Transcending Solely Print-based Texts through Blogging – A Multimodal Approach

Theodore Rodrigues

Abstract

Students are often exposed solely to print-based texts as the primary sources of communication. In South Africa, English Additional Language (EAL) students struggle to engage conceptually with English-medium academic material and, in most cases, they transition to other forms of engagement such as imagery. This study from which this article derives explores the use of various modes of communication such as audio, imagery, and reading text in a scaffolded language that EAL students can better associate with. As literacies change to simultaneously incorporate new ways of communication, this paper examines the impact a blog could have on how EAL students understand text across a variety of different methods of communication. This study employs multimodality (Kress 2010). A case study design approach is used with a small sample of Extended Curriculum Programme first-year mechanics students and their lecturer at a South African university of technology. From the findings, the author reflects on mediating teaching and learning strategies to promote conceptual understanding of course material. Furthermore, the findings contribute to the debate that aims to find viable solutions for suitable teaching and learning practices to promote learner-centeredness in EAL contexts in higher education.

Keywords: epistemological access; English Additional Language; multi-literacy; multimodality; mode; medium

Electronic ISSN: 2519-5476; DOI: https://doi.org/10.29086/2519-5476/2017/v24n2a9

Introduction

In South Africa, many higher education institutions (HEIs), such as the Cape Peninsula University of Technology (CPUT), are still grappling with developing teaching and learning strategies to address the educational demands of securing an exponential increase in the number of graduates in a setting where students, especially English Additional Language (EAL), are struggling to 'read to learn' (Pretorius 2000). The Council on Higher Education (CHE) report (2013) emphasises the need to develop more appropriate academic literacy and other language-related interventions within the context that HEIs are showing an increase of undergraduates who speak English as a second or third additional language.

Subsequently, HEIs have evolved various initiatives, such as Writing Centres, multilingual glossaries, academic literacy units, extended curriculum programmes, etc. However, HEIs have not sufficiently problematise the development of academic literacy of its new student demographic (Antia & Dyers 2017), especially mechanical engineering students (Fontenelle 2013), around teaching and learning methods. Its ineffective achievements reverberate in the low throughput and high dropout rate of first-year students. Independent study for students appears to be very challenging as they struggle with the 'language of textbooks and journals' (McDonough in Hirvela 2013: 88).

Although we could posit various other reasons why EAL first-year students display this response, two factors present major challenges for students when accessing the epistemologies[1] of their respective courses, i.e. linguistic factors and diverse learning styles. These challenges are highlighted by researchers who concur that students enter the tertiary world with various limitations inculcated by their poor conceptual literacy[2] (Rodrigues & Abrahams 2017; Antia & Dyers 2017, 2016; Carstens 2016; Mkonto 2015; Madiba 2014; Boakye 2012). In addition, Bozalek, Garraway and McKenna (2011: 8) rephrase the cause of this conceptual divide as 'the gap between the

[1] Morrow's (1993) notion of epistemological access appears valuable 'as it is anchored in fostering a pragmatic fit between institutional values and personal epistemological orientations' (Rambe & Mawere 2011: 7).

[2] In this regard the following is included: socio-affective factors, learning styles, background knowledge, reading comprehension, cognitive abilities, and different literacy levels in English.

ways of knowing which students come with from school and those which the (university) curriculum exposes them to'.

Current conventionalised practices at universities indicate that knowledge is mostly transferred via mono-modality, i.e. presenting knowledge through printed text in English, and to a lesser extent printed text in translation form (Millar & Barris 2017; Rodrigues & Abrahams 2017). As tertiary students are mostly exposed solely to print-based texts as primary sources of communication, one could have an opinion that the source of the problem is linguistic in nature as English is in effect the *de facto* language of learning and teaching (LoLT) (Carstens 2016; Heugh 2007; Alexander 2003). Reading texts produced in English could present various challenges for EAL students to be successful in their efforts in the academic environment (Rodrigues & Abrahams 2017).

A longitudinal sector-wide study, conducted over a five-year period by the Department of Education (DoE), aimed at establishing academic performance patterns of first-year students at HEIs, concluded that approximately 70% of EAL students drop out. In addition, the study indicated that 14% of the rest complete their studies by spending more years than required to complete their degree and less than 5% of the 20 to 24-year old cohort graduate. The study also showed that the graduation rate for first degrees in key subject areas like engineering was around or below 50% (Scott 2009: 20-24). A National Benchmark Test (NBT) conducted by Higher Education South Africa (HESA) in 2009 with 13,000 students also correlates to this argument. This academic literacy test highlighted that only 47% were proficient in English for general purposes (EGP). It indicated that students were most proficient in answering the multiple-choice questions but struggled to construct cohesive and coherent sentences.

However, with the emergence of digital media over the last few years, new educational challenges presented themselves. Firstly, the fundamental mode of representation shifted from paper-based text to the recent use of imagery. Bateman (2008) accentuates that paper-based text is just one way of presenting information. A natural trend where students would frequently transition from isolated texts to other forms of engagement, such as imagery, became a common practice to learn. As people learn differently, concerns like the 'best practices to transmit information, and how to represent and display information so that it is both understandable and learnable' (Resnick 2001: 32) were highlighted. HEIs, however, were left underprepared to deal with the normal state of human communication (Kress 2010) that is a daily occurrence for many.

