Risky Language at Work?

Exploring the Effects of English Medium of Instruction on Occupational Health and Safety Learning, Communication and Compliance in a Southern African Mining Facility

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ABSTRACT

Risky language at work? Exploring the effects of English medium of instruction on occupational health and safety learning, communication and compliance in a southern African mining facility

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The effects of monolingual English medium of instruction on formal academic and vocational/technical learning have been heavily researched and documented within the southern African 'Anglophone,' yet multilingual context. Less attention has been paid to the impact of English medium of instruction on the lives and livelihoods of individuals who, largely due to national language policies in education, enter the workforce with little or no schooling, and without basic language competencies in English, or literacy competencies in even their mother tongue. When English is the official and dominant language of government, commerce, and industry, the consequences of limited familiarity with it can be far ranging, affecting possibilities for political engagement, contributions to economic growth, employment opportunities, security, and upward mobility; they can also be dire, threatening health and safety.

This qualitative case study fills a gap in knowledge by addressing the under-researched problem of communicative and learning issues faced by individuals who enter the workforce with limited or no English language skills, and for whom linguistic accommodations are not made. The study is situated in the context of a foreign owned mining subsidiary in an 'Anglophone' country in southern Africa. The particular focus is on often plurilingual, yet English second/foreign language shop floor workers engaged in the most hazardous jobs within this risk-ridden environment, where occupational health and safety knowledge is an essential, life-saving tool, as well as a learning foundation upon which higher skills attainments and employment security are built.

From the perspective of workers most directly affected, illuminated through the analysis of interviews, observations, and teaching materials, this qualitative case study illustrates how the use

of English communication, medium of instruction, and teaching materials in a multilingual but English second/foreign language dominated work environment constrains effective occupational health and safety learning and works to influence policy compliance. The ways in which workers mediate these challenges are also explored. Grounded in this case, based primarily on workers' input and suggestions, and supported by exemplary practices reported in the occupational health and safety literature, practical and applicable recommendations for change are proposed.

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Mid-life, I set out on my post-secondary educational journey, pursuing a BA in Philosophy at Concordia University—sometimes part-time, sometimes full-time, and sometimes no time at all. Eleven years in, too close to the end to give it all up, but by then questioning the exclusive focus on philosophy, I decided to add an Education minor. That change also changed the course of the following twelve years of my life due to the influence of two wonderfully supportive professors, Ayaz Naseem and Ailie Cleghorn, who encouraged me to continue my educational studies at the graduate level, and continued to encourage me throughout. I thank you both for being so certain that I could do it.

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Dedication

William Overing (November 28, 1952-October 5, 2009)

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Steven Overing (March 26, 1958-March 9, 2016)

Leslie Hachey (March 16, 1954-May 24, 2017)

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Abbreviations/Definition of Terms

BS OHSAS: British Standards Occupational Health and Safety Assessment Specification

Code-switching/mixing: "Code-switching refers to a switch in language that takes place *between* sentences . . . code-mixing refers to a switch in language that takes place *within* the same sentence" (Brock-Utne, 2004, p. 2).

ESL: English as a Second Language

EFL: English as a Foreign Language

IAPA: Industrial Accident Prevention Association

OHS: Occupational Health & Safety

Occupational Health: "The development, promotion, and maintenance of workplace policies and programs that ensure the physical, mental, and emotional well-being of employees" (IAPA, 2007, p. 19).

Occupational Safety: The maintenance of a work environment that is relatively free from actual or potential hazards that can injure employees (IAPA, 2007, p. 19).

HSE: Health, Safety & Environment.

IK: Indigenous Knowledge

L1: First Language

MOI: Medium of Instruction

NIED: National Institute for Educational Development

PRAESA: Project for the Study of Alternative Education in South Africa

ST: Science and Technology

~ Ino londa omukwa neenghaku. ~

~Don't climb a baobab with shoes. ~

(Don't enter a difficult situation ill-prepared.)

~Ovombo Proverb

Chapter 1: General Introduction

Statement of the Problem

This case study focuses on language issues related to occupational health and safety (OHS) education in the context of a foreign-owned mining subsidiary in one southern African country. Company management at the facility had reported continuing problems with OHS policy compliance by shop floor workers, despite the implementation of multiple possible solutions, including in-house OHS training, motivational videos, information workshops given by OHS nurses, 'tool box talks' facilitated by peers, and the introduction of sanctions. In the course of research that addressed this problem, which I conducted in 2015, several factors emerged as influencing OHS compliance: training effectiveness; lack of internalization/integration of information; attitude; a hierarchical management style; communication; language and literacy. During interviews, shop floor workers pointed specifically to English language of communication, instruction, and materials as significant overlapping factors constraining learning and influencing compliance. Previous field research, conducted in Namibia in 2014, as well as literature exploring tensions between and consequences of language of education policy and actual practice supported these perceptions.

English is the official language of Namibia, and the sole medium of instruction (MOI) in schools from at least grade four; therefore, it may be assumed by foreign industry owners—likely uninformed about issues related to English language policy and practice—that resident workers do speak, read, write, and understand English. Research related to English second language (ESL) and English foreign language (EFL) instruction in the country indicates that this assumption is questionable (Beyer, 2010; Cantoni, 2007; Djité, 2008; Frydman, 2011; Papen, 2001, 2007; Simasiku, 2010, 2014; Simasiku, Kasanda & Smit, 2015; Smit, 2010; Wolfaardt, 2005, 2010). A brief look at some of this research will be helpful to contextualize the problem addressed in this study.

Fifteen years after independence and the institution of English as the official language of government, business and education, Wolfaardt (2005) reported on research concerning Namibia's language of education policy. In the capital city, where English usage is more prevalent than in the rural sectors, 204 Grade 8 students were tested in literacy and numeracy skills. "It was found that 22.4% of those learners were not functionally literate in English and

only marginally skilled to a Grade 6 level. Furthermore, 49.2% learners' numeracy skills were lower than Grade 7 level" (Wolfaardt, 2005, p. 2359).

Citing the fact that "a vast majority of children in Namibia are studying in their second language," (p. 1), Cantoni (2007) investigated the impact of English MOI in primary schools. Study results indicated that,

> The use of English as a medium of instruction hinders the full participation of the pupils because it does not seem to provide comprehensible input, it does not seem to work as a tool for constructing knowledge in the content subjects and it is an obstacle for the learner centeredness that is desired by the ministries of the country. (Cantoni, 2007, p. 26)

Concerning the status of English language usage in the country, Beyer (2010) argued that, "the majority of learners entering the school system have **no** prior knowledge of English" (p. 30, emphasis in text), meaning that English was a foreign language for them. Frydman (2011) confirmed this assessment, further adding that at least two generations of the nation "have not had the opportunity to formally acquire English as a foreign language," not to mention "those outside the formal education system" (p. 185). Simasiku (2014), maintained that this situation has not changed much, stating that,

> as a result of problems beginning in the primary school, learners continue to lag behind their required level of English language proficiency, and the majority never really reach the language proficiency in English which their age and school level demand. (p. 12)

While entirely relevant to the problem addressed in this study, as will be discussed in Chapter 2, the research cited above concerning the consequences of English MOI in the country has focused primarily on formal educational settings.

The case study detailed here addresses the under researched problem of communicative and learning issues faced by individuals who enter the workforce with limited or no English language skills, and for whom linguistic accommodations are not made. The particular focus is on ESL/EFL employees working in the hazardous environment of a mining facility, where OHS knowledge is an essential learning foundation upon which safety, security and higher skills development are built.

Purpose of the Study

The purpose of this research, then, was to explore and illustrate how the use of English communication, medium of instruction, and teaching materials in a multilingual but ESL/EFL dominated work environment constrains OHS learning and influences compliance. The goal of this case study is to contribute to research and theory in education, language, and development with particular reference to one country in southern Africa.

Through the analysis of interviews and observations conducted amongst employees within the mining subsidiary, as well as the analysis of teaching practices and materials employed in training modules, this case study explores how, as in the formal education system, language issues contribute to teaching and learning challenges within the particular context of OHS knowledge transfer, as well as the ways in which workers mediate these challenges. Grounded in this case, based primarily on workers' input, and supported by such exemplary instances as exist in the literature, practical and applicable recommendations for change are suggested.

Research Questions

The main research question that guided this case study was:

> How do English language instruction, materials and communication present barriers to OHS knowledge transfer and exchange between ESL/EFL instructors, supervisory personnel, and shop floor workers; what does this look like a) in the classroom, and b) on the shop floor?
>
> Corollary questions were:

1. How do English language instruction, materials and communication influence shop floor workers' compliance with OHS policy?
2. How do workers compensate for linguistic barriers to ensure their health, safety and security on the shop floor?
3. In this particular context of cultural and linguistic diversity, where effective knowledge transfer and exchange is essential for health, safety and security, how might the 'language problem' be mitigated?

Contribution to Knowledge and Literature

As discussed above, the literature pertaining to challenges presented by monolingual

English MOI in multilingual, southern African contexts, where it is a second and/or foreign language for the majority of students and teachers, has tended to focus on outcomes in formal academic and vocational/technical instructional settings. Reported consequences have included weak performance in standardized tests, problems with reading and writing that carry through to post-secondary education, and, most significantly, high drop-out rates beginning from mid-primary school (Bamgbose, 2011; Djité, 2008; Education Policy & Data Centre (EPDC), 2014; Heugh, 2011; Kangootui, 2016; Ramachandran, 2012).

High drop-out rates are particularly prevalent in the rural north of Namibia (UNICEF, 2015), where 65% of the national population lives and from where most of the shop floor workers originate. Thus, when individuals seek entry to the workforce, they often do so with minimal education and English language capabilities. Little research has attended to the particular challenges faced by this substantial segment of the population.

Many who do find employment—and many do not (Mwinga, 2012)—do so as semi-skilled or un-skilled labourers in heavy industry, such as the mining sector, where they often work at the lowest level and the most hazardous jobs. In recent years, international and national labour organizations have drawn increasing attention to the risky conditions of this work. As a result, the provision of OHS education is very often legislated as the responsibility of businesses, as is the case in Namibia.

At the mining subsidiary, in-house OHS training is delivered solely in English, using materials that are produced in English only; at best, inconsistent attempts are made to translate or to make linguistic accommodations. English is a second/foreign language for almost all subsidiary employees, including those who design and provide OHS training.

A growing body of research and literature focuses on “language related risks” (Lindhout & Ale, 2009) for immigrant labourers who do not speak the language of their host country; little has been produced concerning the imminent hazards posed by English-only MOI for local peoples employed by international corporations based in their own countries. In southern Africa, historical and contemporary forces of imperialism, colonialism, and globalization have continually increased the numbers within this segment of the labour force.

This case study draws attention to the risks, threats to security, and limitations to development presented by monolingual English language instruction, materials, and

communication within the multilingual, yet ESL/EFL reality of a southern African context. In doing so, it addresses a gap in knowledge and contributes to existing literature by expanding the scope of research concerning the effects of monolingual English language of education policy and practice within ESL/EFL environments beyond formal academic settings to real world locations where sustainable livelihoods are sought by local peoples.

Limitations of the Study

The role of language in the "underdevelopment" of Africa, by delimiting and/or denying access to multiple sites of knowledge and power is well-documented (African Development Bank, 2014; Bamgbose, 2011; Okombo, 2000; Ouane & Glanz, 2011; Williams, 2011; Wolff, 2010), as are the underlying issues of linguistic and economic imperialism (Phillipson, 1992; 1996; 2009; Skutnabb-Kangas, 2000; 2009). This line of thinking certainly occurred to me as I approached the original research project and then, in this case study exploration, delved more deeply into shop floor workers' perceptions of difficulties presented by English language communication, instruction, and materials. It is of note that English was used by upper management personnel, who happened to be predominantly white or coloured, while virtually all shop floor workers happened to be black, Namibian African language speakers. This fact prompted a number of questions concerning clearly sensitive issues that, though acknowledged, were beyond the focus and scope of this study.

Might the continuing use of an unfamiliar language in the dissemination of information that is crucial to human and economic security and development be intentional? If, as research continues to demonstrate, English (or any of the "big" languages) is perceived as the language of success within the upper echelons of African countries, then might "elite closure" (Myers-Scotton, 1993) be in play? If companies are really invested in ensuring the training and development, in occupational health and safety, for example, of their employees and operations, then why is workplace education not conducted in local languages—is this an intentional attempt to limit the advancement of local people to positions of influence and/or to ensure voicelessness in regards to their own welfare?

What the case study sought to provide, in its "on-the-ground" exploration of a real life, non-academic context of imposed English MOI, was an illustrative, foundational platform upon which in depth examinations of these types of social, political, and economic issues might be

effectively constructed.

Not unrelated to these larger linguistic considerations, a troubling situation presented itself at the onset of preparations for data collection. The employment and collaboration of a local research assistant was an important part of the project plan, intended to provide contextual, knowledge, and linguistic supports. Despite recruitment efforts at the satellite campuses of the national university and vocational/technical institute located in a nearby town, no candidate presented. Appeals to contacts within the community were also unsuccessful. Consequently, conversations and interviews had to be conducted in English. This excluded some employees, particularly among the shop floor worker population; the irony is not lost on me.

It is noteworthy, however, that participants with more facility in English organized group interviews that included peers with limited English language skills, and helpfully provided translation. It was also an unanticipated benefit that I was able to observe first-hand the real English abilities/limitations of shop floor workers. These accommodations notwithstanding, a wider ranging exploration of workers' perspectives concerning the constraints presented by English MOI in OHS instruction would most certainly benefit from the collaboration of fluent speakers of local languages.

Delimitations of the Study

The initial data for this case study was gathered from the purposive sampling of participants within one company, in one community, in one country in southern Africa; therefore, generalization to other contexts must be made with caution. However, research to date concerning issues in language, education and development would seem to support the possibility that similar conditions prevail in similar contexts, and that the exploration of the particular situation captured in this study can contribute to directing research attention to comparable circumstances.

Chapter 2: Literature Review

Introduction

This chapter opens with a discussion of language as it relates to the construction of knowledge, and theory in sociolinguistics concerning ESL/EFL content instruction, which form the Theoretical Framework of this study. Following, is a review of the literature in three interrelated areas: ESL/EFL MOI in the Namibian educational context, language-related risks in OHS, and education, language and development. The final section explores a sample of current literature concerning second/foreign language MOI used for OHS teaching in multilingual African contexts.

Theoretical Framework

Language and the Construction of Knowledge

Constructivism holds that individuals construct knowledge by interpreting and building upon life experiences that already have meaning to them, "through interaction with and reflection on what they already know and believe, balanced against the ideas, events, people and activities they have contact with in their day-to-day activities" (Bockarie, 2002, p. 52). Vygotsky (1978/1997) maintained that this interaction, or social activity, was the essential foundation of cognitive structures, the development of which was "inextricably linked with language" (Hodson & Hodson, 1998 as cited in Bockarie, 2002, p. 50). Halliday (1993) further articulated the inextricable nature of this link, stating that,

> the distinguishing characteristic of human learning is that it is a process of making meaning—a **semiotic** process; and the prototypical form of human semiotic is language. Hence the ontogenesis of language is at the same time the ontogenesis of learning. (p. 93, emphasis in text)

It is this notion of the developmental confluence of language and learning that provides theoretical support for the primary assumption of this study. That is, that learning cannot take place when the language of instruction is unfamiliar to the learner; where meaning cannot be made, learning cannot happen.

Imagine for a moment the impossibility of constructing knowledge through the medium of sign language without first acquiring fluency in sign language! This represents the very real situation of ESL/EFL learners in English MOI classrooms in many southern African countries;

worse still, constructivist-based, learner centered teaching practices have been almost universally adopted as national educational policy (Cantoni, 2007; Harlech-Jones, 1998; UNESCO, 2016). This means, as Bockarie (2002) explained, that "students are expected to actively participate in [constructing] their own learning through the use of language and interactions with their colleagues and instructors" (Bockarie, 2002, p. 50). Yet, they often have insufficient—if any—grasp of the language of instruction.

The lack of alignment of language abilities with learning expectations endures in southern Africa. This, despite the fact that, as Pinnock (2009) pointed out,

> since the 1950s, education experts have demonstrated many times that learning in the mother tongue is the best option for children, enhancing their learning out-comes, social development, confidence, and critical thinking skills. In 1953, just 8 years after its founding, UNESCO published a 150-page document on 'vernacular languages' in education that stated, 'To say that a world language problem exists is not only to state a truism but to make an enormous understatement. . . .We take it as axiomatic that every child of school age should attend school. . . .We take it as axiomatic, too, that the best medium for teaching is the mother tongue of the pupil.' (p. 11)

What are the consequences of this misalignment?

ESL/EFL "Medium of Destruction"[1]

Over three decades ago, Cummins (1981) drew attention to the poor academic performance of minority language students enrolled in bilingual programs in American schools, pointing out that, "they do not acquire the language, academic, and sociocultural skills necessary to meet the challenges of vocational and higher education pursuits" (p. ix). The tendency at that time was the early exit of students from bilingual to all-English classes, "when students have become proficient in English" (Cummins, 1981, p. 17). Based on research conducted in Canada in 1980, Cummins suggested that it was the conception of "English proficiency" that lay at the root of students' poor academic performance. To clarify this term, Cummins (1981) drew a distinction between "relatively fluent and peer-appropriate face-to-

[1] Bloch, 2000.

face communicative skills" (p. 17), and the more taxing "communicative demands of schooling (e.g., processing language outside of one-to-one, face-to-face situations)" (p. 21).

Cummins (1981) formalized this distinction as, basic interpersonal communicative skills (BICS), and cognitive academic language proficiency (CALP), stating that,

> conversational [BICS] aspects of proficiency reached peer-appropriate levels usually within about two years of exposure to English but a period of 5-7 years was required . . . for immigrant students to approach grade norms in academic [CALPS] aspects of English. . . .(Cummins, 2008, n.p.)

The southern African educational research landscape is strewn with authoritative literature that has drawn from Cummins' work, and theorizes and documents the importance of early learning in a familiar language, preferably mother-tongue (e.g., Alexander, 2006; Alexander & Bloch, 2004; Benson, 2005; Benson & Wong, 2015; Bloch, 2000; Brock-Utne, 2010; Djité, 2008; Heugh, 2011; Okombo, 1996; Ouane & Glanz, 2010; Pinnock, 2009; Skutnabb-Kangas, 2009, 2000; Smit, 2010). Yet, early exit models—for example, mother tongue used until Grade 3, then the switch to English MOI from Grade 4 forward—are still adopted in many southern African countries; in others, a straight to English mode—no mother tongue instruction—has been implemented from Pre-Primary forward.

The problems with these educational models continue to be the subject of considerable research in sociolinguistics and learning theory, including within the African context (Alexander, 2006; Alexander & Bloch, 2004; Benson, 2005; Benson & Kosonen, 2013; Bloch, 2000; Cummins, 2007; Heugh, 2011; Leahy, Cooper & Sweller, 2004). Heugh (2011) summed up the constraints of early exit/straight to English approaches clearly:

> If a child needs to learn a new language, such as the official language/international language of wider communication, s/he will normally need six to eight years of learning this language as a subject before it can be used as a medium of instruction. One cannot expect a child to begin learning a new language as a subject and to use this as a medium of instruction at the same time. If one tries to hurry the process, the child will learn neither the new language well enough nor the other important subjects of the school curriculum. We now know that most children who have to try to learn mathematics and science through a language they

> do not know will not manage to understand the concepts or the explanations of these concepts. (p. 120)

Language related learning difficulties can be mitigated in situations where teachers are adequately trained in ways to integrate subject content with the development of the second language. However, this is often not the case in many southern African educational contexts; furthermore, teachers may themselves be struggling, second language speakers of English (Benson, 2005; Cantoni, 2007; Cleghorn, 1992; 2005; Evans & Cleghorn, 2013; Heugh, 2011; Nel & Muller, 2010; Ola-Busari, 2014; Ouane & Glanz, 2011; Prochner, Cleghorn, Kirova & Massing, 2016; Simasiku, 2014; Totemeyer, 2010; Wolfaardt, 2005; Wolff, 2010).

Given the ideological and theoretical commitment of authoritative agencies such as the UN, as well as the decades of research concerning language and learning that have followed,

> language of instruction should arguably have been made a priority in educational development . . . but it was not. Since the 1970s, donors have been known to support individual projects or experiments using learners' mother tongues, also known as home languages or L1s. However, low-income countries have continued to offer formal education mainly in single official (former colonial or otherwise dominant) languages, excluding large proportions of their populations from access to quality basic education. (Benson &Wong, 2015, p. 2)

Namibia is representative of this situation, as discussed in the following section, which explores the three interrelated areas of research upon which this case study was premised.

Three Interrelated Areas of Research

The questions that guided this study were premised on research within three interrelated areas: ESL/EFL MOI in the Namibian educational context, language-related risks in OHS, and education, language and development.

Firstly, within sociolinguistic research, the negative impact of ESL/EFL MOI on educational outcomes in multilingual/multicultural southern African countries has been widely reported. A sampling of this research, and studies specifically in the Namibian context, is provided. Secondly, researchers in industrial hazard management have begun to isolate language issues as directly related to high risk in multilingual immigrant contexts. Parallel,

though subtly different, issues within the southern African context may be inferred from this literature. Finally, amongst education and development theorists, as well as researchers in sociolinguistics, the language factor—by delimiting the acquisition of knowledge, skills, and leadership capabilities amongst the substantial segment of the population that lives below the elite level—is increasingly cited as a necessary, if not sufficient cause of under-development in sub-Saharan African countries.

In the final section of this chapter, current research concerning language-related OHS learning and compliance issues in African country contexts will be explored.

ESL/EFL and Education in Southern African Countries

A compelling pool of the sociolinguistic literature points to the early introduction of English MOI in multilingual African countries as presenting significant educational barriers at academic levels (In South Africa: Bloch, 2000; Evans & Cleghorn, 2013; Probyn, 2009. In Kenya: Cleghorn, 2005, 1992. In Ghana: Adogpa, 2015; Fredua-Kwarteng & Ahia, 2005. In Eastern and Sub-Saharan Africa: Cleghorn & Rollnick, 2002; Malaba, 2010; Ouane & Glanz, 2011. In Nigeria: Ola-Busari, 2014; Orekan, 2010. In Namibia: Beyer, 2010; Brock-Utne, 2010; Papen, 2001, 2007; Simasiku, 2010, 2014; Simasiku, Kasanda & Smit, 2015; Smit, 2010; Wolfaardt, 2005; 2010). There has also been an increase in interest and research concerning formal vocational/technical education (Babaci-Wilhite, Macleans, Geo-JaJa, & Lou, 2012; Chumbow, 2008; Ola-Busari, 2014; Wolff, 2010). In both contexts, scholars in education, linguistics, and development whose research focuses on African nations identified high occurrences of grade repetition and dropouts, as well as weak academic performance and low vocational/technical skills attainment as consequences of conducting content teaching solely in English.

Pertinent to this case study (and as discussed briefly in Chapter 1), oral and written proficiency in English, the official language of government, finance and education in many African countries since independence, is sometimes never acquired by students, many of whom drop out before the end of secondary school if not during primary school (Bamgbose, 2011; Djité, 2008; Education Policy & Data Centre (EPDC), 2014; Heugh, 2011; Kangootui, 2016; Ramachandran, 2012). According to the CIA *Factbook* (2016), English is a language of daily use for very small segments of many "Anglophone" African countries that have granted it

official status.[2]

Namibia. With at least 28 different spoken languages, and 9 distinct cultural groups,[3] literacy, language, and education challenges in Namibia are similar to those faced by other African countries (Beyer, 2010; Diescho, 2015; Hays, 2011; New Era, 2015; Simasiku, 2010; Simasiku, Kasanda & Smit, 2015; Smit, 2010; Wolfaardt, 2005; 2010). The official language of education policy favours an early exit model; that is, mother tongue instruction up to grade three, followed by instruction in English only, a second or additional language, through to the end of post-secondary education (Republic of Namibia Ministry of Education, 1993).

Obstacles stemming from this language of education policy are particularly apparent in the rural north of Namibia. Sixty-five percent of the country's population resides in the north; it is worth noting that many of the subsidiary shop floor workers originate from this territory. As is the case throughout the country, Ministry of Education curriculum legislation requires schooling to be conducted in English from Grade 4 forward. In this vast northern region, community exposure to English is often minimal, sometimes nonexistent. Thus, English is often more akin to a *foreign* than a second language, and basic language skills have generally been acquired in one or other of several local (mother tongue) languages (Beyer, 2010; Cantoni, 2007; Marsh, Ontero & Shikongo, 2001; Murray, 2007; Simasiku, 2014).

It would not be surprising, therefore, if many workers at the mining subsidiary speak, read and/or write little English. In some cases, those who work in the facility have never attended school, or have had to terminate their schooling before reading and writing skills (in any language) were firmly established. Nor would it be unexpected that, even with English language capabilities, workers have difficulty understanding Euro-western scientific terms used to explain health and safety concepts. Education in science and technology (ST), if received at all, might have been poorly taught, without regard for existing Indigenous or

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[2]Examples of English language usage in African countries *where it is the official language*: in Ghana, the ranking of English usage falls after 10 African languages, and is categorized under the group of "other" languages spoken by 31.2% of the population; in Namibia, English is spoken by 3.4% of people, and ranks 7th in usage amongst national languages; 1.7% of Zambians speak English, with 11 languages more frequently used; and, in Botswana, 2.8% of the population uses English daily, ranked 4th amongst languages (CIA, 2017).

[3]Some groups within the officially and generally recognized cultural categories self-identify as distinct peoples.

experiential knowledge, and/or taught in an unfamiliar language, with the result that the ability to understand Western conceptualizations of ST is weak (Cleghorn, Merritt & Abagi, 1989; Djité, 2008; Heugh, 2011; Howie, 2003; Mji & Makgato, 2006; Overing & Cleghorn, 2015).

Further, the translation of Indigenous knowledges to Euro-Western knowledges, and vice versa, is an extremely complex matter due to the fact that terms in one body of knowledge may not have direct equivalents in the other. The explanation of Euro-Western ST concepts cannot be assumed to be easily understood (Alexander & Bloch, 2004; Benson & Kosonen, 2013; Cleghorn, Merritt & Abagi, 1989; Mkosi, 2005). Terms that are common in OHS and environmental education, such as 'evaporation', 'atmospheric emissions', 'microscopic', 'bacteria' and 'noxious' provide such examples (Overing & Cleghorn, 2015).

Yet, though the terms may be unfamiliar and not well understood by shop floor workers, many of the concepts are not only known, but have been essential tools of day-to-day life and long term environmental stewardship. For example, discussing the potential of using Indigenous Knowledge (IK) as a bridge to learning Euro-Western ST language, Mukwambo (2017) described the practices of his community concerning water evaporation.

> [When fetching water,] members of my community were discouraged from using containers contaminated with soot. The fundamental understanding was that soot causes water to evaporate. . . .Western science became aware of the adverse effects of soot on the environment quite recently. . . .Indigenous communities, however, have been aware of these effects for some time. Such knowledge has been and is still used by Indigenous communities to curb the effects of global warming. Mukwambo and Ngcoza (2015) suggest that Indigenous communities use cultural practices based on understanding how the contamination of water bodies by soot can be avoided in order to reduce excess evaporation of water, as well as preventing the accumulation of large amounts of energy from the sun. (Mukwambo, 2017, p. 5)

Scholars such as Mukwambo (2017), and Ramasike, Mukwambo and Ngcoza (in press) strongly promote the use of Indigenous and/or experiential knowledge as a bridge to Euro-Western ST terminology. However, there has been a deep-seated resistance in Namibia from "experts" in educational administrative quarters. Mukwambo (2017) recounted that,

> when I was teaching the idea of child spacing or family planning, I resorted to first discussing how it is done in the community. Culturally, the withdrawal method, or abstaining from sex (also known as the rhythm method) (Ngalangi, 2016), are used for child spacing or family planning. Thereafter, I discussed how family planning is done following the inventions of Western science; that is, the use of condoms, injections, pills and other methods was discussed and linked to the concept of child spacing applied in their community. The aim of this was to situate and contextualize the concept.
>
> However, the use of such an approach was short lived when the head of the school heard that I was using local knowledge as an explanation, I was reprimanded and had to appear before a disciplinary committee. The disciplinary committee said, "*We charge you of bringing non-scientific knowledge into the classroom. We give you the first warning and once we hear the incident recurring we will serve you with a suspension letter so that you do not practice in this profession*". I stopped using that approach. (Mukwambo, 2017, pp. 7-8, emphasis in text)

Since Mukwambo's experience, the Namibian National Curriculum for Basic Education (NNCBE) (2010) "encourages teachers to take cognizance of the learners' IK to address educational goals" (Mukwambo, 2017, p. 9). Citing these changes and the support of authoritative research (Mukuka, 2010), Mukwambo has persisted and teaches in the far rural regions of northern Namibia using Indigenous Knowledge as foundational and contextualizing content. This approach to teaching unfamiliar terms and information holds promise for teaching practices with workers such as those at the Namibian subsidiary that is the context of this case study.

Language & OHS Training in Multilingual Immigrant Contexts

The second line of research that supported the focus of this study points to problems related to language of instruction and communication in the transfer of information and exchange of knowledge concerning OHS policy amongst immigrant workers. As transmigration has become an increasing reality in the globalized world, a body of literature has developed concerning "language issues" in relation to training, as well as compliance with established workplace norms by immigrant workers who do not speak or read the language of

the host country (Belin, Zamparutti, Tull, Hernandez, & Graveling, 2011; Daly, 2014; Faulk, 2012; Lindhout & Ale, 2009; Neufield, 2011; Paul, 2013; Premji, Messing & Lippel, 2008; Prochner, Cleghorn, Kirova & Massing, 2016; Worksafe Victoria, 2008). From the perspective of researchers in this area, language and communication issues are increasingly viewed as obstacles to the development of professional competence; consequences for health and safety in hazardous industries are a growing subject of research focus.

Lindhout and Ale (2009) defined "language issues" as, ". . . problems with communication via speech, signs, gestures or their written equivalents. They may result from poor reading and writing skills, a mix of foreign languages and other circumstances" (p. 247). In a study of immigrant worker populations within the Netherlands, based on literature reviews, surveys, interviews, accident report data, readability reviews of training materials, and safety scenarios, the authors identified 22 language-related dangers; they isolated 10 as particular risk factors, with 6 contributing to "very high risk." In decreasing order of importance, these were: misunderstanding, deviation from instructions, situation unknown, activity not done, design not understood, and habit intrusion. Lindhout and Ale concluded that, in a situation of escalating transmigration for work purposes, "an increasing number of companies now face 10 or more different languages on their shop floor, . . . [and they] often ignore the dangers and the risks associated with language issues" (p. 255).

Between 2004 and 2005, Premji, Messing and Lippel (2008) conducted a study in Canada within a garment factory that employed many immigrant workers. Grounded on the findings from semi-structured interviews conducted with 25 workers from 14 countries of birth, the authors described "the multiple ways in which language influences occupational health" (Premji, Messing & Lippel, 2008, p. 1). The researchers concluded that, "language influenced work-related health by affecting workers' ability to understand and communicate information" (Premji, Messing & Lippel, 2008, p. 15).

In a study conducted under the auspices of the European Parliament, Belin et al. (2011) reviewed OHS issues concerning risk hazards for vulnerable workers, including migrant workers. Addressing risks due to language issues, this time in EU Member States, the authors stated that, "language and cultural barriers contribute to higher risks for migrant workers. Difficulties to understand occupational health and safety rules can put migrant workers in a

dangerous situation" (Belin et al., 2011, p. 13).

These three representative studies highlighted language issues as clearly contributing to OHS risks for immigrant workers, and their co-workers.

The Education-Language-Development Link

The third set of literature that lends support to the anticipated impact of this study pertains to the contention that the "language factor" in African countries, and specifically in education, has had direct impacts on both human and economic development. In the context of southern Africa, numerous development theorists and NGO activists have argued that the weaknesses and/or failures at all levels of teaching and learning, due in large part to English MOI, have contributed to the inability of local peoples to acquire the skills necessary to securing safe and sustainable livelihoods within their own countries. They also point to the adoption of English MOI as limiting opportunities for advancement and leadership (African Development Bank, 2014; Bamgbose, 2011; Kanana, 2013; Okombo, 2000; Ouane & Glanz, 2011; Williams, 2011; Williams & Cooke, 2002; Wolff, 2010).

