

The multilingual radiography classroom and the world of clinical practice

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Abstract

Enabling students to access the discourse of their chosen discipline is to open the door to the content knowledge of that discipline. The medium of instruction (MOI) at Cape Peninsula University of Technology (CPUT) is officially English. Consequently, the student primarily experiences English in the classroom. However in experiential practice in the workplace, the student experiences a multilingual work environment. In the health care environment of the Western Cape, the student will experience interchanging use of the regional languages, English, Xhosa or Afrikaans, when communicating with the patients. Students not fluent in the languages used may misunderstand some of the transactions occurring between the supervising member of staff and the patient. Appropriate multilingual translations need to occur between the supervising member of staff, the patients and students. Students experiencing those transactions with the patient may also require more informal terminology to ensure common understanding among all role-players. This article reports on the language and cultural diversity within the student body and the language requirements of the clinical workplace. In the light of these requirements, the article repositions the tertiary healthcare educator's required expertise in terms of language and disciplinary content.

Introduction: The multilingual environment in higher education

In the South African context the linguistic reality of higher education (HE) is that both the medium of instruction (usually English) and other languages (such as the students' home languages) are represented within the classroom. It would probably be quite unusual to find a class of students and their educator in the HE context where all role-players use the same mother tongue for teaching and learning. This multilingual reality is also apparent in workplaces in the Western Cape, such as hospitals and clinics, where professionals are likely to use English, Xhosa and/or Afrikaans when communicating with patients and their work colleagues. In the workplace where clinical teaching takes place, students who are not fluent in the language of patients and professionals may misunderstand the transactions between the supervising member of staff and patient. For example, in the context of the workplace environment in health sciences, the staff practitioner supervising a student may address a patient in his/her home language,

such as Afrikaans, in order to explain the procedure required. If the student is not fluent in Afrikaans, the staff member may switch to English when teaching the student. Alternatively, a Xhosa-speaking student may find him-/herself in the position of interpreter between staff and Xhosa-speaking patient when explaining the relevant procedure.

The learning and work environment of South Africa is increasingly dominated by English because English is seen as a global language and a common communication means across local and international contexts (Alexander, 2003). The new Constitution of South Africa has driven transformation in education policy and language policy to embed appropriate educational philosophies and strategies in mainstream education (NACWC, 2001). The new constitution stipulates that eleven official languages must now be recognized in South Africa and this indicates the intent to transform language policy and a commitment to multilingualism (Crawford, 1999).

Crawford notes, however, that "the actual practice and discourse of politicians makes it clear that English is unquestioningly enshrined as the dominant, socially powerful language" (1999, 32). Thus, in practice, English has been largely adopted as a convenient language of tuition in HE (Alexander, 2003). For many South African students in HE, English is their second or third language, although it is used in general communication with fellow students, in daily social contacts, and in the workplace. Alexander notes that mother tongue or first languages are used preferentially in "primary contexts", such as home and family, church, community, and that there is resistance to using indigenous languages in the so called "high-status or secondary domains such as science and technology" (2003, 15-16). He attributes this resistance to perceptions that the indigenous languages may not be able to incorporate the required vocabulary and discourse of the specific discipline. Alexander calls this resistance the "Static Maintenance Syndrome" (200, 15) whereby a dominant language, such as English, introduced into South Africa by colonial occupation, is seen to have more power and status in certain contexts than the local indigenous language, even though the local language is valued and treasured by its speakers. Alexander further refers to the "hegemonic position of English which necessarily puts other languages and varieties at risk to the point of threatening them with extinction" (2003, 16). These are both issues to be considered in the HE learning environment and the question to be asked is: how can a multilingual learning environment be encouraged?

A range of issues around the multilingual classroom and cultural diversity of the student body emerged from the HE practitioners interviewed for this case study. Reflections on their teaching practices included the choice of language, medium of instruction, and the use of multilingual glossaries in order to help students to decode the terminology and discourse of the discipline. Attendant on this theme was the need for academic literacy development in academic writing and the importance of contextualising the disciplinary (academic) and professional discourses.