This state of communication includes alternative communication methods, i.e. gestures, posture, gaze, font choice and colour, images, video, and even the interactions between them. Although these have always existed, they were not always recognised as legitimate or culturally accepted forms of communication. Learning theorists who advocate multimodality accentuate that people communicate in diverse ways, and that these communication methods are mandatory to completely understand someone. This correlates with the argument of psychologists and educational researchers that 'learning is an *active* process in which people construct new understandings of the world around them through active exploration, experimentation, discussion, and reflection' (Resnick 2001: 33). Against this backdrop it becomes essential to observe and recognise these diverse ways of communication to negotiate the meaning-making process (Jewitt & Kress 2003; Kress 2000a).

The rationale for conducting this study was to explore an alternative approach to teaching and learning and to improve the epistemological access to the language of mechanics. This rationale arose from the pedagogical marginalisation of EAL students which was (and is still) further problematised by mono-modality in the teaching and learning context, thus incarcerating their conceptual development even further. The aim of this paper is to reflect on a multimodal approach that employs teaching and learning strategies that are sensitive to the real multi-literacy demands employing a multimodality framework.

The following critical questions guided this research:

- How would a multimodal approach, using a blog, contribute to a better conceptual understanding of the language of mechanics on the part of EAL Extended Curriculum Programme (ECP) first-year mechanical engineering students?
- What is the impact of various methods of communication on the epistemological access of the language of mechanics?
- How do various methods of communication affect the learning preferences of students?

This article commences with a literature review, followed by a theoretical framework and methodology. Findings from the data collected are then analysed and discussed.

Literature Review

Written material designed for mechanical engineering students is written in English. The intention of such texts, according to publishers, is to help EAL students to gain access to, and develop a proficiency in the language of mechanical engineering (Fontenelle 2013). However, EAL students enrolled for courses in English for science and technology (EST), like mechanical engineering, experience far greater constraints with gaining access to knowledge as reading in EST demands much more than texts in English for general purposes (EGP) (Hirvela 2013).

EST written texts do not take into account the social and cultural backgrounds and literacies of the diverse group of potential users. Swales (1980: 11) reiterates as follows: 'ESP[3] textbooks have been in many respects an educational failure'. Therefore, EAL students and their teachers are required to negotiate visual and verbal-visual meaning-making expressions in academic texts (Hyland & Hamp-Lyon 2002). Hyland (2009) elaborates that academic material, including all visual information, figures, and tables, depicts the objective world and presents an overview of how a discipline views itself. Furthermore, that it is only possible to gain a clear insight into written academic discourse by engaging with the written word and images. The neglect to experiment with multimodality in mechanical engineering created a mismatch between what higher education institutions (HEIs) offer and what EAL students require, and insinuates that we lost out on potential engineers.

Hyland and Hamp-Lyon (2002) highlight linguistic issues as one of the difficulties inherent in incorporating multimodal meanings in discipline-specific texts. Kress (2000b: 337) parallels this observation by pointing out that English language professionals present a false impression when they say that 'language fully represented the meanings they wish to encode and communicate'. Dealing with comprehension problems when engaging with text, students would adapt their 'environment in increasingly effective and successful ways' (Van Lier 2004: 97) by converting their linguistic skills by employing their entire semiotic repertoire and draw upon various sets of language features from different languages or other semiotic systems (Carstens 2016). These multicultural literacies are developed at secondary school to make sense of difficult content and provide them with equal opportunity in the academic environment (Hibbert & Van der Walt 2014). In this regard, a clear

[3] English for specific purposes.

and active relationship between language users and their environment in all physical, social and symbolic functioning can be observed (Van Lier 2004). Koda (2004) attests that using a language to which students relate best would scaffold their encounters with new texts and facilitate epistemological access. In addition, this will add value to their (meta)cognitive, pedagogical and even non-pedagogical development (Blackledge & Creese 2010).

With regard to the second barrier, Mkonto (2015) argues that an awareness of learning preferences (modalities)[4] is mandatory in order to provide epistemological access to tertiary students. Gilakjani (2012) proposes an all-encompassing teaching style or mode in a diverse classroom as it could improve their academic achievement (Abidin, Ziegler & Tuoli 2012). Furthermore, Veena and Shastri (2013) accentuate multimodality to support students in adjusting to different teaching styles and learning environments. What makes these suggestions feasible is the increasing transformation of learners to engage with more complex and integrated screen-based text other than only engaging with page-based text. As a common practice they use various digital means to communicate, be it texting, blogging or through social media (Vaniti & Towndrow 2010; Selfe & Selfe 2008). Needless to say, they would also attempt to understand information through various other non-linguistic methods of communication, including sound, images, video, gestures, and animation (Selfe & Selfe 2008).

With the emergence of digital media in the 21st century, the fundamental mode of representation has shifted from text to the recent use of imagery. This rise in digital and Internet literacy effected the notion that the spoken and written word is only one mode of communication (Kress 2003) and that alternative methods beyond the paper-based text to convey meaning should be considered (Vaniti & Towndrow 2010). Kress (2000b: 337) accentuates as follows: 'It is now impossible to make sense of texts, even of their linguistic parts alone, without having a clear idea of what these other features might contribute to the meaning of a text'. The 'other features' refers to the multi-literacies which acknowledge the importance of non-linguistic features in the meaning-making process.

Against this backdrop multimodality effected a broader understand-

[4] Four basic perceptual learning preferences (modalities) are identified: visual learning, auditory learning, reading learning and kinaesthetic learning (Fleming 2014).

ing of what literacy entails (Bezemer & Kress 2008; 2009; Jewitt 2008; Hyland 2006; Kress & van Leeuwen 2001). Instead of literacy only referring to reading and alphabetic writing or being extended to other fields, it now also includes multiple 'social and cultural shaped resources for making meaning' (Kress 2010: 79). Subsequently, literacy has transitioned to include methods such as visual, technological and other social uses among others (Kress 2003), including text messaging tools like WhatsApp, social media like Facebook, podcasts and blogs (Murray 2013; Shepherd 2010; Selfe & Selfe 2008). In addition to the written word, students use multi-literacies which enable them to simultaneously incorporate it into communication (Selfe & Selfe 2008) providing those with a more interactive experience (Shepherd 2010).

