore, Pena and Boerger, 2011, cited in Wilkinson, 2019, p.88). Text comprehension (in both listening and reading) is linked to knowledge of technical language, with students in some disciplines facing considerable challenge; Chung and Nation (2003) identified 37.6% of an anatomy text as being technical, and 16.3% of an applied linguistics text. There is also a link between knowledge of technical vocabulary and content knowledge. Bond (2020, p.104) notes that acquisition of disciplinary vocabulary is 'a key aspect of gaining access to target knowledge'. As well as having receptive knowledge of this vocabulary, students also need to be able to use it to become part of their discourse community (Wray, 2002, cited in Coxhead, 2016, p.178; Szudarski, 2018, p.140).

Specialised key word lists

The present study aims to help students with the high vocabulary load of their mathematics lectures through the creation of a key word list. The main purpose of wordlists is to identify key vocabulary and provide a target for vocabulary learning, allowing students to see their progress, which can be very motivating (Coxhead, 2016, p.180). This is true of all wordlists, including interdisciplinary academic wordlists, such as the Academic Word List (Coxhead, 2000), the Academic Vocabulary List (Gardner and Davies, 2014), and the Academic Spoken Word List (Dang et al., 2017). These

interdisciplinary wordlists assume a common core of academic vocabulary across disciplines and can be useful in EGAP contexts (Dang et al., 2017, p.2; Coxhead, 2018, p.22). In contrast, a more specialised wordlist focusing on a particular discipline can be even more beneficial for specific contexts. Such a wordlist may be seen as clearly relevant to the student's course and result in increased motivation (Hyland, 2016, p.20). It provides greater coverage of discipline-specific lexis (Fraser, 2009; Ward, 2009; Dang, 2018) and may result in more efficient learning of lexis (Hyland 2016, p.20).

A wordlist can be specialised in different ways: discipline- or genre-specific, or based on either a spoken or written corpus, for example. Using Becher's classification of academic disciplines into hard and soft (Becher, 1989), there are several wordlists available for hard sciences, such as Lei and Liu's (2016) New Medical Academic Wordlist, the Pharmacology Word List (Fraser, 2009), the Basic Engineering Wordlist (Ward, 2009), and the Engineering English Word List (Hsu, 2014). The closest list to one for mathematics is a list of academic lexical bundles (Alasmary, 2019) but this consists of phrases such as *if and only if* or *a set of all* rather than individual items of lexis.

While the above are derived from written corpora, there are far fewer wordlists based on spoken corpora. Examples include the Academic Spoken Wordlist (Dang et al., 2017), and the Academic Formulas List (Ellis and Simpson-Vlach, 2010), neither of which are discipline-specific. At the time of the current study, there is one wordlist based on a spoken corpus that is specific to hard science disciplines. Dang (2018) created the Hard Science Spoken Wordlist, based on a corpus of 6.5 million words from six hard-pure disciplines and six hard-applied disciplines, from a range of lectures, seminars, labs and tutorials. Regarding discipline-specific spoken wordlists, there is the Medical Spoken Word List (Dang, 2020), but there is very little that is specific to mathematics derived from either spoken or written corpora.

Bond (2020) discusses the need for specificity in EAP language support, working with disciplines in the university, studying the discourse of these communities and increasing awareness of the importance of discipline-specific language. It was felt that a general wordlist would not meet the needs of our specific context. Therefore, the primary aim of the study was to create a 'pedagogic corpus' (Willis, 1990, cited in Szudarski, 2018, p.108), comprising all the language that students encounter on a module. Such a context-specific corpus is the most effective way to target key lexis and reduce vocabulary load for the students (Hyland and Tse, 2007, p.251). A study by Hou (2014)

showed that a pedagogic corpus in a different context was used in the creation of learning materials which were successful in improving students' understanding of disciplinary vocabulary. From our pedagogic corpus, a keyword list was created to form the basis of materials designed to help SWJTU-Leeds Joint School students with the linguistic demands of their mathematics lectures.

METHODOLOGY

Creation of the corpus

Due to Covid, all the lectures used in the creation of the corpus were pre-recorded and thus mp4s were readily available. Permission to use these was obtained from the lecturer involved. Transcripts of the video lectures were created using Otter.ai (a commercially available online transcription application). These were then manually checked against the recordings for lexical and orthographic errors. Punctuation was only corrected in cases where errors impeded comprehension.

The 46 lectures were divided almost equally between the three researchers and each lecture was listened to while reading the transcript. Once corrected, the transcripts were searched using a text editor, Notepad ++, to correct typographic errors and to eliminate inconsistencies with hyphenation (pre-factor, three-dimensional), UK/US spellings (meter/metre, recognise/recognize, labeled/labelled), and compounds of words (arcsecant/arc secant, workout/ work out).

Finally, Sketch Engine was chosen to analyse the corpus data and produce a keyword lemma list, conforming to Bauer and Nation's level 2 of word families (1993). A lemma consists of a headword and inflections that are the same part of speech. For example, the lemma 'factor' as a noun would include 'factors' (plural). 'Factor' as a verb would include 'factors', 'factored' and 'factoring' in the lemma. Sketch Engine, however, combines headwords that are the same form but a different part of speech, so 'factor' as a verb and a noun are the same lemma.

Creation of the keyword list

Webb (2021) suggests that choice of unit of counting for wordlists (word type, lemma, word family) should be made based on the purpose of the list. As such, the lemma was chosen as the unit of counting when analysing and creating our keyword list. This is because research suggests L2 learners

have sufficient knowledge to cope with lemmas but often lack morphological awareness to deal with word families (Brown et al., 2022, p.600; Gardner and Davies, 2014, p.30). Lemma was also helpful as several words in the list only occurred in a derived form, such as variable(vary), recursion(recur) and decomposition(decompose). The list would also be needed for both productive and receptive uses, in which case, lemmas are the preferred unit (Nation, 2016, p.26).

The simple maths formula (Kilgarriff et al., 2014) used in the keyword analysis feature of Sketch Engine allows for a variable to be set to change the focus of the list between more common and rarer items (Sketch Engine, no date). Higher values will bias the results in favour of frequency. In our corpus a list created with the variable set at one gives 'sine', which has a frequency in the focus corpus of 607, as the word with the highest keyness score. However, if the variable is set to 1000, 'minus', whose frequency is 1381, appears first in the keyword list and 'sine' appears eighth. The default score in Sketch Engine of one was chosen for our analysis.

As the focus of this research was on technical language rather than features of spoken English, a corpus containing only samples of spoken discourse was selected as the reference corpus, using the spoken component of the British National Corpus (BNC) (2014). Experiments using the full BNC corpus revealed a bias towards idiomatic language and colloquialisms, whereas using the spoken corpus removed these items.

The first version of the list contained a significant number of items of mathematical notation (x, y and dx for example) as well as proper nouns (Chengdu, Leeds) and numbers (one, two, three). As these either did not represent English words or would already be familiar to the students, they were added to a non-word list and excluded from the analysis. A keyword list containing only real words was then obtained.

Refining and categorising the keyword list

Once the keyword list was generated in Sketch Engine it was categorised into four groups: technical vocabulary, sub-technical words with both technical and non-technical meanings, lay-technical words, and a final group comprising high-frequency words with no technical meaning (see Appendix 2). This was initially done individually by the three researchers and then any words where there was disagreement were checked together. To be categorised as technical, words had to be monosemous

and included in the mathematical dictionary. These included terms such as cosecant, cotangent, and calculus. Words were categorised as sub-technical if they were assigned a general meaning in the Oxford Learners Dictionary (Oxford, 2021) and also had a technical meaning in the Oxford Concise Dictionary of Mathematics (Clapham and Nicholson, 2014). Examples of these terms include derivation, dummy, and log. Finally, words were categorised as lay-technical if they had a mathematical meaning but would be easily understood by a general audience. These words appeared in both the general and mathematical dictionaries and the mathematical meaning was the most common one. Examples of lay-technical items include multiply, radius, and decimal. Words that did not fit into the technical, sub-technical or lay-technical groups and were to be found on the top 2000 most frequent words in the Browne NGSL were then excluded from the list. The decision to exclude general words was justified on the basis that most students would be familiar with these vocabulary items, or they would have been required to learn them in order to pass the College English Test, which requires a knowledge of 4,200 words (Wei, 2004). It should be noted that much research (for example, Lu and Dang, 2022; Sun and Dang, 2020) suggests students at this level in China have not mastered the first 2000 most frequent words. However, as this study was aimed at helping them with their mathematics vocabulary knowledge, it was decided any generally frequent vocabulary would be better dealt with separately in their English lessons. Browne's New General Service list (2013b) was preferred over other lists as it was readily available in lemmas and in a format which could be used with Range and Ant Word Profiler without any further manipulation. Finally, vocabulary items that appeared five times or less in the corpus were excluded from the list as it was felt that learning these would not be beneficial for students.