Methodology and data production

A group of four HE practitioners in radiography education in the Western Cape province of South Africa were interviewed. They are university lecturers with a dual role in that they are responsible for teaching the academic content as well as supervising the clinical experiential work. They are, therefore, allied to both health care and educational institutions.

According to Yin (2003, 13), a case study is a 'phenomenon within its context' where both phenomenon and context are closely connected. This case study seeks to describe the participants' experiences and understanding of language and content integration within their individual teaching environments. This case study traced the reflections of the practitioners on their teaching practice within academia and the clinical workplace as they introduced students to, and taught the discourse of their chosen discipline, radiography.

Data was produced by means of semistructured interviews between the researcher and the participants. The interviews were specifically designed to allow participants to express themselves freely but at the same time they were asked to comment on and discuss the specific themes: terminology of their discipline; discourse of their discipline; what content-language integration represents to them; and how they make content more learner-friendly (Bernard, 1995).

All participants gave written consent for the interviews to take place. Each interview was conducted in English, recorded on audiotape and transcribed. Discourse analysis was guided by predetermined themes. Multilingualism in the classroom and workplace was identified as a common emergent theme.

Contexts of learning: The classroom and the hospital

The multilingual learning environment experienced by HE radiography practitioners and students in the Western Cape is one in which three languages predominate locally: Afrikaans, Xhosa and English. According to the most recent SA census figures recorded in 2001, the actual percentages of languages used in the Western Cape and for the whole of South Africa are as follows:

Table 1: Comparison of 2001 SA census figures

Language	% Population in Western Cape -- -- first-language speakers	% Population in South Africa -- first-language speakers
Afrikaans	55.3%	13.3%
isiXhosa	23.8%	17.6%
English	19.3%	8.2%

HE practitioners have always had the role of inducting students into the discourse of their chosen discipline – in this instance, radiography. Radiography is a career-focused learning programme consisting of the following three components: theoretical lectures that are classroom-based; practical demonstrations that are both classroom- and workplace-based; and experiential learning that is based in clinical workplaces such as the academic state hospital and other regional hospitals and clinics.

A crucial way of enabling students to access the content knowledge of radiography is for the practitioner to help students to understand the "language" of their chosen discipline. In the author's experience, the "language" of radiography involves scientific and medical terminology, as well as specific codes of professional practice and professional conduct – all of which could be said to comprise the discourse of the discipline. This process of access to content knowledge and the disciplinary discourse can be complicated by the various factors that comprise the linguistic reality of the learning environment. For example, the medium of instruction (MOI) at the Cape Peninsula University of Technology's Groote Schuur campus is officially English. However, most students are English second or third language speakers; thus, the student primarily experiences English in the classroom and may expect to do the same at the clinical workplace. In practice, however, other regional languages such as Afrikaans and Xhosa are also used informally and formally in both the academic classroom environment and the clinical environment. For example, in the classroom, the students very often use their mother tongues (Xhosa and Afrikaans), when explaining concepts to one another, and in group discussion. They may then revert to English in the class during feedback sessions and in general class discussions.

In the clinical teaching environment in the hospital, the students may use or experience both Xhosa and Afrikaans in communicating with patients along with their supervising member

of staff and educator. Students who are not fluent in either Xhosa or Afrikaans may miss transactions between staff and patient unless the qualified staff radiographer or HE practitioner remembers to keep translating into English for those students' benefit. Likewise, the Xhosa-speaking students are frequently asked to translate the interactions between the English-speaking staff radiographer and the Xhosa-speaking patient. Similar situations arise when Afrikaans-speaking staff radiographers need to translate interactions with Afrikaans-speaking patients into English for the benefit of students who are not familiar with Afrikaans. Currently some radiography students are international and are from countries such as Ghana, Tanzania, Ethiopia and Eritrea. English is therefore their primary means of communication and the MOI in their new learning environment and temporary home in Cape Town. These international students are not familiar with the regional languages of Afrikaans and Xhosa and therefore do not understand certain transactions occurring between staff and patients unless the staff radiographer or HE practitioner remembers to keep translating into English for their benefit. The linguistic reality experienced by HE practitioners and students therefore contributes to a language of learning that students experience differently. This "language of learning" is influenced by a multiplicity of factors as discussed above, such as the multilingual learning environment, the medium of instruction (MOI) and the required academic discourse of the discipline.