Multimodality, however, is more than just the combination of multiple technologies. It creates meaning by integrating multiple resources. The form the message is represented in, be it in written, spoken, visualised or in some other semiotic system, plays a vital role in meaning-making (Jewitt 2008). The traditional literacies, like reading and writing are therefore not replaced but rather integrated with these new multi-literacies (McVee & Miller 2012). This generates new ways of communication and opens the door to a variety of different ways to access information. Storyboarding is an example of this new way of communication which highlights the integration of learning outcomes such as – but not limited to – reading, writing, and language skills (Essley 2013; McVee & Miller 2012). However, the option to integrate multimodal forms in the classroom is not fully driven by all at institutions despite its functionality to prepare students for the 21st-century work environment (Vaniti & Towndrow 2010).

Based on the notion that learning has changed and that educators should now consider the educational and affective needs of students a great number of educators are reluctant to embrace a culture of multimodality in their classrooms (McVee & Miller 2012). Within the current educational crisis South African HEIs are embattled with, it exacerbates the outcry for a strategy that could assist students to negotiate meaning within the conventionalised system in which they study.

The eclectic use of different resources, i.e. a blog post accompanied with images and an embedded video, promote layered communication that is spread across a medium using multimodality. What multimodality implies is the transformation of the original mono-modal message into another way of communication, i.e. transforming a text into a video (Kress 2003). Kress (2003:

36) coins this reshaping process as 'transduction'. During this process the original message is changed often by adding more information to it. The added resource can therefore be regarded as a supplement to the meaning-making process. In essence, the way the revamped text is understood across the variety of different means is attributed to multi-literacy.

Pinkman (2005: 12) suggests a blog as a support to students as it allows them to 'reflect, comment, question, review, and communicate – outside the classroom in an authentic environment'. Apart from their authentic, collaborative learning potential and interesting nature (Pinkman 2005), blogs enhance and supplement the learning environment promoting reflective thinking, interactivity and deep learning where students interpret information and apply their knowledge (Cashion & Palmieri 2002). What makes blogs even more appealing is the fact that users or bloggers can use their own linguistic and literacy practices (Rodrigues & Abrahams 2017; Hibbert & Van der Walt 2014) to operate in a non-judgemental educational environment. Blogging is a media form where bloggers respond immediately, and publish more frequently, as users do not spend time redrafting or revising their posts and are more willing to express their opinion because their writing is not judged by fellow bloggers (Rettberg 2009). Offering the possibility of uploading and sharing multimedia, i.e., documents, videos and audio files, blogs promote the negotiation of meaning, create new semiotic networks and engage students in a language of their choice. In the context of promoting accessibility, blogs correlate with a constructivist approach to learning by highlighting learner- and activity-centeredness (Van Lier 2007).

To scaffold this meaning-making process by using blogs, translanguaging[5] could be employed as a viable mechanism to support the notion of language as a resource (Carstens 2016), and thus address the linguistic barrier mentioned earlier.

Theoretical Framework

This paper draws on a multimodal approach (Kress 2010). The rationale for

[5] Lewis, Jones and Baker (2012: 641) refer to translanguaging as 'two languages [that] are used in a dynamic and functionally integrated manner to organise and mediate mental process in understanding, speaking, literacy […] and learning. Translanguaging concerns effective communication, function rather than form, cognitive activity, as well as language production'.

using multimodality is that it provides us with a lens that teaching and learning should be an activity that takes place in a meaningful environment that produces the highest possible quality of related learning and teaching activities.

Multimodality

Multimodality is a theory of communication and social semiotics. It describes communication practices in terms of textual, aural, linguistic, spatial, and visual resources or modes used to compose messages (Murray 2013; Kress 2010). The multimodal approach is rooted in an assisted learning paradigm which caters for the linguistic and literacy needs and learning modalities of students by means of technology and through creating a symbiotic relationship between teaching personnel and students (Hornberger 2005; 2008).

In simple terms, multimodality refers to the application of a collection of modes to enhance a person's reception of an idea or concept and to affect different rhetorical situations. These modes are ultimately set in motion to enhance the *meaning-making* process. This theory is relevant as technology tools and access to multimedia-composing software is constantly increasing. This in turn has resulted in people effortlessly using different methods of communicating in the contexts of art, music, and dance and every-day interactions among themselves (Kress 2010).

In the context of multimodality one should distinguish between two apparently related terms, i.e. mode and medium. The former refers to 'a socially and culturally shaped resource for making meaning. Image, writing, layout, speech, moving images are examples of different modes' (Kress 2010: 79). Kress and Van Leeuwen (1998: 35) also refer to semiotic modes that are 'shaped by both the intrinsic characteristics and potentialities of the medium and by the requirements, histories and values of societies and their cultures'. This implies that every mode has a different modal resource which can be broken down into various smaller elements because it has 'distinct potentials [and limitations] for meaning' (Kress 2010: 1).

As mentioned above, modes such as writing, can be broken down into its modal resources, i.e. syntactic, grammatical, lexical and graphic resources. The latter resource can be broken down even further into font size, type, etc. These resources have a historical and cultural connection. Kress (2010: 114) accentuates this as follows: 'Mode is meaningful: it is shaped by and carries

the "deep ontological and historical/social orientations of a society and its culture with it into every sign". Mode names the material resources shaped in often long histories of social endeavour'. Modes transition into multimodal ensembles and over time they culminate into familiar cultural forms like film which combines visual modes, dramatic action and speech, music and other sounds (Bateman & Schmidt 2011).