The process of categorising the words on the wordlist was not straightforward. Some words found in both the technical and non-technical dictionaries appeared to make reference to the same concept with the main difference being the degree of precision of the definition. An example of this would be *variable* which is defined as 'a situation, number or quantity that can vary or be varied' in the Oxford Learner's Dictionary but in the Oxford Dictionary of Mathematics as:

an expression, usually denoted by a letter, that is defined for values within a given set. Can be used to represent elements of sets which are not numbers but frequently it relates to numerical quantities and functions defined in them together with the relationship between them.

This problem was further compounded by the fact that some words did not appear in the same form in the mathematical dictionary as in the corpus. For example, the corpus has examples of *primed*,

while the mathematical dictionary only has *prime*. Another complicating factor was that words often occurred as part of collocations in the mathematical dictionary making direct comparison with the general dictionary difficult.

Once a definitive list of categorised key words had been obtained, it was decided to sub-divide the list. The reason for this was to spread the load of learning for the students. It was felt that words that occurred in all three lecture topics (series, derivatives and integrals) would be best presented to students at the beginning of the course. In order to accomplish this task Range (Heatley et al., 2002) was used to provide data on the number of occurrences in each sub-section of the corpus. The remaining words on the list were then assigned to one of three lists corresponding to each lecture series (see Appendix 3).

RESULTS AND DISCUSSION

Categories of vocabulary in the keyword list

The final keyword list comprised 202 lemmas. This were categorised into four categories: technical terms, sub-technical, lay-technical and non-technical. In total 116 words were identified as sub-technical, 35 were found to be technical terms and 20 were designated as lay-technical. The other 31 words on the list were non-technical.

Analysis of the corpus

The mathematics lecture corpus contains 152,443 word tokens (a single occurrence of a word in a text), comprising 2,125 word types (1,496 lemmas).

Table 1 below shows the percentage of words the learners would potentially be able to understand if they knew the first 2000 words of the NGSL (Browne et al., 2013b) and the NAWL (Browne et al., 2013a). The first 1000 would cover just over 79% of the corpus and combined with the second 1000 that would rise to just over 84%. By learning the NAWL they could increase their understanding to nearly 89% of the words in the lectures. Again, the Browne NAWL list was selected because it was readily available in a format which could easily be imported into Range.

These results are broadly in line with other research which shows that a combination of knowledge of the NGSL and the NAWL provides very good coverage of academic texts. However, this does not take into account sub-technical words that possess both a general and a technical meaning; i.e., words where it is unlikely they would know the mathematical meaning despite knowing the more general meaning.

TOKEN	TOKEN%	CUMTOKEN%	
1st 1000	120642	79.12	79.12
2nd 1000	7680	5.04	84.16
NAWL	6879	4.51	88.67

Table 1: Browne NGSL + NAWL

Interestingly, the sub-technical vocabulary on our wordlist accounts for 8.82% of the tokens in the corpus (see Table 2), significantly higher than the coverage provided by the NAWL which suggests that lack of knowledge of this vocabulary may cause learners significant comprehension problems. However, it must be acknowledged that the sub-technical vocabulary was not always used in a technical sense in the corpus. For example, the word ‘even’ was most commonly found in the corpus in its general meaning, while ‘product’ was found exclusively in its technical sense.

	TOKENS/%	TYPES
Sub-technical	13450/ 8.82	116
Technical	2882/ 1.89	35
Lay-technical	2552/ 1.67	20
Nontechnical	766/ 0.50	31

Table 2: Coverage by word type

Coverage of keyword list

The maths wordlist (as it stands) covers nearly 13% of the vocabulary they encounter in the lectures (see Table 3). This means that by learning the first 2000 word families from one of the NGSL lists plus

our list will give them approximately 97% of the words needed to understand the lectures. This is a much better coverage than using the NAWL and the NGSL combined.

WORD LIST	TOKENS/%	TYPES/%	LEMMAS
Maths list	19650/12.89	359/16.93	202

Table 3: Coverage of whole list

Sub-technical vocabulary in the corpus

The sub-technical vocabulary in the corpus comprises vocabulary on both the NGSL and the New NAWL, while a number of words are not present in either of these two lists. In total, 56 terms were found to be present in the NGSL, while 33 were in the NAWL. 29 terms were not present on either list (see Table 4).

Examples:

Sub-technical vocabulary also on the NAWL: derivative, integral, substitution

Sub-technical vocabulary on the NGSL: function, square, power, value

Neither list: alternate, diverge, inverse

29 were not present in the NAWL or NGSL

56 were in NGSL

33 were in NAWL

Table 4: Breakdown of sub-technical words by NGSL and NAWL

During the process of checking the lecture transcriptions on Otter.ai, it became clear that there was a high number of these ‘everyday words interpreted in the context of mathematics’ (Wilkinson, 2019, p.88). This sub-technical language comprised 8.82% of the tokens in the corpus, compared to just 1.89% for fully technical language. It is very difficult for people with limited understanding of mathematics to judge how similar a word is in its mathematical sense to its general meaning, but some general categories could be discerned.

- High-frequency words (in the 2000 most common word families in English) whose mathematical meanings may be inferred from their general meanings outside the context of mathematics; examples include 'limit' and 'boundary'. (Word frequency was checked using the VocabProfiler function of the Compleat Lexical Tutor site (Cobb, no date), which uses the BNC-COCA frequency lists.)
- Lower frequency words whose mathematical meanings are connected to their general meanings outside the context of mathematics. An example is 'cusp'.
- 'Opaque' (Watson Todd, 2017) or 'cryptotechnical' (Fraser, 2009) words which are high frequency outside the discipline. These words have a very different meaning in mathematics, so their meaning cannot be easily understood from their common meanings outside the discipline. (E.g., 'square')
- 'Opaque' words that are lower frequency, such as 'differentiate'.
- Words that are used as a different part of speech in mathematics; for example, 'constant' and 'bound', which are both used as nouns.
- Words with two meanings in mathematics. 'Prime', for example, may refer to prime number, or the prime symbol.
- Opaque words that form parts of collocations/multi-word items, like 'rational function'.

Potential challenges for students and tutors regarding polysemous lexis

There is a lack of literature on the potential language difficulties encountered by Mathematics students, such as those caused by polysemy. In comparing mathematical and general meanings of polysemous lexis for the current study, various potential issues for both students and tutors presented themselves. Students may find searching for mathematical definitions challenging. Often a mathematical definition does not appear in Google Translate or general dictionaries like the Oxford Advanced Learner's Dictionary or is near the end of the definitions. Specialised mathematics dictionaries such as the Oxford Concise Dictionary of Mathematics include all terms but are not written for English learners. Another issue is collocations and multi-word items. 'Common denominator' occurs in Google Translate and is translated into Mandarin, but 'arbitrary constant' does not; Google Translate translates each word separately.

Another difficulty is how to approach technical language when the language tutor has no content knowledge. The different categories of sub-technical lexis in mathematics suggest different approaches; knowledge of the non-mathematical meaning can be helpful when the word is frequent and has a connection with the mathematical meaning. Nation discusses core meanings of words and how meanings are often more specific in their technical sense (Nation 2013, p.295 and p.306). Bond (2020, p.101) suggests that such vocabulary may not present significant difficulties for students. However, comparison with the general meaning(s) is less helpful when the word is low frequency and perhaps unknown, or when meanings are very different. If an everyday meaning of a specialised word is known, it may affect comprehension of the same word with a different meaning in a different context (Coxhead, 2018, p.32).