A simple example of the use of professional language, involving a series of typical exchanges between different role-players and audiences within the radiography clinical environment, is shown in the following typical exchanges between different audiences in the health care team:

Discipline expert/s: Radiologist/ doctor may say to the patient:

"We need to take a picture of your chest to see if there is a problem."

Patient (recipient of expertise) may reply:

"What sort of picture? What is the problem?"

Discipline expert 1 (radiographer/nurse) to patient:

"The doctor would like an x-ray of your chest to see if there is a problem. He/she will look at the x-rays soon to give a report to your doctor."

Discipline expert 2 (radiologist to radiographer):

"Are those films ready yet? Send them through ASAP for IR."

Discipline expert 2 (radiologist in seminar discussion with colleagues and/or students):

"These images show ..."

Discipline expert 1 & 2 (in written case study analysis for colleagues and/or students):

" These radiographic images show ..."

These exchanges illustrate very clearly the differences in discourse used in the radiographic context, showing the use of technical jargon and hierarchy. The student experiences the changes in the use of the informal layperson's term, as in *picture*, to a more technical jargon, as in *x-ray*, *films* and *images*, to the formal professional language of *radiographic images*. In the workplace, radiography students learn to use the appropriate discourse in the accepted manner by following the role-model of the members of the healthcare team. For example, they learn to use the layman's term *picture* or to use more technical jargon, as in *x-ray*, when explaining to the patient and ensuring that he/she understands the procedure proposed. When interacting with members of the healthcare team, the student learns to use the technical jargon, referring to *x-ray*, *films*, *images* and the more academic language use of *radiographic images*. The acronyms used as part of technical

jargon, for example, *ASAP* ("as soon as possible") and *IR* ("immediate report"), are learnt and used appropriately by the students as they develop their use of professional language. This illustration of typical exchanges shows the use of the term for an *x-ray image* as used by different hierarchies of experts within their disciplines while in pursuit of their interrelated expertise. Depending on the transactions and contexts, the term is transformed and changes in use from:

English: Picture – x-ray – films – images – radiographic images

Xhosa: Umfanekiso – ugesi –

Afrikaans: Prentjie – bestraling – plaat – beeld – radiografiese beelde

These terms would be used in Afrikaans and Xhosa within the clinical workplace. Afrikaans has equivalent terminology, as seen in the example above; Xhosa is more limited and is still developing the equivalent terminology. The use of multilingual glossaries could encourage the use of mother tongue languages in the classroom and workplace, and could serve to enhance students' learning experience and possible success. Students need to access the language in which the disciplinary knowledge is embedded in order to gain the required communication level (Crandall, 1998). The case for increasing the multilingual environment further is noted by Alexander (2003) who suggests that HE should take steps to intellectualise indigenous languages and that bilingual mother-tongue education should be considered where English could be a partner language in the learning process. Goduka considers it particularly important for students from indigenous backgrounds to "be helped to find opportunities to engage in classroom dialogues and activities that permit them to explore the meaning of their lived experiences through the familiarity of their home language" (1999, 109).

When developing their disciplinary expertise, HE practitioners identify closely with their chosen discipline and the disciplinary discourse becomes second nature. Their knowledge of the disciplinary discourse is tacit and this knowledge can be passed on to students both consciously and unconsciously by means of modelling. The HE practitioners interviewed commented on their awareness of this discourse when teaching and noted the importance of keeping to the accepted professional language and ensuring that it was maintained and passed onto the students.

All four participants interviewed commented on various aspects of disciplinary discourse such as the use of technical jargon, expected behaviours and hierarchical roles, as components of professional expertise in radiography. The hierarchy of the profession and its influence on professional codes of practice are seen as important parts of the discourse for students to learn. This is reflected by the following two comments:

Perhaps I'm old fashioned but in front of the patient – I always believe that you address the people by their title. If they are a doctor, you say "doctor" or if they are a senior, you show respect in front of the patient even if you happen to be best friends outside of work ... and also to use the proper terminology *with* the other medical professions because it will give the patient, if it's in front of the patient, more confidence in the person speaking because they sound as if they know what they are talking about (Practitioner D, 19/04/2004).