Modes shape and are shaped by the systems in which they operate. A mode is determined by its 'shared cultural sense within a community of a set of resources and how these can be organised to realise meaning' (Vaniti & Towndrow 2010: 321). Communication is often dependent on the way cultures extract meaning from resources of knowledge, understanding, and representations. Signs that are visual modes, for example, will be determined by our daily necessities.

The other term, medium, refers to a component in which meaning is realised and the channel through which it becomes available to people. The modes of delivery take the current and future contexts into consideration by using components such as video, image, text, audio, etc. Within a social context it includes semiotic, sociocultural, and technological practices such as film, newspaper, a billboard, radio, television, theatre, a classroom, etc. Multimodality motivates a clear transition from a solely print-based knowledge to a screen-based presentation of it which stimulates a developing relationship between the speaker and the recipient. Multisensory perception is thus provided to the end user in different modes, i.e. visual, auditory, and written stimuli in their preferred language, to negotiate meaning. This in turn allows the recipient to transform the information into signs, objects, words, gestures, and emergent mental representations. Based on the aforementioned, it appears that multisensory perception could assist receivers to make the correct interpretation when words or concepts are foreign or strange. Applying a combination of semiotic elements spurred on by auditory and visual information could support the conceptual understanding of a term or word that is unclear at first. The constructivist nature of a multimodal approach strikes a balance between the pedagogical knowledge and facilitation of teaching personnel and the independent learning of students.

Research Design and Methodology

This study followed a qualitative case study design approach within the inter-

pretivist research paradigm. This research design coincides well with the proposed theoretical framework. On the basis of the particularistic nature of a case study design that relies heavily on inductive reasoning in handling multiple data sources (Siyepu & Ralarala 2014), the researcher embarked on this study using a questionnaire, observations, and focus group discussions.

Method

In this study, conducted at the Cape Peninsula University of Technology between July and September 2015, participants included 20 ECP first-year Mechanics students, one lecturer and one tutor. The objective of the study was to investigate the impact of various modes of delivery on students' epistemological access of Mechanics 1 concepts. The sample was randomly selected from a group of 70 registered ECP students. The Standardised Assessment Test for Access and Placement (SATAP) used at the university revealed that 75% of this ECP group scored below 50% for English reading and comprehension.

During the June mid-term and September tests, only 13% and 12% respectively of the entire ECP group had passed. Based on the unacceptably high failure rate and the dissatisfaction of the cohort of students, gleaned from an initial interview, the researcher embarked on providing an intervention by designing a blog that could help to address their challenges.

This study interrogated the teaching and learning practices of teaching personnel, as opposed to the teaching and learning preferences of the participating student cohort. After ethical clearance was obtained, data collection procedures were carried out over three months from June to September of the academic year. Various research instruments were used:

(1) first, a questionnaire was administered to obtain participants' perceptions around their current teaching practices and their learning preferences;

(2) then contact sessions were observed over a period of two months (before and after the intervention), which were video- and audio-recorded, transcribed and then analysed, and subsequently; and

(3) focus group interviews were conducted to verify the preliminary findings.

The distribution of mother tongue speakers in the ECP group who responded to the questionnaire was as follows:

Table 1: Distribution of mother tongue speakers in ECP group

English	isiXhosa	Sesotho	Afrikaans	SiSwati	isiZulu	Tshi-venda
24%	55%	8%	4%	4%	4%	1%

The study was conducted with a diverse group of 10 EAL students hailing from indigenous and Afrikaans-speaking communities. The participants were observed during lectures and tutorials while being subjected to a particular teaching practice. After the questionnaires, observations and focus group interviews based on their activity on the blog were administered. For the second phase of the study, a blog[6] was designed on Blogger – a blog-publishing service developed by Google in 2003. A blog was chosen because it is public, allows easy access and maximum learning opportunities. The comments were moderated by the researcher, who has administrative rights, before it is made public. Other reasons why the researcher opted to use a blog were as follows: (1) blogs allow for posts to be made using personal labels and can therefore be categorised quite easily, and (2) older posts are situated at the bottom and recent posts appear at the top in the post section. The blog was designed to have a customisable interface, i.e., a representation of the entire blog. Currently, the blog has a navigation bar, header, cross-column pages, and sidebar on the right, main posts section, a comments section, and a footer to promote participation of the users. In addition to these features, the blog also has label gadgets personalised for each blog page/content, i.e., home, motion, energy, gravity, forces, and friction. Each post allows for multimedia to be added together with the content.

The participants were subjected to this blog and multilingual tutorials which addressed their diverse learning styles, multi-literacies and linguistic

[6] This blog is currently hosted at a subdomain on blogspot.com.

needs in three modes, i.e., visual, audio and written text using hybridised versions of Afrikaans, isiXhosa and Sesotho. The curriculum on the blog was prepared and produced by senior mechanical engineering students using five of Mayer's principles to clarify multimedia text design which could enhance learning (Mayer 2008)[7]. The final products, i.e., calculations and presentations, were verified by a BTech student who was, coincidently, also appointed as a teaching assistant in the Mechanical Engineering department. The blog covered all the themes in Mechanics 1 with the gamut of related concepts in isiXhosa, Afrikaans and Sesotho presented in written, visual and auditory formats.