Future directions

One aim of the current study was the indirect application of the corpus in creating teaching materials (as opposed to direct application, when data driven learning is used in the classroom (Flowerdew, 2009; Rohmer, 2011, cited in Szudarski, 2018, p.141). According to Coxhead (2016, p.117), few studies 'go beyond simple frequency counts and also consider learnability and teachability'. Teachability is a concern in this mathematics context; using Nation's (2007) four strands of language learning, tutors working with subject specialists can provide some practice in comprehensible meaning-focused input, using lecture notes and concordance lines to provide context and encourage noticing. Language-focused learning is also possible, with a focus on collocation or pronunciation, for example. A lack of content knowledge on the part of the language tutor means that meaning-focused output and fluency development would require collaboration with subject specialists.

Providing a glossary might be an efficient way of dealing with the issue of technical and sub-technical language in mathematics and might indeed be necessary with lexis that is not easily searchable. However, we hope to use our insights regarding polysemous language in mathematics in the creation of materials to raise awareness of aspects such as opacity and collocation. This awareness would be transferable to other contexts and would hopefully be beneficial to students later in their courses. A further benefit of these materials would be their potential to raise staff awareness of possible language issues for students.

It became apparent during this project that our assumption that the learners would already know the most frequent 2000 words may be incorrect. This has been addressed initially by focusing solely on maths vocabulary, however, we intend to test this assumption during the next academic year as it would have an impact on the content of their English lessons.

Our choice of the Browne NGSL and NAWL is also possibly questionable. It was mainly a choice based on the ease of availability as both lists were available as .xml files in lemma format with inflections included meaning they could be used instantly without needing any further manipulation. As they were used to remove only words of a non-mathematical meaning, we do not believe the choice of list had a meaningful effect on the result.

CONCLUSION

The aim of this project was to build a corpus and use that to analyse the lexical challenges faced by our learners. Clearly, they face a difficult task understanding the lectures from a purely lexical perspective. If we take van Zeeland and Schmitt's (2013) estimate that learners need to know a minimum of 95% of the words from a lecture to understand it, our learners will not come close to this by learning words from the NGSL plus NAWL (88.67%). We can solve this issue by combining the NGSL with our wordlist, which would allow them to achieve nearly 97% coverage.

The wordlist has allowed the separation of words into those which are technical and therefore outside the scope of EAP tutors and those which are nontechnical or lay-technical that can be taught by EAP tutors. The final category of sub-technical highlights the difficulty of exactly where to draw the line between subject knowledge and language knowledge. Here, the best approach appears to be one of consciousness raising of the learners to the high quantity of potentially opaque language within their discipline and strategies to cope with it.

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A list of further reading is available from the authors.

APPENDIX 1**Full wordlist by frequency**

0-51		52-102		103-153		154-202	
minus	1381	coefficient	75	simplify	32	manipulation	13
square	1263	pi	74	rotate	31	intermediate	13
derivative	1002	recursion	71	sub	31	cotangent	12
function	864	exponential	71	increment	31	unknown	11
series	750	separately	70	extend	30	calculus	11
integral	739	true	70	finite	30	outermost	11
times	627	graph	69	quantity	30	sufficiently	11
sine	607	irreducible	68	subtract	29	min	10
term	496	absolute (value)	68	equivalent	28	max	10
cosine	475	slope	68	explicitly	26	exact	10
factor	453	chain	66	inner	26	circumference	10
power	367	arctangent	66	individually	25	diagram	10
value	336	quadratic	65	implicitly	24	systematic	10
evaluate	317	equation	65	geometric	23	stack	10
give	298	convergence	64	trigonometric	22	bound	9
dot	278	agree	64	essentially	22	decimal	9
cube	263	polynomial	62	proper	20	diagonal	9
constant	227	logarithm	61	corresponding	20	statement	9
limit	225	rational	58	geometrical	20	branch	8
converge	218	identity	57	raise	19	parabola	8
log	212	delta	54	straightforward	19	arcsecant	8
root	212	segment	53	verify	19	algebra	8
taylor	206	exponent	53	obtain	19	calculator	8
formula	202	arc	51	expansion	18	bracket	8
curve	186	contour	50	expand	18	legitimate	8
even	185	plot	49	machinery	18	argument	8
integrate	183	alternate	49	outer	18	transform	7
substitution	178	sequence	49	namely	18	cusp	7
expression	178	rectangle	49	differentiate	18	inflection	7
prime	170	strip	49	infinitely	17	divergence	7
tangent	168	notation	48	cosecant	17	condition	7
integration	166	degree	45	local (max/min)	17	accuracy	7

denominator	160	integer	45	p-series	17	geometrically	7
infinity	155	repeat	45	angle	17	geometry	7
multiply	151	definite	44	valid	17	multiplication	7
secant	147	variable	43	approximation	16	compute	7
theta	145	rid	42	continuous	16	tricky	7
fraction	140	numerator	40	calculation	16	specify	7
product	135	derive	40	chop	16	precise	7
factorial	133	differentiation	39	strictly	16	improper	6
partial	132	inverse	38	maximum	15	approximate	6
convert	132	implicit	38	radius	15	composite	6
insert	127	arcsine	38	satisfy	15	representation	6
cancel	126	cone	37	parameter	15	proof	6
infinite	120	endpoint	36	conversion	14	accurate	6
interval	117	quotient	35	common (denominator)	14	correspond	6
ratio	104	inequality	33	triangle	14	non-zero	6
trig	96	substitute	33	correctly	14	parametric	6
decomposition	95	axis	33	preliminary	14	manipulate	6
diverge	91	arbitrary	33	indefinite	13		
linear	89	odd	32	minimum	13		

APPENDIX 2

Wordlist by word type and frequency

Technical		Sub-technical		Lay-technical		General	
sine	607	square	1263	minus	1381	insert	127
cosine	475	derivative	1002	times	183	separately	70
Taylor	206	function	864	multiply	151	true	70
denominator	160	series	750	fraction	140	strip	49
secant	147	integral	739	rectangle	49	notation	48
theta	145	term	496	cone	37	rid	42
factorial	133	factor	453	subtract	29	inner	26
trig	96	power	367	angle	17	individually	25
coefficient	75	value	336	calculation	16	essentially	22
pi	74	evaluate	317	radius	15	straightforward	19
recursion	71	give	298	triangle	14	obtain	19
absolute	68	dot	278	circumference	10	machinery	18
arctangent	66	cube	263	diagram	10	outer	18
quadratic	65	constant	227	decimal	9	namely	18
polynomial	62	limit	225	diagonal	9	valid	17
logarithm	61	converge	218	algebra	8	chop	16
arc	51	log	212	calculator	8	strictly	16
integer	45	root	212	bracket	8	satisfy	15
numerator	40	formula	202	multiplication	7	correctly	14
arcsine	38	curve	186	compute	7	preliminary	14
geometric	23	even	185			manipulation	13
trigonometric	22	integrate	183			intermediate	13
geometrical	20	substitution	178			outermost	11
cosecant	17	expression	178			sufficiently	11
local (minimum/maximum)	17	prime	170			systematic	10
p-series	17	tangent	168			stack	10
Common (denominator)	14	integration	166			legitimate	8
cotangent	12	infinity	155			tricky	7
calculus	11	product	135			specify	7
parabola	8	partial	132			precise	7
arcsecant	8	convert	132			manipulate	6

geometrically	7	cancel	126
geometry	7	infinite	120
non-zero	6	interval	117
parametric	6	ratio	104
		decomposition	95
		diverge	91
		linear	89
		exponential	71
		graph	69
		irreducible	68
		slope	68
		chain	66
		equation	65
		convergence	64
		agree	64
		rational	58
		identity	57
		delta	54
		segment	53
		exponent	53
		contour	50
		plot	49
		alternate	49
		sequence	49
		degree	45
		repeat	45
		definite	44
		variable	43
		derive	40
		differentiation	39
		inverse	38
		implicit	38
		endpoint	36
		quotient	35
		inequality	33

substitute	33
axis	33
arbitrary	33
odd	32
simplify	32
sub	31
rotate	31
increment	31
extend	30
finite	30
quantity	30
equivalent	28
explicitly	26
implicitly	24
proper	20
corresponding	20
raise	19
verify	19
expansion	18
expand	18
differentiate	18
infinitely	17
approximation	16
continuous	16
maximum	15
parameter	15
conversion	14
indefinite	13
minimum	13
unknown	11
min	10
max	10
exact	10
bound	9
statement	9

branch	8
argument	8
transform	7
cusp	7
inflection	7
divergence	7
condition	7
accuracy	7
improper	6
approximate	6
composite	6
representation	6
proof	6
accurate	6
correspond	6