To clarify the linkages between education, language and development, Okombo (2000) delineated the following interconnections:

> (a) Modern development relies heavily on knowledge and information; (b) African countries rely significantly on foreign sources of knowledge and information, especially in the areas of science and technology; (c) the knowledge and information comes to Africa through international languages which are not indigenous to the African continent; (d) for development ideas to take root in Africa and benefit from African creativity, development activities must involve the African masses, not only the elite; and (e) the goal of involving the African masses in development activities cannot be achieved through a national communication network (including education) based exclusively on non-indigenous languages as is presently and most widely the case. (as cited in Wolff, 2010, p. 44)

Williams and Cooke (2002) stressed the necessity of understanding the connection ". . . between language and the provision of *effective* education, which is a crucial factor in economic and human development" (p. 317, emphasis added). Wolff (2010), explaining the

importance of considering language within discussions of education and development, maintained that,

> Present and continuing underdevelopment in Africa is intimately linked to the language factor, which plays a decisive role in the success or failure of development communication, which again is closely linked to education, more specifically to the language factor in education. (p. 54)

Citing multiple authoritative sources of support (Alexander, 2000, 2003; Alidou, 2003; Djité, 2008; Obanya, 1999; Okombo, 2000; PRAESA, 2003; Rabenoro, 1999; Robinson, 1996; Stroud, 2002), Ouane and Glanz (2011) concluded that, "there is no development without effective communication, which entails taking the language factor into consideration *in all sectors*" (p. 24, emphasis added).

Theorists who draw an education-language-development link consider effective education to be education communicated in languages that are familiar to learners (Bamgbose, 2011; Okombo, 2000; Ouane & Glanz, 2011; Williams & Cooke, 2002; Wolff, 2010). The effective communication of OHS policy is a fundamental necessity within the mining industry, and the provision of effective OHS education is one of the basic requirements within risk management procedures.

Language & OHS instruction. The dissemination of health and safety information is increasingly undertaken by company in-house training and development divisions, generally under the guidance of international standards. The British Standards Occupational Health and Safety Assessment Specification (BS OHSAS)18001 is presently the most authoritative and frequently followed model.[4] The BS OHSAS package purchased by companies for in-house education purposes includes the text, a safety manual, implementation guide, and other instructional materials and information (Occupational Health and Safety Zone, 2015). These training aids are produced *in English only* (J. Whoriskey, Personal Correspondence, September 21, 2015).

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[4] "ISO 45001, the international standard that will replace BS OHSAS 18001, has now reached the Draft International Standard (DIS) stage. The standard sets requirements for occupational health and safety management systems and will be published towards the end of 2017" (Willaert, 2016, para. 1) http://dqs-cfs.com/2014/08/a-first-glance-at-iso-45001-the-ohsas-18001-successor/.

Namibia has adopted many of the training standards and procedures of the South African mining industry (Overing, Informal Conversations, April 10, 2015). Regarding OHS teaching materials available in South Africa, Tuchten (2011) reported that "most of the learning materials I found were produced in English at a reading level that would suit high school graduates, but not those who had not completed school or did not use English as a first language" (p. 15). In neither country are OHS materials translated, and in both, instruction is conducted in English only. Focusing on Namibia, the impact of these factors on effective OHS policy communication and education, and their possible influence on compliance are questions addressed by this research study.

Current Research in Language and OHS Education in Africa

Attempts to mitigate for language-related OHS issues by Euro-Western industries and/or countries where labour is increasingly supplied by immigrant workers are evidenced by, for example, the products of the IAPA (2007) and Worksafe Victoria (2008). However, in the same context, language-related OHS risks have only more recently become a subject of research (Lindhout & Ale, 2009). The study conducted by Lindhout and Ale (2009), the first that I found during my literature search, is frequently referenced in the OHS literature as an authoritative first source. This developing area of research concerning language-related OHS risk issues has also focused predominantly on Euro-Western countries that host immigrant workers (Belin, Zamparutti, Tull, Hernandez, & Graveling, 2011; Daly, 2014; Faulk, 2012; Lindhout & Ale, 2009; Lindhout et al., 2012; Neufield, 2011; Paul, 2013; Premji, Messing & Lippel, 2008).

Searches for research specifically related to language issues and OHS education in multilingual African settings resulted in little substantive input. This is not to say that research concerning OHS policy, education and compliance issues in African contexts is scant; on the contrary, a quick search including the terms, "occupational health and safety training issues in Africa," will produce abundant returns (see, for example: Hermanus, 2007; Masia & Piennar, 2011; Moyo, Zungu, Kgalamono & Mwila, 2015; Ryan & Elgstrand, 2009). What was missing in these samples, and in many other sources that I found, was any reference to language as a particular risk issue in OHS training and on the shop floor.

When reference to language was made in the OHS literature, it generally focused on "making it simple" or "making it understandable" rather than on the actual medium of instruction

and materials and its associated potential hazards and risks. Two representative studies are briefly discussed below.

Premised on the contention that "there is inadequate attention to occupational health and safety practices" (p. 151), Puplampu and Quartey (2012) reviewed key issues in OHS practices in Ghana, a site of substantial international industrial activity. They assessed that the promotion of proper OHS practices, awareness, research and education required a broader platform than was currently in place. Although Puplampu and Quartey did draw attention to "ignorance and illiteracy," and ineffective training and education (p. 155), language was not specifically mentioned. However, as more than 250 languages are spoken in Ghana, and the official language, English, is only one of the "other" languages spoken by 31% of the population (Ghana Statistical Service, 2012), it seems pertinent to ask whether "illiteracy" points to language issues.

A study conducted by Emuze and James (2013) contained some relevant findings that lent support to the significance of the study reported here. In South Africa, 63 employees were purposively selected from five construction firms. The participants belonged to multiple ethnic groups, including Xhosa, Afrikaans, Zulu, Shona and Sesotho (Emuze & James, 2013, p. 50). Data was collected by survey, and the results showed "that language plays a crucial role with regard to understanding the instructions given to site workers" (Emuze & James, 2013, p. 52). OHS was not specifically emphasized; however, one respondent did comment that "cultural differences play a very big role when it comes to housekeeping, safety, and wastage, to be responsible and accountable" (Emuze & James, 2013, p. 60). Further, and consistent with Lindhout and Ale's (2009) findings, the authors concluded that, "language differences were viewed as a major contributing factor to misunderstanding. These poor communication tendencies result in rework and other construction problems on site when they are not addressed adequately" (Emuze & James, 2013, p. 62). The conclusion not drawn by Emuze and James was that misunderstanding was a high-risk factor on the shop floor (Lindhout & Ale, 2009).

A major discovery of the literature search, and validation of my research focus, was Tuchten's (2011) study within the South African mining industry, which focused "specifically on mineworkers who have the least formal education or training" (p. iii), and their "preparation for dealing with the hazards of the mining workplace" (p. 2). For "the many mineworkers who do not speak English" (Tuchten, 2011, p. 142), language issues were targeted as particular threats to

not only safety and health, but also to skills development. As discussed in more depth in Chapter 7, the Namibian context is quite similar to that of the mining industry in South Africa.

Though perhaps not yet recognized or reported to as great an extent in the southern African context, language-related issues in OHS policy and practice have emerged in other multi-lingual contexts as risk factors. The growing prevalence of this research, coupled with the large body of literature concerning language issues in education in Africa, and the continuing dependence on foreign-based industry for national development, provided considerable warrant upon which to build the case study reported here.

In Chapter 3, I discuss the Methodological approach adopted for the research.

Chapter 3: Methodology

Introduction

To reiterate, the purpose of this case study was to explore and illustrate the effects of English language communication, medium of instruction, and teaching materials—in a multilingual but ESL/EFL dominated work environment—on OHS learning and compliance. The main research question that guided the study was:

> How do English language instruction, materials and communication present barriers to OHS knowledge transfer and exchange between ESL/EFL instructors, supervisory personnel, and shop floor workers; what does this look like a) in the classroom, and b) on the shop floor?

Corollary questions were:

1. How do English language instruction, materials and communication influence shop floor workers' compliance with OHS policy?
2. How do workers compensate for linguistic barriers to ensure their health, safety and security on the shop floor?
3. In this particular context of cultural and linguistic diversity, where effective knowledge transfer and exchange is essential for health, safety and security, how might the 'language problem' be mitigated?

Following, in Case Study Foundations, I briefly discuss the initial research activities from which the present case study emerged. I then present the Research Design of the study. This is followed by a description of the research Setting—country, town, and facility—including an overview of the facility population. The Methods section includes a breakdown of information and data sources and collection methods, including procedures for recruitment and participant consent. The analytical tools employed to produce the findings of the research are also discussed.

Case Study Foundations

In 2014, working as a research assistant, I spent two months in Namibia, the southern African country in which the field work for this study was later conducted. While exploring suspected tensions between language of education policy and actual practice in the country, I observed university teacher education classes, engaged with students and professors, took part in graduate student workshops, and built a friendship with a fellow doctoral student in education.

Through these activities and encounters, I was helped to understand the difficulties faced by students and teachers—even at this tertiary level of education—due to English language instruction, materials and communication. These very real experiences supported what I had come to know concerning issues associated with Namibia's official English language policy in education. It was also due to our ongoing research work that my supervisor and I were engaged by a multi-national mining company in late 2014 as independent research consultants.

In 2015, over a five-month period and as the Principal Investigator of the research project, I conducted a qualitative field-based study concerning shop floor workers' non-compliance with occupational health and safety (OHS) policies in place at the southern African subsidiary of the mining company. At the outset of the project, corporate representatives suggested the following possible causes for non-compliance with OHS policy:

- Shop floor workers lacked adequate skills training.
- The link between occupational safety and personal health was not clearly understood by shop floor workers.
- Shop floor workers had difficulty understanding the scientific and technical concepts embedded in English language health and safety instructional materials.
- Shop floor workers' "illiteracy" contributed to weak understandings of OHS principles.

While these preliminary propositions did inform my initial thinking about the project, the research questions that guided the study were deliberately broad:

1. What are the barriers to effective health and safety knowledge sharing among [facility] employees, and how can they be mitigated?
2. What do employees already know, and what knowledge is still missing?
3. What are the specific barriers to acquiring that missing knowledge?

Numerous factors, briefly discussed in Chapters 1 and 4, emerged as barriers to OHS policy compliance. However, the consistently expressed perception that English language of communication, instruction, and materials presented a significant barrier to OHS learning and practice was particularly interesting. As indicated at the conclusion of the literature review (see Chapter 2), I believed that this particular factor was worth exploring further. A qualitative framework, and case study approach seemed particularly suited to that exploration.

Research Design

Hancock and Algozzine (2006) characterized qualitative research as attempting "to explore a host of factors that may be influencing a situation," providing "richly elaborated explanations," presented "primarily from the participants' . . . perspective" (p. 8). Yin (2012) distinguished five features of qualitative exploration, which are particularly salient to the study proposed here:

1. Studying the meaning of people's lives, under real-world conditions;
2. Representing the views and perspectives of the [participants] in a study;
3. Covering the contextual conditions within which people live;
4. Contributing insights into existing or emerging concepts that may help to *explain* human social behavior; and
5. Striving to use *multiple sources of evidence* rather than relying on a single source alone. (Yin, 2012, p. 8, emphasis in text)

The *emic* nature of qualitative research—that is, the attention that, at its best, it pays to hearing and representing the views and perspectives of participants—is a particularly important feature in the context of this study. Ideally, it can open up spaces for expression to often marginalized voices, such as those of the shop floor workers whose perspectives are profiled in this research.

As the research questions indicate, this research sought to answer "How" questions by engaging with those most directly affected by the issue of English language instruction, materials and communication; thus, from within the diverse qualitative research options, using a case study model was considered the most appropriate approach (Yin, 2003, as cited in Baxter & Jack, 2008). According to Baxter and Jack (2008),

> rigorous qualitative case studies afford researchers opportunities to explore or describe a phenomenon in context using a variety of data sources. It allows the researcher to explore individuals or organizations, simple through complex interventions, relationships, communities, or programs. . . .(p. 544)

Hancock and Algozzine (2006) pointed out several characteristics that combine to define the case study approach. Some of these are itemized below, accompanied by examples from the case study:

- Case studies generally address a particular phenomenon—an event, situation, program, activity; individual perspectives are representative of 'being in' the particular phenomenon [e.g. workers' perspectives concerning being in the situation of receiving OHS instruction in English].
- The phenomenon "is studied in its natural context, bounded by space and time," and that context is an important element of the study [e.g. the case under study was situated within the offices, classrooms and on the shop floor of a locally administered mining subsidiary subject to guidance by the corporate policy of a foreign-owned company].
- Case studies are "grounded in deep and varied sources of information" and, thus, provide "richly descriptive" accounts of the phenomenon under study [e.g. informal conversations, observations, activities, which served to orient the case study; interviews, participant observations, materials review, which contributed to the exploration, illustration, interpretation, and discussion of the phenomenon]. (pp. 30-31)

These shared characteristics notwithstanding, there are a variety of case study types. Stake (1995) distinguished these as intrinsic, instrumental, and collective, while Yin (2003) categorized them as explanatory, exploratory, and descriptive (as cited in Baxter & Jack, 2008, p. 547). These classifications are not mutually exclusive, however. The case study described here is both intrinsic, in that it is focused on better understanding a particular situation (Baxter & Jack, 2008, p. 548), and descriptive, in that it "attempt[s] to present a complete description of a phenomenon within its context" (Hancock & Algozzine, 2006, p. 33).

Positioning Myself in the Research Field

Selecting a case study design and the investigative methods it entails may have *equipped* me with the tools to open up opportunities for rich engagements and in-depth explorations; however, it was no guarantee of entry. Factors related to my positions both as an individual and a researcher needed to be considered.

I entered the Namibian field of research from a number of locations: as a consultant contracted by the company, a doctoral student, and a white, middle-class, middle-aged, English speaking North American woman. All of these positions held the possibility of affecting

interactions with company personnel, as well as with local community members, from ethical, cultural, and linguistic perspectives. As a minority world outsider in the somewhat unfamiliar context of a majority world country, I needed to pay particular attention to the national and local cultural practices that guide behaviour, so as to avoid unintentional harm and/or disrespect; for example, the order and manner in which I approached people, as well as the way in which interviews were scheduled and questions were posed. In addition to acknowledging and attending to my various positions, given the country's colonial history of imperial domination—particularly in regards to minerals extraction for exportation and the exploitation of local peoples to this end—I was aware of important considerations of power, race, and politics. Moreover, the research was conducted within the sphere of an important and influential local employer, and concerns about confidentiality, job security, appropriate meeting places, and company hierarchies had to be taken into account.

These realities, consequently, put ethics and cultural sensitivity at the fore of methodological considerations to be addressed before entry into the unfamiliar territory that was the site of the research study. The six-week entry period, discussed in Chapter 4, provided a crucial orientation in this regard. I was offered numerous opportunities to observe, converse with, and befriend a diversity of local peoples in a variety of contexts.

Setting[5]

The Country

Namibia is geographically large (824,292 sq. km), but has a total population of only 2.4 million (World Bank, 2016). Due in great part to its arid climate and dry, desert and mountainous terrain, it is the third least inhabited country in the world, with only 3 inhabitants per sq. km (World Bank, 2016). In 2014, its Gross Domestic Product (GDP) was US$13 billion; as a result, Namibia has been designated an upper middle income African country (CIA, 2017; World Bank, 2016). This categorization ignores the huge inequalities between rich and poor. In 2014, its Gross National Income (GNI) per capita was US$5,630 (World Bank, 2016), ranking the country's income distribution as one of the world's most unequal (CIA, 2017). The proportion of people living below the poverty line in 2010 was 28.7%. The country's

[5] For reasons of confidentiality, the names of the company and the town are omitted.

unemployment rate stood at 28.1% in 2014 (Namibia Statistics Agency (NSA), 2015).

A brief History. Subject to German, followed by South African rule, Namibia's 19th and 20th century pre-independence history is unique amongst African countries (Frydman, 2011). From 1884 to 1919, the territory, designated German South West Africa, was occupied by German nationals and brutally ruled by German military command. In what is now recognized as a genocidal "race war" (Tejas, 2015, para. 1), waged between 1904-1907, German authorities were responsible for the enslavement, starvation, and murder of over 65,000 Herero and 10,000 Nama peoples (Aidi, 2015; Olusoga & Erichsen, 2011; Steinmetz, 2005). In conversation with local peoples during my time in Namibia, it was suggested by some that the decimation of the Herero and Nama populations, once the main tribes of Namibia (Suzman, 2002), led to the numerical and subsequent political dominance of the Ovambo peoples; the tribal divisions remain a part of the political landscape.

In the aftermath of WWI, Germany's loss became South Africa's gain, as the League of Nations mandated South West Africa to South Africa—a reward for its defeat of Germany in the African theatre of war. "South Africa seamlessly continued the German habits and considered Namibia a colony;" as such, in 1951, the region fell subject to all of the inequities of apartheid rule (namib.info, n.d.). In 1990, after "70 years of pressure by the organized international community - through the League of Nations - and then the United Nations to enable the people of the Territory to live in peace, freedom and independence" (UNTAG, n.d., para. 1), the country of Namibia was named, and recognized as an independent state. English was adopted as the sole official language.

***Colonial legacies*.** As a visitor to Namibia, it can be quite surprising to notice that, despite the brutality of the German and South African occupations, their colonial legacies remain powerfully influential within the country. German is still widely heard throughout Namibia. German-language private schools, churches, memorials, and businesses flourish in the inland capital city, Windhoek, as well as the second largest and port city, Swakopmund, and in some towns in the northern regions. In Swakopmund, a vibrant German cultural community is evidenced by the large, predominantly German-language bookstore, as well as the beerhouses, restaurants, and shopping malls, where the German language is spoken by locals as well as the many tourists attracted to what is locally referred to as a "little Germany by the sea."

South Africa's continuing sway within the country is, however, far stronger than that of Germany. Three of Namibia's five banking institutions are majority South African owned (Shihepo, 2017). Namibia's dollar is pegged to the South African rand. Although agricultural production is improving, and food security, processing, marketing and distribution programs have been in development, Namibia still depends heavily on South Africa for fresh produce (Sattar, Diz & Franklin, 2003; Prevor, 2013). In addition, "as Namibia has had a very limited growth in [the] industrial sector, it imports most of [the] manufactured products which it requires from South Africa" (Focus: Africa, 2010, para. 11). The most enduring day-to-day legacy of South African rule, however, is the *lingua franca*, Afrikaans.

During the years of South African dominance in Namibia, education was a useful tool in ensuring the subjugation of the black population. Katjavivi (2016), speaker of the National Assembly of the Republic of Namibia and founding Vice-Chancellor of the University of Namibia, described it well:

> Before Namibia's independence, the country's education system was designed to reinforce the Apartheid system rather than provide the necessary human resource base to promote equitable social and economic development. It was fragmented along racial and ethnic lines, in what was termed the Bantu Education system, which was also being enforced in black communities in South Africa, with vast disparities in both the allocation of resources and the quality of education offered. (p. 3)

Ironically, mother tongue medium of instruction was the legislated requirement in black African schools in Namibia, as it was in South Africa. The goal of this legislation was far from benevolent; it aimed to separate tribes linguistically as they had already been separated geographically by the creation of tribally designated reservations, to divide and rule by limiting communication between groups. However, South Africa was no more successful in employing mother tongue instruction than Namibia has been to date, and "due to the lack of educational resources in Namibian languages, the instruction was mainly in Afrikaans" (Martinez Madrid, 2015, p. 21). Though Afrikaans was rejected as the official language at independence, due to its identification with the oppressive South African regime, it—not English—continues to dominate as the accepted inter-cultural, cross country language.

In the context of this exploration of language and learning issues in Namibia, it is another irony worth noting that, except for the very brief "ownership" of a very small coastal area, Britain played no direct colonial role in Namibian history, and English was never an embedded language.

The Town

The town that is linked to the mining facility is medium-large by the country's standards, with banks, supermarkets, shopping malls and hotels. There are numerous schools—5 primary, 3 secondary, and 2 combined—as well as satellite campuses of national post-secondary institutions. There is a continuing education centre, as well as a local Community Skills Development Centre (COSDEC). The COSDEC offers adult technical and vocational education, without high school leaving admission requirements, but conducted entirely in English.

Languages spoken in the town and/or the surrounding regions are representative of the diverse tribal and regional groups and cultural backgrounds in the country. In descending order of first language representation, they are Oshiwambo, 86.2%; Damara-Nama, 5.7%; Afrikaans, 2.3%; San, 1.6%; Kavango, 1.2%; English (official), 1.2%; other African languages used in the region, but by under 1% of the population are, Caprivi, Otjiherero, and Setswana (Namibia Statistics Agency, 2011). Although local percentages are not available, German is used by 17% of the national population, and is also heard in the town. Again reflecting national demographics, Afrikaans, rather than English, serves as the *lingua franca*.

Although it is difficult to isolate exact dates, it is known that the enormous area surrounding the town had been the site of artisanal mining[6] and processing by Indigenous groups for centuries prior to the colonial incursion. Indigenous knowledge concerning mining and processing of minerals would, thus, span generations.

The Subsidiary Company

The subsidiary of the international mining company is the largest local employer. It has a well-developed Corporate Social Responsibility (CSR) program in place, and has contributed substantially to educational institutions in the local town, as well as Small and Medium

[6]Artisanal mining uses minimal machinery. It is estimated that more than 100 million people, mainly in developing countries, continue to rely on this and small-scale mining, which uses low technology, for income (miningfacts.org, 2012).

Enterprises (SME), business development activities, and community organisations. It has also collaborated with the municipal government in the provision of new housing for some employees. Since purchasing and reopening the facility, the closing of which some years prior caused severe unemployment, the company is generally viewed as having contributed to the rebirth of the town. As one interviewee put it,

> *Still, [the company] is doing its best, bringing [the] people and town up.*
> (P10-11, June 6, 2015)

Facility population. According to the company's corporate 2015 Sustainability Report, the southern African facility employed 471 permanent/full-time, 54 direct-contract, and 599 project-related sub-contract personnel.[7] Approximately 42 employees were management personnel, hierarchically ranged under the following categories: Superintendents (least senior), Managers, Directors, Vice Presidents, and General Manager and Vice President (most senior).

Company records show that 98% of permanent employees are drawn from the national population. Shop floor workers, the largest employee group, are predominantly male, of black African descent. The administrative and lower management groups are made up of a mix of black, coloured, and white[8] female/male employees. Middle and senior management personnel are mostly country nationals, predominantly males of white Euro-Western extraction. The Company also employed temporary, direct contract workers from both within and outside the country.

Twenty-five percent of the workforce in 2015 was aged up to 30 years old; 51 %, between 30-50; and, 24% were over 50 years of age. This particular demographic information is pertinent to the case study: with 75% of the workforce falling into the middle to older categories, attention to existing knowledge about the inherent dangers of mining, and learned health and safety strategies was important to understanding what shop floor workers already knew. Within the same demographic, considerations of the colonial era educational opportunities, and linguistic challenges that developed with the introduction of English MOI post-independence (27 years ago) must also be taken into account when seeking to understand how language might act as a barrier to OHS information transfer and exchange, and influence

[7] A facsimile flow-chart, giving a general idea of the company hierarchy is shown in Appendix E.
[8] Country nationals self-identify within these groups.

policy compliance.

Many company employees are from the town or close surrounding communities. However, at the management level, some personnel are from other parts of the country, and a considerable number of shop floor workers come from remote, rural communities. Representative of the region, approximately 9 different languages—dominated by Oshiwambo—are spoken by workers, with varied regional differences among these. As in the town, Afrikaans is the *lingua franca* in the facility.

Prior education or schooling of the overall employee group ranged from none to post-graduate levels, but was difficult to pin down. In one division of the subsidiary, which included engineers, project coordinators and draftsmen, all were said to have grade 12 and/or some level of university education. In another division, shop floor workers were said to generally have completed grades 10-12. An overall estimate of shop floor workers' education was placed at grade 6-12 by one manager, while another stated that 60% of these employees had little schooling. Shop floor workers were not always comfortable reporting their educational attainment.

Technically, according to national educational legislation, workers' early schooling, for those who attended and/or completed school, would have been in the home language, usually mixed with Afrikaans or English, depending on the region. However, medium of instruction choices for those speaking languages of low regional representation are likely to have been limited by a lack of materials and teacher ability in these languages. The dominant local language, and often Afrikaans, would have been adopted as the default "mother tongue." Schooling after the 4th grade would have officially been in English only; in reality, previous studies have shown that English was not well known, even by teachers (Beyer, 2010; Simasiku, 2010; Simasiku, Kasanda & Smit, 2015; Smit, 2010; Wolfaardt, 2005, 2010).

Methods

Information and Data Sources

Information sources. In the entry phase, during the first six weeks of the project, with the assistance of a senior management member, opportunities were provided for me to engage in informal conversations with a variety of facility employees and local individuals. In addition,

over the entire period of field research, I was able to spend considerable time observing both community and subsidiary activities. Although the information sources shown in Tables 1 and 2, below, were not included as formal data sources in the study, they provided an invaluable platform upon which to orient the research project.

Table 1

Information Sources: Informal Conversations

Corporate Management
Subsidiary Management[9]
Superintendents
Contractors (above the Operator/Shop Floor Worker Level), Specialists
Training and Development Personnel
Local School Educators
Local Community Members

Table 2

Information Sources—Informal Observations and Activities

Day-to-day activities within the boarding house and community
Daily interactions with boarding house employees
Shared dinners with contract employees
Attendance at company-organized social events
The Company Information Centre (located in the town, and intended to function as a resource for community members and workers
The private hospital, where employee health check-ups are conducted (while undergoing my own check-up prior to entering the processing site)
Local Schools: various training classes at a local Vocational and Technical Training facility; academic classes in a local private, mixed primary-secondary school; academic classes in a local public primary school
Chamber of Commerce and Industry
Small and Medium Enterprises (SME), supported by the Company Community Trust Fund
Community Skills Development Centre (COSDEC)
Local Primary Schools (2)

[9] It is to be noted that the ranks within Subsidiary Management are, themselves, stratified. They have been grouped under one level, Management, for ease of categorization.

Data Sources. Consistent with case study methods, a variety of data sources were accessed, as laid out in Tables 3, 4, and 5 below.

Table 3

Data Sources—Document and Materials Review

Company Annual Reports and Sustainability Reports
Internal Organizational Charts
OHS policy documents
Health, Safety and Environment Training Materials: Manuals, Power Points, Videos, Sample Tests

Table 4

Data Sources—Interviews

Human Resources Employees (n=4)
Health, Safety and Protection Services Employees (n=3)
Operators/Assistant Operators (shop floor workers) from a variety of facility divisions (n=12)

Table 5

Data Sources—Observations and Activities

Employee Training Sessions: Induction—Environment; Induction—Health and Safety; Health, Safety and Environment Representatives (HSE Reps); Confined Space; Health and Wellness Peer Education
HSE Department Meetings
Public Hospital
Informal Settlement (on the outside of town)
Tours of the mining facility (2)

Data Collection

Ethics certifications. Approval for the conduct of the initial research project was obtained from Veritas IRB and the Ministry of Health and Social Services, Republic of Namibia. Data collection was conducted under the obligations of these ethics approvals. Ethics approval

for the present case study was received from Concordia University's Human Research Ethics Committee.

Confidentiality. The data collected for this case study in 2015 falls under the restrictions of the Company Confidentiality Agreement signed by the Principal Investigator. Within the Consulting Agreement with the Company, specific permission was given to include said data in this dissertation:

> It is also anticipated that results of the work provided for by this Agreement may form part of Overing's Doctoral dissertation at Concordia University, Montreal. In order to allow this work to be included in Overing's thesis, this Agreement provides that the research plan and methodology shall be reviewed by an external, private ethics review board for the purpose of obtaining ethics certification. Research results and data may also be shared with appropriate Concordia University personnel as and if required for academic review purposes. Overing will be the sole author of her dissertation and hold the copyright, which will comply in all respects to Canada's Tri-Council Policy for Ethics in Research with Humans; neither the name of the [facility], the town in which it is located nor the actual names of individual participants will be disclosed in oral presentations or written form (Consulting Agreement, 2014, Article 4, Para. 3).

Participant recruitment. A combination of stratified purposeful sampling and snowball/chain sampling (Patton & Cochran, 2002; Flyvbjerg, 2011) was used to recruit interview participants from various levels within the facility population. Stratified purposeful sampling involved the assistance of a key company employee to provide entry into the upper management subgroup of the company personnel. As discussed above, informal conversations within this group created a preliminary understanding of management perspectives, which, after consideration, provided a working framework for recruitment and data collection. Key members of this group suggested likely participants from populations outside of the shop floor worker group, who did the same, thus setting up the snowball/chain sampling that was then used where appropriate throughout the study.

Potential participants at the facility and below the upper management level, but outside of the shop floor worker population, were contacted by email, to which a Study Information Letter

(Appendix A), detailing the purpose of the research and what was entailed in the interviews, was attached. Interviews were scheduled at the convenience of participants. An Information and Consent Form (Appendix B) was reviewed orally, and signed by participants before interviews began; a copy was given to participants.

A crucial part of the purposeful sampling approach involved recruitment of shop floor workers; I conducted this recruitment during training sessions that I attended. I introduced myself in each of the training classes, describing my background and explaining my dual roles as independent consultant working for the company, and doctoral student gathering data for my dissertation. I then explained the purpose of the research, reviewed the Invitation to Participate in a Research Study (Appendix C), which was projected on a screen at the front of the classroom, and detailed the purpose of the research as well as what was entailed in the interviews. Following this, all class participants were given a printed copy of the Invitation to Participate in a Research Study and were provided with additional explanation when requested. Where necessary, translation was provided by employees' colleagues.

I emphasized that participation was voluntary. A space was indicated on the Invitation to Participate in a Research Study for contact co-ordinates, and all letters were gathered, face-down, and returned to me, whether completed or not, in order to safeguard confidentiality. Volunteers were then contacted by Short Message Service (SMS)—the most popular form of communication amongst employees, and conducted in English[10]—and meetings were scheduled according to potential participants' availability outside work hours. Interviews were conducted either individually or, at workers' request, in small groups. Also at workers' request, some interviews were conducted in a dedicated office in the Training and Development Division building within the facility grounds; others were conducted in various locales within the town. Transportation and/or taxi fare was provided as necessary, and a light snack was offered. Information and Consent Forms were reviewed and signed before beginning the interviews; a copy was given to participants.

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[10] It is an interesting phenomenon that even amongst non/limited English language speakers, the "language" of SMS, or texting—predominantly based on English—has become universal. This is the case in Namibia, see Semali, L.M. & Asino, T.I. (2014). Postliteracy in the digital age: The use of mobile phones to support literacy practices in Namibia and Tanzania. *Prospects, 44,* 81-97.

Observations. Observations in training settings, on the shop floor, and during an employee community outreach project provided rich sources of illumination concerning linguistic and communication challenges in the transfer and exchange of OHS knowledge. During two training sessions and as an invited member of the outreach project, I was fortunate to be included as an "observer as participant" (Kawulich, 2005, section 6.3); that is, although I was not a member of the group, I was given an opening to participate "as a means for conducting better observation and, hence, generating more complete understanding of the group's activities" (section 6.3) Referencing Adler and Adler (1994), Kawulich (2005) described this "peripheral membership role" as "enabl[ing] the researcher to "observe and interact closely enough with members to establish an insider's identity without participating in those activities constituting the core of group membership"" (section 6.3).

Field notes were taken during all observations, and, where possible, while attending activities; when, in the latter case, this was not possible, I recorded experiences as soon after the activity as possible. Notes were transcribed to Word documents. Reflective notes were recorded in a journal on an ongoing basis, both to record my personal responses to and thoughts about events and/or people, and to use as reference points for future data analysis.

Interviews. Being permitted to attend training classes and outside activities and provided with opportunities to be an observer as participant helped to "break the ice" with workers, which facilitated interview recruitment—of crucial importance to the research program. Employees' perceptions of the effects of English language use were central to the aims of this study, and interviews were conducted to provide a forum for their thoughts.

Initially, interviews were semi-structured and open-ended, guided by general Interview Guidelines (Appendix D); for the most part, they quickly took on a more unstructured, conversational tone, and lasted, on average, 60 minutes. Given a choice in the Information and Consent process, participants chose not to be audio-recorded during interviews. Handwritten notes were transcribed to Word documents directly after each interview.

Documents and materials review. Classroom observations of teaching practices and materials, as well as interview participants' frequent references to these elements as factors influencing information transfer and policy compliance indicated the need for a review of instructional texts, as concrete examples of the difficulties—for both teaching and learning—

presented by English language medium of instruction.

Classroom materials were reviewed during observations of training sessions, including audio-visual and written texts. In addition, access to OHS training materials was provided by the Training and Development Division.

Data Analysis

Following is a discussion of the methods employed to analyze data from the Observations, Interviews, and Training Materials. Initial analysis and coding was conducted with an eye to the research questions. As the field work progressed, and in the ongoing, iterative process of data analysis, participant perspectives and my observations added important reference points by which to understand the data; for example, rather than attempting to impose rigid, "objective" document analysis methods to the texts, these were explored with direct reference to observations and interactions in the classroom, and participant commentary in the interviews.