These professional codes of practice are tacitly understood and practised within the workplace. Practitioner D strives to ensure that the students acquire both the professional and the academic discourse of their chosen discipline. Acquiring this academic discourse is also dependent upon factors such as the students' and HE practitioners' previous life experiences, cultural context and value systems (Bazerman, 1994; Geisler, 1994; Katz, 2000).

A further aspect of this "language of learning" arises when one considers the need for students to become academically literate in these discourses as part of their learning experience. Many South African learners are underprepared for the academic challenges of HE. Students entering HE today are still disadvantaged by the past inequitable and inferior education system which was a feature of the apartheid government. The school educational experience and preparation of students varies greatly according to the resources available within the school system (NACWC, 2001).

Therefore HE practitioners have the challenge of addressing a further dimension in the "language of learning" of their students, that of academic literacy (Makhubela, 2000). HE practitioners thus need to teach academic literacy as well as the discourses of their discipline and this all taking place within a multilingual environment.

Healthcare HE practitioners have a dual role to perform within their work. As educators they are expected to have a mastery of their specific discipline, as well as to be expert teachers (Norgaard, 1999). As noted earlier, radiography is a career-focused learning programme, so some practitioners work in both the academic environment and the clinical environment of their profession; others work in either the academic or the clinical environment. Both groups of practitioners, whether in the academic or the clinical environment, have to be master of the content and the discourse of their discipline. They also have to have the necessary pedagogic discourse and practice as they develop professional expertise as healthcare educators and teachers (Geisler, 1994).

Healthcare HE practitioners involved in teaching content or clinical skills are considered to have a certain expertise in their discipline and subject area. For example, a Physics, Anatomy or Radiography lecturer has had specific tertiary education, training and experience in their respective disciplines and therefore they are considered to be qualified to teach and guide students towards the required disciplinary competence. A healthcare practitioner, when entering a specific teaching environment, enters that environment as the "expert" of that disciplinary environment. The healthcare HE practitioner needs to have a dual-expertise within a dual-profession. For example the expert anatomist must also be an expert teacher, well versed in pedagogy. The application of both these "expert skills" are needed in order to achieve the endpoint of successful and competent students. Just as Geisler (1994) suggests that expertise in the discipline is divided into disciplinary knowledge (the content domain) and disciplinary discourse (the rhetorical processes). Expertise in pedagogy can also be divided into the two components of pedagogical knowledge (the content domain) and pedagogical discourse (the rhetorical processes).

Therefore the HE practitioner, in this case working within the healthcare profession, needs to have a four-fold expertise: that of the subject discipline and that of the discipline of pedagogy as well as an understanding of the rhetorical processes involved in both. A schematic representation of the 4-fold expertise required of the HE educator is shown in Figure 1.

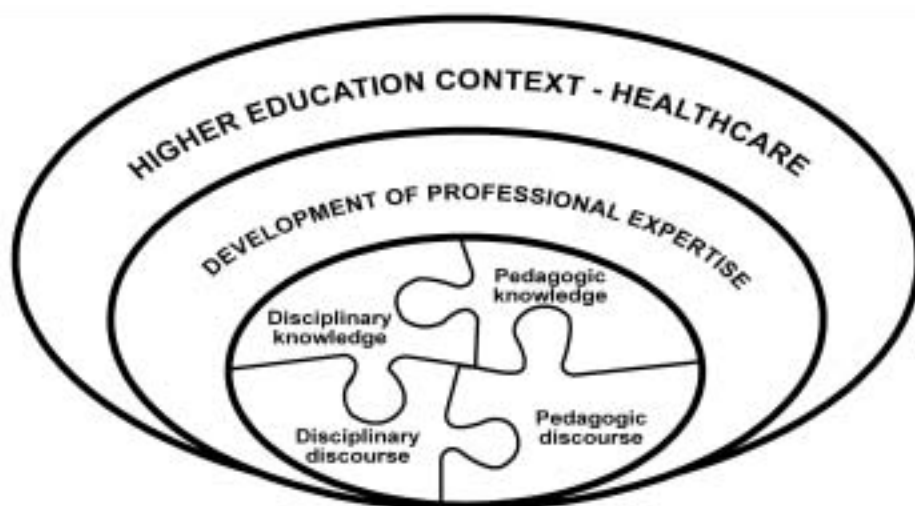
This schematic representation also shows that the 4-fold elements of expertise are embedded within the larger context of professional expertise as a HE practitioner in healthcare. This is in turn embedded within the large world contexts of HE and healthcare.