APPENDIX 3**Wordlist by subject and frequency**

Useful to all		Derivatives		Integrals		Series	
minus	1381	integral	739	series	750	Taylor	206
square	1263	tangent	168	converge	218	factorial	133
derivative	1002	secant	147	integrate	183	infinite	120
function	864	theta	145	substitution	178	diverge	91
sine	607	quadratic	65	integration	166	convergence	64
term	496	identity	57	partial	132	alternate	49
cosine	475	delta	54	interval	117	sequence	49
factor	453	segment	53	decomposition	95	geometric	23
power	367	arc	51	linear	89	expand	18
value	336	contour	50	recursion	71	p-series	17
evaluate	317	plot	49	irreducible	68	bound	9
give	298	repeat	45	absolute	68	divergence	7
dot	278	differentiation	39	polynomial	62	condition	7
cube	263	inverse	38	rational	58	accurate	6
constant	227	implicit	38	strip	49		
limit	225	arcsine	38	rectangle	49		
root	212	substitute	33	degree	45		
log	212	inner	26	cone	37		
formula	202	implicitly	24	endpoint	36		
curve	186	trigonometric	22	inequality	33		
even	185	geometrical	20	odd	32		
times	183	outer	18	sub	31		
expression	178	angle	17	rotate	31		
prime	170	local	17	finite	30		

denominator	160	chop	16	proper	20
infinity	155	calculation	16	machinery	18
multiply	151	radius	15	expansion	18
fraction	140	maximum	15	infinitely	17
product	135	preliminary	14	cosecant	17
convert	132	triangle	14	approximation	16
insert	127	conversion	14	continuous	16
cancel	126	minimum	13	correctly	14
ratio	104	cotangent	12	manipulation	13
trig	96	outermost	11	indefinite	13
coefficient	75	unknown	11	systematic	10
pi	74	calculus	11	circumference	10
exponential	71	stack	10	diagram	10
separately	70	diagonal	9	min	10
true	70	legitimate	8	max	10
graph	69	branch	8	exact	10
slope	68	argument	8	decimal	9
chain	66	arcsecant	8	algebra	8
arctangent	66	specify	7	calculator	8
equation	65	cusp	7	parabola	8
agree	64	inflection	7	tricky	7
logarithm	61	geometrically	7	transform	7
exponent	53	geometry	7	improper	6
notation	48	manipulate	6	approximate	6
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Exploring Teachers' Beliefs and Practices Associated with Written Feedback on English for Academic Purposes Student Writing

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ABSTRACT

If teachers' feedback practices are partly influenced by their institutions as well as their cultural and educational backgrounds (Hyland and Hyland, 2006a), then research on pre-sessional programmes is of particular interest since their increasingly international teaching staff generally consists of individuals coming from different institutions. As such, pre-sessional teachers might have differing attitudes to providing feedback on writing tasks (Seviour, 2015). Using interview data and teachers' written feedback comments, this study seeks to explore the beliefs and practices of a small group of pre-sessional teachers at a UK university. The findings suggest that most teachers adopt a 'contextualised' view of feedback (Nicol, 2010) according to which written feedback must relate to the course's intended learning outcomes as well as the assessment criteria. The data analysis also found that teachers conceptualise feedback as a dialogue and, in their written comments, combine the use of questions with requests for information and suggestions. This type of dialogic feedback, however, was less visible when the comments were typed in a checklist. The results also highlight the influence of teachers' prior teaching and learning experiences on their feedback beliefs.

KEYWORDS: feedback, L2 writing, pre-sessional courses, teachers' beliefs, English for Academic Purposes

INTRODUCTION

Feedback is central to the student experience in Higher Education (HE) as it is through feedback that students understand whether they are meeting expectations (Boud and Molloy, 2013). Carless and

Boud (2018, p.1315) define feedback as 'a process through which learners make sense of information from various sources and use it to enhance their work or learning strategies'. Thus, feedback is not a 'product' delivered to a student, and the teacher is only one of its many sources. This contrasts with notions of feedback typical of the receptive-transmission model of teaching and learning (Winstone and Carless, 2020) where feedback is conceptualised as 'a gift from the teacher to the learner' (Askew and Lodge, 2000, p.5). Similarly to Carless and Boud (2018), Nicol (2010, p.503) views feedback 'as a dialogical and contingent two-way process' and argues that the issues surrounding feedback in HE are due to the failure of written feedback to engage students in a dialogue, thereby reinforcing what Winstone and Carless (2007) call the 'old feedback paradigm' (Winstone and Carless, 2020, p.7). The issues to which Nicol (2010) alludes are well-documented in the literature. Students often find the feedback they receive too vague and unhelpful (Van Heerden, 2020; Weaver, 2006), demotivating (Wingate, 2010) and difficult to interpret (Rossiter, 2022) and first-year undergraduates do not seem to be equipped with strategies for *using* feedback (Burke, 2009; Weaver, 2006).

Academic teaching staff, on the other hand, seem to theoretically embrace the idea that feedback should feed forward, but in practice they often use it to justify a summative mark (Price et al., 2010), a mismatch which also features in Lee's (2009) list of mismatches between secondary teachers' beliefs and written feedback practices. Overall, teachers in HE question the extent to which students value their feedback (Glover and Brown, 2006; Van Heerden, 2020), a perception which results in teachers' negative emotional experiences, particularly in the case of second language (L2) writing teachers (Yu et al., 2021). In this regard, Bayley and Garner (2010) argue that innovative practices aimed at standardising teaching in HE such as structured feedback forms are partly to blame for the general dissatisfaction with feedback whereas Burke (2009) and Weaver (2006) claim that students do not receive enough guidance on how to action feedback. Notwithstanding these issues, feedback is still seen as central to the student experience (Boud and Molloy, 2013) and more so in the case of L2 writing (Hyland and Hyland, 2006a).

As Hyland and Hyland (2006a, p.13) point out in their discussion of the sociocultural dimensions of feedback, teachers 'are at least partly influenced by the dominant ideologies of their institutions'. This is particularly relevant to Pre-Sessional (PS) courses which are often taught by teachers who 'come from a variety of teaching contexts and so have widely differing experience of and attitudes to providing feedback on writing' (Seviour, 2015, p.88). It is therefore important to research PS

teachers' beliefs and practices and, if necessary, improve the quality of feedback provided for the benefit of students (ibid.). As such, the current study inquired into the feedback practices of 5 PS tutors on a 10-week online course at a UK university.

McGrath and Bailey (2009) describe PS courses as 'bridging programmes' aiming to help international students reach the English language requirements of their future degree courses. However, the aim of the course in the present study is broader than this. Its Intended Learning Outcomes (Table 1) emphasise the importance of socialising students into academic practices rather than a mere focus on language proficiency which is often typical of courses PS students might have previously attended. The course adopts a Problem Based Learning approach which sees students engaging in activities where the focus is on sharing meanings. The language element of the course, which focuses on features of academic register with the aim of socialising students into the 'academic discourse community' (Basturkmen et al., 2014), consists of two hours a week of asynchronous consciousness-raising activities, followed by three hours of synchronous consolidation facilitated by the teacher. The students' entry language levels, as measured by their IELTS scores, range from 5.5 to 6.5.