Observations. During the numerous classes I attended, participants rarely spoke out if they didn't understand, and rarely indicated lack of comprehension when asked. Therefore, non-verbal behavioural indicators became an important element of interpreting and understanding class members' responses to the teaching and materials in each module. According to Onwuegbuzie and Byers (2014), the consideration of non-verbal communication is rich with possibilities; they referenced Denham and Onwuegbuzie (2013) who suggested that,

> nonverbal communication data could allow qualitative researchers to (a) *corroborate* speech narrative (i.e., triangulation); (b) *capture* underlying messages (i.e., complementarity); (c) *discover* nonverbal behaviors that contradict the verbal communication (i.e., initiation); (d) *broaden* the scope of the understanding (i.e., expansion); and (e) *create new directions* based on additional insights (i.e., development). (as cited in Onwuegbuzie & Byers, 2014, pp. 185-6, emphasis in text)

I initially noticed non-verbal indicators during my first observation of OHS training, and realized that attending to them might help to answer questions concerning what English MOI "looked like" in the classroom. Onwuegbuzie and Byers (2014) particularly recommended the consideration of non-verbal data in conjunction with in depth analysis of how individual(s) "in a

given context, make sense of a given phenomenon" (p. 199), such as is the case with this study.

Non-verbal behaviours were noted during all observations. Though rare, and often communicated after some probing, verbal indications of mis/non-comprehension also occurred in the classroom, and were also noted during observations. These, as well as notes taken concerning the materials and teaching practices during training modules, were analyzed in the same iterative and recursive manner as the Interviews (see below).

Interviews. "Interviews provide in-depth information pertaining to participants' experiences and viewpoints of a particular topic" (Turner, 2010, p. 754); or, they are intended to do so. The depth of information obtained from interviews can depend on a number of factors, including the preparations made by the interviewer, the comfort of the interviewee, the interview format, the data analysis methods, and the interpretation of the findings (Firmin, 2012; Roulston, 2012; Turner, 2010).

As mentioned above, both participant and non-participant observations, as well as my inclusion in employee activities, provided good potential for interview success. By the time interviews were conducted, I was a familiar presence on site, which seemed to contribute to participants' engagement. That said, however, those who volunteered to take part in the study were quite eager to share their thoughts and ideas about OHS policy, instruction, and compliance issues. This eagerness both motivated, and was facilitated by, the increasingly unstructured and conversation-like format of the interviews. Another factor that might have contributed to participants' strong collaboration was their options to choose the venue for interviews, as well as between individual or group interviews. There was, as a result of their substantial input, much data to analyse, and a preliminary organizational scaffold was helpful.

Saldana (2009) provided a "very basic . . . ideal and streamlined scheme" to help track the movement from coding and categorizing data, through isolating themes and concepts, to developing theory. In this case study, where exploration and understanding, not theory building, were the goals, Saldana's process was adapted to draw an illustrative picture. The framework (Figure 1), which involves an iterative cycling between data and emergent codes, categories, themes, and concepts, guided the initial analysis of observational notes and participant interview data.

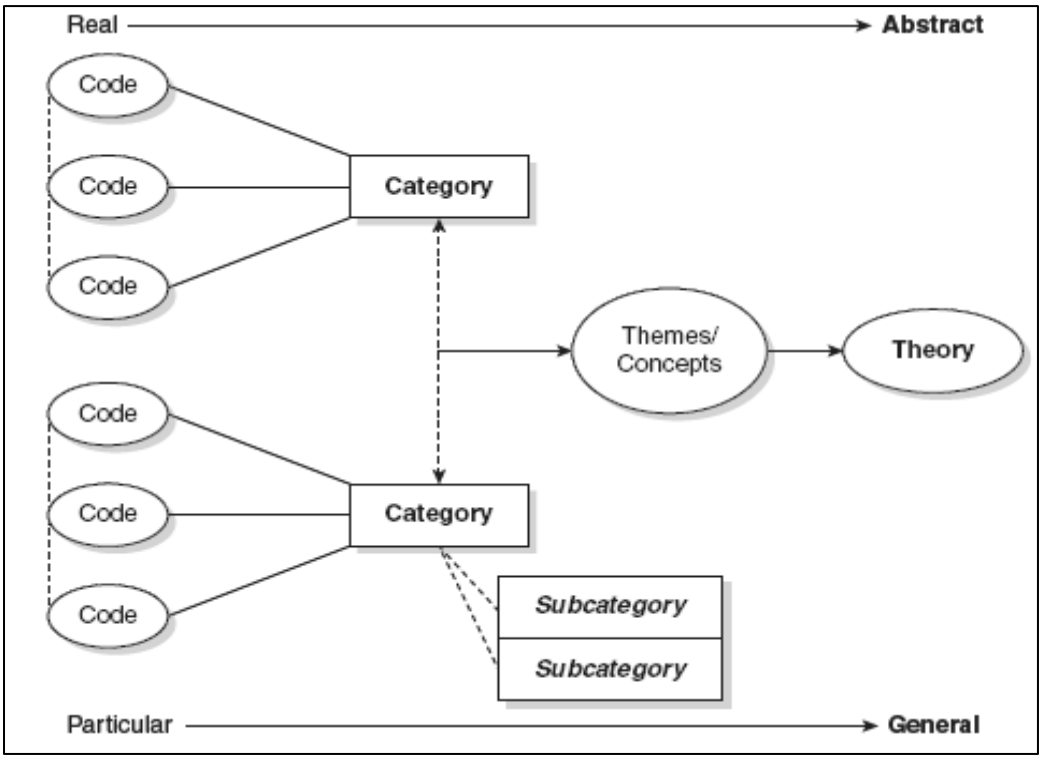

Figure 1. A streamlined codes-to-theory model for qualitative inquiry. Reprinted from *The Coding Manual for Qualitative Researchers* (p. 12), by J. Saldana, 2009.

Beginning at the "particular" end of the analytical spectrum, because I was looking for specific references to language-related issues, first cycle coding was directed at identifying and highlighting predetermined key words, for example, "language," "communication," "English." Aided by analytic memo writing (Saldana, 2009), additional coding cycles focused on participants' embodied and verbalized "comments, articulated thoughts or views" (Long-Sutehall, Sque & Addington-Hall, 2011, p. 340) concerning language issues. This process revealed new codes and contributed to developing categories.

As recommended by Saldana (2009), all emergent codes and categories were recorded in a code book. Using this record, and through the back-and-forth analytical process, patterns began to emerge, allowing for more precise categorization, contextualization of terms and ideas, the move to identifying themes and arriving at the "general" end of the spectrum. In this manner, I worked to create a general and reasonably complete picture of the situation, which began to respond to the research questions, as well as new questions that emerged from the data.

The simplicity of this framework belies the complexity of the inductive process it involved. As Saldana (2009) cautioned, "codes written in the margins of your hard-copy data . . . are nothing more than labels until they're analyzed" (p. 32). According to Saldana, effective analysis requires seven personal attributes: organization, perseverance, ability to deal with ambiguity, flexibility, creativity, and rigorous ethics (pp. 29-30). Analytic memo writing helped me to develop, harness, and support these requirements during the "question-raising, puzzle-piecing, connection-making, strategy-building, problem-solving, answer-generating, rising-above-the-data heuristic" (Saldana, 2009, p. 32).

Questioning through analytic memo writing was an important feature of maintaining rigorous ethics while analysing and interpreting the observational notes and interviews. Roulston (2012) noted that the generation and interpretation of data from interviews—and, I would argue, observational notes—can be a particularly tricky endeavor, especially when—as was the case for this study—they have been conducted in a semi-structured, unstructured, and/or conversational manner. Concerning conversational interviews particularly, Roulston pointed out that, "data generated via conversation provide much potential for manipulation by researchers as they code, analyze, interpret, and represent speakers' words" (p. 5). Adopting a reflective approach through the analytical process—during memo writing, for example, questioning my motivations as compared to participants' intentions, keeping context in mind, and acknowledging power and influence as significant presences in the "conversational" setting—was an essential element of the data analysis and interpretation process regarding both observations and interviews (Cohen, Manion & Morrison, 2007; Roulston, 2012; Yin, 2011).

Saldana's (2009) helpful guidelines notwithstanding, Kvale (2011) suggested that, "no standard method exists, no *via regia*, to arrive at essential meanings and deeper implications of what is said in an interview" (p. 4). Modes of interview analysis certainly exist, such as meaning coding, linguistic, narrative and discursive analysis (Kvale, 2011, p. 5); however, Kvale raised "interview analysis as bricolage" as an effective and acceptable analytical approach.

Saldana's (2009) framework, noting codes, patterns, categories and themes helped me to see "what goes with what" (Kvale, 2011, p. 16). However, a combination of "tactics of meaning generation" (Kvale, 2011, p. 16) assisted me in the move to the "general" level in Saldana's model:

- reading the interviews through to "get an overall impression;"
- counting occurrences of specific words to get a sense of the weight they carried for interview participants, and as compared to dialogues within the upper levels of the company;
- going "back to specific interesting passages" that promised to hold important, perhaps quotable ideas, or supported/questioned other participants' perceptions;
- casting parts of observations into narratives that seemed to better illustrate the classroom dynamics and frame participants' ideas. (Kvale, 2011, p. 16)

As I moved back and forth through the data, using these tactics of meaning making changed my entire anticipated approach to "analysing" the training materials and practices, as discussed below.

Training Materials. Rather than formally analysing the training materials and practices as stand-alone educational tools apart from the classroom experience—as had been my proposed intention before I actually reviewed the entire collection of data—I decided to gauge their impact as mediated by the responses of learners in the classroom, and their effectiveness as judged by participants during interviews. This change was part of a larger rethinking of how I would present the study findings.

Creating a Panoramic Through Narrative Snapshots

The interviews, observations, and interactions—the unique opportunities and contributions afforded me by "being there" and engaging with people—were the "real nuts and bolts" of this case study.[11] Moving back and forth through the field notes, data, journals, materials, and memories, a persistent question played background to the process: How can I take others there? Mulling this through, continuing to work with the data, and searching for expert support, this advice from Baxter and Jack (2008), concerning the analysis, interpretation, and presentation of case study data, stood out:

. . . the researcher must ensure that the data are converged in an attempt to

[11] With thanks to D. Waddington for emphasizing this point so effectively.

> understand the overall case, not the various parts of the case, or the contributing factors that influence the case … [and] describe the study in such a comprehensive manner as to enable the reader to feel as if they had been an active participant in the research and can determine whether or not the study findings could be applied to their own situation. (Baxter & Jack, 2008, p. 555)

The idea of creating "narrative snapshots," which could be overlapped to present a kind of panorama, began to take shape, developed, and ultimately involved:

1. From my observation notes, describing the classroom experience of each training module—a narrative snapshot—including an analysis of teaching materials and practices employed.
2. From interviews, illuminating participants' perspectives concerning language issues in OHS training.
3. Through a theoretical lens, exploring themes that emerged from Steps 1 and 2.
4. Then, drawing from the findings of Steps 1 through 3, as well as relevant additional data from interviews and observations, exploring the effects of identified language-related issues on shop floor workers' compliance with OHS policy.
5. Building from Steps 1-4, and interviews and observations, depicting how shop floor workers compensated for linguistic barriers.
6. Based on the findings from Steps 1-5, presenting recommendations for more effective teaching and learning of OHS information.

Chapters Layout

The panoramic opens with an orienting frame in Chapter 4: Getting the Lay of the Land, which depicts experiences of everyday language encounters, observations of language and schooling situations, and a general account of executive management perspectives concerning shop floor workers non-compliance with OHS policy, all garnered during the preliminary phase of the study.

In Chapter 5: "What does this look like in the classroom?" the five training modules, Induction: Environment; Induction: Health and Safety; HSE Representatives;

Confined Space; and, Health and Wellness Peer Education, are described from my observer's perspective, explored through the participants' viewpoint, and discussed from a theoretical perspective.

Chapter 6: "What does this look like on the shop floor?" portrays shop floor workers' daily work environment, their interview commentary concerning "language related risks" in the day-to-day work environment, and research related to these issues.

In Chapter 7: "How do language issues influence compliance?" interview participants' perspectives concerning OHS policy compliance and the role of language in non-compliance are explored; supporting research is discussed.

Chapter 8: "How do workers compensate?" describes ways in which shop floor workers attempt to bypass linguistic barriers in order to ensure their health and safety.

Chapter 9, "How might the 'language problem' be mitigated?" brings together participants' ideas about how language difficulties might be mitigated, as well as supporting views and suggestions from within the ESL/EFL and OHS research areas. The dissertation concludes with a summary of the issues and ideas presented in the previous chapters, as well as suggestions for future research.

Chapter 4: Study Orientation—Getting the Lay of the Land

Introduction

For about six weeks, from mid-January to the beginning of March 2015, much of the work on this study involved orientation within the mining facility and the adjacent town. The observations and interactions I engaged in during this entry phase—recorded in my field notes and journal entries—provided an invaluable foundation to the research study.

In this chapter, a selection of these activities is described in order to share with readers the same advantages I had, which led to a reasonably well-rounded understanding of the context in which the more formal research activities later took place. The chapter opens with a description of everyday language encounters at our guest house accommodations. This is followed by observations of some of the schools in the surrounding community. The next section gives a general account of conversations with upper management personnel concerning their perceptions of problems with OHS compliance among shop floor workers. The chapter ends with a brief look at the English language capabilities of shop floor workers, and a note about subsidiary hiring practices.

The Guest House

During the five months in the field, accommodations were provided by the company in a guest house primarily intended for upper level, long term contract workers, as well as visiting corporate personnel and, occasionally, government officials. Formerly owned by a European industrialist, the vestiges of colonialism were everywhere in this early 20th century mansion. Staying there immediately positioned me as a privileged company insider—a reality that could not be avoided, but an image that I hoped time would temper.

The guest house administrator was a white female South African expat, who spoke Afrikaans and English. The supervisor, who reported to the administrator, was a black male Namibian, who spoke Afrikaans, English, and a number of Namibian African languages. The head of kitchen, a female Namibian, also spoke Afrikaans and English, as well as two Namibian African languages. Amongst the housekeeping and maintenance staff, a variety of Namibian African languages, some Afrikaans, and limited English were spoken. Interactions between the administrator and housekeeping staff were conducted either in Afrikaans or with the mediation of the supervisor in whichever language was required.

In the boarding house environment, formal group dinners allowed us some "insider" exposure to the different languages, nationalities, and cultures of the staff and our fellow boarders. The latter comprised mostly long-term contract employees at the subsidiary and originated from a variety of countries: Canada, Australia, Bulgaria, South Africa, Namibia, the United States, Armenia, and England. Generally employed at the upper supervisory or management level, all spoke English to greater and lesser degrees, as either their first or additional language. Some spoke Afrikaans. None spoke a Namibian African language. For the most part, other than with the administrator and supervisor of the house, there was little interaction between the contractors and guest house staff; it was a little like living in two solitudes.

My husband[12] and I, on the other hand, engaged with staff members as much as possible, though in some cases to a more limited degree as not all staff members spoke enough English to be comfortable in conversation—and we could not contribute anything but English (our French language skills didn't hold much currency). Nonetheless, over time, we built understandings together, and developed relationships at least somewhat beyond staff/guest formalities.

As I came to understand, the guest house hierarchy and linguistic diversity resembled that of the subsidiary quite closely:

- Upper Management/Administrators: Predominantly White, Afrikaans or German first language/English additional language speakers;
- Superintendents/Supervisors: Predominantly Black, Namibian African first language(s)/Afrikaans and/or English additional language speakers;
- Lower level employees: All Black, Namibian African first language(s)/varying additional language abilities.

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[12] My husband accompanied me to Namibia. Including him in descriptions of our initial and ongoing orientation to the country, town and surrounding communities is quite relevant. Walking or bicycling through town, shopping in stores popular with local people, sharing dinners with fellow contract workers, attending company events, chauffeuring study participants, and engaging in his own conversations with local people, he was a valued support, source of alternative perceptions, and sounding board.

Local Schools

Keeping in mind the government's designation of English as Namibia's sole official language, and the relevant research referenced in preceding chapters concerning issues related to ESL content instruction, I was particularly interested to observe students in the classrooms where some of the shop floor workers might have received their schooling. In addition to academic schools, I also spent a day at the local Community Skills Development Centre (COSDEC), where young people who have not completed basic education can learn technical and vocational skills.

Okutseya[13] Primary School and Okwilionga Secondary School

Okutseya Primary School is located just outside the Town, and started out as a school for the children of mining facility employees. From grades 1-7, Okutseya caters for approximately 450 students; the student/teacher ratio is around 45/1.

Many students attending Okutseya live in a very large informal settlement, referred to by some as a "slum," on the other side of the Town. From the settlement and other parts of the surrounding area, many students walk up to 10 kilometers to and from school. The current principal said that the school has come to be regarded as "non-existent," not worth considering. This might have to do with the make-up of the school population.

The San peoples of Namibia remain the most marginalized in the country, and there are many San children attending Okutseya, along with those from Damara-Nama, Herero, and, to a lesser extent, Ovambo, groups. The San and Damara-Nama peoples in the region generally speak Khoekhoe, one of the Khoe languages characterized by click consonants and entirely different from the more dominant Bantu languages, such as Oshiwambo and Otjiherero, not to mention Afrikaans and English.

I briefly visited two classrooms, one of which was an Afrikaans language class. When asked about the use of mother tongue, the principal explained to me that it was "impossible" to use mother tongue medium of instruction, as there were too many languages to cope with; so, Afrikaans was designated the default mother tongue of the school, with English as the second language. This means that the majority of students attending Okutseya Primary School, all of

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[13] To protect confidentiality, pseudonyms replace all school names. *Okutseya* means *to know* in Oshiwambo; *Okwilionga* means *to learn.*

whom are of black African descent, are expected to learn by way of two second/foreign languages—one of which, Afrikaans, although the acknowledged *lingua franca* in Namibia, was rejected as a possible official national language at independence due to its association with the oppression of the South African imposed apartheid era in Namibia.

According to the principal, and representative of cases cited in the research, the drop-out rate from this school is "very high;" exact rates were unavailable. Some indications can be taken from national statistics, however. The Education Policy and Data Center (EPDC) (2014) puts the percentage of young people in Namibia aged 15-24 years old who did not complete primary school at 19% (p. 1). Based on similar statistics, but comparing urban and rural regions (EPDC, 2014), such as the vast northern area of Namibia, this percentage would likely be higher for Okutseya Primary School.

Later in the research process, I had an interesting conversation with a mathematics teacher at Okwilionga Secondary School, which intakes students from Okutseya Primary School. S/he noted that Okutseya students face numerous challenges when they enter high school. At the primary school, there is a meal plan, whereas there is no meal plan in the high school, a significant change and difficulty for many students. Family circumstances—such as living at some distance from school; caregivers who do not speak, read or write Afrikaans and/or English; lack of electricity—contribute to academic challenges faced by students.

This teacher stated that a significant number of students in each class do not speak English well, and that this does affect their learning of mathematics (all teaching/learning materials at this level are English only). Completing homework assignments presents a particular problem under these conditions, as there is often no English language support at home. As a result of these multiple obstacles, this teacher suggested, many children do not do well in secondary school. EPDC (2014) national statistics reporting school intake and flow in Namibia help to give a sense of what drop-out rates might look like: from an 82.5% transition rate from primary to lower secondary school, gross enrollment in upper secondary school fell to 36.5%; once again, rural areas would generally show lower transition and enrollment rates (pp. 1-2).

I did spend a little time on the Okwilionga campus, and tried very hard to set up a Grade 12 Physics class observation visit, but was unsuccessful.

Private Afrikaans School

In quite startling contrast to Okutseya Primary School and Okwilionga Secondary School was an exclusive private Afrikaans school, offering pre-primary to Grade 12 levels, and located close to the centre of town. I did not visit this school, but our boarding house was located close to it, and we often saw and heard groups of students heading to the large, well equipped and maintained sports field just behind the house, walking, cycling or mo-pedding home after school, or being picked up by parents in expensive, high-end vehicles. Snippets of conversations between predominantly white students came to us almost exclusively in Afrikaans, sometimes, but rarely, in English. The school prides itself on the rigor of its academic standards and the superiority of its sports programs. I was told that there is tremendous pressure on students to perform at the highest level, requiring "much, much" homework.

Alternative School

Concerned about the pressure on students attending the private school, and particularly as a result of seeing her own children facing challenges due to special learning needs, a former teacher at the school started a private alternative school in the town. Since its opening in 2013, the registration has grown from two students to 54 in 2015. Classes are offered from grades 1 to 10, in two somewhat makeshift locations: a former residential dwelling within the town, and the out building of a now-defunct private flying club on the outskirts.

The school population is predominantly white and Afrikaans is the first language of all students and teachers. In conversation with the founder, I was interested to hear her insist, "I want my child to learn in mother tongue"—Afrikaans—clearly understood as a value within this segment of the population; clearly more highly valued than English. This priority notwithstanding, some content was taught in English, though heavily supported by Afrikaans. I observed grades 2, 4, 5, and 7.

The Grade 2 English class was taught by an Afrikaans mother tongue speaker, whose spoken English was excellent. Two of the students came from unilingual Afrikaans families; that is, no English was spoken at home. Consequently, they were only supported by the school in their learning. Observation and teacher comments indicated slow, slow progress. This impression of English learning as heavy work was reinforced during my observation of the Grade 4 English class, where the teacher repeatedly insisted: "Let's talk English. We're in English class"

(Overing, Field Notes, March 30, 2015). The course content, days of the week and months of the year, was taught in rote fashion:

> *Teacher: What is the first day of the week?*
>
> *Students call out. Teacher writes on the board. Students copy from the board.*
>
> *Continued through the days of the week, then moving to months of the year.*
> (Overing, Field Notes, March 30, 2015)

The Grade 5 Natural Sciences class was perhaps the most informative concerning language of instruction. The teacher was much more comfortable in Afrikaans, starting in English, then switching to Afrikaans when s/he was unfamiliar with the scientific terms. This was particularly the case when s/he was not teaching directly from the English text. Coincidentally, for me, the subject matter was "microscopic particles," a term that came up frequently in OHS materials. Addressing the question, "How do we know they exist?" the teacher relied very heavily on the English text, unable to clearly explain the concept without that aid (Overing, Field Notes, March 30 2015).

Community Skills Development Centre (COSDEC)

During an entire day spent at COSDEC, I observed classes in Plumbing and Pipe Fitting, Welding, Bricklaying, Office Administration and Computer, and Clothing Design and Textile. There are no academic requirements for admittance to these programmes, but students must be able to read and write, presumably in English as this is the language of instruction and materials. In fact, I was told by an instructor that some students' reading and writing skill were limited in any language. Languages represented in the classrooms were Oshiwambo, Afrikaans, Damara, and RuKwangali, with English as a second, additional, or foreign language.

The Plumbing and Pipe Fitting class was an introductory one, and the instructor was showing and explaining the tools of the trade. Students were seated in chairs facing the instructor, and had been given handouts that corresponded with the lesson. No note-taking was observed during this class. The instructor showed each tool and explained its use, directing students to their handouts for the corresponding pictures and notes. Students were not given an opportunity to hold and/or manipulate the equipment. Not far into the lesson, I noticed considerable restlessness, and attention directed elsewhere in the outdoor classroom. Amongst themselves, students occasionally spoke to each other in one or another Namibian African language, and I noted what appeared to be attempts to name articles and explain their uses. The

instructor frequently lectured about not using the tools in ways that would break them.

During the Office Administration and Computer class, which was conducted entirely in English, students engaged in a Customer Service role-playing activity. Participants formed groups, each of which set up a model small to medium enterprise (SME). Students from other groups posed as disgruntled customers/clients, and the SME owners had to deal with their complaints. Overall, the role-players interacted well in English; interestingly, the complainers were more fluently assertive than the owners. For example, at the "Cash-and-Carry," the customer questioned the quality and price of products—loudly, and in very good and imperiously toned English. From my field notes:

> *. . . hard for "owners" to come back as quickly and clearly in English. Felt like a good little "power show"—this is how "rich customers" behave?* (Overing, Field Notes, March 17, 2015)

Though class participants did handle the role-playing quite well, the Office Administration and Computer instructor, who spoke excellent English, pointed out that English instruction still presented a challenge due to some students' lack of education. In particular, s/he pointed to students' inability, outside of the context in which they were taught, to express and apply ideas taught to them in English (Overing, Field Notes, March 17, 2015).

Learners' challenges with English language instruction were also raised by the Bricklaying instructor, who suggested that some students, over 20 years old and from the villages, might not have heard English before entering the COSDEC programme. If students spoke no English and/or Afrikaans, s/he said, they used an "open language" as they went along (Overing, Field Notes, March 17, 2015); classes, however, were still only conducted in English, as was testing. During my observations of the practical session of the Bricklaying class, I did only hear Namibian African languages spoken among participants; I was also told by another instructor that a number of these students spoke no English, with some also unable to read and/or write in their home language.

The classroom encounters described above provided real insights into the complexity of the language of education situation in the region: English officially dominating—English-language institutional materials specifically—though not widely used in the day-to-day; Afrikaans often the default "shared" language, with no institutional materials provided—except in "Afrikaans" schools; and, Namibian African languages—though spoken by the majority of the

local population—almost absent from educational contexts.

Within the objectives of the research consultation, during informal conversations with upper management personnel at the subsidiary, I aimed to find out what impact they thought language issues, such as those observed and discussed in the school context, might have on OHS compliance.

Executive Management Perspectives

It is not the argument of this project that if the rules can be made understandable—through the use of familiar language—they will inevitably be followed. Even the most cursory glance at human history reveals that although understanding the rules may be a necessary feature of following the rules, it is by no means a sufficiently motivating one. Rule-following for one's "own good," such as compliance with OHS policy, is certainly no exception.

A variety of complex, intersecting factors can combine to influence employees' conscious and unconscious disregard for policies and practices intended to safeguard their health and security. As Beer, Finnstrom and Schrader (2016) explained, organizations are themselves "a system of interactions shaped by multiple facets—strategy, structure, processes, leadership style, peoples' background, culture and HR policies and practices. These multiple facets drive individual behavior" (p. 4).

The corporate representatives who engaged me to conduct the original research study had been alerted to problems with OHS compliance by management at the subsidiary facility. From their distanced positions in the very hierarchically structured organization, these representatives had not, themselves, observed or experienced the particular challenges faced by personnel in the day-to-day running of the operation. Therefore, before conducting interviews with employees, in order to get a sense of how management perceived the problem of OHS non-compliance among workers, I met and had informal conversations with seven members of the executive cohort at the subsidiary; in addition, I attended two of the weekly Health, Hygiene, Safety, Environment and Protection Services roundtable meetings, which included upper management from the Human Resources division.

True to Beer, Finnstrom and Schrader's (2016) analysis, numerous factors were suggested during these encounters as contributing to non-compliance with OHS policy. These

conversations and observations served as a preliminary orientation to the research problem and site, and a brief discussion of major themes that emerged will also help to orient the reader.

Workers' Non-Compliance: The View from the Upper Level

The conversations with executive personnel were informal. My goals were to introduce myself, become familiar with people, and get a general sense of management's perceptions of the problems with OHS policy compliance by listening a lot, and probing a little. The snowball sampling used to recruit workers also began here, as management personnel suggested contacts within their departments. All contributors agreed to meet again if I felt the need to pursue emerging issues and seek commentary/thoughts once I had broadened the scope of data collection; I did meet again with some towards the end of the research project.

The themes that emerged during this segment of the preliminary phase of the research project served as a temporary conceptual scaffold upon which I was able to build the next phase and steps of the study. They were not intended to present, rigid, stand-alone categories; there were many thematic overlaps. For example, there were significant relationships discussed between culture, language, and communication, as well as internalization, attitude, and education. Nor were these initial themes expected to represent the perspectives of workers below the executive management level. Under headings that are representative of comments made during these conversations, a discussion of the more significant factors sited by executive personnel follows.

It's easy to change behaviour, but attitude. . . . I heard variations on this refrain, which referred to the fact that though behaviour might change with warnings, penalties, and the fear of job loss, attitudinal change was the desired long-term goal. However—and here we have one of those overlaps I mentioned above—issues of "cultural differences" were also raised, and were perceived as getting in the way of sustainable attitudinal change. A "short-term view", a "that's life" mentality, and a lack of belief in the consequences of non-compliance with OHS policy were referred to as stumbling blocks to change, which were said to influence negative perceptions on workers' part of being "forced" into "unnecessary" behaviours as some kind of "punishment."

Age also came up as an interesting, if somewhat contested, factor contributing to attitude. On the one hand, it was suggested by some that the older employees had greater difficulty

understanding and accepting the necessity of OHS compliance; on the other, the phenomenon of "young immortals" was raised. In the former case, the thinking was that older workers brought—and defended—previous “bad” habits to the workplace; in the latter, it was believed that lack of prior experience, and the denial of potential dangers were significant factors.

Lack of training and education. There was strong consensus within the executive cohort that skills training and development, as well as basic pertinent science and technology knowledge were severely lacking among shop floor workers. This lack of previous training/education was seen as contributing heavily to OHS policy non-compliance, as it was considered difficult to explain the scientific concepts and logic, to convey the long-term consequences of dangerous actions, and to ensure the “internalization” and “integration” of information.

Some executive personnel referred to this information and its holders as the “chain of knowledge,” and questioned the effectiveness of teaching/training using the manuals adopted or designed by HR and OHS personnel with no “hands-on” experience of the facility and its particular risks. In my own early experience on site, while attending a HHSEPS meeting, I was led to question the effectiveness of training when, with reference to Noise Induced Hearing Loss, it was stated by a health professional tasked with teaching this particular skill, that “many [employees] don’t know how to correctly insert ear plugs.”

No safety culture. "It's cultural," "cultural differences," "no safety culture" were phrases that came up frequently during these conversations with upper management personnel, and even when *culture* was not specifically invoked, its influence was implied in "we/they" references that also overlapped with perceptions about “attitude,” and a lack of “internalization/integration of knowledge.”

It was stated by a number of executives that, for shop floor workers, there is a sharp distinction between behaviour at home and requirements at work. Reference was made to a difference in approach to maintenance that was attributed, for example, to the difference between "German" (fix it 1 time, properly and permanently) and "Namibian" (fix it flimsily, for now, many, many times) thinking. Different tolerances for danger, a missing "recognition of danger" and, as mentioned earlier, a "that's life" mentality were indicated as being culturally embedded hindrances to OHS compliance.

Some management personnel drew attention to language, education and culture as specifically hampering the transfer of scientific knowledge. This alerted me to consider the influence that local/indigenous knowledge, traditions and language, i.e. culture, might have on understandings and/or acceptance of Western science and technology concepts imbedded in OHS policy.

A lack of belief in the consequences. Workers' perceived inability to internalize and integrate information overlapped with upper management perceptions of attitude, education, and culture as barriers to OHS compliance. It was raised as a real contributor to non-compliance, which led to questions such as, "How can we get the workers to embed OHS knowledge so that it is so internalised that it is instinctive?" on the part of management personnel; and, on my part, "How do workers integrate other knowledge that is important to them? How do we tap into that thinking and learning process?"

Overall compliance, with zero tolerance for non-compliance and sloppiness across the company hierarchy, was viewed as essential—and inferred as being lax amongst some management and supervisory personnel by a few of the executives with whom I spoke. Getting employees at all levels to comply with the mandatory use of Personal Protective Equipment (PPE), for example, was sited as a big issue that required a specific effort to integrate in order to attain total compliance throughout the designated areas in the facility.

In my own experience during one tour of the facility with upper level supervisory personnel, I saw workers quickly re-placing their protective respirators at the sight of us. Before setting out on this walk-about, however, I also witnessed my guides improperly placing the ventilator; proper placement had been explained to me—as it is to all personnel—when I was fitted for my own PPE.

An example of the non-integration of OHS knowledge was raised with regards to biological testing. All employees at the facility are periodically tested for arsenic counts in the body. The top 50 (with the highest counts) undergo retraining (OHS, proper PPE use, etc.), and are then monitored more frequently than others for compliance. It was said that among shop floor workers, the counts generally improve for a time, but then begin to slide again, presumably as compliance also slips. This situation was offered as an example of information not internalized, and knowledge not integrated by shop floor workers.

A communication problem all the way from the top. Effective communication, broadly understood, was brought up by some upper level management people as a fundamental issue throughout the company. Isolation of company departments, working in "silos," depending on electronic rather than face-to-face communication, and ineffectively meeting the challenge of information sharing between "technical" and "ordinary" people were raised as particular communication issues. The "chain of knowledge" as, effectively, broken. Yet, when asked about language issues as specifically contributing to this breakdown, responses were mixed, if not dismissive or a little confusing.

Don't think it's a language thing. . . . Ovambo don't speak much other than Oshiwambo. During conversations with upper management personnel, when language came up as a contributing factor, it was not without qualifications, differing perceptions and contradictions. The generalization that Ovambo employees' (an estimated 85% of the workforce) language skills were so limited, stated in the same breath with the perception that language did not play a role in non-compliance seemed to represent these conflicting viewpoints.

When language was seen as a possible issue on the shop floor, it was suggested that "older" workers might have a problem with language of training and instruction, but that the young ones were more fluent in the necessary languages. For me, this raised two red flags:

1) From company demographics, 51 % of employees were between 30-50, and 24% were over 50 years of age—a possible 50% of employees might fall into the "older" range.
2) Which languages were considered by upper management to be *necessary*, in the classroom and on the shop floor?