I now turn to the reflections of four HE practitioners in radiography regarding the language of radiography as an academic discipline and the professional language of the workplace. These are components of the professional expertise as exhibited by the model in Figure 1 in the areas of disciplinary knowledge and discourse.

Developing a professional language

The first task of the "discipline expert" is to induct the students into the professional language of radiography (for example, the accepted terminology). Students would then learn how to access the content knowledge of that discipline. The importance of this first task was expressed as follows by a practitioner:

Figure 1: A schematic representation of the professional expertise development of the HE practitioner working within the healthcare context



Adapted from Geisler, 1994.

I start using the correct terminology right from year one so they grow used to it, even if at the start they don't understand and with having some foreign students and lot of non-English first language students – even if they don't initially understand the language – I will explain it the first few times within the context and within the context it also becomes clear (Practitioner D, 19/04/2004).

The practitioner is acknowledging the way in which she presents the content knowledge to the students, particularly when the majority of the students are learning in a medium of instruction (English) that is not their mother tongue. Within this context, she notes that:

I know they say you should use simpler terms but then they never get to learn the proper language. So at the start I will explain certain concepts but after that they become used to it and I make them use the correct terminology as well (Practitioner, D 19/04/2004).

She goes on to discuss the importance of the students using the correct terms and terminology from the beginning of their studies and not using simpler terms instead. She concludes :

The textbooks are not going to use the simpler terms. They will use the correct terminology and if you go worldwide, because it's the language of the discourse used, that's what they are going to hear. They are not going to hear the simpler terms used (Practitioner D, 19/04/2004).

These students are new to their chosen discipline and intend to gain expertise in a specific programme or profession (Norgaard, 1999). Thus, the expert subject lecturer or practitioner is in a position of expertise relative to the audience, the students. The expert lecturer or HE practitioner's approach to the audience could be informed by questions such as: What discipline-specific language is appropriate? What will the audience understand? Which contexts are appropriate?

In the following instance, another practitioner was considering and discussing her thoughts on how best to induct students into the professional language of the discipline and she notes:

Initially I used to be aware of wanting students to learn the correct – I was quite pedantic about it and terminology – wanting them to get it right and so on. Then we had more and more students with English as a second language – that just fell away, and I thought, I tried to find easier ways of dealing with the whole terminology. Now ... I think I've maybe made a full circle in that I'm beginning to place more emphasis again on terminology – stressing the importance of it (Practitioner A, 16/04/2004).

She goes on to explain why the method of teaching correct terminology needs to be considered carefully and states:

If you try to water down terminology, the meaning sometimes gets lost. That is ... I think, that I find happened. In trying to make it easier to communicate with students, where English is not the first language, there is, there's that risk of changing the meaning of things and so its maybe not such a good idea to change (Practitioner A, 16/04/2004).

She emphasised the importance of students learning to use the correct professional language within the clinical environment by writing reports that other members of staff read. In this way the students are encouraged to use the appropriate terminology continuously and in the correct context. Here, the practitioner is also considering the rhetorical process of the discipline – the learning context (the undergraduate student of the discipline), the context in which the information is imparted (lecture, journal article, textbook, clinical environment) and therefore the "language of learning" current within the discipline (Bazerman, 1994; Geisler, 1994; Norgaard, 1999).