Intended Learning Outcomes
<p>By the end of the pre-sessional course, you will be able to demonstrate:</p> <ol style="list-style-type: none"> 1. Skills and strategies to communicate effectively in academic contexts. 2. Skills to access and critically question knowledge in academic contexts. 3. Choices of content, organisation and language to communicate with different audiences for different purposes. 4. Autonomy through active reflection on feedback and self-evaluation to enact learning goals. 5. Collaborative participation in local and global communities of practice

Table 1: Pre-sessional Intended Learning Outcomes

Taking as a premise that teachers are influenced by the institutional context in which they are operating, a brief overview of the main ideologies at the Centre in which this study took place seems necessary. In relation to language teaching and material design, the Centre espouses Systemic Functional Linguistics (SFL): 'Materials should focus on choice of language, organisation, and content for audience and purpose. This means focusing on effectiveness and efficiency, and the impact of the writer's choice on the reader rather than right or wrong answers' (internal website, n.d.). In the

area of feedback, the Centre's view draws on both Carless and Boud's (2018) work on students' feedback literacy as well as Nicol's (2010) idea of inner feedback: materials often feature the analysis of both student exemplars and marking criteria so students can develop their ability to form judgments about the quality of their own work. In relation to assessments, the Centre embraces 'assessment for learning' (Wiliam, 2011) as a leading ideology and for this reason assessments on the PS course are portfolio-based: students submit weekly formative assignments on which they receive written feedback which is then followed-up in a weekly tutorial with the teacher. Overall, the Centre operates within a socio-constructivist framework that emphasises the principles of collaboration but also autonomy. This is also visible in the PS feedback checklist (Appendix 1) which includes a column for peer feedback and a section where students decide what their teacher's feedback should focus on.

However, it is uncertain the extent to which PS teachers at this Centre are familiar with these ideologies since a significant number of tutors are usually employed only for the duration of the course (10 weeks). Thus, some might not be familiar with institutional practices, and this is perhaps why they attend a week-long induction which features a seminar-style discussion of the theories underpinning the work at the Centre – and for which teachers need to prepare by reading relevant texts (e.g., Ryan, 2011 and Alexander, 2019) – as well as a whole day focussed around feedback on writing and the use of exemplars. Further ways in which tutors' feedback literacy is developed include the provision of the checklist in Appendix 1, which tutors are encouraged to use when giving feedback, as well as a Career Development session on feedback practices, which was partly designed to help teachers stay within the allocated time of twenty minutes per script.

It was thus with the aim of investigating the extent to which pre-sessional teachers' feedback practices align with the Centre's ethos and espoused theories that the present study was undertaken. In particular, this exploratory study was guided by the following research questions:

1. What are PS teachers' beliefs in relation to written feedback on writing and what are the origins of these beliefs?
2. How do these beliefs manifest themselves in the teachers' feedback practices?

METHODOLOGY

Participants

This is a qualitative case study offering in-depth perspectives from a small group of teachers (5) with a variety of backgrounds (Table 2). Although the data in the present study cannot be representative of the broader teacher group, it is reasonable to assume that the issues raised in this study are relevant to that group.

Tutor	Employment (permanent / summer only)	Teaching experience (years)	EAP experience (years) - provision	Other teaching experience
Jacob	permanent	over 20 years	5 years (UK) - PS, International Foundation Programme (IFP)	Primary schools
Melissa	permanent	9 years	9 years (UK) - PS, IFP	Seminar tutor (English department) and Academic Skills tutor
Stephanie	summer only	10 years	10 years (UK) - PS, IFP	English as a Foreign Language (EFL)
Carol	summer only	20 years	5 years (UK) - PS	EFL and exam preparation courses
Georgia	Summer only	25 years	15 years (mainly overseas) - PS, in-sessional	EFL and teacher training

Table 2: Participants' profile

Data collection and analysis

This study reports the analysis of 20/30-minute semi-structured online interviews with the individual teachers as well as the feedback comments visible in screen recordings of the teachers' computer-based activities in the process of giving feedback. In the interviews, teachers were asked to discuss their beliefs in relation to the following topics:

- The purpose of feedback
- Approaches to giving feedback on a written task

- Changes over time in feedback practices
- Emotions associated with giving feedback
- Influences on feedback practices

The 20-minute screen recordings, which captured the process of giving written feedback on student scripts, were done autonomously by the teachers using Microsoft Teams after the interviews had taken place. In these recordings, teachers left a total of 83 comments across 5 scripts. Teachers recorded themselves giving feedback on the first draft of a written formative task that required the students to synthesise ideas from two different texts (see the assignment brief in Appendix 2).

The interview data was coded thematically in two main stages. In the first stage, the themes were identified inductively (Braun and Clarke, 2006); in the second stage, these themes were revisited in light of what had emerged from the coding of the feedback comments. Drawing on similar studies (Mirador, 2000; Ellis, 2008; Basturkmen et al., 2014; Guasch, Espasa and Martinez-Melo, 2018; and Van Heerden, 2020), these written comments were coded from two perspectives, which in practice resulted in each comment being assigned two codes. One set of codes, partly informed by the Centre marking criteria, aimed to identify the aspects of the task teachers focused on in the comment (Table 3) while the other set classified comments according to how they had been formulated (Table 4). Table 3 distinguishes between *content/purpose* and *language*, and this perhaps warrants clarification. Although it is indisputable that the distinction between language and ideas in writing is artificial (Hyland and Hyland, 2006), within the context of the present study the category of language in Table 3 was interpreted very narrowly as consisting mainly of comments focusing on discrete elements in student writing such as a single word or punctuation.

Another point worth clarifying is the use of the term *corrective* in Table 4. In contrast to similar studies (Guénette, 2007; Ellis, 2008; Evans et al., 2010; Van Beuningen, De Jong, and Kuiken, 2012), the label *corrective* used herein includes any type of correction and not only linguistic errors. Therefore, comments focusing on any of the categories in Table 3 were classified as negative/corrective if they pointed to weaknesses or areas for development in the student writing. If the answer to these problems in the student writing was given by the teacher, the comment was coded as *direct*. Conversely, if the comment only pointed out the existence of a problem without providing a solution, it was classified as *indirect*. Finally, the comments were coded as *dialogic* if the

teacher seemed to engage in a dialogue with the student which included prompting the student to offer reasons for a specific choice and/or to think of how the issue identified could be addressed. The data analysis of positive comments did not identify any instances of dialogic positive feedback, so this type was omitted from Table 4.

Focus	Examples
Content/purpose	'Perhaps you could include some more background information. One or two sentences would be enough.'
Cohesion/structure	'A good use of a summary noun to introduce another point of comparison, but you need to state that you are comparing the two texts.'
Language	'I'm not sure this is the right word.'
Presentation/conventions	'You must refer to your texts with citations. Ask a classmate the best way to do this, citations are a very important part of academic writing and are a transferable skill you will need throughout your studies next year.'

Table 3: Classification 1: the focus of feedback

Category	Sub-category	Examples
Negative/corrective	Direct	'The last sentence contained new information, you analyse a point not made in the body. It would be better to move this up to the body as the conclusion should not contain new information, remember?'
	Indirect	'I don't think this is the right word.'
	Dialogic	'I'm not sure where this sentence belongs - is it a heading? Part of a paragraph (which)?'
Positive/praising	Direct	'here you provide an explanation - well done.'
	Indirect	'However great evidence of learning here - well done.'

Table 4: Classification 2: the function of feedback

RESULTS AND DISCUSSION

The following sections have been organised around the themes that emerged from the data analysis. Each theme is explored by examining the main findings from the analysis of interview data and by then considering whether these findings are consistent with the analysis of comment data as well as the relevant literature.

Contextualised feedback

The first question in this study aimed to explore teachers' beliefs about written feedback on writing. A common view amongst the teachers interviewed is that PS students are transitioning between two different educational contexts, and a key aspect of this transition is a necessary shift in students' perceived priorities. In this regard, teachers view written feedback as facilitating this transition by helping students set priorities in relation to their writing skills as it is generally felt that students attach excessive importance to surface features of writing such as grammatical accuracy which does not adequately reflect the expectations of the academic community as expressed, for example, in marking criteria:

I suppose the other thing is to provide not only your focus but also priorities [...]. What a student might think of priorities could be very different. They often think grammar is the most important thing, whereas for us on our criteria sheets it's 20% rather than the structural things which we think are more important and the analysis (Jacob).

One tutor suggested that this misalignment might be a legacy of students' previous language learning experiences:

There's a lot of filling in all that background and perspective because [students] have come from a background in language to pass tests and we're looking at it in a completely different way, so there's a whole kind of perspective shift happening (Stephanie).