From both observation and conversation, it was clear to me that, as I had experienced elsewhere in Namibia, Afrikaans dominated day-to-day administration, as well as communication between supervisors and workers. It is the acknowledged *lingua franca* amongst the Ovambo people—the largest language group within the facility—Damara-Nama, and some Herero peoples. Supervisory personnel, predominantly black Namibians, in one division, for example, were described as Afrikaans-speaking, then Oshiwambo, then Damara. Some executive commentaries indicated that the larger percentage of workers were "bilingual"—indicating Afrikaans, not English, as the alternate language.

Where, then, does English fit in the communication network? Consistent with my previous experiences in Namibia, unless prompted by an English speaker, it was almost never heard. Amongst themselves, upper management personnel spoke either Afrikaans or German. Yet, during these conversations, and before experiencing this fact myself, I was told that OHS training was given in English.

Some personnel did see English language training as a barrier to OHS knowledge transfer. For example, some of those who had watched informational and instructional DVDs produced for the company—and not all had—pointed somewhat disparagingly to the fact that they were, for the most part, in English. There was also some doubt expressed about the effectiveness of teaching from the English OHS training manuals. On the other hand, it was "believed," on the part of executives who maintained that language was not an issue, that English OHS training was understood.

Looking at language more broadly, as including not only daily communication modes, but also "language of safety," “language of science,” and "language of technology," there was stronger consensus that it presented a barrier to OHS knowledge transfer, particularly concerning scientific knowledge. As mentioned above, a communication challenge was sited, between what "technical" (systematic) specialists put down on paper, and how it is conveyed through the “chain of knowledge” to "ordinary" people in order to be put into action—suggesting the likelihood of a sort of “broken telephone.”[14]

Summary

Observations and encounters at the company guest house, in classrooms, and with subsidiary upper management personnel produced a preliminary linguistic picture. In the guest house, some housekeeping and maintenance staff communicated in Afrikaans, but a number spoke one or another Namibian African language only. Although English was used as the *lingua franca* amongst boarding house residents and between them and administrative personnel, it was rarely heard outside of these occasions.

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[14] The reference to “broken telephone” was common in conversations and interviews. It refers to a game in which a sentence is spoken into the ear of one person in a group, then by that person to the next, etc. until the round is completed, at which time the last person speaks the phrase s/he heard—very often, this last iteration is quite different from the original phrase.

No Namibian African mother tongue instruction was encountered in any of the public schools I visited. In the public primary school, the student population of which was black Namibian, Afrikaans was the designated "mother tongue," and English was taught as a second language; for some students, it was clearly more akin to a foreign one. English was the MOI from grade 4 forward, with students having varying levels of proficiency. This school reported high drop-out rates. At the secondary level public school, attended predominantly by black Namibian students, content was taught only in English, presenting particular problems for students in Maths and Sciences. A teacher reported high dropout rates at this school as well.

Afrikaans dominated private schools that I visited, which had predominantly white student populations. At the alternative school, English was taught as a second language and, at the middle school level, natural sciences classes were conducted in English, heavily mediated by Afrikaans. The private school advertises itself as an "Afrikaans school;" English is taught as a subject throughout the grades, but Afrikaans mother tongue is privileged.

At the subsidiary, upper management personnel agreed on many issues concerning OHS policy non-compliance among shop floor workers, and emphasized some factors as perceived causes. However, concerning English MOI, there was no consensus as to it presenting a particular barrier to compliance. Though it was viewed by some as a constraint to information transfer, connections between language issues, learning, non-compliance, and hazard and risk management was for the most part not made. For these nine executive cohort members, language was simply one of a number of more pressing perceived causes of shop floor worker non-compliance. Consistent with Lindhout and Ales's (2009) study findings, language issues were not strongly associated by management personnel with danger and risk in the subsidiary environment.

Two Considerations Before Entering the Classroom

Before exploring, in Chapter 5, workers' perspectives concerning English language instruction, materials, and communication, it will be helpful to have a sense of the language abilities of shop floor workers, as assessed by some of their peers during interviews. A word about subsidiary hiring practices, specifically the use of psychometric testing, will also help to orient the Narrative Snapshots, Participant Perspectives, and Discussions that follow.

What are the English Language Capabilities of Shop Floor Workers?

Concerning oral English language skills, it was said that,

> *[There is a] problem when the trainer asks, "English or Afrikaans?" Some cannot speak either, but will not say so.* (P3, May 26, 2015)
>
> *[Approximately] 15% don't have English or Afrikaans.* (P4, May 21, 2015)
>
> *Old and young without English skills.* (P5, May 25, 2015)
>
> *Not all workers educated in English.* (P6-9, May 21, 2015)
>
> *Older men generally speak only Afrikaans and Mother Tongue.* (P12, May 18, 2015)

With regard to English reading and writing skills among their peers, interview participants referred to,

> *[Incident] reports [that] are in English, and not all can understand, but it is on paper with authority…so, they sign.* (P2, May 25, 2015)
>
> *Difficulty reading for understanding.* (P6-9, May 21, 2015)

Reference was also made to literacy skills in other languages:

> *[Approximately] 5% can't read or write in ANY language—older workers, mostly, but some age 30 and up.* (P6-9, May 21, 2015)

Dover Psychometric Testing

Dover Systems is a South African company. Amongst other industrial contexts, its testing system is used in the mining sector; the following description is taken from the company web site.

> [Dover Psychometric testing] is a basic skills-competency measurement tool, which looks at fundamental practical skills:
>
> - Eye-hand-foot + basic manual co-ordination;
> - Reactions to stimuli in various environmental conditions;
> - Auditory discrimination;
> - Estimation of the speed/direction of moving objects;
> - Basic decision-making abilities and concentration levels under monotonous circumstances;
> - It can also be used in recruitment to narrow down large numbers of applicants for a job. (Dover Systems, n.d.)
>
> The testing system is **Culture Fair**—if administered properly, **every step**

> **of each test gets explained** by the administrator and the candidate need never have operated a computer before in order to do the test/s. Thus **prior computer experience is not required** as the administrator ideally controls the process. Even **illiterate candidates can do the tests** as the administrator ideally explains the basic concepts of the tests, then assists candidates with the **standard Practice examples** before allowing them to continue—administrators control the assessment process, with candidates being required only to listen and respond to instructions. (Dover Systems, n.d., emphasis in text)

As can be seen in the above description, the testing requires significant administrator support. That any human-made testing system can genuinely claim to be "culture fair," is a larger issue than can be discussed here. However, what is pertinent to this study is the fact that the human interaction required to conduct the test cannot be culture free, most significantly as regards language. As Foxcroft, Paterson, le Roux & Herbst (2004) concluded in the findings of a major survey of South African psychological assessment practitioners' test-use patterns and needs, "the issue of language . . . in terms of the administration of the test . . . was identified as problematic" (p. 120). At the subsidiary, for example, it would be highly unlikely that the administrator(s) of the Dover psychometric testing would be fluent in the many languages of job candidates. Furthermore, testing of candidates' English language skills is not an element of the psychometric kit; nor is the lack of English abilities considered a barrier to being hired.

Before being hired, candidates for shop floor positions at the subsidiary must undergo Dover Psychometric testing. In the Training and Development division, it is acknowledged that some candidates/workers cannot read and write in any language and that, regardless of Dover-testing success, this constrains training success. However, not hiring "illiterates" is not considered an appropriate solution (Informal Conversations, February 24, 2015). So, although the Dover testing might be considered suitable "even [for] illiterate *candidates,*" in that reading and writing skills are not necessary to successfully complete the testing, some question would seem to remain as to the viability of future training and testing of hired, "illiterate" shop floor workers using written, let alone English-language, training materials.

In Chapter 5, against the orienting backdrop provided in this chapter, five different OHS training sessions are each described; explored through the lens of participants' perspectives

concerning the use of English-language instruction and materials in these modules; and, examined through theoretical discussions of emergent themes. The approach adopted in both this chapter and Chapter 6 is intended to respond to the main research question that guided this case study:

> How do English language instruction, materials and communication present barriers to OHS knowledge transfer and exchange between ESL/EFL instructors, supervisory personnel, and shop floor workers; what does this look like a) in the classroom, and b) on the shop floor?

In addition, these data-rich chapters substantially supported the findings that responded to the case study's corollary research questions—addressed in Chapters 7, 8, and 9:

1. How do English language instruction, materials and communication influence shop floor workers' compliance with OHS policy?
2. How do workers compensate for linguistic barriers to ensure their health, safety and security on the shop floor?
3. In this particular context of cultural and linguistic diversity, where effective knowledge transfer and exchange is essential for health, safety and security, how might the 'language problem' be mitigated?

Chapter 5: "What does this look like in the classroom?"

Introduction

Each observation of a training module added a thicker layer to my understanding of the facility, the workers' place within it, and the language issues they faced. The narrative snapshots, participant perspectives, and theoretical discussions included in this chapter illustrate and explore this expanding view of the case study landscape.

The Environment and Health and Safety Induction sessions were my first exposure and orientation to the manner in which in-house OHS training was designed and delivered to facility employees. I was a non-participant observer of these two classes, trying to get a broad sense of what English language instruction, materials and communication within this ESL/EFL context looked like. From the Health, Safety and Environment Representatives training module through the Confined Space Training and, finally, the Health and Wellness Peer Educators Workshop, my position gradually became that of an observer as participant (Kawulich, 2005); I was increasingly invited, and happily accepted, to interact with group members.

Environment Induction (March 3, 2015)

The Environment Induction module is Part 1 of newly employed workers' first exposure to the processes, impacts, hazards, and safety measures concerning the facility's operations. It also serves as a refresher course for current employees, from the middle management level to shop floor workers.

This training session ran from 9:00-12:00.

Narrative Snapshot

I walk into a darkened classroom and sit behind training participants. My eyes are immediately assailed by the yellow background of a Power Point (PPT) frame projected onto a screen at the front of the room; many, many yellow frames later, they had not yet adjusted.[15] The long, bench-like desks are placed in typical classroom rows. Assuming the "teacher position" at

[15] I was later told that the problem was with the projector, not the PPTs.

the front of the room, just to the side of the screen is the instructor, almost overshadowed by the commanding presence of the English text, densely packed within its yellow backdrop.

Training participants, all of whom are black—as is the instructor—are asked to enter their names on an attendance register, which also requires that they identify their "race"[16] and language. Despite this apparent nod to linguistic diversity, language abilities are not otherwise addressed, suggesting the assumption that all participants understand, speak, read and write English. English is not the first language of the presenter; s/he does, however, speak it clearly.

Other than the instructor's self-introduction, no conversation precedes the presentation. No discussion of workers' previous mining experience occurs. No assessment of their prior knowledge is conducted.

The instructor reads, word-for-word and speaking very quickly, from the slides. Participants have not been given a manual; no note-taking is observed among class participants. From time to time, the instructor stops to emphasize items that will be "important for the test" and to ask if there are questions or comments; no participant asks questions, indicates a need for clarification, or comments. There is virtually no interaction between the instructor and class members. Participants appear almost hypnotized by the PPT content and word-for-word recitation.

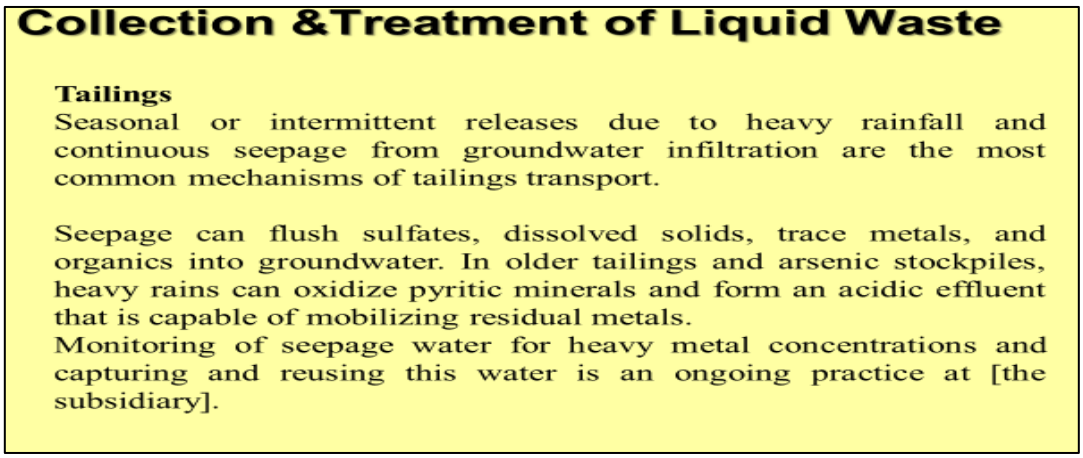

Figure 2. Collection & Treatment of Liquid Waste (PPT slide). Reprinted from *Environment Induction* (PPT presentation), with permission[17].

[16] Participants entered their tribal designations in this space, e.g. Damara-Nama; Ovambo; Herero.

[17] Permission for the use in this dissertation of this and all figures following that include "with permission" is given by the Company in the Consulting Agreement (2014): "Research results and data may also be shared with

I note the very technical vocabulary; for example, oxidize, pyritic, effluent, in Figure 2, above. I can't help but wonder if the educational and English language levels of training participants are sufficient for understanding. My doubts grow as I begin to notice body language that seems to indicate confusion and frustration.

At the end of the module, participants are given a 12-item, multiple choice quiz to test their knowledge, with the instructions, "Check all that apply." As they move through the quiz, the distressed body language becomes more pronounced, with some participants nervously looking around the classroom to gauge the progress of their peers. From my notes:

> *The…exam seemed to present a problem to the participant sitting directly in front of me…others?* (Overing, Field Notes, March 3, 2015)

Figure 3, below, gives an example of the question and answer choices that might be considered to correspond with and/or be deduced from information given in the PPT slide shown in Figure 2, above. I wonder if the PPT presentation has made the meanings of "impacts" And "biodiversity" sufficiently clear, and notice the confusing sentence structure in the second question example.

[Company] operations have direct impacts on land/biodiversity, water and air.

☐ True ☐ False

Is it Ok not to report all leaks and burst pipelines to the area owner or the Environmental department.

☐ True ☐ False

It is OK to spill oil, diesel and chemicals on the ground and in the water.

☐ True ☐ False

Figure 3. Quiz: Environmental Induction (sample questions). Reprinted from *Environment Induction* (printed materials), with permission.

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appropriate Concordia University personnel as and if required for academic review purposes" (Article 4, Para 3). In some cases, figures have been cropped to protect confidentiality.

The second page of the quiz is a Presenter Evaluation Form, designed on a Likert scale, where 1=strongly disagree and 5=strongly agree (Figure 4). Questions include:

5.	The presenter was responsive to questions.	1 2 3 4 5
7.	The presenter hold (sic) the attention of the audience.	1 2 3 4 5
10.	This presentation was well tailored to the audience.	1 2 3 4 5

Figure 4. Presenter Evaluation Form (sample questions). Reprinted from *Environment Induction* (written materials), with permission.

In my own immediate response to these three items, I note the following:

> *5. NO questions were asked by participants. When the facilitator asked or solicited questions, participants who did speak were very hesitant to do so;*
> *7. It was very difficult to tell whether the audience was attentive. The lights were dimmed, the presenter spoke very quickly, did not often stop to make sure that participants understood, and did not simplify language (likely because there was no indication from the participants of a difficulty);*
> *10. The language and content of this PPT presentation seemed particularly unsuited/tailored to the audience, from what I could see/hear.* (Overing, Field Notes, March 3, 2015).

Statements 1-10 are followed by a free-form writing section, Comments & Recommendations for Change.

A quick review of participants' completed quizzes indicates varying, but generally low degrees of understanding and/or information integration. Some participants have partially/fully completed the Likert scale questions; however, no written comments and/or recommendations are noted.[18]

Participant Perspectives

Later in the study, I conducted a very informative interview with the instructor. S/he was born and raised in the town adjacent to the facility, and is an Oshiwambo first language speaker. In defiance of historical and ongoing South African/Afrikaans domination within Namibia, s/he has learned and speaks little Afrikaans; learning English, on the other hand, has been a top priority tied in with educational aspirations.

[18] I was not able to record test results.

At the time of our conversation, the instructor had completed four internships at the company as a bursar student; s/he has since been accepted into the Master of Science Degree Course in Geo-Information Science and Earth Observation for Water Resources and Environmental Management, at the University of Twente, The Netherlands.

The instructor told me that s/he had no input into the design and content of the Environment Induction module. S/he was trained by one of the program developers to deliver information provided for the presentation by the highly educated, academically spoken Manager, Environment. There was no opportunity to insert knowledge that s/he had acquired from the BA, Environmental Biology and Geology program s/he was in the process of completing. Nor was there any opening to present the materials in a more interesting, understandable and personalized manner.

When I asked the instructor what s/he thought about the suitability of the Environment Induction materials to the targeted learner group, s/he pointed out that within the shop floor operator population there are varying degrees of "English technical language" comprehension, with some groups understanding it well, less well, and not at all. For many, then, teaching materials as scientifically and technically advanced as those used in the Environment Induction module would constrain learning. This perception was echoed during another interview, with a Health, Safety and Environment employee, who suggested that,

> *The present Environment Induction should be for advanced training. For new workers, it must be simplified . . . to include essentials. . . . Safety must be* ***simple****: pictographs, videos, visuals are the best.* (P14, April 21, 2015)

The Environment Induction instructor pointed to limited basic English language skills as compounding the problem. S/he expressed concern that,

> *In the "general worker group," English becomes a very big problem. Some [are] unschooled, short-schooled [with] no English, but Afrikaans a little. [For those] aged 40 and older*[19]*, many have [only] Afrikaans due to schooling under South African rule.* (P17, June 3, 2015)

Moreover, s/he pointed out cases where,

> *...even if taught in Afrikaans, it might still only be to Grade 4—parents may have pulled [children] out or Afrikaans schooling [may have] stopped,*

[19] As discussed in Chapter 3, this would represent approximately 50% of the employee population.

due to Independence. (P17, June 3, 2015)

Discussion

Observing participants in this training module, it was very hard to know what previous experience, knowledge, and abilities they brought to their new employment. It seemed that they had just minutes before arrived at the facility. It was also difficult to know what languages they spoke; whether they could read or write—in any language; whether or what level of education they had attained; if they were familiar with science and technology language; if they had ever faced a PPT presentation. I knew no more about these considerations at the end of the class than I did at the beginning; more to the point, neither did the instructor.

The 'power' of PPTs. What seemed to be assumed was that if the information was projected before them, and read to them, it would somehow indelibly mark itself on their minds—in English—and somehow translate to environmentally appropriate behaviour. That is, that the PPT, "a thoroughly established technological way of conveying the (western/scientific) knowledge and skills they are expected to acquire" (Kirova, Massing, Prochner & Cleghorn, 2016, p. 61), had the literal 'power' to transmit and imprint very complex and for many, no doubt, new information by some magical process of knowledge/language osmosis.

This approach to knowledge "sharing" could be said to reflect the overall management culture of the subsidiary: hierarchical and linear. Flow charts, spreadsheets, information sharing programs—in English—abounded, pointed to as proof that the best of technology was aimed at and primed for the regulation and transmission of knowledge. Through the use of technology, the "systems," as one upper management employee stated, were "now on paper." For example, the HHSEPS department used the Digi Lex Safety, Health, Environment and Quality (SHEQ) Management System, which was referred to by one executive as "easy" to use. The acknowledged challenge was how to communicate between "technical," i.e. "systematic," and "ordinary" people; how to get those systems in action. I was told that, to this end, access to the Digi Lex system was open to anyone with a company email address. For shop floor workers, however, access to company computers was very limited; PPTs were adopted by the Training and Development division as the appropriate technological solution for information transfer.

Yet, as Kirova et al. (2016) pointed out, "this form of organization and communication of information presumes that all students, regardless of their cultural backgrounds, are adept at

interpreting information presented in a linear, written, and summarized or outline form" (p. 65). During conversations with upper management personnel, there seemed an implication that if workers, many un/semi-educated with limited English language skills, did not "integrate and internalize" the information presented in this "systematic" format, this was a failure on their part, not on the part of inappropriately employed technology, content, and/or language. As one shop floor operator said, however,

> *Processes [presented] don't necessarily translate into teaching and learning. There is a barrier.* (P2, May 25, 2015)

That no questions were raised, and very few comments were made during this class, and that the tests indicated low levels of understanding seemed to me to indicate that workers were overwhelmed by the information being pressed upon them. It speaks to the point made by Kirova et al. (2016) that, "once words are made visible as text, they have enduring power and authority; promoting a specific knowledge and way of knowing which "forecloses on other forms of knowledge"" (p. 68).

Indigenous/Traditional Knowledge. That "other forms of knowledge" were likely held by training participants, and certainly unacknowledged, introduces an additional complication to the mix. If some class members held knowledge about the environmental impacts of the mining process, and the sustainable stewardship of the land, but in non-Euro-Western or Indigenous forms best explained in local languages, no opening was given to share it.

The possibility very much exists that some of the workers are descended from long lines of family that, generation after generation have, and may continue to mine locally or be employed in mining. Although it is difficult to isolate exact dates, it is known that many areas in the enormous, minerals-rich northern region of Namibia had been the site of artisanal mining[20] and processing by Indigenous groups for centuries prior to the colonial incursion; the San peoples, for example, mined ore in the northern regions, and traded with Ovambo peoples, who then processed the ore. Ross (2011) reported that there were currently some 2,000 artisanal miners of various minerals, many of them situated in the north of the country.

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[20] Artisanal mining uses minimal machinery. It is estimated that more than 100 million people, mainly in developing countries, continue to rely on this and small-scale mining, which uses low technology, for income (miningfacts.org, 2012).

Local peoples were also forced into mining, as slaves or indentured workers, during German and South African colonial rule. With no consideration for their safety, or provision of health services by the mine owners, workers likely developed survival strategies, "a culture of 'self-preservation'" (Tuchten, 2011, p. 145), amongst themselves and passed them down over time. Exploring new employees' previous knowledge prior to beginning the Environment Induction presentation might have exposed this knowledge, contributed to their understanding, and allowed for integration of new information. On the other hand,

> . . . when students' prior knowledge is rooted in traditional knowledge and if that knowledge is *not* brought into classroom lessons, a form of collateral learning can be expected to take place. Collateral learning (Jegede, 1995) refers to the extent to which learners may compartmentalize new knowledge alongside knowledge that stems from prior experience, rather than integrating the new with prior knowledge. (Cleghorn, 2005, p. 108, emphasis added)

As for environmental knowledge, and as Dashwood (2007) and Hecht (2010) pointed out, it was Euro-Western industry that changed the landscape, poisoning water sources and agricultural land, and undermining or making obsolete traditional stewardship guidance. Local peoples did not face environmental problems on this scale before; therefore, there are often no traditional words and concepts to understand them, let alone to translate from the language of science and technology projected at them from the PPT screen.

Health and Safety Induction (March 3, 2015)

The Health and Safety Induction module is Part 2 of newly employed workers' first exposure to the processes, impacts, hazards, and safety measures concerning the facility's operations. It, too, also serves as a refresher course for current employees, from the middle management level to shop floor workers.

This training session ran from 1:00-4:00.

Narrative Snapshot

After a short break, training participants from the Environment Induction have regrouped in the same classroom. The lights are on, and a different instructor stands at the front of the

classroom, where a new PPT frame—a white background, much easier on the eyes—is projected on the screen. The instructor is chatting a little with participants, in a mix of Afrikaans and one or two African Namibian languages, as all settle in. Once again, participants are asked to enter their names on the attendance register.

This time, before beginning the class, the instructor, whose first language is Otjiherero, asks about language abilities, referring to her/his own English as "not perfect;" it is, to my ear, quite accented, but not particularly more so than most English speakers in Namibia. Once again, there is no assessment—informal or formal—of participants' previous knowledge and/or experience.

As in the Environment module, all materials are in English. Unlike the previous instructor, this one is quite attuned to signs of non-comprehension and/or confusion. However, though s/he is making the effort to switch between fluent Afrikaans, a little bit of Oshiwambo, and Otjiherero if the need is apparent, the language of instruction is still predominantly English.

Compared to the Environment Induction training session, there is a more comfortable and relaxed feel to this class: some participants are asking questions, some are answering, most seem more engaged. They are not being read/lectured to and there is some humour; so, they seem to feel less intimidated.

The PPT presentation, which was developed by this instructor, is less wordy than the Induction one, uses many more graphics, and is much more dynamically delivered. I begin to notice, however, that many of the illustrations (see Figure 5, below) are neither relevant to the facility context—a dark, dirty, loud, hot, oppressive indoor environment—nor representative of the worker demographic—black, male, shop floor operators wearing various permutations of Personal Protective Equipment (PPE).

Figure 5. Horseplay (PPT slide). Reprinted from *Health and Safety Induction* (PPT presentation), with permission.

They are also, at times, very simplistic, even childish, and possibly disrespectful of the adult learners in the room (See Figures 6, 7, below).

Figure 6. Noise (PPT slide). Reprinted from *Health and Safety Induction* (PPT presentation), with permission.

Figure 7. Unsafe Acts (PPT slide). Reprinted from *Health and Safety Induction* (PPT presentation), with permission.

We're about 20 minutes into the class, and the door opens. A small group of new participants—the majority of them white—enters, clearly expecting to be admitted at this late time. They are. As the class progresses, I'm coming to understand that this new group is made up of current employees, who hold higher level positions in the subsidiary than the original group, and are taking the "refresher course." This is becoming clearer as some members of the new group are quite talkative, while the original group members are more and more quiet, and the instructor visibly less confident in his/her delivery. Afrikaans has quickly emerged as the language of a running "private" commentary within the now dominant group.

This refresher course is a requirement; it does not, however, seem to be taken very seriously.

There is no test at the end of this module. I have not seen any notetaking by participants.

Having completed these two modules, new employees will take on their tasks within the facility. Their health and safety, as well as that of their fellow workers, will depend on how much they have taken in from this training.

Participant Perspectives

During interviews with shop floor workers who participated in the Health and Safety Induction module, participants contributed numerous comments concerning the effectiveness of the training session. Language emerged as a significant issue.

I conducted a group interview with four shop workers, which was organized by one of the participants in the Peer Education (PE) training module, who recruited the other three from within their division. The PE participant spoke English very well. The three recruits spoke it at varying levels, and needed translation assistance at times during the conversation. I opened with the very general question: "Is there a problem with Health and Safety?" English language instruction in Health and Safety training featured largely in their responses:

> *Safety training is always in English; not all workers are educated in English.*
>
> *The manual and theory are **only** in English. Even if translated into Afrikaans, the test paper is in English.*
>
> *[There is] difficulty reading for understanding.*
>
> *Information should be printed in . . . **all** languages.* (P6-9, May 21, 2015)

Another participant, a safety officer and operator on the shop floor, when asked about training problems faced by workers, responded adamantly:

> *The whole thing is the language!* (P12, May 18, 2015)

Though somewhat tempered, this assessment was reinforced by a Human Resources employee educated in industrial psychology. Regarding Health and Safety Induction training, s/he stated that,

> *[Workers] need understanding or safety is compromised. Language **is** a barrier!* (P15, April 30, 2015)

Concerning workers' understanding of Health and Safety teaching and materials, a training facilitator commented,

> *[Workers] say they understand, but they don't.* (P13, May 19, 2015)

My own experience in the Induction training classroom was that, when asked, participants who answered almost invariably indicated Afrikaans, not English, as the language they knew better; many did not answer. If, however, they were asked if they understood English, most would answer yes. This is not uncommon in multi-lingual work settings; for example, concerning "Latino, or Hispanic" immigrant workers in Canada, Vazquez, Fernando, Stalnaker and Keith (2004) found that, "Latino workers usually say yes, regardless of whether or not they understand" (as cited in Neufeld, 2011, p. 20).

A number of interview participants, including the four in the focus group, insisted that OHS information should be presented in "simple form and in all languages" (P6-9). While citing translation as a minimum requirement, one training facilitator insisted that,

> *Trainers should learn the necessary languages. . . . The first question workers should be asked: "Can you read and write?*[21] *In what language?" Then, training should be available in the Indigenous language of choice.* (P13, May 19, 2015)

This opinion was reinforced by a shop floor worker, who said that,

> *[The company should] hire and train people who know languages. Knowledge should be presented in [workers'] language.* (P4, May 21, 2015)

When asked about the possibility of providing training in Namibian African languages, however, a middle management HSE employee responded with an argument that will ring a familiar tone for those who promote mother-tongue education:

> *How to translate in the many other languages? Some will call "discrimination" if not all languages are used, so English is used.* (P14, April 21, 2015)

Participants also emphasized the need for simplicity in Health and Safety training:

> *Information should be printed in simple form. . . .* (P6-9, May 21, 2015)
>
> *. . . with diagrams, visuals, and videos that are local and relevant.* (P14, April 21, 2015).

To be fair, it would seem that the Health and Safety Induction module attempted to fulfill the "simple" qualification. However, the results were an overly simplistic presentation that, for at least one shop floor operator, prompted the perception that,

> *. . . management thinks, "These people, they are foolish."* (P1, June 1, 2015)

That is, not trainable beyond the most rudimentary level.

Discussion

[21] Indications during conversations and interviews were that some shop floor workers did not read or write in any language. However, when it was suggested by an employee in the training department that "illiterates" should not be hired, this was considered an unacceptable option. It is, therefore, known by training personnel that lack of reading and writing skills is a factor, and a likely contributor to ineffective knowledge transfer in the current training design. The increasing use of visuals, videos, signage, and situated learning would appear to be an attempted accommodation based on this reality.

Robson et al. (2010) categorize training approaches according to degrees of engagement: low, medium, and high. Both the Environment and the Health and Safety induction training modules represented text-book cases of low engagement training.

> Low engagement is defined as training that uses oral, written or multi-media presentations of information by an expert source, but requires little or no active participation by the learner other than attentiveness. It may include some interaction between instructor and trainees, or post-tests of learned material without feedback of test results to trainees. Examples include lectures with or without brief question-and-answer periods, videos, pamphlets, manuals that do not contain interactive exercises, and computer-based instruction that is essentially an electronic slide show, lecture or textbook. With these low engagement training methods, the trainee does not have an active cognitive or behavioural role in the learning process. In many cases, trainees are simply required to attend the training session and sign a log indicating they were present. In low engagement training, trainees notably do not receive hands-on practice, nor do they engage in group or individual problem-solving activities. (Robson et al., 2010, pp. 4-5)

Receiving this type of low engagement training in an alternate or unfamiliar language would not enhance the experience.

The use of cartoons and visuals in the Health and Safety PPT presentation demonstrated an attempt to engage participants. It also aimed to "make it simple," an approach that O'Connor, Flynn, Weinstock, and Zanoni (2014), for example, affirmed, pointing out that "materials that rely primarily on illustrations, with only limited text in simple language, have been used effectively to train workers in a variety of settings" (p. 6). However, O'Connor et al. continued, "such materials, when done best, *are not simplistic*, but rich in content, presenting a recognizable human drama that provides an interesting context in which to convey an OSH-related message" (p. 6, emphasis added).

Regarding Figure 5, above, in addition to the simplistic nature of the representations, and despite the "funny" illustration, some of the language was ambiguous at best. Does "horseplay" cross linguistic and cultural divides? In Figure 7, is "operational" not a little obtuse? What is

entailed in “abusing fire extinguishers”? And, really, what does a drunken white man dressed in “business casual” and sloshing around a martini have to do with the risky realities of black workers on the shop floor? The goal of these frames seemed more to entertain than to inform—a not uncommon misdirection of PPT usage. From my perspective at the back of the classroom, what they did not do is engage.

As Szabo and Hastings (2000) pointed out concerning the educational affordances of 21st century technologies, and PPTs particularly, “the challenge . . . is not to entertain students . . . but to improve or to facilitate learning” (cited in Craig & Amernic, 2006, p 151). The designer of the Health and Safety PPT presentation seems to have fallen into a trap predicted by Parker (2001), who “contended that presenters are concentrating more on “formatting slides—because it’s more fun to do than concentrate on what [they’re] going to say”” (Craig & Amernic, 2006, p. 151). This is not to say that technical information should not be presented in a “sufficiently interesting and attractive” way (Rollnick, 2004). In the case of the Health and Safety Induction presentation, however, many of the pictures trivialized hazards and risks, and infantilized the class participants, in an attempt to mitigate educational and linguistic barriers and make the material understandable.

Marginalization by simplification. Concerning institutional training materials, Massouleh and Jooneghani (2012), suggested that they are often “a reflection of the complex realities of the world of institutionalized communication” (p. 64), as well as the equally complex internal culture of an organization. They have their own rhetorical styles and discourses (Bhatia, 2002, as cited in Massouleh & Jooneghani, 2012, p. 64) and, much like academic texts within specific disciplines, understanding and being able to participate in the discourses can be as important as grasping the techniques and concepts (Gee, 1996, as cited in Rollnick, 2004).