Developing an academic language

HE radiography practitioners are expert in the subjects required by the prescribed curriculum. Higher-level post-graduate qualifications would be mandatory or expected of the discipline expert in the HE context. The educator's years of experience, both as a clinical and educational professional, would be aspects that define the level of his/her expertise within the area of *disciplinary knowledge*. The radiography HE practitioner working within the clinical environment in South Africa also has the statutory requirement of being up-to-date and gaining continuous professional development (CPD) points and must register annually with the statutory registration body (Health Professions Council of South Africa) which allows radiographers to practice clinically in South Africa.

Within the context of disciplinary knowledge, the practitioner makes use of a specific academic language that is part of the discourse of this discipline. Two examples of pedagogic strategies to help students access disciplinary discourse are discussed in this article. The first example involves the knowledge of medical terminology. The second example involves multi-lingual peer teaching.

As described earlier, all four participants in this study commented extensively on the role of medical and radiographic terminology and its importance as representing fundamental knowledge for students entering the profession. Being able to use medical terminology correctly was also seen as an essential part of the professional practice of radiography by all four interviewees. As one HE practitioner explained:

Radiographic terminology, I think, allows, specifically first years to operate at a professional level with other health care professionals. They come very inexperienced and very new to radiography and once they've mastered the basic terminology it allows them to operate, as I've said, at a professional level. They'll be part of the team – the professional health care team (Practitioner C, 19/04/2004).

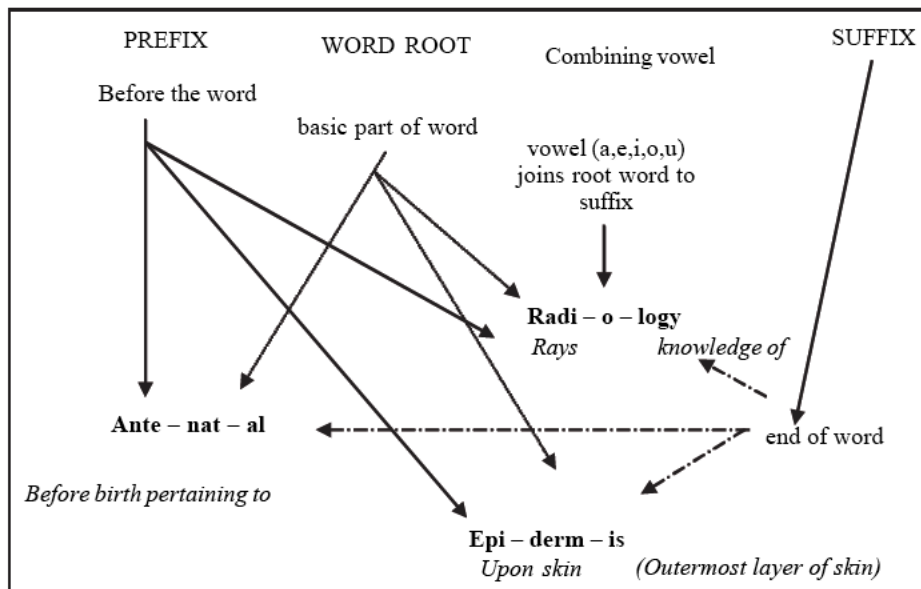
In the theoretical subjects, the students learn the specialised terminology specific to their chosen discipline. Medical terminology has its roots in Latin and Greek and relies heavily on prefixes, word roots, combining vowels and suffixes. This can be extremely taxing to students confronted with the range of medical terminology for the first time. To access the content of their discipline, they have to learn this new "language". For example, the students are expected to learn the make-up and meaning of words such as radiology, antenatal and epidermis. The HE practitioner can help students to clarify this new language/ words with the help of multilingual glossaries of common prefixes and suffixes and by breaking down the medical words into understandable "pieces". Figure 2 shows examples of prefixes and suffixes and the breakdown thereof. This is preceded by Table 2, which shows an explanation of some of the terms used in English, Afrikaans and Xhosa.