Findings

In the questionnaire, students were asked whether discipline-specific language was a challenge to them and what practice they use to make it easier for them to gain access to the content. Nearly three-quarters of the cohort (70%) confirmed that they did not have a good understanding of Mechanics concepts. Approximately two-thirds of them (60%) felt less confident that they would be successful if they were only to rely on their English notes and lectures. The entire cohort preferred a hybridised version of their home language to deepen their conceptual understanding. However, they indicated that they would explore English as part of their linguistic repertoire when engaging with academic material, especially as it is still the language of assessment. In this regard, they preferred that their prescribed paper-based material should contain an explanation of English terms stated in parenthesis to allow them greater access.

Preliminary findings indicated that students had different learning preferences that needed to be addressed. Three learning styles were identified: reading, auditory and visual. Close to three-quarters of the cohort (70%) confirmed that they were visual and auditory learners, while the remaining

[7] These principles include the following: (1) *coherence principle* where unnecessary words or pictures are omitted; (2) *signalling principle* which highlights essential information; (3) *spatial contiguity principle* which places related words and pictures closely together; (4) *segmenting principle* which breaks information into small parts; and (5) *retraining principle* which explains the operation of parts first.

group (30%) identified themselves as reading learners. Approximately two-thirds (60%) preferred a combination of the three learning preferences used, i.e. visual, reading and auditory. The cohort, in turn preferred podcasts and video material as a learning support when unpacking concepts. They also opted for it to be in the three languages i.e. Afrikaans, isiXhosa and Sesotho.

The researcher noticed during his observations that the cohort of this study could not effectively objectify the language of Mechanics through English, the LoLT. A clear mismatch between the LoLT and the language of Mechanics was evident during the attempts of the struggling EAL students to engage effectively with the academic discourse at hand. As a result of that difficulty, EAL students appeared reluctant to ask questions as the lecturer appeared unsympathetic towards their needs (e.g., he did not provide them with alternatives modes of access to the epistemologies of mechanics).

During the lectures, EAL students misinterpreted and incorrectly applied formulae, revealing the poor interconnectedness of their current mechanical knowledge and the new knowledge presented prior to the intervention. As a result, it seemed that students reverted to their default disposition of passive disengagement. During pre- and post-lecture discussions with the lecturer, the researcher sensitised the lecturer to the language and literacy needs of the cohort and proposed a multimodal approach to support epistemological access (which was not evident in the classroom at that point).

When the lecturer used a multilingual approach characterised by students' demonstrating their linguistic hybridity and drawing on examples from their own cultural domain, the EAL cohort engaged with more confidence and willingness. Video footage revealed how two students from different language communities explained their solution on the chalkboard using their home language. This resulted in improved class participation and a peer assisted learning scenario ensued in which students conversed in their respective home languages. Similar findings were also revealed during tutorials where students even grouped themselves into specific language hubs to mediate their comprehension of the language of mechanics and improve its comprehensibility for one another.

Focus group interviews conducted as part of the intervention revealed that EAL students had memorised concepts without developing conceptual understanding. Students noted that the lecturer had negated their literacy level by making them feel superfluous and uncomfortable when they posed questions. Furthermore, they commented that he disregarded their ECP status

when he covered the content without providing them with the necessary links between concepts. The students attested to not relating well to the teaching approach of the lecturer. They explained their discontent: he seemed reluctant to address their questions; he dismissed the troublesome concepts as relevant to secondary school work; he did not provide any background knowledge; and he gave superficial explanations and examples to which they could not relate.

The cohort expressed a need for different modes of instruction to meet their diverse learning preferences and language needs. Engaging with the language of Mechanics by means of visual representations in textual terms, diagrams, illustrations, practical explanations from their culture or every day activities (Kress & van Leeuwen 1998) enhanced their learning experience. These semiotic resources were well received by the cohort as they commented that the combination of auditory and visual information spurred their attention and enhanced their conceptual understanding. The cohort regarded the multimodal approach as meaningful as it promoted learning as constructive and active. They voiced their opinion that it encouraged them to participate in learning independently as the blog provided them with an explanation of concepts in their preferred language, while English terms were retained for assessment purposes.

Despite their acceptance of English as the LoLT, they preferred explanations in a language with which they were comfortable. Furthermore, they felt encouraged to interact on the blog with their peers and tutors as they viewed the blog as a non-threatening environment to test their conceptual understanding and applications of formulae to solve mechanical problems. They preferred the blog over other forms of technological tools like Facebook where they are far more prone to be distracted by incoming posts. The blog restricted them from engaging with other stimuli other than the academic material at hand. They would have preferred that the lecturer also engaged with them on this platform.

Discussion

There was a strong correlation between the low SATAP English scores and poor academic performance of the EAL student cohort of this study. Their poor scores during assessments in their 2015 academic year were mainly the result of their literacy and linguistic rights and their learning preferences not being

addressed. Memorising terms without understanding the concepts in the field of Mechanics had resulted in a 13% and a 12% pass rate in the June and September mid-term tests respectively. These memorisation practices could be related to the fact that a great number of previously disadvantaged students 'did not have the opportunity to develop strong academic literacy skills in their mother tongue, which is not surprising, given that English is the LoLT' (Parmegiani & Rudwick 2014: 115).