The consequences of not grasping specialized language and imbedded discourses can be two-fold: lack of information integration and application, and/or inability “to function as a participant in the social practice of the discipline” (Rollnick, 2004, p. 107). Furthermore, as Rollnick (2004) also pointed out, “the challenge of acquisition of discourse is far greater for those whose primary language is not English” (p. 108), as is the case for participants in this study. How, then, to communicate essential health and safety information in mature and effective ways to ESL/EFL shop floor workers, when English is the language of industry, but

not the language of life? How to build the language that will allow for knowledge transfer? How to make specialized knowledge and discourses accessible?

A concern here is that adaptations of science and/or technical materials to the language ability levels of learners—making texts "readable" and/or "comprehensible and/or "entertaining"—often involves removing specialized language entirely and replacing it with more easily communicated vernaculars, or "life-world language" (Gee, 2001 as cited in Rollnick, 2004), or the types of visuals chosen for the Health and Safety Induction training module. A common consequence of this approach is that, unable to communicate at the higher levels of knowledge, learners with limited English technical language skills remain on the margins of specialist groups (Rollnick, 2004). One shop floor worker referred to this limitation, stating that,

*Change and advancement are **very** difficult.* (P4, May 21, 2015)

Having completed the Environment and Health and Safety general induction training units, new employees move into the jobs for which they have been hired within the various divisions of the facility. They will be integrated into their sections by the Superintendents, Supervisors, Foremen, HSE Reps, and their co-workers. They will receive further on-the-job training as required.

Health, Safety and Environment Representatives (March 19, 2015)

Following national labour legislation[22]guidance, Health, Safety and Environment Representatives (HSE Reps) at the subsidiary are nominated and elected by their peers once there are more than 20 employees in a division within the facility. According to the "HSE Representative Course Manual"[23] provided by the company training and development division, HSE Reps must be "employed in a full-time capacity in that specific workplace; informed of and familiar with the conditions and activities at that workplace or section." That is, they are expected to have a high level of knowledge relating to the processes, risks and hazards inherent in their particular sector.

[22] Labour Act, Act No. 11 of 2007, Section 43.

[23] This is a manual produced by the company; therefore, for reasons of confidentiality, it is not included in the References below.

"HSE Reps are responsible for First Aid, communication with Safety Officers, and Incident Reports" (P6-9, May 21, 2015). In order to successfully meet these responsibilities, they must be able to communicate with employees at various levels of the subsidiary: co-workers, foremen, supervisors, middle management personnel, union leaders. Although HSE Reps have more direct experience with the facility processes than, for example, Induction participants, there is no specific educational prerequisite for this position; therefore, language variety and ability would fall within the same range as that of their peers, as would literacy and educational attainment.

HSE Rep training differs from the Induction modules, and the Confined Space training discussed below, in an important way. Shop floor workers receiving Health, Safety and Environment Induction and/or Confined Space training are expected to integrate the information for their own security; although, clearly, their own safe practices will help to ensure their co-workers' safety as well. HSE Reps, on the other hand, are expected to share their OHS knowledge, to guide and direct their peers, to take responsibility for risk/hazard management. That is, they are meant to transfer their OHS knowledge to those working around them. From the English language classroom, where they themselves often struggle with comprehension, they will be obliged to translate—both linguistically and conceptually— what they have learned into the languages of the shop floor.

This training session ran from 8:00-4:00, with tea breaks in the morning and afternoon, and a break at lunch.

Narrative Snapshot

About two weeks after the Induction training experience, I am sitting in the same classroom; the instructor for this module presented the Health and Safety Induction. There are seven shop floor workers, all black, sitting in front of me. They are HSE Reps, about to receive specialized training related to their specific responsibilities to their peers, and to their employer.

The *de rigueur* PPT presentation is ready to go. Once again, the instructor is engaging with some of the class members before starting the training session, speaking in a mix of Afrikaans, Otjiherero, and Oshiwambo—no English. Once again, there is no assessment of, or invitation to share previous experience/knowledge; there is likely, based on these representatives having been chosen according to the stated requirements, an assumption of company OHS policy knowledge.

I'm excited, because this is my first opportunity to recruit participants for the study. Conforming to the communication mode that is judged by training and development specialists to be the most effective, I've taken over the screen, projected the "Invitation to Participate in a Research Project," and am explaining the research goals, study procedures, and anticipated participant contribution.[24] As I do this, the instructor is providing simultaneous translation into Afrikaans.[25]

Each participant has been given a Course Manual. Watching and listening to the presentation, I'm also following along in the manual, and noticing that some rather important PPT items are not, in fact, present in the manual, and that the instructor does not go beyond repeating what is on the screen. The information noted in the slide below (Figure 8), for example, could have benefitted from expansion/explanation/clarification that did not appear in the manual.

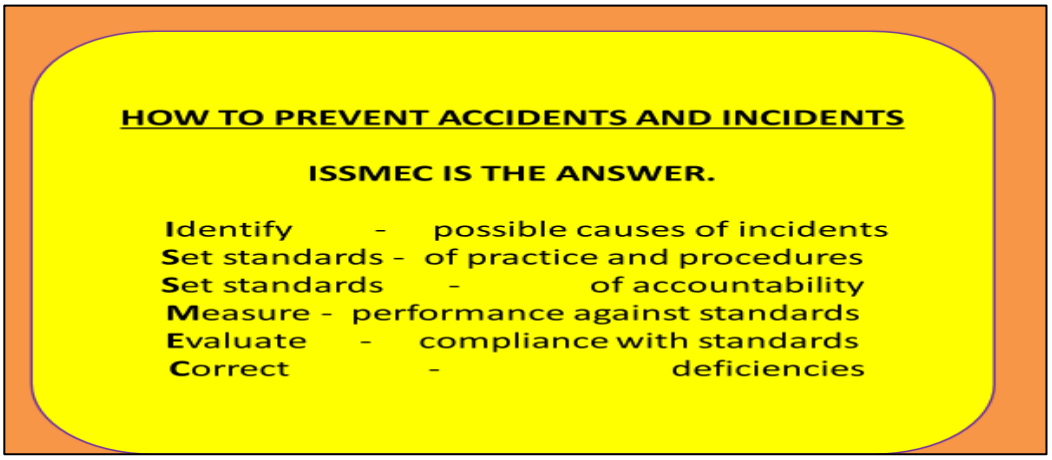


Figure 8. How to Prevent Accidents and Incidents (PPT slide). Reprinted from *Health and Safety Representatives* (PPT presentation), with permission.

Also, though great emphasis is placed on knowing the colour-coding and meaning of symbolic signs, shown in Figures 9 and 10 below, these graphics are not included in the manual for easy future reference. Signage is considered by HSE standards to be a key element in the

[24] All classroom recruitment was conducted in this manner.

[25] It bears reiterating, at this point, that all training materials—manual, examples of company forms, illustrative videos, PPTs—and the major part of verbal instruction are in English only.

identification and avoidance of hazards; ensuring that co-workers have a good understanding of their significance is part of an HSE Reps responsibilities.

Figure 9. Know Your Colour Coding (PPT slide). Reprinted from *Health and Safety Representatives* (PPT presentation), with permission.

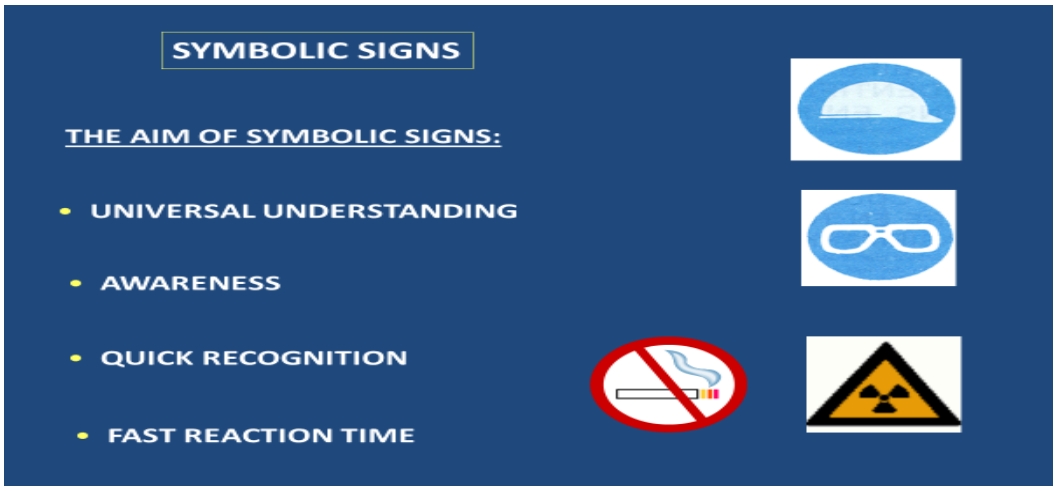


Figure 10. Symbolic Signs (PPT slide). Reprinted from *Health and Safety Representatives* (PPT presentation), with permission.

On the other hand, the explanations given by the instructor as the PPTs are shown are often less detailed than those in the manual. Figure 12, below, shows 1 of 4 explanatory pages in the manual that correspond to the PPT in Figure 11. In addition, the information provided in Figure 11 seems to assume that the meaning of "ISSMEC"—given three slides earlier—was fully integrated and understood.

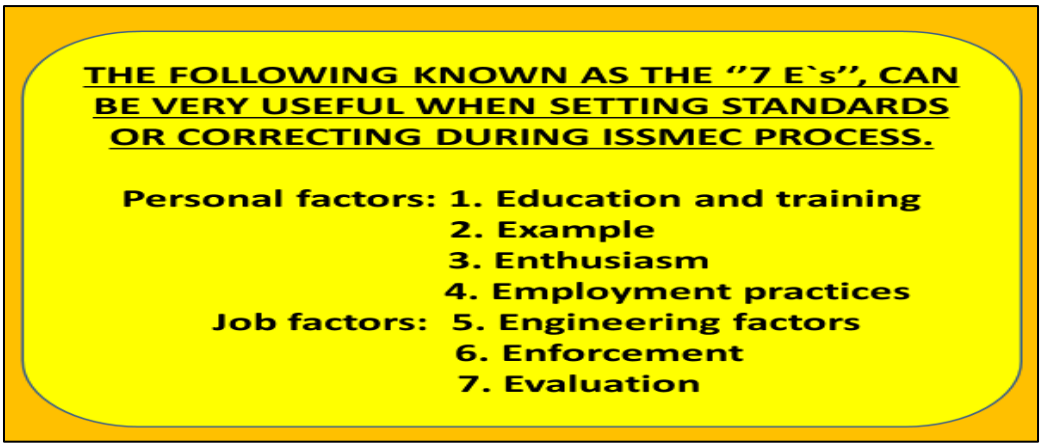


Figure 11. 7 E's (PPT slide). Reprinted from *Health and Safety Representatives* (PPT presentation), with permission.

JOB FACTORS

1. Engineering revision

PROBLEM

- Improper or inadequate mechanical design or safeguarding. The transmission belts and pulleys may not be guarded; poor ventilation system may allow fumes to build up and/or temperatures to rise.

SOLUTION

- If the equipment design is old or outdated it may be unsafe. Designs should be regularly review and revised to be in line with up-to-date hazards prevention and control methods and standards.

2. Enforcement (Last resort)

PROBLEM

- Poor work standards. Employees perform tasks on machines without following the safety, health and environmental standards or procedures.

SOLUTION

- Jobs must be studied and safety, health and environmental procedures established to ensure compliance with the minimum standards of the law and the company. Once established, everyone must be made aware of these standards, what the compliance measures are and how to implement and maintain them. Any employee who fails to follow training or other instructions for the prevention of safety, health and environmental incidents must be disciplined according to company procedures. The employer remains accountable for any acts and omissions of employees. Employees cannot be allowed to break the law on safety, health and environmental matters.

3. Evaluation

PROBLEM

- There are always changes in technology, methods and materials. Even the best plans and designs can become outdated.

SOLUTIONS

- Regular Review of safety, health and environmental programmes' successes and problems should be carried out. One complete, the findings should be evaluated.
- Safety, health and environmental standards should be measured against the latest findings and information available. Any changes, improvements or modifications should be made and

Figure 12. Job Factors. Reprinted from *HSE Representative Course Manual* (p. 31), with permission.

I wonder if the instructor is assuming that these will be read by class participants

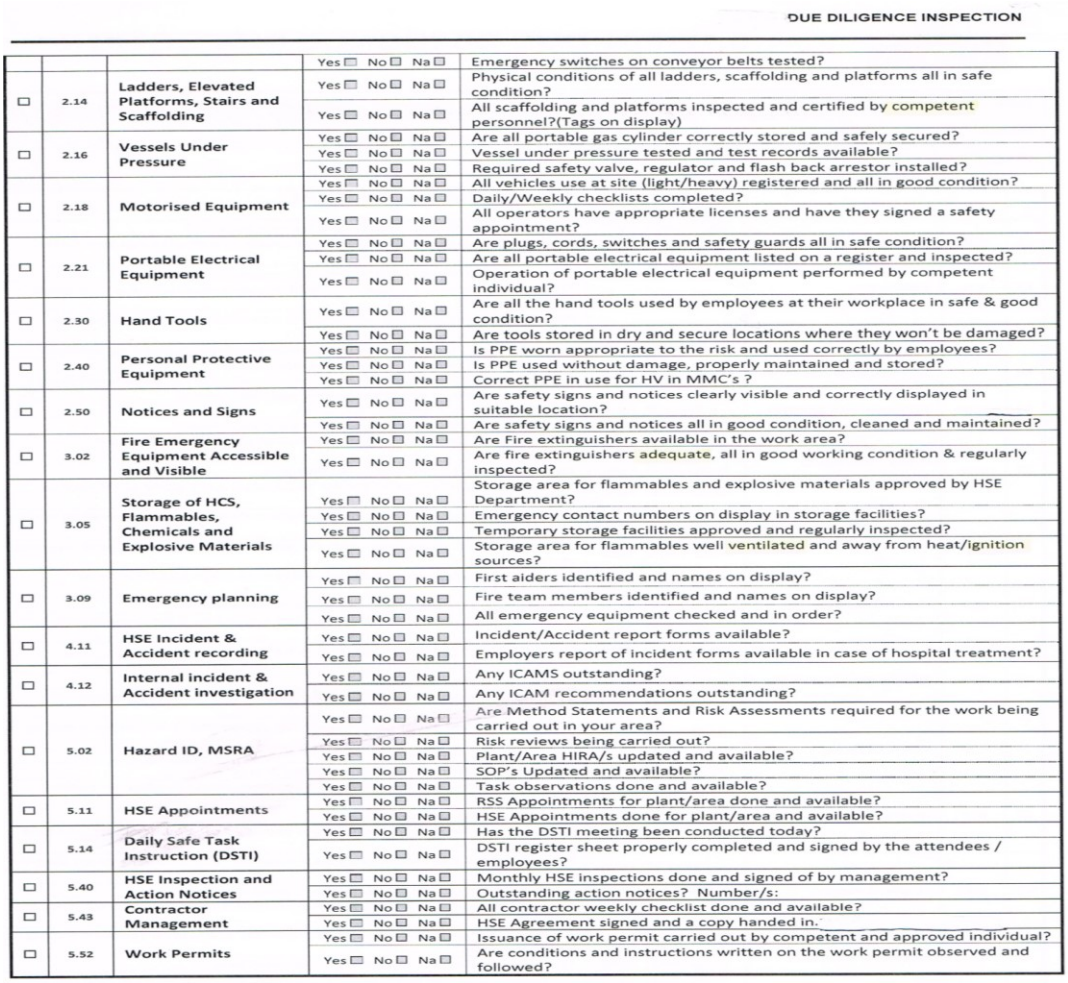
at a later time. That seems unlikely, though, because s/he is having to provide Afrikaans translation, and attempted translation in other languages when it becomes apparent that someone has not understood. From my field notes:

> *If it were not translated, would they understand? If not, what does this mean to health and safety on site?* (Overing, March 19, 2015)

In fact, class members are not being directed or referring to the manual very much, but instead, focusing on the PPTs and the instructor's presentation. Though each section of the manual concludes with a self-test and interactive exercises, as well as a space for note-taking, little time has been given to complete the questions, or taken to engage in group work. No one is taking notes; yet, there have been very specific suggestions/examples, in addition to the manual content, that might have been helpful to record.

I am watching a participant in the row in front of me, who is clearly having difficulty understanding the training presentation. The instructor has been trying to communicate, but the employee does not seem to speak any of the three languages s/he, more or less, knows. I am not hearing the click sounds of Khoesaan languages from this worker, so I'm thinking that the participant speaks one of the five Kavango, or four Caprivi languages. With words here and there, others are attempting to help out. I'm wondering how this HSE Rep will communicate the required OHS information to co-workers.

The instructor has included a number of videos in this module, and participants are responding well; seeing hazards, risks, and potential incidents in the "real" world is sparking discussion where lecturing about these has not. That the videos are in English seems to present less of a barrier to engagement with the content. One video, "When in Doubt," is particularly gruesome. It shows the consequences of working too close to cables lifting a heavy load: fingers lost, livelihood lost, uncertain future. It seems to have a real impact on class members. Another, "Safety Rap," is lighthearted, but effectively covers the essentials of proper PPE wear; the context, however, is street workers in a US city—far from the realities of a mining environment. More relevant to the mining context and representative of the shop floor workers, "Working at Height," an animated video, clearly shows the risks and consequences—in this case, death—of unsafe actions.



DUE DILIGENCE INSPECTION

			Yes ☐ No ☐ Na ☐	Emergency switches on conveyor belts tested?
☐	2.14	Ladders, Elevated Platforms, Stairs and Scaffolding	Yes ☐ No ☐ Na ☐	Physical conditions of all ladders, scaffolding and platforms all in safe condition?
			Yes ☐ No ☐ Na ☐	All scaffolding and platforms inspected and certified by competent personnel?(Tags on display)
☐	2.16	Vessels Under Pressure	Yes ☐ No ☐ Na ☐	Are all portable gas cylinder correctly stored and safely secured?
			Yes ☐ No ☐ Na ☐	Vessel under pressure tested and test records available?
			Yes ☐ No ☐ Na ☐	Required safety valve, regulator and flash back arrestor installed?
☐	2.18	Motorised Equipment	Yes ☐ No ☐ Na ☐	All vehicles use at site (light/heavy) registered and all in good condition?
			Yes ☐ No ☐ Na ☐	Daily/Weekly checklists completed?
			Yes ☐ No ☐ Na ☐	All operators have appropriate licenses and have they signed a safety appointment?
☐	2.21	Portable Electrical Equipment	Yes ☐ No ☐ Na ☐	Are plugs, cords, switches and safety guards all in safe condition?
			Yes ☐ No ☐ Na ☐	Are all portable electrical equipment listed on a register and inspected?
			Yes ☐ No ☐ Na ☐	Operation of portable electrical equipment performed by competent individual?
☐	2.30	Hand Tools	Yes ☐ No ☐ Na ☐	Are all the hand tools used by employees at their workplace in safe & good condition?
			Yes ☐ No ☐ Na ☐	Are tools stored in dry and secure locations where they won't be damaged?
☐	2.40	Personal Protective Equipment	Yes ☐ No ☐ Na ☐	Is PPE worn appropriate to the risk and used correctly by employees?
			Yes ☐ No ☐ Na ☐	Is PPE used without damage, properly maintained and stored?
			Yes ☐ No ☐ Na ☐	Correct PPE in use for HV in MMC's ?
☐	2.50	Notices and Signs	Yes ☐ No ☐ Na ☐	Are safety signs and notices clearly visible and correctly displayed in suitable location?
			Yes ☐ No ☐ Na ☐	Are safety signs and notices all in good condition, cleaned and maintained?
☐	3.02	Fire Emergency Equipment Accessible and Visible	Yes ☐ No ☐ Na ☐	Are Fire extinguishers available in the work area?
			Yes ☐ No ☐ Na ☐	Are fire extinguishers adequate, all in good working condition & regularly inspected?
☐	3.05	Storage of HCS, Flammables, Chemicals and Explosive Materials	Yes ☐ No ☐ Na ☐	Storage area for flammables and explosive materials approved by HSE Department?
			Yes ☐ No ☐ Na ☐	Emergency contact numbers on display in storage facilities?
			Yes ☐ No ☐ Na ☐	Temporary storage facilities approved and regularly inspected?
			Yes ☐ No ☐ Na ☐	Storage area for flammables well ventilated and away from heat/ignition sources?
☐	3.09	Emergency planning	Yes ☐ No ☐ Na ☐	First aiders identified and names on display?
			Yes ☐ No ☐ Na ☐	Fire team members identified and names on display?
			Yes ☐ No ☐ Na ☐	All emergency equipment checked and in order?
☐	4.11	HSE Incident & Accident recording	Yes ☐ No ☐ Na ☐	Incident/Accident report forms available?
			Yes ☐ No ☐ Na ☐	Employers report of incident forms available in case of hospital treatment?
☐	4.12	Internal incident & Accident investigation	Yes ☐ No ☐ Na ☐	Any ICAMS outstanding?
			Yes ☐ No ☐ Na ☐	Any ICAM recommendations outstanding?
☐	5.02	Hazard ID, MSRA	Yes ☐ No ☐ Na ☐	Are Method Statements and Risk Assessments required for the work being carried out in your area?
			Yes ☐ No ☐ Na ☐	Risk reviews being carried out?
			Yes ☐ No ☐ Na ☐	Plant/Area HIRA/s updated and available?
			Yes ☐ No ☐ Na ☐	SOP's Updated and available?
			Yes ☐ No ☐ Na ☐	Task observations done and available?
☐	5.11	HSE Appointments	Yes ☐ No ☐ Na ☐	RSS Appointments for plant/area done and available?
			Yes ☐ No ☐ Na ☐	HSE Appointments done for plant/area and available?
☐	5.14	Daily Safe Task Instruction (DSTI)	Yes ☐ No ☐ Na ☐	Has the DSTI meeting been conducted today?
			Yes ☐ No ☐ Na ☐	DSTI register sheet properly completed and signed by the attendees / employees?
☐	5.40	HSE Inspection and Action Notices	Yes ☐ No ☐ Na ☐	Monthly HSE inspections done and signed of by management?
			Yes ☐ No ☐ Na ☐	Outstanding action notices? Number/s:
☐	5.43	Contractor Management	Yes ☐ No ☐ Na ☐	All contractor weekly checklist done and available?
			Yes ☐ No ☐ Na ☐	HSE Agreement signed and a copy handed in.
☐	5.52	Work Permits	Yes ☐ No ☐ Na ☐	Issuance of work permit carried out by competent and approved individual?
			Yes ☐ No ☐ Na ☐	Are conditions and instructions written on the work permit observed and followed?

Figure 13. Due Diligence Inspection Form (sample page). Reprinted from *HSE Representative Course* (handout) with permission.

The final item before the test is a review of the Due Diligence Inspection Checklist, which must be completed by HSE Reps monthly. Figure 13, above, shows one page of a 3-page form that includes 32 categories and multiple items within each category, as well as a section for notes/actions; each item on the list must be checked, and checked off. The document is considered a crucial element of the facility hazard and risk management procedures; it is provided in English only. As the instructor takes us through the checklist, I'm noting words that, from my observations of non-verbal cues, might present a comprehension challenge for the members of this class, e.g. protrudes, demarcation, redundant, oscillating, competent, adequate. No one, however, asks for clarification.

The test that follows this presentation consists of 8 multiple choice, 8 true/false, and 5 short answer questions, with a total score out of 40, and a required pass of 70%. I assume that failing the test will mean being removed as the HSE Rep for the section; however, I was not able to confirm this. Given the unease I witnessed among class participants during the test-writing, I can only wonder how removal from the position could be effected each time a Rep fails the test—who would be left?

The worker to whom I previously referred as speaking no language that any other participant spoke, and whom I, of all people, ended up trying to assist, most certainly did not pass the test.

Unfortunately, I am unable to review the tests.

I have a potential participant from this group. Very interested to hear what s/he has to say.

Participant Perspectives

HSE Reps are meant to be a vital link in the "chain of knowledge" considered by upper management to be an essential element of OHS information transfer and hazard/risk regulation. The "HSE Representative Course Manual"[26] emphasizes this point: "Together with committee members, [HSE Reps] act as a central point for providing and receiving information." Within their divisions, Reps are given and assume a role of leadership among their peers (P2, May 25, 2015), telling workers the company rules, advising them (P3, May 26, 2015), and presenting their concerns to higher level personnel. Among the Reps with whom I spoke, their responsibilities "to ensure **all** have correct PPE and safety knowledge" (P2, May 25, 2015) were taken very seriously.

To fulfill these responsibilities, HSE Reps must often work as translators of both technical and day-to-day languages. As one Rep explained it,

> *[The] group uses the many languages that are present. . . . It's about* ***understanding****, so whatever language is needed for that.* (P3, May 26, 2015)

However, as a Health, Safety and Environment Specialist pointed out,

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[26] This is a manual produced by the company; therefore, for reasons of confidentiality, it is not included in the References below.

> *[Although] in groups, workers help each other with language . . . this can result in "broken telephone."* (P16, April 30, 2015)

Misunderstanding of processes and instructions that might result from this type of communicative confusion was also raised by the company corporate representatives at the onset of field research. It is one of the high-risk language issues isolated by Lindhout and Ale (2009).

Referring to the current Health and Safety Induction training, some shop floor workers raised the need for explanations of the "Yes and No" of safety, the "A, B, C, Ds" (P10-11, June 6, 2015); not only general policy presentations, but explanations of the hazards, risks, and safety requirements specific to their particular work divisions. The duty to provide this specialized information generally fell on the sectional HSE Reps on the shop floor. Responding to occurrences of non-compliance was a corresponding responsibility.

A shop floor safety officer with whom I spoke emphasized that in addressing workers' non-compliance, HSE Reps,

> *Must not just reprimand; must also* ***explain*** *consequences.* (P12 May 18, 2015)

Because "not all understand," however, this often involves a back and forth process:

> *First, re-explain, with patience. If [action] repeated, then go to supervisor who, with HSE Rep, talks and explains again. If [again] repeated, then a warning [is issued].* (P3, May 26, 2015)

Even in this peer-mediated process, in addition to the potential for confusion resulting from translation, language can be a contentious—and political—issue; for example, concerning the use of Afrikaans.

As discussed above, the Environment Induction instructor was quite adamant about avoiding the use of Afrikaans, and using English instead. An HSE Rep expressed stronger objections, stating that as the official language is English, s/he gets insulted and angry when others speak Afrikaans and expect that s/he do the same. Quite vehemently, s/he stated,

> *This apartheid is still here.* (P1, June 1, 2015)

Given that Afrikaans is often the only shared language on the shop floor, one can see how not only communication difficulties, but also political ones, might arise.

Discussion

The complexities of linguistic politics aside, what happens to explanation and advising, to providing the "A, B, C, Ds" of OHS in these linguistically diverse circumstances? How can HSE Reps who have limited English language abilities, have been taught from English materials, in English, Afrikaans, and smatterings of African Namibian languages, and who have exhibited confusion, lack of understanding, and/or unease with significant portions of the teaching/learning situation fulfill their responsibilities to pass on the crucial OHS information that will safeguard their peers? Under the same conditions, how can ESL/EFL shop floor workers, who have been instructed in Induction training sessions to report OHS concerns to their Reps, communicate these concerns in any effective way? Adding to these conditions in both cases, how much more difficult is this information sharing when languages are not shared?

Neufeld (2011) strongly stressed how important it is,

> . . . that health and safety training take into consideration the language skills of these workers to ensure full comprehension of training. It is not enough, to merely provide training and then assume that workers have learned the content and have the ability to apply the learned information. It is vital to health and safety of workers that they not only attend training but that they understand the training that takes place and can then apply it in their daily work. (p. 17)

This is particularly true for HSE Reps, upon whom falls much of the responsibility for ensuring the safety of their co-workers and their working environment.

As previously discussed, the effective communication of OHS information to and between industry workers is a minimum requirement in hazard and risk management (Lindhout & Ale, 2009; Robson et al., 2010; Tuchten, 2011). According to Lindhout and Ale (2009), instructions are "the single biggest source of language issues related dangers;" misunderstanding is the top rated of the six "very high risk' factors isolated in their study (p. 253).

> The main causes [of language problems] are poor education and training and poor information exchange, in writing, verbally and even by signs or gestures. Individual factors, the multi-lingual shop floor setting and a variety of circumstances affecting communication are the conditions under which a language issue can become a safety problem. (Lindhout & Ale, 2009 p. 248)

In Figure 14, below, Robson et al. (2010) indicate Individual Factors, including language abilities, as influencing all other elements of "workplace training interventions."

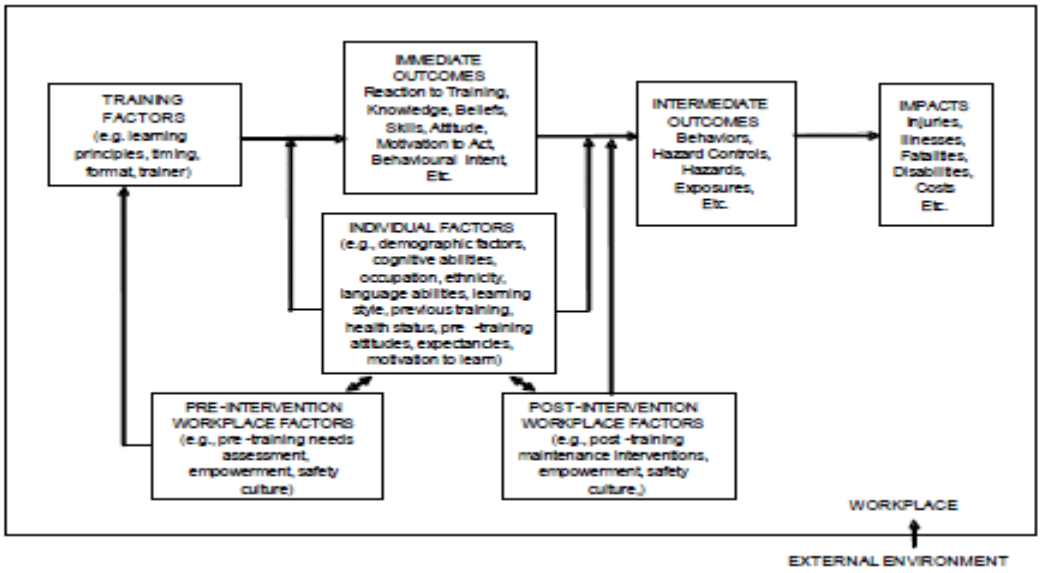


Figure 14. A conceptual model of workplace training interventions for primary prevention in OHS. Reprinted from *A systematic review of the effectiveness of training and education for the protection of workers* (p. 15), by L. Robson et al., 2010.

As a way of mediating language issues, symbolic signs and pictograms aim to communicate instructions and warnings in an immediately comprehensible way, across linguistic barriers. Ubiquitous presences globally, they are linguistically neutral, and assumed to be universally understandable. On industrial sites and in their immediate surrounding areas, signage is considered an important element of health, safety, and environment management (Industrial Accident Prevention Association, 2000).

Signs and symbols are viewed by some OHS specialists as particularly useful in multi-lingual work places (Cameron, Hare, Duff & McNairney, 2011), in order "to minimize dangers for workers arising from differences in language and culture" (Lindhout, Swuste, Tuenissen & Ale, 2012, p. 153). In the Namibian subsidiary, hazard/risk management relies heavily upon symbolic signage to mitigate linguistic differences on the shop floor. However, as Cameron et al. (2011) cautioned, "attempts to transcend the language barrier by using symbols have often proved futile, in many cases due to . . . a severe lack of comprehension testing" (p. 13). Lindhout

et al (2012) also highlighted issues regarding "image comprehensibility" (p. 155). Concerning language issues in the mining industry in South Africa—which is not dissimilar to that in Namibia—Leon, Davies, Salamon and Davies (1994) maintained that on the multicultural shop floor, "even symbolic communication is difficult when there is a large difference in cultural backgrounds between those who wish to communicate" (as cited in Tuchten, 2011, p. 132).

It is one major responsibility, emphasized in the training module, of HSE Reps to maintain, draw attention to, and explain posted signs to co-workers. The latter task assumes their own comprehension of the symbolic signage, and the conditions under which the represented hazards and risks pose a potential health and safety danger. Yet, similar to PPTs, there are assumptions of certain kinds of knowledge inherent in the categorizations and iconic values of the symbols.

New employees' exposure, during the Induction training, to the meanings of the many different signs and colours is brief. Some were incorporated into Health and Safety Induction PPT frames (Figure 6, above); another frame in that presentation (Figure 15, below) gives a general overview of the sign categories.

Figure 15. Five categories of Safety signs (PPT slide). Reprinted from *Health and Safety Induction* (PPT presentation), with permission.