Table 2: Terms used in English, Afrikaans and Xhosa

PREFIX: Morpheme attached before the word	WORD ROOT: Basic part of the word	Combining Vowel (a,e,i,o,u) joins root word to suffix	SUFFIX: Morpheme attached to end of the word
PREFIKS: Morfeem wat vooraan die woord gelas word	WOORDSTAM: Basiese deel van die woord	Bindingsvokaal: vokaal (a, e, I, o, u) wat woord se wortel met suffiks verbind	SUFFIKS: Morfeem wat aan die einde van die woord gelas word]
ISIMAPHAMBILI: Esihlonyelwa phambi kwengcambu	INGCAMBU YEGAMA: isakhi esiqulethe intsingiselo yegama	Isikhamiso esidibanisayo: Isikhamiso (a, e, I, o, u) Esidibanisa ingcambu nesimamva	ISIMAMVA: Isakhi esihlonyelwa emva kwengcambu

Wyrley-Birch & Wright, 2003, 74

Figure 2: Examples of the use of prefixes and suffixes (Wyrley-Birch & Wright, 2003, 73)



The examples in Table 2 and Figure 2 were quoted by two interviewees as being useful aids when teaching medical terminology, therefore academic language. The examples form part of the workbook used by first-year students.

One HE practitioner commented further on why he thought the multilingual glossary, which covers the most common words prefixes and suffixes used, is useful. He notes that:

Like also the workbook, you've got the terminology in three languages which I think is very useful. Because I mean, students can remember or describe things easier if they can see it in their own language because I mean, it's in Afrikaans or Xhosa, I think, which is very helpful for students, and it's easier for students to remember if they can read it in Xhosa and then apply it to sort of English – I think it's easier to remember that way (Practitioner C, 19/04/2004).

Students entering a healthcare profession such as radiography are required to learn more than terminology as their new "language". This language is a specialised discourse of academic terminology, specific modes of expected behaviour and knowing how to function among different hierarchies and roles within the clinical environment.

Another example of a pedagogic strategy that incorporates the multilingual nature of the learning environment is that of multilingual peer-teaching. The practitioner concerned was highly supportive of the multilingual glossaries included in the workbook and wondered about further multilingual applications in the classroom. She asked a second-year class what they thought about teaching each other conversational English, Afrikaans and Xhosa. The class was enthusiastic and opted to teach each other conversational phrases in Xhosa and Afrikaans that would allow them to communicate better with their patients. As the practitioner put it:

A group are teaching the non-Xhosa speaking students Xhosa ... but we are using the discipline's discourse in terms of what words are needed to prepare patients or to explain to patients specific techniques (Practitioner B, 16/04/2004).

This was felt to be an exercise that facilitated learning for all the class, that was fun and non-threatening and all participants enjoyed learning about one another's languages and customs of speech.

Conclusion

The context of the learning environment plays an important role in the student successfully learning the required professional and academic languages and related discourses. The learning context is a social context and the meaning and learning which the student experiences are relevant to that particular environment (Bazerman, 1994; Gough, 2000). The student learns to be academically literate within their chosen social and disciplinary context. Gee (1996) refers to primary and secondary discourses, whereas primary discourse refers to everyday language and transactions and secondary discourse is that which is found within specific contexts that require certain expertise. Gee (1996) notes that there is a continuum between these discourses and that, dependent on context and our language interactions, we position ourselves where it feels most appropriate between the primary and the secondary discourse. Students have to learn to place themselves in relation to the secondary discourse of the chosen discipline. The HE practitioner is the facilitator in this regard. In introducing students to aspects of this secondary discourse, the various strategies described were employed to make content more learner-friendly and contextually relevant.

In conclusion, the "language of learning" may be seen as a social practice: the choice of MOI, and developing multilingualism and disciplinary discourse within the learning environment described, are examples of language as a social practice that operates in support of other educational and discursive practices. Goduka argues that it is essential that HE practitioners

"recognise that language is one of the most powerful transmitters of culture" (1999, 108); as such, it is essential to the success of the student and his/her cultural identity. For the HE practitioners in this case study, the experience of practising in a cultural and linguistically diverse learning environment, has repositioned their expertise in terms of language and disciplinary content. The learning dynamic between educator and student should be altered to incorporate a multilingual environment to facilitate learning.

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