From observations and the questionnaire, the researcher noticed that a clear mismatch existed between the learning needs of the cohort and the teaching practices of the lecturer and tutors. Epistemological access to the discipline was therefore denied, as students, who are equally responsible for making meaning, could not fulfil their role as learners in this mono-modal learning environment. Given the above, the study utilised multimodality (Kress 2010) to describe, understand and provide viable solutions to give the student cohort access to the epistemologies of Mechanics. Using this framework allowed the researcher to:

- describe the perceptions of the student cohort and made a conceptual analysis of their language and literacy needs within a multimodality framework (Kress 2010). The study indicated that this specific cohort required access to the academic discourse mostly by using their hybrid language in and outside the classroom but not negating the value of English as an added resource;
- interrogate the teaching practices of the teaching personnel and the students' learning preferences (Mkonto 2015; Fleming 2014) of the cohort of this study. Focus group interviews attested to the creation of an empathic learning environment where their semiotic resources and knowledge sources are employed as part of the meaning-making process; and
- suggest viable solutions to bridge the conceptual gap caused by conventional teaching practices (Muller 2012; Bozalek, Garraway & McKenna 2011; Boughey 2010; Morrow 2009) that do not take the literacy needs of historically disadvantaged students and their transformation as digital learners into account.

The lecturer not making the necessary links among concepts, coupled

with the cohort's poor background knowledge and limited English proficiency, created a barrier to the students' access to the epistemologies of Mechanics 1. After the teaching personnel had been sensitised to the various diverse pedagogical needs of the student cohort, a symbiotic relationship that promoted confidence and participation ensued. Respecting the pedagogical rights of students and elevating them to the status of partners in the construction of meaning were demonstrations of social justice, equity and redress. A blog was tailor-made according to the students' specific learning styles and language needs. In order to actualise their understanding fully, the blog was created to stimulate students' multisensory perception by providing users with different modes, i.e., visual, auditory and written stimuli in their preferred language, to negotiate meaning. The cohort of the study noted that they understood the concepts better, having all these modes to select from.

The blog thus provided the cohort of students with auditory and visual information so that they could transform the information into signs, objects, words, gestures and emergent meanings, as outlined in multimodality (Kress 2010). The blog, designed using Mayer's (2008) principles to clarify multimedia text design, employed a combination of various modes that facilitated epistemological access. Multimodality emphasises the notion that conceptual understanding is dependent on both linguistic information *and* a variety of other communications methods.

The presence of all modes of communication is mandatory to construct meaning (Fontenelle 2013). The effects of poor academic performance on the part of cohort are evident when only engaging within a mono-modal structure. Fontenelle (2013: 99) accentuates that 'it is not possible to remove, or almost remove, a mode and maintain the same meanings'. The overall impression of the cohort emphasises that English paper-based material does not achieve its intention to develop their competence in the language of Mechanics. The information according to them is not visually and spatially integrated. The text and its visual elements are at times non-existent or on different pages and at best very limited in negotiating meaning as the examples are outside their cultural domain. They therefore struggled to make the necessary connection required to make meaning.

Applying Mayer's (2008) visual design principles in the blog, this apparent divide in reading material provided to the cohort could be addressed. The visual and text and even other modes of communication were integrated. What other multimodal layouts and presentations do not present, were in fact

expounded on in the blog. The cohort could engage in various modes in the language of their choice. This enhanced the learning of the cohort who previously had a negative impression of the teaching and learning practices they were experiencing on a daily basis. The learning gaps experienced in contact sessions and in paper-based material were addressed by a blog that provided multimodal ensembles required for their successful study in Mechanics. Providing the cohort with multimodal ensembles prepared on the *spatial contiguity principle* which places related words and pictures closely together (Mayer 2008), and even adding videos in the language of choice, addressed the mismatch created by paper-based material. Retrieving and finding information on the blog was easier and more accessible than the other mono-modal paper-based material they were exposed to.

Limitations of the Paper

Two limitations exist in this paper:

- The result was based on a small sample of students. The same positive results with a larger group would validate the use of a multimodal approach.
- No impact study was conducted to validate the positive perceptions of the cohort, as the academic year came to an abrupt halt owing to student protests.

Conclusion

The study highlights the impact a multimodal approach could have in providing *assisted learning* specifically to EAL students at CPUT. Using a blog where students can operate in an unthreatening learning environment in the language and mode of their choice, this study demonstrates how students' understanding of threshold concepts deepened. Using various modes and mediums provides all participants with an enabling teaching and learning environment. The blog with its variety of communication modes provided a learning space where students could assimilate their diverse semiotic resources and knowledge sources with the language of mechanics. This clearly shows the advantage a multimodal approach has for the teaching and learning spaces,

especially where English is still used in paper-based material and as the only LoLT.

By highlighting multisensory perception through various modes, the end user is now enabled to transcend the paper-based text to negotiate meaning. This study suggests that Mechanics students could gain access to complex applied sciences concepts if they can transform paper-based information into signs, objects, sound, images, and emergent mental representations. A developed multisensory perception could therefore scaffold them in making the correct interpretation when words or concepts are foreign or strange.

References

Abidin, Z.A., R. Ziegler & R. Tuoli 2012. Learning Styles amongst Engineering Students in Malaysia, South Africa and Finland. In Aung, W., V. Ilic, O. Mertanen & J. Moscinski (eds.): *Innovations 2012: World Innovations in Engineering Education and Research*. Potamac, NJ: iNEER.

Alexander, N. 2003. The African Renaissance and the Use of African Languages in Tertiary Education. Available at: https://www.marxists.org/archive/alexander/2003-languages-in-tertiary-education.pdf. (Accessed on 20 September 2016.)

Antia, B. & C. Dyers 2017. Affirming the Biliteracy of University Students: Provision of Multilingual Lecture Resources at the University of the Western Cape, South Africa. In Palfreyman, D.M. & C. Van der Walt (eds.): *Academic Biliteracies*: *Multilingual Repertoires in Higher Education (Bilingual Education & Bilingualism)*. Bristol: Multilingual Matters.

Antia, B. & C. Dyers 2016. Epistemological Access through Lecture Materials in Multiple Modes and Language Varieties: The Role of Ideologies and Multilingual Literacy Practices in Student Evaluations of Such Materials at a South African University. *Language Policy* 15,4:525-545.