Only the Colour Codes (Figure 9, above) and a frame pointing out the aim of symbolic signs (Figure 10, above) were presented to HSE Reps during the training module. No comprehensive list of safety signs and their significations was provided. Figure 16, below,

illustrates one of the many signs that are posted on the facility site. This particular posting is accompanied by a written explanation, in English, of the icon (Figure 17). Without the explanation, an employee new to the work site might have difficulty interpreting the meaning; for the many without English language reading skills, the explanation would be meaningless.

As this particular sign was not included in the Induction training, and no comprehensive list of signs and indicators is provided to workers, clarifying its meaning would likely be the responsibility of the HSE Rep. To do so, the HSE Rep would need to be capable of 1) reading and understanding the English explanation; 2) translating it into the language of the new employee; and, 3) ensuring that the new employee has understood the terminology and intent of the message. Considering Cameron et al. (2011) and Lindhout et al. (2012), above, the concern regarding comprehension of signage might well be realized in this situation.

Figure 16. Crushing in Progress (detail: icon). Reprinted from *Health and Safety Induction* (PPT presentation), with permission.

Figure 17. Crushing in Progress (icon with text). Reprinted from *Health and Safety Induction* (PPT presentation), with permission.

In the sign below (Figure 18), although the icons might be understandable, in the yellow upper section, the supporting English language text, particularly “LPG” is not so clear; in the red section, the language is more than a little ambiguous.

Figure 18: Danger Highly flammable LPG (PPT slide). Reprinted from *HSE Representatives* (PPT presentation), with permission.

For HSE Reps, and the workers for whom they are responsible, these “universal” significations can work to defy comprehension and undermine OHS policy compliance.

Confined Space (April 13-16, 2015)

A “confined space,” as defined in the manual provided for this training module, is any “enclosed or limited space in which, because of its construction, location or contents” and/or work activity conducted within it, “a hazardous substance may accumulate,” or a dangerous lack of oxygen may occur. These can include, for example, storage tanks, sewers, combustion chambers in furnaces, unventilated or poorly ventilated workshops (Marock, 2012, p. 2).

These conditions are prevalent in the many divisions of the subsidiary facility’s shop floor. Participants in this training session would have been chosen to attend based on the presence of confined space conditions in their work areas. They were experienced workers; some were also HSE Reps, for whom this training would add another level of knowledge, as well as increased responsibility for the health and safety of their peers.

It would be expected that all participants, having undergone this training, would be able to communicate this information, and activate these safety measures. This would require a complete understanding of the concepts and principles underlying the procedures.

Attending this session gave me an opportunity to observe shop floor workers receiving training, with English as the language of instruction, at a higher skill level than the previous three modules

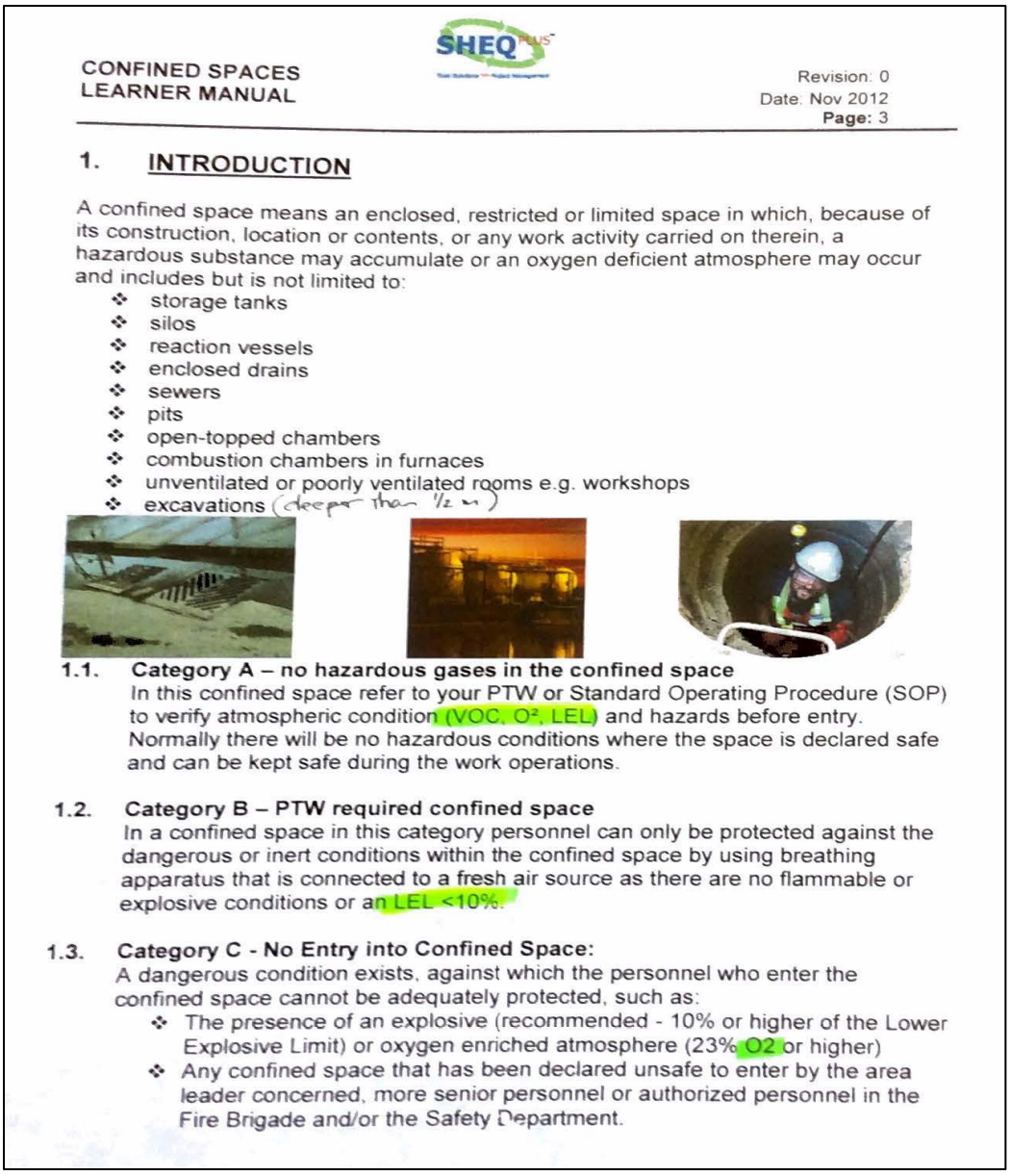
This training session ran from 8am to 4pm, over three days.

Narrative Snapshot

There are approximately 22 participants in this Confined Space training session, of which four are white middle management personnel, and the balance black shop floor workers. A few of the participants were in the HSE Reps training session. We are in a different classroom this time, but the seating set up is the same: cafeteria-style tables and chairs, instructor at the front of the class, projection screen lowered into place. Once again, all teaching materials—manual, PPTs, videos, workbook/assessment tools—are in English only. Unlike the previous sessions, however, this module is facilitated by an outside provider. The white, South African trainer asks what language s/he should teach in besides English; the options being limited for the Afrikaans/English ***bi***lingual instructor, Afrikaans is the agreed upon second language option. Participants will be allowed to answer workbook and test questions in Afrikaans, if necessary; in addition, the facilitator will, if needed, clarify the English questions and write down participants' answers.

Beginning at 8:30am, most of the first hour of this class is dedicated to filling in personal and work information in the Portfolio of Evidence (POE) Workbook. This is requiring a lot of help from the trainer, with Afrikaans translation—coaxing and directing all, and one participant specifically requiring considerable language assistance. All class members must supply a number of documents—proof they have taken certain courses, medical report, etc.—which they must find/get on their own; there are indications from some that this might present a problem.

The paperwork finally completed, the class rules and schedule of breaks is established. The instructor then directs participants to the first page of the manual, and turns to the PPT presentation. The PPT frames are simply a reproduction of the manual, and the content is read aloud by the instructor—word-for-word, with only a little elaboration. The Introduction page of the manual is shown in Figure 19, below.



CONFINED SPACES
LEARNER MANUAL

Revision: 0
Date: Nov 2012
Page: 3

1. INTRODUCTION

A confined space means an enclosed, restricted or limited space in which, because of its construction, location or contents, or any work activity carried on therein, a hazardous substance may accumulate or an oxygen deficient atmosphere may occur and includes but is not limited to:

- storage tanks
- silos
- reaction vessels
- enclosed drains
- sewers
- pits
- open-topped chambers
- combustion chambers in furnaces
- unventilated or poorly ventilated rooms e.g. workshops
- excavations (deeper than 1½ m)

1.1. Category A – no hazardous gases in the confined space
In this confined space refer to your PTW or Standard Operating Procedure (SOP) to verify atmospheric condition (VOC, O², LEL) and hazards before entry. Normally there will be no hazardous conditions where the space is declared safe and can be kept safe during the work operations.

1.2. Category B – PTW required confined space
In a confined space in this category personnel can only be protected against the dangerous or inert conditions within the confined space by using breathing apparatus that is connected to a fresh air source as there are no flammable or explosive conditions or an LEL <10%.

1.3. Category C - No Entry into Confined Space:
A dangerous condition exists, against which the personnel who enter the confined space cannot be adequately protected, such as:

- The presence of an explosive (recommended - 10% or higher of the Lower Explosive Limit) or oxygen enriched atmosphere (23% O2 or higher)
- Any confined space that has been declared unsafe to enter by the area leader concerned, more senior personnel or authorized personnel in the Fire Brigade and/or the Safety Department.

Figure 19. Introduction. Reprinted from *Learner Manual: Confined Spaces* (p. 3), by D. Marock, 2012.

The acronym, PTW, used in section 1.1, is explained four pages later; the explanation of the scientific acronym, VOC, does not appear until page 16; O^2, LEL, are not explained at all, nor is the mathematical symbol, <. That is, there is an assumption of science and technology knowledge, which has not been confirmed. Although, in the POE, the questions have been asked, and the time given to answer them, the information provided by workers concerning their previous knowledge and work experience is not referred to or discussed before the PPT presentation begins. In addition, the instructor assumes that the HSE Reps in the group have had some confined space training; the HSE Rep module does not, in fact, include this content.

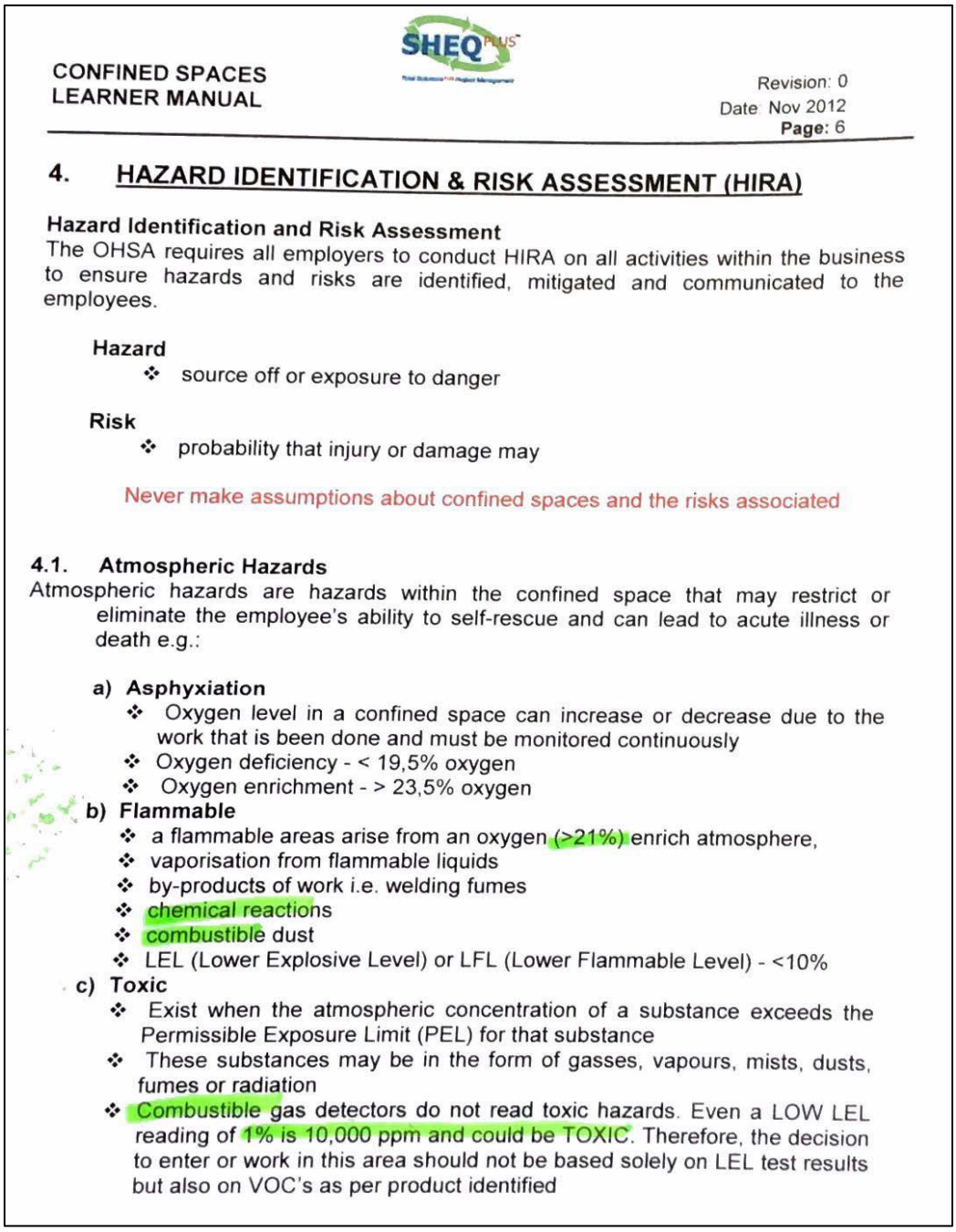
The instructor shows four videos over the course of the theory portion. Three are produced by Work Safe BC, the other by Colorado Springs Utilities. All are in English. The sites shown in the short clips are in no way similar to the subsidiary facility, nor is the worker population (white) in any way representative of the facility population (predominantly black). This lack of contextual similarity has been a common occurrence in training sessions I've observed so far. Nonetheless, class participants seem to be paying attention to the actual confined spaces and accident situations shown in the video.

The teaching method follows a theory (PPT), illustration (video), group work model that has not been used in previous training sessions. Initially the instructor splits the class randomly in two and assigns the learning task. This, because they are sitting together, puts the white, higher-level employees in with some of the black shop floor workers. One of the former immediately suggests that s/he move to the other group. I notice that these senior people are taking, and being given the lead in their groups; one group seems very engaged, I begin to sense some tension in the other. From my field notes:

> *Is there some tension in Group 2? . . . Discussion ended some time ago, while Group 1 is still going. Smaller groups would be helpful. Some are uncomfortable and seemingly intimidated. Discussion is in English and Afrikaans; not hearing other languages.* (Overing, April 13-16, 2015)

A spokesperson is chosen from among the shop floor workers in each group, who presents the highlights of topic discussions in English; each does so quite clearly and thoroughly. On the projection screen, the instructor presents the basics of Hazard Identification and Risk Assessment (HIRA), which include technical/scientific vocabulary and symbols. S/he seems to be sensing some confusion or frustration when discussing atmospheric hazards (see Figure 20,

below), and tells class participants that "technical, big words are not necessary; just keep [asphyxiation, flammable, toxic] in mind." I wonder how they are meant to understand these concepts while not understanding, and being told to ignore the technical vocabulary that explains them.



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4. HAZARD IDENTIFICATION & RISK ASSESSMENT (HIRA)

Hazard Identification and Risk Assessment
The OHSA requires all employers to conduct HIRA on all activities within the business to ensure hazards and risks are identified, mitigated and communicated to the employees.

Hazard
- source off or exposure to danger

Risk
- probability that injury or damage may

Never make assumptions about confined spaces and the risks associated

4.1. Atmospheric Hazards
Atmospheric hazards are hazards within the confined space that may restrict or eliminate the employee's ability to self-rescue and can lead to acute illness or death e.g.:

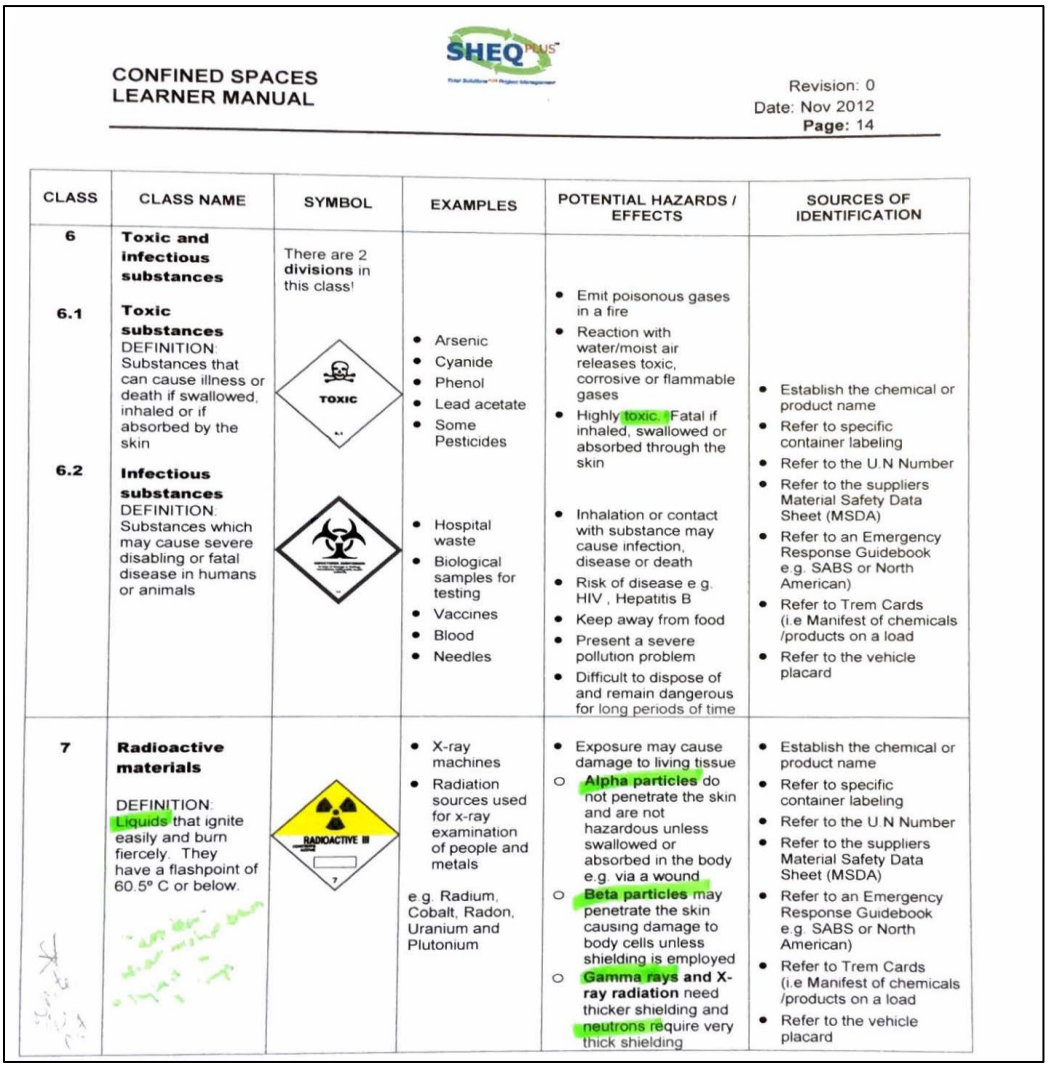
a) Asphyxiation
- Oxygen level in a confined space can increase or decrease due to the work that is been done and must be monitored continuously
- Oxygen deficiency - < 19,5% oxygen
- Oxygen enrichment - > 23,5% oxygen

b) Flammable
- a flammable areas arise from an oxygen (>21%) enrich atmosphere,
- vaporisation from flammable liquids
- by-products of work i.e. welding fumes
- chemical reactions
- combustible dust
- LEL (Lower Explosive Level) or LFL (Lower Flammable Level) - <10%

c) Toxic
- Exist when the atmospheric concentration of a substance exceeds the Permissible Exposure Limit (PEL) for that substance
- These substances may be in the form of gasses, vapours, mists, dusts, fumes or radiation
- Combustible gas detectors do not read toxic hazards. Even a LOW LEL reading of 1% is 10,000 ppm and could be TOXIC. Therefore, the decision to enter or work in this area should not be based solely on LEL test results but also on VOC's as per product identified

Figure 20. HIRA. Reprinted from *Learner Manual: Confined Spaces* (p. 6), by D. Marock, 2012.

Hazardous substances are the next topic and, once again, the manual pages are reproduced on and read from the frames. There are 7 printed pages; 6 of them comprise charts showing and explaining the class of chemicals and their particular hazards/effects. Figure 21, below, illustrates the level of English and technical/scientific language and concepts.



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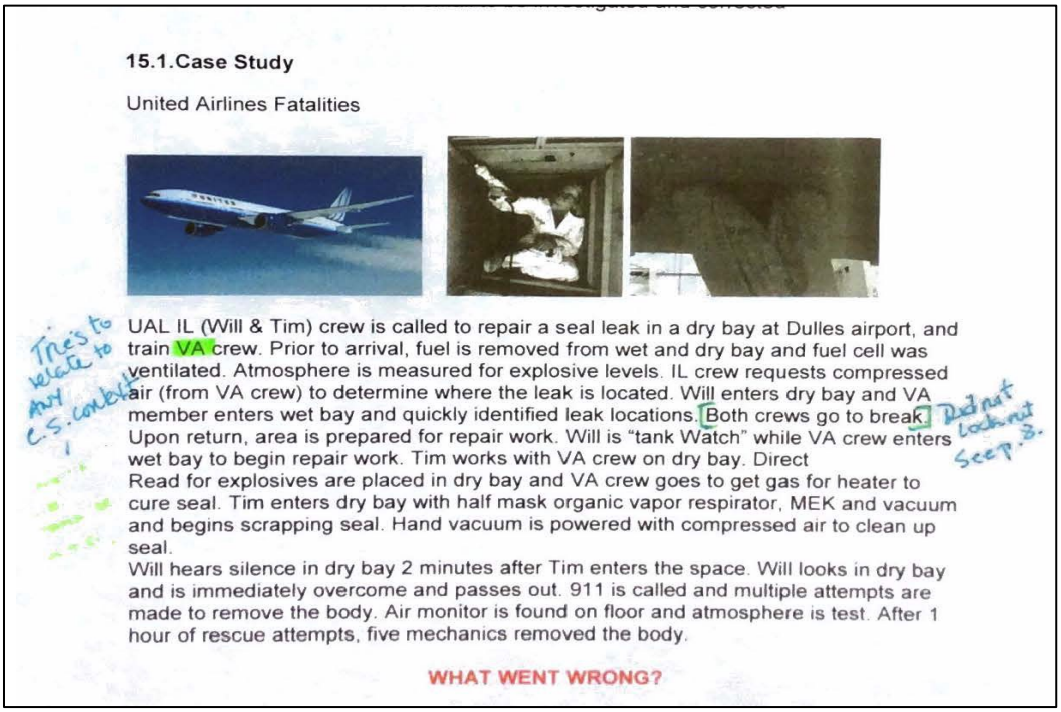
CLASS	CLASS NAME	SYMBOL	EXAMPLES	POTENTIAL HAZARDS / EFFECTS	SOURCES OF IDENTIFICATION
6 6.1 6.2	**Toxic and infectious substances** **Toxic substances** DEFINITION: Substances that can cause illness or death if swallowed, inhaled or if absorbed by the skin **Infectious substances** DEFINITION: Substances which may cause severe disabling or fatal disease in humans or animals	There are 2 **divisions** in this class! TOXIC 6 7	• Arsenic • Cyanide • Phenol • Lead acetate • Some Pesticides • Hospital waste • Biological samples for testing • Vaccines • Blood • Needles	• Emit poisonous gases in a fire • Reaction with water/moist air releases toxic, corrosive or flammable gases • Highly toxic. Fatal if inhaled, swallowed or absorbed through the skin • Inhalation or contact with substance may cause infection, disease or death • Risk of disease e.g. HIV , Hepatitis B • Keep away from food • Present a severe pollution problem • Difficult to dispose of and remain dangerous for long periods of time	• Establish the chemical or product name • Refer to specific container labeling • Refer to the U.N Number • Refer to the suppliers Material Safety Data Sheet (MSDA) • Refer to an Emergency Response Guidebook e.g. SABS or North American) • Refer to Trem Cards (i.e Manifest of chemicals /products on a load • Refer to the vehicle placard
7	**Radioactive materials** DEFINITION: Liquids that ignite easily and burn fiercely. They have a flashpoint of 60.5° C or below.	RADIOACTIVE III 7	• X-ray machines • Radiation sources used for x-ray examination of people and metals e.g. Radium, Cobalt, Radon, Uranium and Plutonium	• Exposure may cause damage to living tissue ○ **Alpha particles** do not penetrate the skin and are not hazardous unless swallowed or absorbed in the body e.g. via a wound ○ **Beta particles** may penetrate the skin causing damage to body cells unless shielding is employed ○ **Gamma rays and X-ray radiation** need thicker shielding and neutrons require very thick shielding	• Establish the chemical or product name • Refer to specific container labeling • Refer to the U.N Number • Refer to the suppliers Material Safety Data Sheet (MSDA) • Refer to an Emergency Response Guidebook e.g. SABS or North American) • Refer to Trem Cards (i.e Manifest of chemicals /products on a load • Refer to the vehicle placard

Figure 21. Hazardous Substances. Reprinted from *Learner Manual: Confined Spaces* (p. 14), by D. Marock, 2012.

No additional information or explanation is given; no questions are asked by participants. During the lunch break, I ask a few of the shop floor workers, with whom I am now somewhat familiar, if they understand some randomly selected words, e.g. toxic, noxious, caustic—none do. I

mention this to one of the higher-level participants, an HSE technician, who responds that many of the workers are illiterate and do not understand these terms.

The training continues with PPT frames and videos concerning monitoring, personal protective equipment (PPE), communication, and tools and equipment. The two groups are then directed to a confined space case study scenario given in the POE (Figure 22), and tasked with assessing "What went wrong?" As with the previous group work, participants' discussion and findings are to be recorded in the workbook; these will form part of their overall assessment.



15.1.Case Study

United Airlines Fatalities

UAL IL (Will & Tim) crew is called to repair a seal leak in a dry bay at Dulles airport, and train VA crew. Prior to arrival, fuel is removed from wet and dry bay and fuel cell was ventilated. Atmosphere is measured for explosive levels. IL crew requests compressed air (from VA crew) to determine where the leak is located. Will enters dry bay and VA member enters wet bay and quickly identified leak locations. Both crews go to break. Upon return, area is prepared for repair work. Will is "tank Watch" while VA crew enters wet bay to begin repair work. Tim works with VA crew on dry bay. Direct Read for explosives are placed in dry bay and VA crew goes to get gas for heater to cure seal. Tim enters dry bay with half mask organic vapor respirator, MEK and vacuum and begins scrapping seal. Hand vacuum is powered with compressed air to clean up seal.

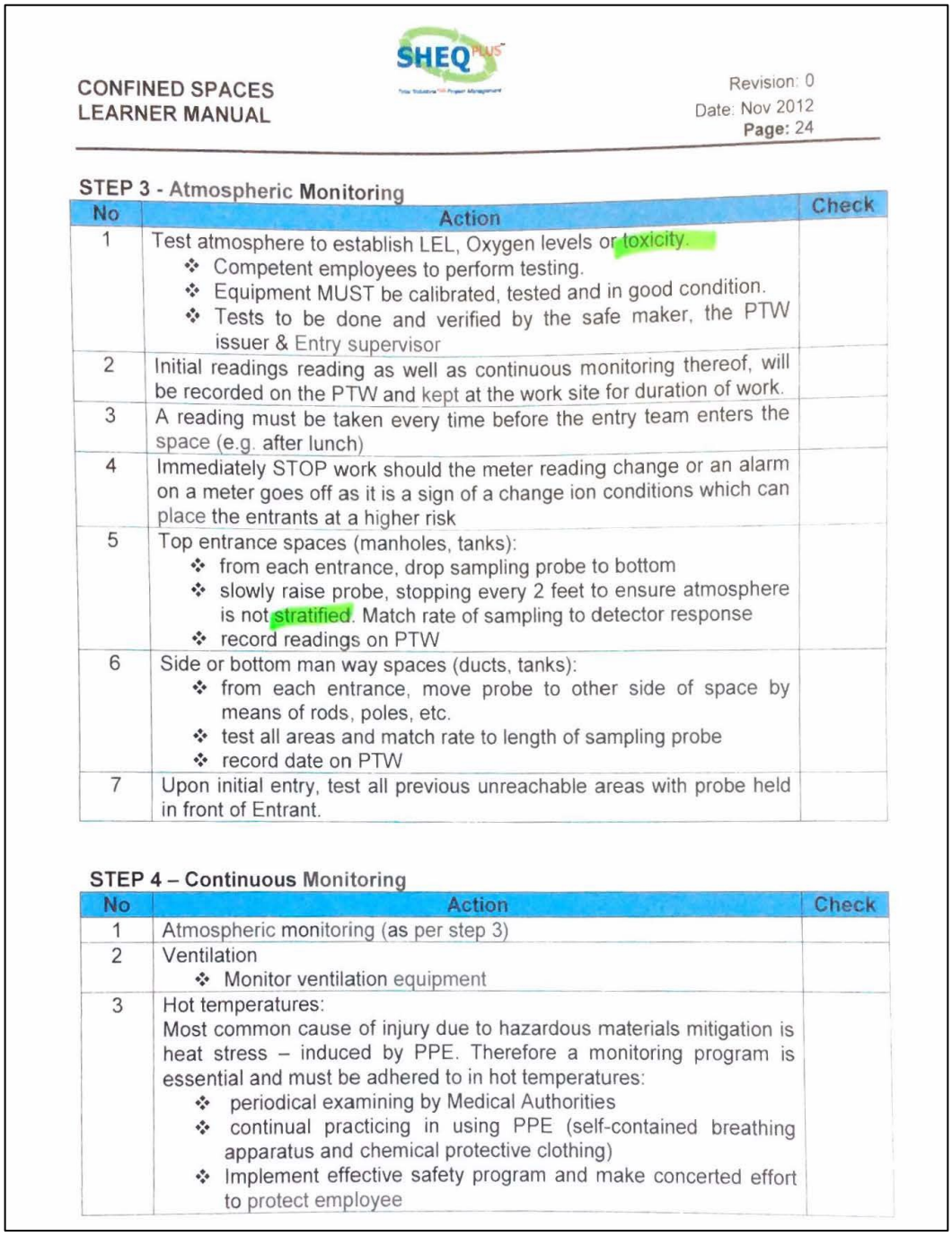
Will hears silence in dry bay 2 minutes after Tim enters the space. Will looks in dry bay and is immediately overcome and passes out. 911 is called and multiple attempts are made to remove the body. Air monitor is found on floor and atmosphere is test. After 1 hour of rescue attempts, five mechanics removed the body.

WHAT WENT WRONG?

Figure 22. Case Study. Reprinted from *Learner Manual: Confined Spaces* (p. 28), by D. Marock, 2012.

The case study is clearly unrelated to mining, and participants seem confused by the unfamiliar context. The instructor repeatedly insists that the context doesn't matter, that it is still a confined space situation. Part of what is necessary to complete the task is going back through the manual and drawing out the relevant information. The aerospace terminology is so entirely different from what the shop floor workers have been exposed to, however, that it's difficult to see how, between that and their limited English language skills, they will be able to successfully complete the task. Participants are helping each other out as much as possible

On day 2, the final theory portion of the training session deals with "step-by-step entry" into a confined space, and emergency rescue procedure—information that I realize would have been essential to complete the case study group work, the day before. This is in preparation for role-playing simulations, set for tomorrow. One of the four pages is shown below (Figure 23).



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STEP 3 - Atmospheric Monitoring

No	Action	Check
1	Test atmosphere to establish LEL, Oxygen levels or toxicity. ❖ Competent employees to perform testing. ❖ Equipment MUST be calibrated, tested and in good condition. ❖ Tests to be done and verified by the safe maker, the PTW issuer & Entry supervisor	
2	Initial readings reading as well as continuous monitoring thereof, will be recorded on the PTW and kept at the work site for duration of work.	
3	A reading must be taken every time before the entry team enters the space (e.g. after lunch)	
4	Immediately STOP work should the meter reading change or an alarm on a meter goes off as it is a sign of a change ion conditions which can place the entrants at a higher risk	
5	Top entrance spaces (manholes, tanks): ❖ from each entrance, drop sampling probe to bottom ❖ slowly raise probe, stopping every 2 feet to ensure atmosphere is not stratified. Match rate of sampling to detector response ❖ record readings on PTW	
6	Side or bottom man way spaces (ducts, tanks): ❖ from each entrance, move probe to other side of space by means of rods, poles, etc. ❖ test all areas and match rate to length of sampling probe ❖ record date on PTW	
7	Upon initial entry, test all previous unreachable areas with probe held in front of Entrant.	