These teachers, however, appear to share the tendency of students, and perhaps most L2 writing instructors (Lee, 2019), to focus on surface features that would require Language Corrective Feedback (LCF) but purposefully resist it. In fact, most tutors acknowledge that this type of feedback would not help students develop their writing:

I just notice that's what I do. I focus on every word and actually that's not always going to be helpful at all (Jacob) .

I don't want to overwhelm [students]. I'm not going to correct or question every single wrong word choice or grammatical issue. But I would kind of go through it organically and just note what I think was important (Melissa).

I certainly have the tendency to spot all the little errors and something that I've really enjoyed about [name of language centre] is that we haven't been focusing so much on the grammatical aspect [...] I think that allowed me to sort of step back and take a more sort of a broader view (Carol).

These findings suggest that these teachers believe that, apart from its 'evaluative' function, feedback has an important 'inducting' function: feedback does not merely identify strengths and weaknesses but has a key role in socialising students into the academic discourse community, thereby highlighting the social nature of writing (Basturkmen et al., 2014). This approach to giving feedback seems to suit the genre-oriented writing instruction (Hyland and Hyland, 2006) which has gained popularity on English for Academic Purposes (EAP) courses (Riazia, Ghanbar and Fazel, 2020).

This move away from LCF toward a more global approach where attention is directed to content and organisation was also described as the main way in which feedback practices have evolved as tutors gained more experience:

I used to be a lot more corrective (Jacob).

I think it was much more analytical and going into detail and focusing on all the tiny little errors. I think there is still a certain element of that. Now I think it's certainly more holistic (Carol).

One tutor suggested that their own assessment literacy in the form of increased familiarity with the marking criteria contributed to refocusing her practices away from LCF:

I learned a lot from the pre-sessional courses that I did at [name of university]. If we start off with writing, you know learning about criteria, things that were important and focusing on those areas (Carol).

The feedback these teachers give can thus be described as ‘contextualised’ (Nicol, 2010, p.512): feedback comments are ‘framed with reference to the learning outcomes and/or assessment criteria’. These findings are very encouraging since students appreciate feedback that relates to the marking criteria (Weaver, 2006). However, in the case of Georgia, who worked extensively outside the UK both as a teacher and teacher trainer (Table 2), LCF appears to still be an important aspect of her feedback practices. A recurrent theme in her interview was the use of marking codes and the importance of training students in using them. In this discussion of marking codes, the use of terms such as ‘errors’, ‘peer correcting’ and ‘models’ suggests a slightly more prescriptive linguistic approach than that observed in other tutors:

We did a lot of learner training like codes, basically lots of code. [...] So the writing feedback was the coding but training them. I think this is the key thing [...] you have to help the students, particularly if they have different learning backgrounds. You could call it scaffolding, but you have to sort of build up to it. You can’t just get them to peer correct. [...] and you say to them you’ll save a lot of money when you get to university if you could correct it yourself. [...] When you’re giving models as well, I quite like guided discovery where you give them a model and maybe with errors (Georgia).

A possible explanation for Georgia’s attitude is that she might have come from a context that attached great importance to accuracy. Such was the case in Al Shahrani and Storch’s (2014) study, for example, in which they found that teachers at an EFL university in Saudi Arabia felt forced to follow the institution’s guidelines of providing feedback on all errors using error codes. These findings thus appear to provide further support for the claim that the social and institutional context in which teachers work plays a role in shaping their practices (Hyland and Hyland, 2006a).

The second question in this study aimed to explore how teachers’ beliefs about written feedback on writing manifest themselves in their practices. The analysis of written comments indicates that the teachers in this study do not focus extensively on LCF as most of their comments concern content/purpose. This contrasts with earlier studies that found L2 writing tutors mostly focus on LCF (Lee, 2009; Junqueira and Payant, 2015). Although a discourse analysis of written feedback is outside the scope of this study, it was noted that when teachers provided LCF, they often hedged their comments or phrased them as questions (Table 5). This mitigation suggests an awareness that LCF might encourage negative attitudes toward writing such as writing anxiety (Tsao, Tseng and Wang, 2017). Indeed, this was one of the reasons behind Truscott’s (1996) call for abandoning LCF

altogether. Furthermore, the fact that most comments on language (Table 5) are *indirect* – the tutor indicates that there is an error but does not correct it – is consistent with research on LCF that supports the view that indirect correction is more appropriate when the teacher’s focus is on developing ‘effective [students’] metacognitive skills as well as revision and editing processes’ (Ferris, 2010, p.190).

Tutors’ on-script comments	Function
I don’t think this is the right word.	indirect
Do you mean topic sentence?	indirect
The stories and questions create cohesion?	indirect
I’m not sure this is the right word.	indirect
However, you have made a couple of vocabulary/ word choice errors, so be sure to double check you know the precise meaning of a word and the context in which it is used before using it.	indirect
Spoken language.	direct
The areas you could improve: 1. use of brackets and punctuation.	indirect
Perhaps some proof reading would be good.	indirect
Driving factor - maybe you could re-name this topic: do you mean purpose?	direct
Comparative language.	direct
Try using comparative sentence structures in your topic sentences.	indirect
You have clearly used much of the compare and contrast language we have focused on in class- well done.	direct

Table 5: Tutors’ on-script comments on language errors in student work

It is worth noticing that in some instances language feedback is used to encourage certain habits (e.g., proofreading and checking the meaning of words) or, in the case of positive comments, praise students for using language taught on the course. This last finding suggests that teachers situate their feedback in ‘an ongoing dialogue between teachers and students’ (Hyland and Hyland, 2006, p.213). It is this theme of feedback as a dialogue that we will explore below.

Dialogic feedback and use of the checklist

The analysis of interview data indicates that tutors generally acknowledge the relational dimension of feedback on writing which one tutor describes as a ‘discussion’:

Other things that I've been doing more recently are asking more questions to the student as to what they could do (Jacob).

[Feedback] is any discussion you might have with the student about their work [...] I try to elicit more rather than giving answers (Melissa).

Both comments suggest that students' active involvement is seen as essential for feedback uptake to occur. This is in line with the 'learning-focused feedback paradigm' proposed by Winstone and Carless (2020) who advocate for a closer partnership between teachers and students.

Even when the issue in the student's work relates to language (i.e., grammar), feedback is said to be given in dialogic terms in line with an SFL-informed view of language:

I'll have a look at perhaps where that apparent contradiction comes from, and if it's just a grammatical mistake, I might suggest 'Do you mean this version of what you could have said? Or do you mean this version of what you could have?' (Stephanie.)

Teachers' conceptualisation of students as 'active participants' (Winstone and Carless, 2020, p.8) might explain why the analysis of written comments on language in the previous section highlighted the predominance of *indirect* feedback (Table 5). This seems to extend to comments on content and structure of which the majority were coded as either *dialogic* or *indirect* (Table 6). In this respect, Guasch, Espasa and Martinez-Melo (2019) found that feedback that combines questioning, requesting information and making suggestions seems the most effective as it encourages students to take an active role. In other words, *dialogic* and *indirect* feedback seem to prompt students to redraft more substantially (Ferris, 1997) as well as encouraging self-regulated learning (Carless, 2013; Nicol, 2010).

However, in regard to *indirect* feedback, it is interesting to note that one of the comments coded as *indirect* in Table 6 (bolded for ease of reference) does not fall within the categories of requests, suggestions or questions but appear to be a call-to-action if not an order as indicated by the use of the imperative mode ('Discuss, examine, evaluate them'). Hyatt (2007, p.341) notes how the use of imperatives 'can lend an air of authority, representing comment as the "truth" rather than an invitation to a dialogue', which might discourage students from being active participants. On the other hand, imperatives have been found to lead to more substantial changes in subsequent drafts

than questions in the case of Japanese students with a pre-intermediate or intermediate English proficiency level (Sugita, 2006).