Bateman, J.A. 2008. *Multimodality and Genre: A Foundation for the Systematic Analysis of Multimodal Documents.* New York: Palgrave Macmillan.

Bateman, J.A. & K-H Schmidt 2011. *Multimodal Film Analysis: How Films Mean.* London: Routledge.

Bezemer, J. & G. Kress 2008. Writing in Multimodal Texts: A Social Semiotic Account of Designs for Learning. *Written Communication* 25,2: 166 - 195.

Bezemer, J. & G. Kress 2009. Visualizing English: A Social Semiotic History of a School Subject. *Visual Communication* 8,3:247-262.

Blackledge, A. & A. Creese 2010. *Multilingualism: A Critical Perspective*. New York: Continuum.

Boakye, N. 2012. *A Socio-affective Approach to Improving Students' Reading Comprehension Abilities.* Unpublished PhD thesis, University of Pretoria, South Africa.

Boughey, C. 2010. Understanding Teaching and Learning at Foundation Level: A 'Critical' Imperative? In Boughey, C., S. McKenna, J. Clarence, B. Mallison, J. Garraway & J. Kioko (eds.): *Beyond the University Gates: Provision of Extended Curriculum Programmes in South Africa*. Proceedings of the January 2009 Rhodes University Foundation Seminar.

Bozalek, V., J. Garraway & S. McKenna 2011. *Case Studies of Epistemological Access in Foundation/Extended Curriculum Programme Studies in South Africa.* Cape Town: University of the Western Cape.

Carstens, A. 2016. Translanguaging as a Vehicle for L2 Acquisition and L1 Development: Students' Perceptions. *Language Matters* 47,2:203-222 Available at: http://www.tandfonline.com/doi/abs/10.1080/10228195.2016.1153135. (Accessed on 21 July 2017.)

Cashion, J. & P. Palmieri 2002. *The Secret is the Teacher: The Learner's View of Online Teaching*. Leabrook, SA: NCVER.

CHE (Council on Higher Education). 2013. *A Proposal for Undergraduate Curriculum Reform in South Africa: The Case for a Flexible Curriculum Structure*. Report of the Task Team on Undergraduate Curriculum Structure. Pretoria: Council on Higher Education.

Essley, R. 2013. What are storyboards? Available at: https://www.scholastic.com/teachers/articles/teaching-content/what-are-storyboards/. (Accessed on 4 September 2017.)

Fleming, N.D. 2014. The VARK Modalities. Available at: https://web.archive.org/web/20150314235648/http://vark-learn.com/introduction-to-vark/the-vark-modalities/. (Accessed on 21 July 2017.)

Fontenelle, R. 2013. Engineering English: A Multimodal Case Study of One Engineering and Two EAP Textbooks. Unpublished Master's thesis. Ottawa, Ontario: Carleton University.

Gilakjani, A.P. 2012. Visual, Auditory, Kinaesthetic Learning Styles and their Impact on English Language Teaching. *Journal of Studies in Education* 2,1:104 - 113.

Heugh, K. 2007. Language and Literacy Issues in South Africa. In Rassool, N. (ed.): *Global Issues in Language, Education and Development: Perspectives from Postcolonial Countries. (Linguistic Diversity and Language rights 4)*. Bristol: Multilingual Matters.

Hibbert, L. & C. van der Walt (eds.) 2014. *Multilingual Universities in South Africa: Reflecting Society in Higher Education*. Bristol: Multilingual Matters.

Hirvela, A. 2013. ESP and Reading. In Paltridge, B. & S. Starfield (eds.): *The handbook of English for Special Purposes*. Oxford: Wiley-Blackwell.

Hornberger, N.H. 2005. Opening and Filling up Implementational and Ideological Spaces in Heritage Language Education. *Modern Language Journal* 89:605–609.

Hornberger, N.H. 2008. Continua of Biliteracy. In Creese, A., P. Martin & N.H. Hornberger (eds.): *Encyclopedia of Language and Education: Vol. 9. Ecology of Language.* 2nd Edition. Boston: Springer Science+Business Media.

Hyland, K. 2006. *English for Academic Purposes: An Advanced Resource Book*. London: Routledge.

Hyland, K. 2009. *Academic Discourse*. London: Continuum.

Hyland, K. & L. Hamp-Lyon 2002. EAP: Issues and Directions. *Journal of English for Academic Purposes* 1,1:1-12.

Jewitt, C. 2008. Multimodality and Literacy in School Classrooms. *Review of Research in Education* 32:241-267.

Jewitt, C. & G.R. Kress 2003. *Multimodal Literacy*. New York: Peter Lang.

Koda, K. 2004. *Insights into Second Language Reading: A Cross-linguistic Approach.* Cambridge: Cambridge University Press.

Kress, G.R. 2000a. Multimodality. In Cope, B. & M. Kalantzis (eds.): *Multiliteracies: Literacy Learning and the Design of Social Futures*. London: Routledge.

Kress, G.R. 2000b. Multimodality: Challenges to Thinking about Language. *TESOL Quarterly* 34,2:337-340.

Kress, G.R. 2003. *Literacy in the New Media Age*. London: Routledge.

Kress, G.R. 2010. *Multimodality: A Social Semiotic Approach to Contemporary Communication*. London: Routledge.

Kress, G.R. & T. van Leeuwen 1998. *Reading Images. The Grammar of Visual Design*. London: Routledge.

Kress, G.R. & T. van Leeuwen 2001. *Multimodal Discourse: The Modes and Media of Contemporary Communication*. London: Bloomsbury Academic.