STEP 4 – Continuous Monitoring

No	Action	Check
1	Atmospheric monitoring (as per step 3)	
2	Ventilation ❖ Monitor ventilation equipment	
3	Hot temperatures: Most common cause of injury due to hazardous materials mitigation is heat stress – induced by PPE. Therefore a monitoring program is essential and must be adhered to in hot temperatures: ❖ periodical examining by Medical Authorities ❖ continual practicing in using PPE (self-contained breathing apparatus and chemical protective clothing) ❖ Implement effective safety program and make concerted effort to protect employee	

Figure 23. Step-by-Step Entry. Reprinted from *Learner Manual: Confined Spaces* (p. 24), by D. Marock, 2012.

Once again, the manual content is projected on the screen; once again, there are no questions; once again, there is no additional information/explanation given. No connection is made by the instructor between the theory and yesterday's case study.

In the second half of the class, we all go to the fire station to become familiar with the equipment that will be used for the next day's simulation. On arrival at the simulation site, with all the equipment ready to go and everyone in PPE, the instructor sets up the scenario, puts participants in groups, and explains each groups' tasks. I am about to see how "learning by doing" works as a teaching tool when English—with Afrikaans assistance—and technical and scientific language have been the medium of instruction among learners with limited English language skills and likely limited science and technology education.

On the ground, there are two trap doors, which are open during the entire prep-talk, with some participants milling about close to them. Groups of shop floor workers stand apart from each other, and from the higher-level participants; I hear different Namibian African languages being spoken in each group. The scenario they are set to enact does not seem to be well understood. There seems to be some confusion concerning the gas monitors they are using. As the simulation continues, it does not seem to be clear to some participants that this is meant to be a "real" situation, responded to in real time with real urgency. There is a breakdown of class cohesion—if participants are not involved in a particular part of the simulation, they move away from the action and talk among themselves. While participating in the action, many seem intimidated and confused, uncertain about what is expected of them. I sense, and see, some real tension between participants at moments. Among the many languages I am hearing as this activity intensifies and wanes, English is a minor player.

Following the simulation, the group returns to the classroom to complete the final exam. There is no debriefing, no opportunity to exchange thoughts about the activity. The instructor tells class members that he "has seen what you know from the practical." The learners are given no opening to explore what they now know, to attempt through verbal interactions, to integrate this new information into their existing knowledge, skill sets, and/or specific work context.

It occurs to me that, to know what they know, the instructor would ideally have completed the 29-point "Operational Assessment" included in the POE for each individual "candidate" while the enactment was going on; this did not happen. Apart from a brief absence

early in the morning on the second day of training, I was present for all three training days. During that time, there was no engagement between the instructor and shop floor workers outside of class time, and little during it—although some conversation, in Afrikaans, went on between the higher-level participants and the instructor. Participants were never called by name. It's hard to think that the instructor would have been able to distinguish individuals and/or their contributions well enough to assess their performance during the practical portion of the training sessions.

The written test is open-book. The questions include 16 multiple choice, e.g.,

Identify which of the following risks are radioactive materials risks

a) Exposure may cause damage to living tissue
b) X-rays are dangerous when wet
c) Beta particles may penetrate the skin causing damage to body cells unless shielding is employed
d) A & C above;

10 true/false, e.g.,

Confine (sic) space entry does not require a PTW when energy sources are lock-out (sic);

and, 5 essay-type, e.g.,

Briefly explain the Entry Steps.

The test must be completed in 2.5 hours. Its requirements would have demanded a level of familiarity with the manual and its English language and scientific/technical terminology that was not evidenced during class time. In order to answer the question concerning the Entry Steps, for example, three dense pages in the manual (See Figure 23, above, for an example of one page) would need to be parsed to present a "brief" explanation. No class participant asked for the Afrikaans language assistance offered at the beginning of the training session.

I was not able to see test papers or know the results.

Participant Perspectives

One of the Confined Space training participants was also an HSE Rep and, as I later found out, a member of the Peer Education programme. Well-spoken in English, and very articulate, this shop floor worker thought the materials used in the Confined Space training were generally good. S/he did, however, point to two weaknesses, which confirmed my own speculations while observing the class:

> *[The] practical did not address REAL practical situations; the gas detector was not the right one. Confined Space used a lot of videos from Canada [that] don't represent the reality here.* (P1, June 1, 2015)

This concern was echoed by another participant, who said that,

> *. . . knowledge should be presented in [learners'] language, with diagrams, visuals, and videos that are local and relevant.* (P4, May 21, 2015)

The Confined Space instructor offered Afrikaans as an alternative to English, considering this an accommodation that would assist their understanding of the materials. However, as was pointed out above, some workers spoke neither language. Furthermore, concerning the translation of materials from English into Afrikaans, some pointed out that,

> *This leads to communication problems . . . regarding health and safety.* (P6-9, May 21, 2015)

This observation was in line with the comments made above by the HSE specialist, who suggested that information gets lost in the process of translation, resulting in a "broken telephone" scenario.

The use of "real life" simulations in the Confined Space training seemed to respond to a need expressed by a number of interview participants.

> *[The] manual and theory are **only** in English [and are] too theoretical [with] not enough practical.* (P6-9, May 21, 2015)

One shop floor worker in this focus group interview went on to say,

> W*hen I do, I learn; when I hear, I forget.* (P6-9, May 21, 2015)

Yet, a participant in the Confined Space training session disagreed, saying that,

> *[Training] should **tell**, but don't let others do it. Practical is not experimenting on workers!* (P2, May 25, 2015)

In conversation with the HSE technician who participated in the class, I suggested that workers would have benefitted from an explanation of the "learning by doing" approach used by the instructor; s/he agreed, adding that using this method was likely a source of confusion.

Discussion

In comparison to previous training modules, two elements of the Confined Space training session stood out particularly: the use of group work, and "real life" simulations. Both correspond with a Euro-Western, "learner centred" teaching approach, which has been adopted as the foundation of Namibian curriculum policy and development in formal education:

> Preparation for a knowledge-based society requires a learner-centred approach to teaching and learning. This means that the point of departure is always what the learners already know and can do, then acquiring new knowledge through ways of working which are relevant and meaningful for them, and learning how to apply their knowledge creatively and innovatively. (NIED, 2010, p. 4)

The core of this approach, then, is the construction of knowledge "through interaction with and reflection on what they already know and believe, balanced against the ideas, events, people and activities they have contact with in their day-to-day activities" (Bockarie, 2002, p. 52), a process "inextricably linked with language" (Hodson & Hodson, 1998 as cited in Bockarie, 2002, p. 50). This approach has proven quite difficult to implement in the multilingual, ESL/EFL reality of English MOI Namibian classrooms (Cantoni, 2007; Harlech-Jones, 1998).

As Harlech-Jones (1998) stated concerning the Ministry of Education policies embracing learner-centred, participative, and enquiry-based methodologies, ". . .the language policy directly confounds them. Put simply, how can education be participative, child-centred and enquiry-based when the child is required to speak, read and understand a language that he/she hardly ever hears except in school?" (p. 6). These difficulties would be compounded for adult learners who, like many of the shop floor workers at the facility, did not attend/complete school, or went to school during the old days of authoritative, "stick" enforced (P2, May 25, 2015), rote-learning teaching methods.

The opportunity to work in smaller groups, which was given to Confined Space training participants during class time, might have mitigated these barriers. Group work has proven a successful approach to mediating language difficulties in multi-lingual learning situations (Benson & Pluddemann, 2010; Peyton, 2015; Probyn, 2009; Slavin, 2014). Discussing the use of code-switching[27] in South African, English MOI science classrooms, Probyn (2009) referred to the usefulness of group work, with students intermixing mother tongue and English, in advancing content understanding.

> In group work, it appeared that learners routinely discussed questions in their home language but were expected to report to the class or answer questions

[27] Code-switching refers to a switch in language that takes place *between* sentences (Brock-Utne, 2004, p. 2).

> in English—thus exploratory talk took place in their home language and presentational talk (Barnes 1992) mainly in English. However, if learners had problems answering in English, then teachers generally encouraged them to express their ideas in Xhosa and would either help them to rephrase in English or else call upon another learner to help them do so. (Probyn, 2009, p. 131)

Slavin (2014) cautioned, however, that "an effective cooperative group is . . . a team composed of diverse students who care about helping one another learn. . . All members must know they can depend on one another for help" (p. 23). To this end, "It's best if teams are composed of a cross section of the class. . .the teacher should make team assignments" (Slavin, 2014, p. 23).

In the Confined Space training classroom, the class was simply split into two groups, without consideration for existing knowledge and experience or shared languages. During my observation, I noted that discussions were in English and Afrikaans, and that I was not hearing other languages.

On the ground, however, where some shop floor workers—who had been vocal group work participants in both English and Afrikaans—took leadership roles during the enactment, a variety of Namibian African languages flowed. It was the realization of what one interview participant said:

> *[A] group uses the many languages that are present and interpret for each other. It's about **understanding**, so whatever language is needed for that.* (P3, May 26, 2015)

The onus, however, landed on those shop floor workers who had the knowledge and language skills that would help to make English MOI content understandable for their peers. The assumption was that they were linguistically equipped to do so.

Health and Wellness Peer Education (April 21-24, 2015)

HIV/AIDS and TB are prevalent in Namibia; in 2015, approximately 211,000 people were living with HIV/AIDS in the country[28] *(CIA, 2017), and 9,953 with TB (Shivute, 2016). Prevention, care and treatment programs are offered at global (USAID; The Global Fund to Fight AIDS; CDC-*

[28] It is important to keep Namibia's low population (2,436,469) in mind when considering these statistics. Comparing Namibia to other ranked countries, it stands at 24/127 on the scale of people living with HIV/AIDS. The

Namibia; UNAIDS,) government (Ministry of Health and Social Services) and local/private (Development Aid from People to People (DAPP) Namibia; Healthworks Business Coalition) levels.

Given the national statistics, it is known or assumed that some subsidiary employees either have, or are at risk of contracting these diseases. As part of its overall Health, Safety and Environment strategy, the mining subsidiary has incorporated HIV/AIDS policies that comply with government legislation prohibiting unfair discrimination on the basis of disability. In addition, the medical coverage for employees includes HIV/AIDS medication and care. An Employee Wellness program has also been created. A three-part (Beginner, Intermediate, Advanced) Health and Wellness Peer Education workshop series, which also incorporates TB awareness, prevention, and care information, was initiated in 2014.

The focus of this program is information sharing both within the facility and in the larger community. Within the facility, it is believed that by equipping some shop floor workers with knowledge about HIV/AIDS, TB, and other high-risk diseases, and identifying them as peer educators within the facility, information and support will be made more accessible in a private and confidential manner. Within the community, the goal is to provide information that is otherwise available solely at hospitals and clinics, where individuals are only likely to go once they are already exhibiting advanced symptoms of illness.

The Health and Wellness Peer Education workshop participants are drawn from various divisions within the facility; all are employed below the supervisory level. Three participants are also HSE Reps. As with the HSE Reps, peer educators are expected to be good and knowledgeable communicators; beyond the expectations of the former, peer educators are also expected to be able to generalize and transfer their knowledge to the larger community population. Their language abilities range from trilingual to plurilingual. In order to collaborate with health care

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adult prevalence rate in 2015 was 13.34%, ranking Namibia 6/133 on the world scale; 3,100 people died of HIV/AIDS according to 2015 estimates, ranking it at 31/129 on the scale (CIA, 2017). Namibia falls under the category of 30 TB "high burden" countries (tbfacts.org, 2017).

professionals in government institutions, such as hospitals, English language facility would have been a factor in the choice of participants. English is a second or alternate language for all of them, spoken in the classroom context with some fluency by most.

Health and wellness peer educators are expected to share knowledge, taught to them in English, with a diversity of ESL/EFL recipients. In the community, particularly in the poorer areas, the likelihood is even greater than in the mining facility that they will need to do this in every language BUT English.

The advanced level workshop took place at the facility and in the community over five days. Because I found out about the workshop once it had already begun, I attended all but the first day. All participants had previously completed the first two workshop segments. I was, unfortunately, unable to obtain a copy of the workshop manual.

Narrative Snapshot

I have arrived a little late on Day 2 of the five-day workshop, and must negotiate my entry into the class with the instructor—not having been forewarned by management, s/he is hesitant, but relents after consulting with class members. I find my way, as unobtrusively as possible, to the back table.

Fourteen people are sitting in the same classroom that held the Confined Space training sessions, already engaged in discussion with the workshop facilitator. The facilitator seems to have established a very good relationship with the participants.[29] A number of things immediately stand out as different from other training sessions I have attended. There is a positive energy in the room that I have not experienced before. Unlike any of the previous classes, participants' table spaces are full of papers and documents. Most surprising, however, is the evident difference in the level of English language abilities amongst these workers as compared to their peers in other training sessions. As with all previous classes, materials and instruction are in English.

[29] I later found out that s/he had also facilitated the Beginner and Intermediate sessions.

Class members are talking quite openly and articulately about HIV/AIDS, condom negotiation, female condoms, penetrative sex—I wonder if they were this open in the Beginner class? In Namibia, from what I've read, this level of open talk about sex is quite unusual (Lafont & Hubbard, 2007), particularly in a mixed female/male group.

I notice from the workshop plan handout that HIV/AIDS was covered yesterday, and that the group is reviewing before moving on to Infectious and Lifestyle Diseases, today's topics. After the review, discussion of tuberculosis (TB) dominates, focusing on avoidance measures, such as good diet and housing. Knowing the close and difficult living conditions of the many local people living in "formal" and "informal" settlements, I wonder how these measures can be implemented.

This theory portion of the workshop includes PPTs; however, unlike other training sessions, the facilitator does not project the manual pages onto the screen. Rather, the frames hold the day's teaching/learning outline, information, links, and suggestions for discussion that apparently complement the manual content. There is a lot of interaction between class members, including the facilitator. A white board is used to take note of ideas and issues raised by workshop participants. There are also videos between the discussions. These seem well-suited, pertinent, and representative of the population; they elicit good responses and commentary from the workshop participants.

Except for one participant, who, though s/he does speak English, is much more at ease in Afrikaans, discussions are in English.

As the workshop progresses, I realize that I am seeing familiar faces from both the HSE Reps and Confined Space training sessions. Some greet me during the morning tea/coffee break. The workshop facilitator seems easier about my presence.

It is 12pm, and I must leave the class for about an hour, to return after lunch, at 1pm.

After a morning of theory and videos, the class has split into discussion groups. They seem to be very comfortable, and are engaging well. One reporter from each group presents the ideas and issues discussed. There is good, good attention, interaction, and thoughtful questions and observations are raised. All of this occurs in English (with one participant using Afrikaans as well).

During the discussions, workshop participants are frequently referring back to the videos, which, unlike previous ones, are set in the Namibian context. The workshop facilitator is Namibian, from the north, and a very experienced and knowledgeable HIV/AIDS awareness activist.[30] S/he is, as well, an extremely charismatic and engaging communicator, to whom the participants respond well and with confidence.

Day three of the workshop, and the focus is on preparations for a field trip to the public hospital, where there is an antiretroviral therapy (ART) outpatient clinic, run under the auspices of the national Centre for Disease Control and Prevention. At this point, I have been accepted as a (still guest) member of the class, and have been invited to join the group on this trip. The intent of this field trip is to make connections between the institution and the peer educators, so that they might exchange information and knowledge.

I travel with some of the class members on the way to the hospital, and notice that, when kidding around or chatting, their shared English language abilities are replaced by one or another of their shared Namibian African languages. As I've experienced elsewhere in Namibia, in these relaxed interactions, English is not the language of first choice.

Once in the hospital setting, it seems to me that the workshop participants are less confident in their English speech. One workshop participant has asked a question in Oshiwambo; the nurse hardly acknowledges it, then asks for translation into English—I detect what seems to be disdain on that nurse's face. I wonder if it is this unfamiliar context, where they are not able to depend on the workshop materials and facilitator support, that has unsettled them. They are, however tentatively, still asking good questions.

I comment on the fact that all the posters on the wall are in English. Wow! Have I opened a can of worms! From an office within earshot of where we are sitting, a hospital worker who has heard the question comes out and, in a loud and reprimanding tone directed at me, asks: "What? Why do we need to know what language? What does this help?" I realize, too late, that I

[30] In a later communication with the workshop facilitator, from whom I unsuccessfully tried to obtain a copy of the manual and links to the Namibian-set videos, s/he was "currently in the bush capacitating villagers" (Personal correspondence, May 18, 2015). I was unable to obtain any texts from this workshop.

have overstepped my guest/researcher boundaries, and apologize to all around me—an important lesson (re)learned.

Despite the dominance of English language USAID posters, provision is made for those who don't speak English, with information flyers in the many different local languages. Bundles of these are given to the peer educators, to be distributed in the informal settlement during the outreach activity scheduled for the next day. They focus only on TB.

During a brief talk given by a hospital nurse, terms such as "productive cough" and "pulmonary" are used; I wonder if there are equivalents in the local languages? And, if the peer educators use these words, whether the local people will understand them. Are other, more familiar/vernacular terms available?

I notice that, over the time of the visit, as the workshop participants listen, they have become more confident; what they already know, learned in English, has begun to come out. On our return to the classroom, the workshop facilitator draws out the new knowledge they have gained, and with PPTs, whiteboard, and discussion merges this with previous workshop information. The new English terms are incorporated into their previous knowledge, and used with some confidence.

The fourth day of the workshop is dedicated to preparing for and initiating an outreach program within the highly over-populated, dismally underserviced informal settlement outside of the nearby town.[31] Presently, the public hospital is community members' principal source of health and wellness information and care. This will be the group's introduction to outreach work; shifting languages—conversational, instructional, and technical—will be essential.

The informal settlement is a microcosm of the larger national tribal and linguistic landscape. Corresponding with the variety of tribal backgrounds is an equally diverse set of languages: Damara-Nama, Otjiherero, Oshiwambo, Kavango, Afrikaans, English—to name only those I am made aware of. The workshop participants are at least trilingual; some are

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[31] Population estimates vary between 4,000 and 7,000 people. The "illegal"—but tolerated—status of the settlement population likely accounts for the discrepancies. The settlement was originally intended to accommodate 350 families. It received partial electricity service (350 households) only in 2015. With only seven water standpipes, the community still battles with minimal water and sanitation services. Many of the shop floor workers live in the settlement. (References excluded due to confidentially agreements.)

plurilingual. The facilitator cautions them to keep their language at the level of the audience, to adapt/adopt local terms. No doubt, in her/his own practice, s/he has come to know local equivalences; is this the case with the workshop participants?

The plan for the day is for educators to meet at a central point within the settlement, collect information pamphlets and walk different paths on the way to the meeting tree,[32] handing out pamphlets and telling people that more information concerning the contents will be given to those who gather there. The suggested approach once people have collected under the tree, developed and agreed to by the facilitator and workshop participants together, is to greet the people, introduce themselves, talk about health and wellness issues concerning HIV/AIDS and TB, answer questions, and close with thanks for attendees' presence and attention.

Once again, while travelling with the workshop participants, I notice that conversation among themselves is conducted in one or another Namibian African language—not in English.

It is a slow going walk through the settlement, and there is a long wait until people have collected under the tree. Community members are shy to participate, but eventually some questions are asked, some experiences shared. Various languages are used. What is very interesting to see and hear is how the workshop participants are trying to pull on information that has been acquired in English, in order to transfer knowledge through the medium of the diverse local languages. From my perspective, and from observing their body language, it seems that they are doing a good job—of course, I can't understand a word they're saying.

During the debriefing today, I am finding out that language and terminology translations were sometimes confused and wrong information was given. The wellness specialist who oversees the program—and speaks five languages—had to intervene a number of times with corrections or clearer explanations. I am reminded of my earlier thoughts about peer educators' language skills being context- dependent, and the difficulties this might present in attempting to transfer their English-learned knowledge.

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[32] Traditionally, a meeting tree is the symbolic African Baobab tree: the place where people can gather to share knowledge, exchange ideas, and learn from each other (Africa Gathering, 2017). In cities, towns, and villages across Namibia, there is almost always a large tree within walking distance, under which people gather for this purpose. In many small villages, this space may serve as the only classroom.

After this final segment of the workshop, I do my recruitment presentation, explaining the study and what is involved in participation, with the information on the screen. I have listened to the workshop participants speaking English for four days; I have engaged in conversation in English with them; some have told me that my English is easy to understand—yet, the HSE Specialist in the room is asked to translate as I speak.

In addition, while reading, completing, and signing the official English documents required for their certification, they are needing a lot of instruction and assistance from the workshop facilitator and the wellness specialist who oversees the program. Once again, I wonder how transferrable their English language skills are.

Participant Perspectives

Why was the Health and Wellness Peer Education workshop so different from the previous training sessions? What accounted for the degree of engagement and enthusiasm? Talking about training generally, one workshop participant commented that,

*Trainers must **want** to gain learners' understanding.* (P-10, June 6, 2015)

The workshop facilitator's teaching style seemed to answer to this perceived need. During the workshop, s/he frequently asked the question: "Are we together?"—checking that participants were following and comprehending the class content; emphasizing the importance of group cohesion; "rallying the troops" before they entered the two outside locations. The facilitator wanted to ensure they had the knowledge; wanted them to know that they were a team; wanted them to succeed. Participants—and I—felt the facilitator's desire to gain their understanding.

Again speaking about training generally, another interviewee emphasized that,

Representations must reflect participants. (P15, April 30, 2015)

This was pointed out as a particular weakness in previous training sessions, where videos portrayed unfamiliar contexts and unrepresentative spokespeople. The Health and Wellness Peer Education workshop was unique in its use of locally relevant materials. As one participant commented,

Peer Education used local videos—[that] helps. (P1, June 1, 2015)

Even though the videos were in English, it was Namibians speaking a familiar English, with its own particular cadences and colloquialisms. In all of the training sessions, videos drew the most attention and prompted the most engagement; in this workshop, this was even more the case.

. In another interview, a shop floor worker said that,

> *. . . facilitators/trainers should be generally educated, social[ly] and technically knowledgeable.* (P12, May 18, 2015)

This was certainly the case with the Health and Wellness Peer Education workshop facilitator, who was well-educated, socially adept, and had extended knowledge based on many years of experience working with diverse learners. In addition, s/he had full command of the specific language of health and wellness, in clear and familiar English.

All of that being said, however, as one employee pondered,

How do we make sure that the knowledge has been transferred? (P14, April 21, 2015)

For workshop participants, the final "test" was applying and sharing their accumulated knowledge during the community outreach at the informal settlement. To do this, they had to communicate, not using the English language and terms with which they were familiar, but in one or more of the many Namibian African languages spoken within the community. Just like the HSE Representatives, they had to translate information in order to transfer knowledge.

To assist them in this task, the peer health and wellness educators had distributed the information pamphlets obtained from the hospital, making sure that attendees had one in the language they spoke. During the debriefing, however, they pointed out that "the materials were not appropriate for the audience" (Overing, Observation Notes, April 21-24, 2015). That the recipients could speak a language that corresponded with one of the pamphlets did not guarantee that they could read it; if they could read it, this did not guarantee that they could understand the technical, health and wellness language; if they could understand the language, there was no guarantee that the conceptual, and personal, links could be made.

The soon-to-be-certified health and wellness educators also had to contend with the demonstrated reality that their own language skills had been tested by the task of presenting in local languages information that had been learned in English. Even if, as one participant perceived it,

> *. . . in Peer Education, [there was] no problem with English.* (P5, May 25, 2015)

by their own self-assessment, they were sometimes hard-pressed to translate into local terms, and to transfer to the people, what they had learned.

What a complex conundrum these health and wellness peer educators faced: Disparaged at the public hospital for speaking a Namibian African language; ineffective (by their own assessment) at transferring English-learned knowledge to local people in local languages.

Discussion

Over the course of the three-workshop series, the wellness educators were taking on a specialized language, learned in an alternate language, to be transmitted in multiple languages. During the outreach, their application of what they had learned and their ability to transfer that knowledge to others in their local languages provided me with a rich opportunity to observe the effectiveness of the English MOI instruction. The outreach was their "test."

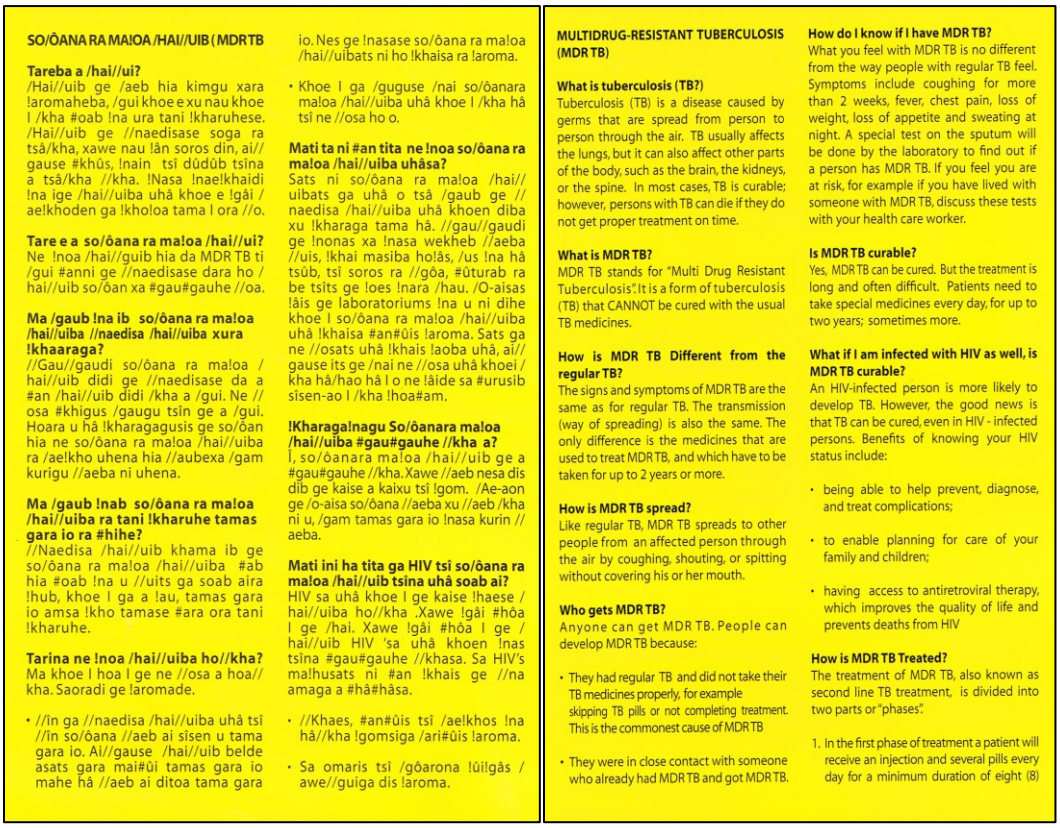
In the classroom, health and wellness peer education trainees were supported by locally representative audio-visual materials, a well-designed manual, an engaging and knowledgeable facilitator, and productive interactions with their peers. In this context-embedded (Cummins, 2008) environment, they were adept at speaking the language of health and wellness in English, had mastered the language of "condom negotiation" and "productive cough." Within the context-reduced (Cummins, 2008) situation under the meeting tree, they could not easily transfer that language and the concepts it represented to the very people they were, as **peer** educators, meant to reach: their co-workers and community members.

In reflecting on the foregoing observations, I draw on the work of Cummins' (1979; 1981; 2008). Cummins' (1979; 1981) interdependence hypothesis "posits a common underlying proficiency that mediates transfer of concepts, language structures, and learning strategies across languages" (p. 266). That is, once learned in students' first language, conceptual knowledge is more likely to be transferred to and understood in additional languages. Had the peer educators been given the opportunity to "build on their prior knowledge (encoded in L1), use their L1 as a tool for learning, and invest their identities in the learning process" (Cummins, 2009, p. 267), would they have been more successful at applying the knowledge they had acquired in English? Based on Cummins' interdependence hypothesis, it is more likely that they would have.

The learning and teaching situation faced by the participants in the Health and Wellness Peer Education workshop could be compared to that of ESL/EFL learners in a monolingual academic setting. Their spoken English skills were, admittedly, better than those of most shop floor workers I encountered; this was one of the reasons they were chosen to be trained as peer

educators. This difference acknowledged, they were nonetheless second/alternate language speakers of English, taught solely in English. They could, within the classroom, use the English language of health and wellness as related to HIV/AIDS, TB and related subjects; it was assumed that they had developed cognitive academic language proficiency (CALP) in that language (Cummins, 2008). When called upon to share the information learned in English in their own and other local languages—the crucial purpose of their training—they were linguistically and conceptually challenged, limited in their abilities to transfer the knowledge they had acquired in English to their local languages. What had been easy to do among their peers in the classroom, became difficult in the real-world application that required them to use basic interpersonal communicative skills (BICS); that is, they were unable to effectively transfer their English-learned conceptual knowledge, indicating that it had not, in fact, become sufficiently embedded to support transfer into other languages.

Given the reality of English as the official national language, and as evidenced by their interactions at the ART clinic, the Health and Wellness Peer Educators had no option but to learn the English language of health and wellness. However, also given that the goal of the Peer Education Programme was to communicate health and wellness information in local languages to local people, neither was learning in local languages optional. The Health and Wellness Peer Education workshop needed to be conducted "bilingually;" that is, in the many languages in which the educators would present information, as well as in English. Opportunities to do this were available. For example, the pamphlets (Figure 24, below) given to the wellness educators at the ART clinic to be handed out at the community outreach, which were published in a number of local Namibian African languages, would have provided a perfect preparatory teaching and learning text.



SO/ÔANA RA MA!OA /HAI//UIB (MDR TB

Tareba a /hai//ui?
/Hai//uib ge /aeb hia kimgu xara !aromaheba, /gui khoe e xu nau khoe I /kha #oab !na ura tani !kharuhese. /Hai//uib ge //naedisase soga ra tsâ/kha, xawe nau !ân soros din, ai// gause #khûs, !nain tsî dûdûb tsîna a tsâ/kha //kha. !Nasa !nae!khaidi !na ige /hai//uiba uhâ khoe e !gâi / ae!khoden ga !kho!oa tama I ora //o.

Tare e a so/ôana ra ma!oa /hai//ui?
Ne !noa /hai//guib hia da MDR TB ti /gui #anni ge //naedisase dara ho / hai//uib so/ôan xa #gau#gauhe //oa.

Ma /gaub !na ib so/ôana ra ma!oa /hai//uiba //naedisa /hai//uiba xura !khaaraga?
//Gau//gaudi so/ôana ra ma!oa / hai//uib didi ge //naedisase da a #an /hai//uib didi /kha a /gui. Ne // osa #khigus /gaugu tsîn ge a /gui. Hoara u hâ !kharagagusis ge so/ôan hia ne so/ôana ra ma!oa /hai//uiba ra /ae!kho uhena hia //aubexa /gam kurigu //aeba ni uhena.

Ma /gaub !nab so/ôana ra ma!oa /hai//uiba ra tani !kharuhe tamas gara io ra #hihe?
//Naedisa /hai//uib khama ib ge so/ôana ra ma!oa /hai//uiba #ab hia #oab !na u //uits ga soab aira !hub, khoe I ga a !au, tamas gara io amsa !kho tamase #ara ora tani !kharuhe.

Tarina ne !noa /hai//uiba ho//kha?
Ma khoe I hoa I ge ne //osa a hoa// kha. Saoradi ge !aromade.

- //în ga //naedisa /hai//uiba uhâ tsî //în so/ôana //aeb ai sîsen u tama gara io. Ai//gause /hai//uib belde asats gara mai#ûi tamas gara io mahe hâ //aeb ai ditoa tama gara io. Nes ge !nasase so/ôana ra ma!oa /hai//uibats ni ho !khaisa ra !aroma.
- Khoe I ga /guguse /nai so/ôanara ma!oa /hai//uiba uhâ khoe I /kha hâ tsî ne //osa ho o.

Mati ta ni #an tita ne !noa so/ôana ra ma!oa /hai//uiba uhâsa?
Sats ni so/ôana ra ma!oa /hai// uibats ga uhâ o tsâ /gaub ge // naedisa /hai//uiba uhâ khoen diba xu !kharaga tama hâ. //gau//gaudi ge !nonas xa !nasa wekheb //aeba //uis, !khai masiba ho!âs, /us !na hâ tsûb, tsî soros ra //gôa, #ûturab ra be tsîts ge !oes !nara /hau. /O-aisas !âis ge laboratoriums !na u ni dihe khoe I so/ôana ra ma!oa /hai//uiba uhâ !khaisa #an#ûis !aroma. Sats ga ne //osats uhâ !khais !aoba uhâ, ai// gause îts ge /nai ne //osa uhâ khoei / kha hâ/hao hâ I o ne !âide sa #urusib sîsen-ao I /kha !hoa#am.