Comment	Focus	Function
This sentence contains too many ideas, so think how you could separate them to make it easier to understand.	structure	dialogic
Is this about the definition of IoT?	content	dialogic
What are you *doing* with this information? You've lifted it from the reading text, but what do you want to show? Are you defining IoT (as the subheading and first sentence suggest)? or are you contrasting how the two texts view the uses and benefits of IoT? or something else? Whatever your purpose, you need to reference where this information came from.	content	dialogic
What's the purpose of this section? You appear to start comparing how the two texts present the development of the IoT, but then the focus shifts and you simply repeat the narrative history taken from the listening. Are you going to return to the typology you outline here (taken from the reading)?	content	dialogic
Are you going to tell your reader anything about this?	content	dialogic
The audience has no idea which text you are discussing here. You need to cite when you refer to text and then it is very clear. See here how to cite your sources [links].	structure	indirect
Please note where I have highlighted in red. I would suggest you pull out concepts more from the content. For example, 'government control/ support' and compare contrast how each author explores them rather than describing both listening and reading in a linear way.	structure	direct
In this paragraph you state use of language features, by describing. You could include some examples and also evaluate how effective you think they are.	content	indirect

These are the ideas we want you to get into! Discuss, examine, evaluate them. Don't just mention them.	content	indirect
'There does not appear to be any evaluation of opinions of point 1 and 2. You have told me what the writer's and speaker's stance is, but not what is your opinion (student's name).	content	indirect

Table 6: Examples of comments on content and structure

Overall, however, the findings discussed so far indicate that the tutors in this study conceptualise feedback as a dialogue and try to encourage students' responses by mitigating their comments and/or phrasing them as questions. This is how most university tutors give written feedback (Van Heerden, 2020; Pazio Rossiter, 2022). PS tutors are thus helping students adjust to how they will receive feedback on their future degree courses by adopting a similar approach to that of lecturers. In this respect, Van Heerden (2020) highlights the importance of feedback beyond teaching students the mechanics of academic writing: feedback should help students become successful participants in HE so has an important 'developmental' function. A key aspect of the student experience in HE, she emphasises, is the ability of students to respond effectively to dialogic feedback which first-year students might have experienced less than evaluative feedback.

Interestingly, in the process of analysing written feedback, it became apparent that the majority of comments typed in the checklist (Appendix 1) belonged to the categories of either *direct* or *indirect* feedback (Table 7). This suggests that the checklist might impede *dialogic* feedback in that teachers appear to use it to simply acknowledge whether the student has followed the guidelines or not. On the other hand, the checklist might have facilitated positive feedback since most positive comments were found in the checklist and not on the scripts. The checklist might have acted as a reminder of all the processes the student writers had to undertake to complete the draft by prompting teachers to consider those achievements that might have otherwise gone unnoticed. Moreover, the presence of the checklist might have made positive feedback, which students often find unhelpful if expressed in short comments such as 'good' or 'good point' (Tom et al., 2013), more specific. However, a note of caution is due here since the positive comments in the checklist appear to merely acknowledge that the student has followed the guidelines and the praising language that would usually feature in positive feedback (e.g., well done for; I like how ...) is sometimes absent.

Written feedback	Function	Evaluation
There are many differences and similarities. This is quite vague. Can you make it more specific and relate it to the texts?	dialogic	negative
I agree with your peer feedback. Can you give a clearer definition of IoT?	dialogic	negative
You discussed the structure, language and evidence provided throughout referring to both texts, you analysed the evidence provided and your stance regarding which text was stronger is clear. However, you did not discuss the content, as in the actual arguments made, in either CCR. Why did you choose to focus on the structure, language and evidence without comparing the arguments? Let's discuss this in tomorrow's tutorial.	dialogic	juxtaposition
1. what do you mean by the implications? 2. What are you referring to? 3. See Wed S1 optional activity on thesis statements.	dialogic	negative
Although the area I have highlighted in blue seems to be only talking about the listening text but the last sentence mentions both as a summary. How could you clarify this better?	dialogic	negative
The structure is clear. It includes sub-headings and the paragraph follow a logical order (as indicated in the introduction). They only contained one point per paragraph.	direct	positive
You used clear topic sentences to introduce each paragraph.	direct	positive
Your conclusion contained a summary and thesis, but although it commented on the future focus of both texts, did not include a future focus of your own.	direct	juxtaposition
Your introduction contains a clear purpose, map and relatively well-formulated thesis statement	direct	positive
The last sentence contained new information, you analyse a point not made in the body. It would be better to move this up to the body as the conclusion should not contain new information, remember?	direct	negative
Additionally, the next two paragraphs are talking about the listening and reading separately.	direct	negative
Please note where I have highlighted in red. I would suggest you pull out concepts more from the content. For example 'government control/	direct	negative

support' and compare contrast how each author explores them rather than describing both listening and reading in a linear way.		
Perhaps you could include some more background information. One or two sentences would be enough.	direct	negative
You have identified two main points for the reading text and three main points for the listening, which are appropriate,	direct	positive
There does not appear to be any evaluation of opinions of point 1 and 2. You have told me what the writer's and speaker's stance is, but not what is your opinion,	direct	negative
nice conclusion you have summarised the key points in your paper, made suggestions for the future-well done.	direct	positive
You have clearly used much of the compare and contrast language we have focused on in class- well done.	direct	positive
there is no hook. You introduce the texts straight away,	indirect	negative
Yes, you have identified three main areas that you will discuss in the main body.	indirect	positive
I don't feel I've learnt much about the issues surrounding (the growth of) the IoT from this CCR.	indirect	negative
I agree with your peer feedback.	indirect	positive
Have a look at this link which may help you.	indirect	
I agree with the peer feedback. However, you have made a couple of vocabulary/ word choice errors, so be sure to double check you know the precise meaning of a word and the context in which it is used before using it.	indirect	negative

Table 7: Comments in the checklist

These mixed results in relation to the effectiveness of the checklist were also mentioned by Melissa:

As a tutor, seeing whether they've used cohesive devices and then just ticking 'yes' in the box, I feel the quality of my feedback is not the same as when I'd go through it organically. Of course, it's less standardized in that sense because what I'd notice and would give feedback on might be slightly different than what a different teacher would notice. But I do think that the level of feedback is slightly deeper perhaps than using the checklist.

Melissa went on to explain that the checklist might prove more useful when students engage in peer review activities which is consistent with the findings in Wakefield et al. (2014) where students reported benefitting from using an essay feedback checklist to self-assess their own work before submission:

I think certain things are more useful to use as peer feedback. If you're a student and you're looking at another person's summary to see whether they use hedging language or cohesive devices and you spot which ones they've used. That's really useful as a peer feedback giver.

Peer feedback is increasingly viewed as a key element of students' feedback literacy coupled with students' ability to initiate feedback by requesting teachers to focus on specific aspects of their writing (Winstone and Carless, 2020). In regard to peer feedback, it is worth noting the three instances of the teacher explicitly agreeing with peer feedback in Table 7. In these three instances, the peer's comments that the teacher agrees with include examples as well as explanations, albeit very brief. Although this is an extremely small sample of comments, it seems reasonable to assume that teachers are more likely to acknowledge peer feedback when this does not consist of a mere 'yes' or 'no', which was the case for some of the peer feedback visible in the screen capture recordings. Interestingly, there were also instances where the teacher and the peer left very similar comments, but the teacher did not explicitly acknowledge this agreement. These findings combined indicate that students need training to be able to engage effectively with peer feedback (see Nicol, Thomson and Breslin, 2014 for an overview of the benefits of giving feedback), and teachers might need to acknowledge peer feedback more consistently if they want students to value their peers' comments.

In addition, closer inspection of Table 7 seems to provide evidence in support of Nicol's claim (2010) that teachers' and students' conceptions of task requirements often do not match, which results in students' difficulties interpreting feedback. This misconception is visible in the underlined comments in Table 7 where tutors draw students' attention to a key requirement of the task (Appendix 2) which the students failed to meet: the need to synthesise information from different sources. Nicol (2010, p.505) explains that the solution to these 'conception mismatches' lies in taking a more dialogic approach to feedback and moving away from a mere focus on written comments.

Beyond investigating how teachers give and conceptualise feedback, the current study aimed to explore where teachers' beliefs originate. This is the topic the next section will explore.