Lewis, G., B. Jones, & C. Baker 2012. Translanguaging: Origins and Development from School to Street and Beyond. *Educational Research and Evaluation* 18,7:641–654.

Madiba, M. 2014. Promoting Literacy through Multilingual Glossaries: A Translanguaging Approach. In Hibbert, L. & C. Van der Walt (eds.): *Multilingual Universities in South Africa*. Bristol: Multilingual Matters.

Mayer, R. 2008. Multimedia Literacy. In Coiro, J., M. Knobel, C. Lankshear & D.J. Leu (eds.): *Handbook of Research on New Literacies*. New York: Erlbaum.

McVee, M.B. & S.M. Miller 2012. *Multimodal Composing in Classrooms: Learning and Teaching for the Digital World*. New York: Routledge.

Millar, B. & K. Barris 2017. 'To open the bridge doors': Student Responses to Multilingual Learning Material. In Ralarala, M., K. Barris, E. Ivala & S. Siyepu (eds.): *Interdisciplinary Themes and Perspectives in African Language Research in the 21st Century*. Cape Town: CASAS Publishers.

Mkonto, N. 2015. Students' Learning Preferences. *Journal of Studies in Education* 5,3:212–235.

Morrow, W. 1993. Epistemological Access in the University. *AD Issues* 1,1: 3–4.

Morrow, W. 2009. *Bounds of Democracy: Epistemological Access in Higher Education.* Cape Town: HSRC Press.

Muller, J. 2012. Every Picture Tells a Story: Epistemological Access and Knowledge. Keynote presentation at the *Knowledge & Curriculum in Higher Education Symposium*. University of Cape Town, 7–8 November 2012.

Murray, J. 2013. Composing Multimodality. In Lutkewitte, C. (ed.): *Multimodal Composition: A Critical Sourcebook*. Boston: Bedford/St. Martin's.

Parmegiani, A. & S. Rudwick 2014. IsiZulu-English Bilingualisation at the University of KwaZulu-Natal: An Exploration of Students' Attitudes. In Hibbert, L. and C. van der Walt (eds.): *Multilingual Universities in S.A: Reflecting Society in Higher Education*. Bristol: Multilingual Matters.

Pinkman, K. 2005. Using Blogs in the Foreign Language Classroom: Encouraging Learner Independence. *The JALT CALL Journal* 1,1:12–24.

Pretorius, E.J. 2000. Inference Generation in the Reading of Expository Texts by University Students. Unpublished PhD thesis. University of South Africa, Pretoria, South Africa.

Rambe, P. & M. Mawere 2011. Barriers and Constraints to Epistemological Access to Online Learning in Mozambique Schools. *International Journal of Politics and Good Governance* 2,2-3:1–26.

Resnick, M. 2001. Rethinking Learning in the Digital Age. Available at: https://llk.media.mit.edu/papers/mres-wef.pdf. (Accessed on 21 July 2017.)

Rettberg, J.W. 2009. Blogging as a Tool for Reflection and Learning. In Larsen, A.K. & G.O. Hole (eds.): *E-Pedagogy for Teachers in Higher Education* (Virtual Book) Bergen: Bergen University. Available at: http://www.virclass.net/eped/ep_tmp/files/17842056574abc85cdf304e.pdf. (Accessed on 21 July 2017.)

Rodrigues, T.R. & A. Abrahams 2017. Improving Reader Comprehension Skills of First-year Electrical Engineering Students: A Community Translation Approach. In Ralarala, M.K., K. Barris, E. Ivala, & S. Siyepu (eds.): *Interdisciplinary Themes and Perspectives in African Language Research in the 21st Century*. Cape Town: CASAS Publishers.

Scott, I. 2009. First-year Experience as Terrain of Failure or Platform for Development? Critical Choices for Higher Education. In Leibowitz, B., A. van der Merwe & S. Van Schalkwyk (eds.): *Focus on First-year Success: Perspectives Emerging from South Africa and Beyond*. Stellenbosch: Sun Media.

Selfe, R. & C.L. Selfe 2008. 'Convince Me!' Valuing Multimodal Literacies and Composing Public Service Announcements. *Theory into Practice* 47,2: 83 - 92.

Siyepu, S.W. & M.K. Ralarala 2014. Making Sense of Mathematical Discourse: Implications for Success in the Learning of Differentiation in a University Classroom. *Alternation Special Issue* 12: 326 - 357.

Shepherd, C. 2010. Social Networking is Fast Becoming Ubiquitous. *Onlignment*. Available at: http://onlignment.com/2010/06/social-networking-is-fast-becoming-ubiquitous/. (Accessed on 4 September 2017.)

Swales, J. 1980. ESP: The Textbook Problem. *The ESP Journal* 1,1:11-23.

Van Lier, L. 2004. The Semiotics and Ecology of Language Learning: Percep-

tion, Voice, Identity and Democracy. *Utbildning & Demokrati* 13,3:79–103.

Van Lier, L. 2007. Action-based Teaching, Autonomy and Identity. *Innovation in Language Learning and Teaching* 1,1:46–65.

Vaniti, V. & P. Towndrow 2010. Multimodal Literacy in Language Classrooms. In Hornberger, N.H. & S.L. McKay (eds.): *Sociolinguistics and Language Education.* Bristol: Multilingual Matters.

Veena, N. & S. Shastri 2013. Learning Preferences among Students. *IOSR Journal of Humanities and Social Science* 15,6:26 - 32.

Theodore Rodrigues
Language Unit
FUNDANI CHED
Cape Peninsula University of Technology (CPUT)
rodriguest@cput.ac.za