The influence of prior experience

Perhaps unsurprisingly, the study participants' prior teaching contexts seem to partially influence their current feedback beliefs, which is consistent with the literature on teacher cognition (Borg, 2007). For instance, both Stephanie and Georgia's views appear to be informed by their teaching experiences in EFL settings (Table 2) and, more specifically, Communicative Language Teaching (CLT). CLT, a popular EFL approach since the 1970s, aims to help students develop *communicative competence* – as opposed to only *grammatical competence* – by emphasising aspects of language use such as *purpose* and *setting* (Richards, 2006). The influence of CLT can be seen in the importance Stephanie attaches to communicating ideas:

[feedback] is time to let [students] know what they've achieved with a piece of work, what they've communicated, how clearly and what more they could do to communicate the idea or clarify a point because ultimately a bit of work that they've written is to communicate. Anything [students] do is to communicate an idea and [students] have either got the linguistic resource as well as the ideas or they haven't. And then sometimes the problem might not be the language. It might be that they just haven't got a clue what they're trying to say.

CLT seems to also inform Georgia's views on the focus of feedback, at least in her downplaying of *grammatical competence*:

it's not just about having right grammar 'cause often students can do the grammar, but they can't construct it. You know, construct the writing as well, or they use their first language. So it's making them aware of appropriate collocations, appropriate language.

On the one hand, this shift from LCF to aspects such as purpose and appropriacy seems better suited to the challenges posed to students by the modern university: a mere control of grammar or style would not prepare students to deal with "the communicative demands" of HE (Hyland and Shaw, 2016, p.1). On the other hand, Kirk and King (2022) have recently drawn attention to the unsuitability of CLT to cater for the needs of EAP students. They advocate for a shift 'from the "E" to the "AP"' (Kirk and King, 2022, p.2) with a greater focus on academic discourses and practices. In this regard, Melissa's approach to engaging with her students' work appears to be more aligned with Kirk

and King's (2022) perspective. This is evident in the self-reported attention Melissa pays to important academic practices such as research methods and criticality in the use of sources:

it could be feedback on [...] a broader level looking at how to structure the entire text or going into content or even discussions around methodology. Uh, data collection. How to analyse those things? Or are talking about how to use secondary sources in your work critically?

Melissa's approach seems to stem from her academic background: she did not start her career as an EFL teacher but rather first as an Academic Skills Tutor and later as a disciplinary lecturer, and she holds a PhD in an English-related subject (Table 2). Melissa acknowledges this influence very explicitly in her interview:

Focus more on the academic side of things rather than going into sentences and looking at language mistakes. [...] I do have some perspective into how a content tutor would maybe give feedback on an essay. From that perspective, because I also did training as a departmental tutor.

Another area where teachers' prior experiences, this time as learners, appear to be influential is positive feedback. Teachers seem generally aware of the importance of providing some positive feedback:

The first thing obviously is always notice the good (Jacob).

I feel it's really important to give praise where praise is due (Carol).

You know you make sure there are positives and negatives in there (Georgia).

This belief in the importance of praising students seems to originate in teachers' previous experiences as feedback receivers:

I think my own experience of receiving feedback when I did my MA [...] the feedback has to connect with the task, and it has to connect with the person's attempt. And even though it's not brilliant, you've got to recognize that they're trying to do something (Jacob).

The belief that feedback should include some praising is what Carless and Winstone (2023), in their three-dimensional view of teacher feedback literacy, call the *relation dimension* of feedback: teachers should show emotional sensitivity. This calls for greater consideration of the ‘social-affective dimension of feedback’ (Yang and Carless, 2013, p.289) and the impact the lack of positive feedback can have on students’ self-esteem and more so in the case of novice writers (Su and Huang, 2022). This raises the need for teachers to monitor their practices to ensure their feedback does not neglect students’ affective needs (McGrath, Taylor, and Pychyl, 2011).

When considering teachers’ actual practices, it is worth pointing out that, although positive feedback was included in the final overall comments, most of the written in-text comments analysed in this study were negative. This is perhaps to be expected since teachers were giving feedback on a first draft and/or might have wanted to delay positive feedback until the tutorial so to encourage students to edit their work.

CONCLUSION

An initial objective of this study was to identify the aspects of writing that PS teachers focus on when giving feedback. This aim was justified on the premise that teachers delivering PS courses often have very different backgrounds, and this variety might result in overall inconsistent feedback practices. The results of this study indicate that the teachers who participated in this study are selective when commenting on linguistic errors as they try to direct their attention to other aspects of writing such as content and organisation thus aligning their practices with the course ILOs. This finding led to the claim that, overall, the feedback these tutors provide is ‘contextualised’ (Nicol, 2010, p.512). The present study also aimed to investigate whether teachers’ beliefs in relation to how feedback should be communicated to students have any effects on the way written comments are worded. The results of this study suggest that tutors conceptualise feedback as a dialogue and try to encourage students’ responses by phrasing their comments as questions and/or mitigating them. This was interpreted as an attempt by teachers to encourage the active involvement of students (Winstone and Carless, 2020).

An additional finding emerging from this study is that teachers' beliefs appear to originate in their prior experiences both in teaching and learning. In this regard, it was noted that the beliefs of teachers with extensive experience in EFL settings appear to be partially informed by CLT.

This study has a number of limitations, the most obvious being the small sample of teachers who agreed to participate and, consequently, the limited number of comments analysed. More importantly, this study explores the views and practices of teachers only. Further research examining students' views and responses to feedback is needed. In relation to this, screen capture recordings of students redrafting processes might yield valuable insights.

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APPENDICES

Appendix 1 Pre-sessional 2021 Checklist

Points to consider	Peer Feedback	Teacher feedback
CONTENT		
Choose 3 areas you would like your peers to focus on in their feedback.		
Summary <ul style="list-style-type: none"> Main points of the reading and listening texts summarised <i>clearly</i>. 		
Analysis and Evaluation <ul style="list-style-type: none"> Strengths of each text included Weaknesses of each text included Judgement/critique of and clear stance towards each text and their evidence (see evidence below) 		
Synthesis and Evidence <ul style="list-style-type: none"> Main (primary) two texts synthesized throughout Evidence used by both texts <i>critically</i> analyzed (see analysis and evaluation above) including their own use of sources (secondary texts) <i>Your</i> stance supported with evidence (from texts) 		
ORGANISATION AND LANGUAGE		
Organisation <ul style="list-style-type: none"> Clear, informative, concise CCR title Clear Introduction with purpose, map and working thesis Clear and coherent overall structure with paragraphs following logical order (as indicated in Introduction) Point by Point structure to allow for effective synthesis Clear paragraphs (one main topic) and sections (with headings?) 		

<ul style="list-style-type: none"> • Clear topic sentences, general to specific and <i>given-new</i> sentence pattern aid flow <i>within</i> and <i>between</i> paragraphs • Conclusion with summary, thesis and future focus (implications, suggestions for further research or recommendations) 		
<p>Language</p> <ul style="list-style-type: none"> • Variety of sentence structures eg simple, complex, co-ordinated; concession etc • Language to express voice and stance eg boosting, hedging, emphatic structures, concession, choice of reporting verbs etc • Variety of cohesive devices eg Pronouns and summary nouns etc • Compare-contrast language (for CCR) eg modified comparatives etc • Academic style: Formal, impersonal, precise and concise eg Precise noun phrases; moves between abstract and general and more concrete, specific details/exemplification • Range of appropriate vocabulary and expression 		
<p>Choose 3 areas you would like your teacher to focus on in their feedback.</p>		

Appendix 2 CCR assignment brief

In Weeks 4 and 5 you will be producing a Comparative Critical Response (CCR) You will only produce one CCR and it must be written – not verbal. The CCR should be between 1000-1500 words.

In a Critical Response, you are required to evaluate and give your opinion about a text. In a **Comparative** Critical Response, you will need to compare, evaluate and give your opinion on two sources: the sources you will compare and evaluate are this week's reading and listening texts:

- the reading text *Any Thing for Anyone? A New digital Divide in Internet-of-Things Skills* (van Deursen and Mossberger, 2018)
- the listening text 'The human use of the Internet of things' by Dr. Michael Marcinkowski (2021).

In addition, you can use a third text of your choice, but this is not a requirement.

When you are writing about more than one source, you need to **synthesise** ideas from both sources. The synthesis matrix you made for your PBL work in Week 3 will be useful for planning your CCR.

In Session 2 today, you will learn more about how to write your CCR and begin making an **outline and drafting your introduction** to your Comparative Critical Response.