!Kharaga!nagu So/ôanara ma!oa /hai//uiba #gau#gauhe //kha a?
I, so/ôanara ma!oa /hai//uib ge a #gau#gauhe //kha. Xawe //aeb nesa dis dib ge kaise a kaixu tsî !gom. /Ae-aon ge /o-aisa so/ôana //aeba xu //aeb /kha ni u, /gam tamas gara io !nasa kurin // aeba.

Mati ini ha tita ga HIV tsî so/ôana ra ma!oa /hai//uib tsîna uhâ soab ai?
HIV sa uhâ khoe I ge kaise !haese / hai//uiba ho//kha .Xawe !gâi #hôa I ge /hai. Xawe !gâi #hôa I ge / hai//uib HIV 'sa uhâ khoen !nas tsîna #gau#gauhe //khasa. Sa HIV's ma!husats ni #an !khais ge //na amaga a #hâ#hâsa.

- //Khaes, #an#ûis tsî /ae!khos !na hâ//kha !gomsiga /ari#ûis !aroma.
- Sa omaris tsî /gôarona !ûi!gâs / awe//guiga dis !aroma.

MULTIDRUG-RESISTANT TUBERCULOSIS (MDR TB)

What is tuberculosis (TB?)
Tuberculosis (TB) is a disease caused by germs that are spread from person to person through the air. TB usually affects the lungs, but it can also affect other parts of the body, such as the brain, the kidneys, or the spine. In most cases, TB is curable; however, persons with TB can die if they do not get proper treatment on time.

What is MDR TB?
MDR TB stands for "Multi Drug Resistant Tuberculosis".It is a form of tuberculosis (TB) that CANNOT be cured with the usual TB medicines.

How is MDR TB Different from the regular TB?
The signs and symptoms of MDR TB are the same as for regular TB. The transmission (way of spreading) is also the same. The only difference is the medicines that are used to treat MDR TB, and which have to be taken for up to 2 years or more.

How is MDR TB spread?
Like regular TB, MDR TB spreads to other people from an affected person through the air by coughing, shouting, or spitting without covering his or her mouth.

Who gets MDR TB?
Anyone can get MDR TB. People can develop MDR TB because:

- They had regular TB and did not take their TB medicines properly, for example skipping TB pills or not completing treatment. This is the commonest cause of MDR TB
- They were in close contact with someone who already had MDR TB and got MDR TB.

How do I know if I have MDR TB?
What you feel with MDR TB is no different from the way people with regular TB feel. Symptoms include coughing for more than 2 weeks, fever, chest pain, loss of weight, loss of appetite and sweating at night. A special test on the sputum will be done by the laboratory to find out if a person has MDR TB. If you feel you are at risk, for example if you have lived with someone with MDR TB, discuss these tests with your health care worker.

Is MDR TB curable?
Yes, MDR TB can be cured. But the treatment is long and often difficult. Patients need to take special medicines every day, for up to two years; sometimes more.

What if I am infected with HIV as well, is MDR TB curable?
An HIV-infected person is more likely to develop TB. However, the good news is that TB can be cured, even in HIV - infected persons. Benefits of knowing your HIV status include:

- being able to help prevent, diagnose, and treat complications;
- to enable planning for care of your family and children;
- having access to antiretroviral therapy, which improves the quality of life and prevents deaths from HIV

How is MDR TB Treated?
The treatment of MDR TB, also known as second line TB treatment, is divided into two parts or "phases".

1. In the first phase of treatment a patient will receive an injection and several pills every day for a minimum duration of eight (8)

Figure 24. TB Information pamphlets (Damara/English language). Reprinted from Republic of Namibia, Ministry of Health and Social Services, n.d.

No opportunity was given/taken to use these materials in order to cross reference Namibian African and English language vocabularies, to enable, for example, code-switching in order to assist knowledge transfer.

Summary

Observing the five OHS training modules was a major source of understanding how English language instruction, materials, and communication might present barriers to OHS knowledge transfer and application, and provided a rich background upon which to illuminate shop floor workers' perspectives concerning teaching and learning challenges presented by training provided in an unfamiliar language. Moving from the Environment and Health and Safety Induction modules—the most basic level of training—to the increased responsibilities inherent in HSE Representative's training, the more technical content of the Confined Space Training, and the multi-faceted demands and goals of the Health and Wellness Peer Education

workshop exposed me to the diversity of language abilities, and the variety of challenges inherent in the multilingual, but ESL/EFL environment of the subsidiary.

In Chapter 6, these insights are taken to the facility shop floor, the next snapshot in the expanding panorama. Beginning with What the Shop Floor Looks Like, the chapter moves to an exploration of Learning on the Shop Floor, and Language and Communication on the Shop Floor.

Chapter 6: "What does this look like on the shop floor?"

What the Shop Floor Looks Like[33]

The Shop Floor: Narrative Snapshot #1

I can now understand that wearing PPE takes some getting used to. Breathing with the ventilator on is an adjustment, and I was often tempted to pull it off for some "fresh" air. It must be fitted just so, and adjusted on the head in a particular way. Then, on goes the hardhat, which is much lighter than I expected. With my glasses on—essential—the fitting of the protective glasses was less than ideal. Another solution would be needed if I did this for a living!

Although I have read, been told about, and knew to expect dirt and dust, it is incredible how much there is and how quickly it accumulates on the hands and any other exposed area. I didn't have gloves on; one use of the guard rails and my hands were almost instantly black. This is, indeed, a dirty business!

I accompanied [the Safety Manager] on his weekly safety round—a different section of the [facility] is randomly visited each week, and potential hazards recorded for later action. In this case, for example, [the Safety Manager] pointed out that one of the trollies in the receiving bay was overfull, and presented a fire hazard due to the electrical running the conveyer belt above it.

It is one thing to hear about the potential hazards on site, quite another to see, first hand, the many, many ways that an accident could happen. While walking around the furnace [running at 1150-1250 C., but water-cooled on its exterior], I noticed a "handle" sticking out from one of the door panels—it had a 2-ended bar on the end that could easily have hooked onto my coat, either entering or exiting. Of course, the workers skirt this all day, every day….

All interaction that I heard was conducted in Afrikaans and/or Namibian African languages. However, when asked a question in English, posed by my tour guide, for example, most responded in English.

The company safety, PPE, and other signs are mostly covered in dust, and difficult to see/read. I would like to see what is posted in each section, and where. HSE reps are supposed to post information, but it was hard to see where this might happen.

Housekeeping!

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[33] The names of specific sections and divisions of the facility, as well as their functions, are deliberately withheld in order to respect confidentiality agreements.

> *My head was constantly down, then up, but mostly down, to be sure that I did not trip on something, or stumble.* (Overing, Field Notes, May 20, 2015)

Participant Perspectives

During informal conversations and formal interviews, some shop floor workers from different divisions of the facility spoke about the conditions under which they worked; their comments confirmed the impressions I had during my very cursory observation of some areas of the site. In conversation with a group of workers, for example, attention was drawn to how dirty the working environment is. More specifically, some shop floor operators referred to the conditions in their particular sections:

> *Lot of smoke and dust for 8 hours.* (P1, June 1, 2015)
>
> . . . *smoke and dust everywhere. . . . heat* . . . (P4, May 21, 2015)

Many sections of the facility, and specific jobs are extremely noisy and, as one worker pointed out, this creates communication problems at a very basic level,

> . . . *hearing—[it is] noisy, so sign language [is] used.* (P5, May 25, 2015)

Training courses sought to address these and other health, safety and environment issues; however, targeted, on-the-job, and more informal teaching happened on the shop floor.

Learning on the Shop Floor

Tool Box Talks

On the shop floor, OHS instruction was carried out via Tool Box Talks, a very common means of training in industrial sectors. Within their divisions, Superintendents, Supervisors, Foremen, and/or HSE Reps conducted 15-minute, on-site, pre-shift mini-training sessions in the workers' break rooms—brief pointers on one specific OHS topic relevant to that particular section. In some cases, materials provided by the Training and Development department—in English only—were used for Tool Box Talks, such as the example shown in Figure 25, below.

CHEMICAL HAZARDS - METALWORKING FLUIDS

Metalworking fluids are liquids used in the machining process for cutting, boring or grinding. Their purpose is to reduce friction and carry away the heat. These fluids, and the additives they contain, are very useful but may cause a variety of health problems.

Skin exposure is the most common type of health problem associated with metalworking fluids, and may affect the skin following prolonged or frequent contact. Some of the fluid or additives may be absorbed by the skin, enter the blood stream, and cause adverse affects elsewhere in the body. In some cases a condition called "oil folliculitis," also known as oil acne, is produced so that the pores of the skin become plugged and the dermal glands cannot drain. These blocked glands often look like pimples. They may fill with pus, become red and cause itching and pain. The additives used in the fluids may also cause an allergic contact dermatitis. This is a reaction which produces redness and itching when even a small amount of the substance comes into contact with the skin.

Methods of *avoiding* direct contact with metalworking fluids include wearing chemical resistant gloves, goggles and aprons; installing deflecting shields to reduce splashes; and applying skin barrier creams when working with these substances.

Metalworking fluids may also form a mist of small droplets that are suspended in the air and can be inhaled. When these fluids are formed into a mist during the machining process, they can be very irritating to the eyes, nose and throat. This may create a burning sensation, sneezing, coughing or itching eyes. The larger droplets are trapped in the nose and windpipe, but smaller droplets can be deposited deep inside the lungs. The droplets which stay in the nose and windpipe can be swallowed, along with any metalworking fluid that may have contaminated food or beverages consumed at work.

Limited information is available about the long term affects of metalworking fluids and oil mists on the lungs. Evidence suggests that inhalation of metalworking fluid mists over a period of years may lead to lung cancer. Repeated exposure to the insoluble fluids containing mineral oil may also cause skin cancer. The Metalworking Fluids Standards Advisory Committee is currently studying methods of controlling metalworking fluid mist through technology.

Water soluble cutting oil is an option that many companies are using as a substitute, in an attempt to mitigate hazardous exposures to workers and the environment. Water soluble cutting oil has minimal requirements for protecting humans and the environment from harmful exposures.

Your first line of defense against the health hazards associated with metalworking fluids is to have a thorough knowledge of the chemicals contained in the fluids along with ways to protect yourself from exposure. This information is always contained in the product's Material Safety Data Sheets and you should have these on file and available at all times. If you cannot locate an MSDS for metalworking fluids, ask your supervisor.

Figure 25. Chemical Hazards-Metalworking Fluids (Tool Box Talk Sample). Reprinted from toolboxtopics.com, n.d.

Highlighted areas in this sample point to potentially confusing terminology, as well as assumptions about the deliverer's ability to read in English and, when necessary, to explain the contents in the many languages of shop floor workers. The document was sourced from a web site, ToolBoxTopics.com, which provides hundreds of these types of informational blurbs.

One division Superintendent pointed out that the materials provided by the Training and Development department were long and technical, as the example above illustrates; in this division, and others, the preferred method of delivery was a more spontaneous one, focused on recent incidents or task-specific topics. These were considered, by shop floor operators and supervisory personnel alike, to be much more effective, as they allowed workers to contextualize the information given.

Participant Perspectives

Discussing the benefits of this spontaneous training approach, one interview participant explained that,

> *Safety issues can be raised at Tool Box Talks with the Supervisor, then these can be sent to the Manager, Safety, then discussed. . . . then the Supervisor can go back to workers and explain. For example [concerning the out-sourcing of respirator cleaning, rather than workers doing it themselves], "My respirator might pick up TB." [In the Tool Box Talk] show the sterilization process, show records, show the difference between sterilized and hand-cleaned.* (P14, April 21, 2015)

As well, languages switched back and forth with translation between workers. One HSE Rep said,

> *Safety Tool Box Talks [give shop floor workers] a chance to talk amongst themselves about Health and Safety.* (P3, May 26, 2015)

Another HSE Rep, who was a peer educator as well, also stressed the importance of Tool Box Talks, "because workers can have input" (P5, May 25, 2015).

The effectiveness of Tool Box Talks was not universally praised, however. As one shop floor worker put it,

> *Workers **do** listen and respond, **but** [then] go back to [their] old ways.* (P12, May 18, 2015)

This particular difficulty is certainly not unique to the subsidiary. As Tuchten (2011) pointed out, "the application of learning or technology transfer in the workplace is frequently cited as a

problem in mining" (p.148). On the multilingual shop floor, however, the reasons for this lack of application can be varied and complex.

Language and Communication on the Shop Floor

The Shop Floor: Narrative Snapshot #2

> *During my facility tour, there is a semi-breakdown of equipment in one division, which is responded to and corrected very quickly. Because I am with the Safety Manager when this happens, I end up in the "command centre" of that area. There are numerous computers for monitoring the zone. Each screen is densely packed with verbal and graphic information; I'm unable to see in what language this is provided. During the breakdown, as workers are communicating—transmitting orders and information back and forth—although I hear a number of languages, I hear no English either in this room or from the shop floor.*
>
> [And I commented to myself, not for the first time,] *"If shop floor business is conducted in every language but English, why train shop floor workers in English only?"* (Overing, Field Notes, May 20, 2015).

Lines of Communication

The process of risk, hazard, and safety communication on the shop floor was raised by some interview participants as hindering compliance, and was linked with language issues.

Under the Namibian Labour Act, employees have the right to leave a dangerous place of work:

> (1) If an employee has reasonable cause to believe that, until effective measures have been taken, it is neither safe nor healthy to continue work in a place of work, that employee may leave that place.
>
> (2) If an employee leaves a place of work in terms of subsection (1), the employee must immediately inform the employer of the basis for believing that it is not safe or healthy to continue working there. (Republic of Namibia, 2007, Article 42)

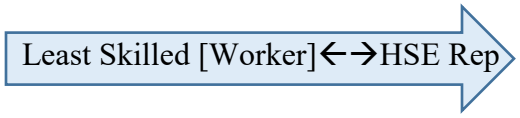
The OHS policy of the subsidiary undertakes to comply with all articles of the Labour Act, and amplifies employees' responsibilities by including a duty to "report any high-risk conditions to the HSE representative as soon as possible. The HSE representative should report these to the employer" (HSE Representative Manual, 2014, p. 10). The right to leave a dangerous place of work, as well as the duty to report high risk conditions is strongly emphasized in the Environment and Health and Safety Induction training modules. To fulfill these responsibilities,

shop floor workers must be capable of effectively communicating the nature of the potential risk; HSE Reps must be able to understand what is communicated, and to convey this information to the next in command.

During a group interview with four shop floor workers (P6-9, May 21, 2015), participants explained their understandings and experiences of the system and flow of communication in the facility with regards to health and safety concerns, potential hazards, and actual incidents.

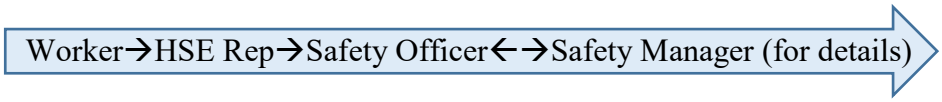
The arrows below illustrate their perceptions of the line of communication for reporting issues, moving from less to more urgent situations. While examining these, it will be pertinent to keep in mind the diversity of languages spoken on the shop floor, to remember the example of the HSE Representative trainee (referred to in Chapter 5) who spoke none of the "common" languages in the classroom fluently, and to consider the language accommodations that would need to be made in order to assure the effective "flow" of information.

As the Induction training directs, when reporting health and safety concerns or seeking information, the Worker communicates with the HSE Rep, who tries to respond to and/or resolve the issue:



If s/he cannot resolve a problem, the HSE Rep then communicates with the Safety Officer, who becomes responsible for addressing the issue, often with the help of the HSE Rep:

When incidents happen, and reports are made, the passing of information looks something like this:

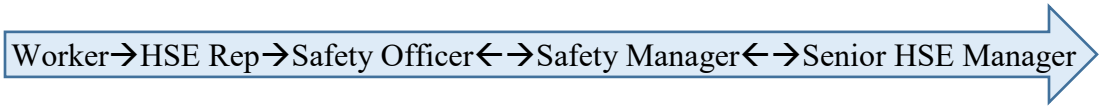


It can happen that the Worker has reported to the HSE Rep in a language that needs translation by the Worker's peers; the HSE Rep may need to translate, or receive help to translate, to the language spoken by the Safety Officer; then, the Safety Officer must make this understandable to the Safety Manager, which may require considerable back and forth communication. The

probability of that "broken telephone" scenario referred to earlier would seem to increase, with the Worker's first-hand account of the incident lost somewhere in the process. Indeed, one of the focus group participants commented on this very likely scenario:

> *Does the Safety Officer **know** the details? Still, [s/he] must be the one to explain, not the worker involved in the incident.* (P6-9, May 21, 2015)

When situations arise that cannot be resolved by the HSE Rep, the Safety Officer, and the Safety Manager, the communication chain stretches further, with increasing back and forth movement:



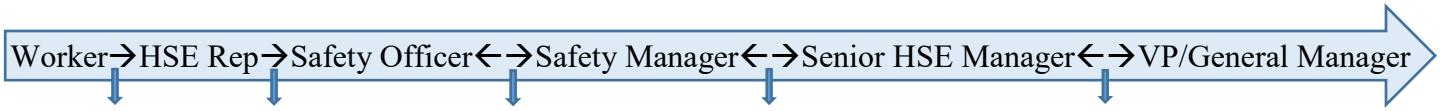
One HSE Rep described a shop floor occurrence that illustrated the communicative challenges this chain presents. There was an offloading incident in the division.

> *[I prepared an] evaluation statement, pictures, and saw what caused it. But, the report that came back for signature said otherwise. The statement that came back . . . to be read and signed was different than what I reported—I didn't sign it. Then, run, run to find management.* (P2, May 25, 2015)

Regarding reports and statements, and concerning other workers who are responsible for completing them, this interviewee went on to say that,

> *These reports are in English, and not all can understand, but it is on paper, with authority . . . so they sign.* (P2, May 25, 2015)

Finally, in more serious (but not emergency response) situations, the flow of communication looks like this:



NA/A NA/A +/- NA/A A A

Based on my experience, communication amongst employees during this process would look, linguistically, something like the indications above (NA=Namibian African; A=Afrikaans). English would rarely be employed.

Regarding this communication "system and flow," the four group interview participants said that,

> *[The] response is too slow and sometimes not at all. HSE Reps attend to [Incidence Reports] very quickly, but. . . .* (P6-9, May 21, 2015)

Previous comments, facial expressions, and gestures implied that the system broke down at some point beyond the power of HSE Reps.

Other workers echoed the perceptions of these four interviewees concerning the ineffectiveness of the communication network, pointing to "no communication" between bottom and top levels of the subsidiary (P1, June 1, 2015), and a situation where,

> *Company divisions work in silos.* (P14, April 21, 2015)

Signs and Posters

Compounding the perceived ineffectiveness of the communication network was the fact of English being the language in which OHS information was posted within the facility. As discussed in Chapter 5, signage plays a large role in the OHS strategies adopted by the subsidiary. The use of "simple," "universal" icons—sometimes on their own; sometimes with accompanying written warnings—was viewed by the HHSEPS division as an effective means of instantly communicating potential dangers. However, as Cameron et al. (2011), Lindhout et al. (2012), and Leon et al. (1994, cited in Tuchten, 2011) pointed out, assumptions about workers' actual ability to comprehend signage may be unreliable.

Other means of communication that I came across included a large computer-operated screen at the entrance to the facility on which health and safety tips, employee events, environmental data, weather, and the like were projected. Within the Training and Development building where classes were held and there was some shop floor worker traffic, there were notice boards on which were posted health and safety information sheets and posters (for example, Figure 26, below).

Figure 26. Health, Safety, and Environment Information Poster (photo), Overing, 2015.

While one worker thought that these information postings were effective (P12, May 18, 2015), others referred to them as, “blah, blah, blah” (P6-9, May 21, 2015). At the entrance to the work zone of the facility, danger warnings and correct PPE reminders were posted, as they were throughout the facility. All of these postings were in English only.

As Chapters 5 and 6 illustrate, both in the classroom and on the shop floor, English dominated in Health, Safety and Environment education and risk management. Amongst themselves and on the shop floor, however, Afrikaans functioned as the primary *lingua franca*, used in an attempt to mediate the many Namibian African languages spoken by workers. In Chapter 7, the question of how language issues were perceived to influence OHS policy compliance is explored.

Chapter 7: "How do language issues influence compliance?"

Introduction

Unpacking "compliance"

The notion of compliance, and the reliance on the systems that accompany a compliance-based OHS policy are controversial issues in current health and safety literature. Tuchten (2011) takes particular issue with the focus on compliance, likening it to attempts at the "rehabilitation of elementary workers,"[34] that relies on "prescribed rules and procedures" (p. 145). Compliance-based OHS management is founded on elements of behaviourist psychology, and first came into vogue in South Africa—the context of Tuchten's research—in the 1980s (Smith & Mulder, 2004 as cited in Tuchten, 2011, p. 123). Since then, as Reichardt (2010) pointed out,

> Many multinational mining companies have found that the behaviour-based safety programmes, instituted among their workforces in countries such as South Africa, struggle as they seek to impose a safety behaviour culture at work that exceeds that of employees' everyday life experiences. This suggests that further advances in work-place safety will need to change very fundamental tenets of the workforce culture. (as cited in Tuchten, 2011, p. 146)

The subsidiary's Integrated Management System (IMS) consisted of OHS and Environmental standards and practices set by a number of guidance programs, including the BS OHSAS18001 series referred to in Chapter 2. Hazard Identification and Risk Assessment (HIRA), referred to in the Confined Space training module, was another system employed.

As discussed in Chapter 4, workforce culture at the subsidiary was perceived by executive management personnel as a significant contributor to OHS non-compliance. In line with Reichardt's (2010) assessment, it was stated by a number of executives that, for shop floor workers, there was a sharp distinction between behaviour at home and requirements at work, and that workers had "no safety culture." From a worker's perspective, one of the training facilitators explained that,

Workers move from one world—village—to another world—[facility].

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[34] Tuchten's (2011) categorization of mine workers: elementary (unskilled), machinery operators and drivers (semi-skilled).

> *[They] don't have [facility] knowledge and culture, so [they] use existing village knowledge. There is a safety culture and it applies in the village context; therefore, it must be built upon along with the new technical, work skills.* (P17, June 3, 2015)

Assumptions that workers' ways were "wrong," and the lack of consideration of their previous knowledge was said to influence negative perceptions on workers' part that they were "forced" into "unnecessary" behaviours as some kind of "punishment," with the further negative effect of influencing compliance.

The perceived imposition of "rules-for-rules-sake" would certainly not be lessened by those rules being "imposed" in an unfamiliar language. As Shein (1996) stated, "safety culture, communication and language are related" (as cited in Lindhout & Ale, 2009, p. 249). Burkhardt (2014) cautioned that, unless language issues "are addressed by management, it can be difficult or perhaps impossible for some employees to work effectively and safely" (para. 5).

Communication, Language and Compliance

In the literature concerning language issues for immigrant workers, it is pointed out that one way in which language works against OHS compliance is that when workers have difficulties communicating with their co-workers they become reluctant to report dangerous situations and/or to refuse to work within them (Lindhout & Ale, 2009; Lindhout et al., 2012; Magee, 2015; O'Connor et al., 2014). Concerning the global increase of immigrant workers in industry, Magee (2015) maintained that "the reality of these new multi-lingual and multi-cultural workplaces has led to particular challenges with regards to risk communication" (para. 1). Amongst these challenges, O'Connor et al. (2014) suggested, "language barriers between workers and supervisors . . . may prevent workers from acting to address safety concerns at work" (p. 15).

In the South African context,[35] Tuchten (2011) pointed out a number of factors that complicate communication in the mining industry, two of which were the many different

[35] In the absence of related literature regarding Namibia, South Africa—due to its enduring influence on Namibian policy and practice in mining—provides a relevant reference point concerning language related safety issues. A significant difference between the two countries, however, is that South Africa has 11 official languages (including English), as compared to Namibia's sole official language, English. This means that, in relation to accommodating the multilingual shop floor, South Africa can, at least theoretically, legally choose from a larger set of linguistic options than can Namibia.

languages used by mineworkers, and the fact that "many workers do not speak English" (p. 130). Furthermore, in a 2008 mine and safety audit, the South African Department of Minerals and Energy (DME) emphasized that,

> The workforce speaks a range of languages resulting in constraints in terms of communication. . . . The safe and healthy operation of the industry depends . . . on effective communication. . . . The lack of common communication undermines the efficiency of oral communication" (pp. 36-7).

Participant Perspectives: Communication and Compliance

Shop floor workers who participated in the study raised a number of issues related to the communication system within the subsidiary and how it affected compliance with OHS duties and responsibilities.

Unacknowledged understandings. Some workers insisted that they and many of their peers understood, intuitively and from experience, the dangers inherent in their work environment:

> *Workers do understand safety. . . .* (P2, May 25, 2015)
>
> *Workers **do** understand that their lives and health are in danger without PPE. . . .* (P3, May 26, 2015)
>
> *People understand safety. . . .* (P5, May 25, 2015)

These statements are consistent with Tuchten's (2011) observation, discussed above, that mining workers demonstrate "a culture of 'self-preservation'" (p. 145).

Undermining the duty to report and the right to refuse. Despite their understanding, however, a number of interview participants pointed out that the type of communicative system that confronted shop floor workers was intimidating and created a barrier to their reporting of safety issues:

> *Workers become very fearful.* (P2, May 25, 2015)
>
> *. . . no questioning [of] instructions: "Do as [you're] told!"* (P4, May 21 2015)
>
> *. . . though employees know better, they are powerless to say so.* (P10-11, June 6, 2015)

Missing teachable moments. Related to these issues, some workers expressed the view that communicative difficulties resulted in a

> *"From now on . . ." [approach to] instructions . . . without explaining the right way, just imposing.* (P6-9, May 21, 2015)

Thus, the communication system within the hierarchical and authoritative subsidiary management culture were perceived to discount shop floor workers' existing OHS knowledge, to interfere with the duty to report and the responsibility to refuse unsafe work, and to neglect immediate teaching/learning opportunities—teachable moments—which would contribute to long-term understandings of health and safety regulations on the shop floor.

To what extent were these difficulties considered attributable to English language OHS instruction, communication, and informational materials?

Participant Perspectives: Language and Compliance

For shop floor workers at the subsidiary, reporting health and safety concerns and/or activating their rights to refuse to work in hazardous conditions on the shop floor emerged as the most significant perceived difficulty related to language issues and compliance. Other constraints, some aspects of which were related to the primary concern, were identified across study participants: ST language, and written safety warnings/information.

Language and the duty to report/right to refuse. A fundamental necessity in activating the duty to report hazards and the right to refuse to work in unsafe conditions is an understanding of the elemental concepts of duties and rights. This knowledge goes beyond understandings of safe/unsafe conditions—which, it has been suggested, miners often grasp almost intuitively as a self-preservation tactic, and which subsidiary shop floor workers were said to hold. The English language of "rights" and "duties" assumes an education that, for many shop floor workers has not been available. Enacting these Euro-Western legal concepts would require a grasp of English far beyond what was demonstrated by most; in none of the training sessions that presented these concepts were explanations provided in Namibian African languages.

Furthermore, it is important to keep in mind that Namibia only gained independence in 1990, after decades of brutal, racist, and apartheid rule; for a large portion of the shop floor workforce, these freedoms might not be taken-for-granted truths. The referencing of labour codes and legal obligations, reproduced in English legal language on PPTs and in training manuals might be scant assurance of impunity from discipline for confronting company authority.

Feeling intimidated. In fact, feelings of intimidation were viewed by some interview participants as particularly prevalent among workers with limited English, and Afrikaans,

language abilities. For example, the older shop floor population was perceived as most likely to avoid confrontations about safety issues:

> *[The] older generation [is] resistant, but don't question orders.* (P4, May 21, 2015)

As previously mentioned, cultural influences and colonial legacies must certainly be acknowledged as contributing to the non-questioning of authority by older workers. As one shop floor worker put it,

> *[The] authoritarian model of schools carries to training—[a] stick mentality*[36] *[that leads to workers saying,] "Yes, I understand," even if they don't.* (P2, May 25, 2015)
>
> *. . . HSE Reps can't challenge due to culture.* (P18, April 20, 2015)

However, as discussed in Chapter 3, this particular demographic group—an estimated 50% of the worker population—was also frequently referred to by executive management and co-workers as having the most limited English language skills, relying on their mother tongue, with varying abilities in other Namibian African languages and/or Afrikaans. Even those who spoke Afrikaans, one interviewee said, "may not have complete understanding" (P5, May 25, 2015).

Keeping in mind that, explaining and reporting OHS concerns or incidents might involve layers of translation; hazard and incident reports were written in English; the final, English report might not clearly and correctly represent the facts, (P2, May 25, 2015; P6-9, May 21, 2015); and, "someone will be blamed" (P2, May 25, 2015)—older workers' reticence to report health, safety, and environmental hazards and/or to refuse to work in unsafe conditions seemed justified.

Though perceived by some as more prevalent among older workers, language issues related to English-only OHS instruction and communication were also considered by a number of the workers interviewed to be influential factors related to younger workers' compliance with rules and responsibilities. Although some executive management personnel and study participants said that "most" young people spoke English, and faced little or no language and literacy difficulties with English MOI, others contradicted this perception:

> *There are old and young without English skills.* (P5, May 25. 2015)
>
> *[Approximately] 5% can't read, write in ANY language; older workers, mostly, but some aged 30 and up.* (P6-9, May 21, 2015)

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[36] Referring to the use of corporal punishment in the school system.

Research in both academic and vocational/technical education sectors, referenced in Chapter 2, concerning the limited language abilities of those schooled under early-exit ESL education models, as well as the high dropout rates attributed in part to English MOI, underscore the misperceptions concerning young people's language—and literacy—abilities.

New entry, low level workers were often young and unskilled; many were characterized by training and development personnel as being mostly Oshiwambo-speaking. Unlikely to have much, if any, previous knowledge of the facility processes, their introduction to these, and the hazardous environment surrounding them was through Induction training. As discussed in the Narrative Snapshots, but worth reiterating, prior to the training sessions, no assessment of shop floor workers' language abilities and/or previous experience was conducted. No handouts corresponding with the training presentation were given to class participants. No notetaking was observed. Little, sometimes no translation to Namibian African languages was provided. OHS information, given in English, was expected to be understood and applied on the basis of the oral presentation. It, thus, became the responsibility of HSE Reps and more experienced workers to provide OHS guidance to newcomers.

Following the culture that is already there. One of the most difficult OHS compliance challenges reported by management and shop floor workers alike was adherence to regulations concerning the proper use of Personal Protective Equipment (PPE), described by a management executive as taking a specific effort to integrate into normal work practice. My own experience of hard hat, safety glasses, and respirator wear provided a very mild example of PPE equipment.

There are a variety of PPE requirements, depending on the place and type of work in the facility, ranging from full body coverage, to lab-coats, industrial boots, hardhats, and protective glasses. The use of ventilators and respirators was a consistent requirement within most areas of the facility; the negligence and/or improper use of ventilators/respirators were also the most consistent OHS infractions.

One HSE Rep reported seeing safety problems daily, including incorrect PPE wear (P2, May 25, 2015). Another, also stating that there was a problem with safety compliance, explained co-workers' reasons for non-compliance with PPE regulations:

> *[They say,] "We don't have to wear it all the 8 hours in too much heat." But, [they] also don't wear in cool places, [saying,] "[We] cannot wear the whole 8 ½ hours."* (P3, May 26, 2015)

Furthermore, a safety officer said that workers only follow PPE rules when the safety officer comes along, then warn others down the line (P12, May 18, 2015). During my facility tours, which required the use of a ventilator, I witnessed this behaviour—ventilators/respirators being "adjusted" as we moved through the different divisions.

Into this environment, fresh from Induction training that s/he may have incompletely understood, comes the young worker who, as one interviewee stated, will

> *. . . follow the culture that is already there. (P15, April 30, 2015)*

This particular interviewee, who also insisted that language is a barrier to OHS learning and compliance, suggested that the inability to read influenced this behaviour (P15, April 30, 2015). Another employee, who had regular contact with workers from divisions across the facility, reinforced this suggestion, stating that,

> *People don't read . . . because it's almost always in English. Even slogans [are] only in English.* (P16, April 30, 2015)

And, as another worker stated,

> *In the general worker group, English becomes a very big problem.* (P17, June 3, 2015)

So, the young new entry, who may have had some exposure to English, but could just as likely speak Oshiwambo (or another of the many Namibian African languages spoken on the shop floor) only, may land in a well-established group on the shop floor that uses Afrikaans and/or Namibian African languages, and follows OHS PPE rules selectively. Because the worker is new, less experienced, may not have fully grasped in English the importance of correct PPE use, and needs to fit into this group, s/he will be easily influenced by the attitudes and practices of her/his co-workers. As OHS posters and warning signs, which might have worked to convince the entry level worker of the health hazards that result from improper PPE wear, are in English or "universal" iconic language that may not be understood, the behaviour of peers becomes the model.

Written Safety Warnings/Information. During the five months at the facility, I saw only one sign that included Namibian African languages (Figure 27, below):

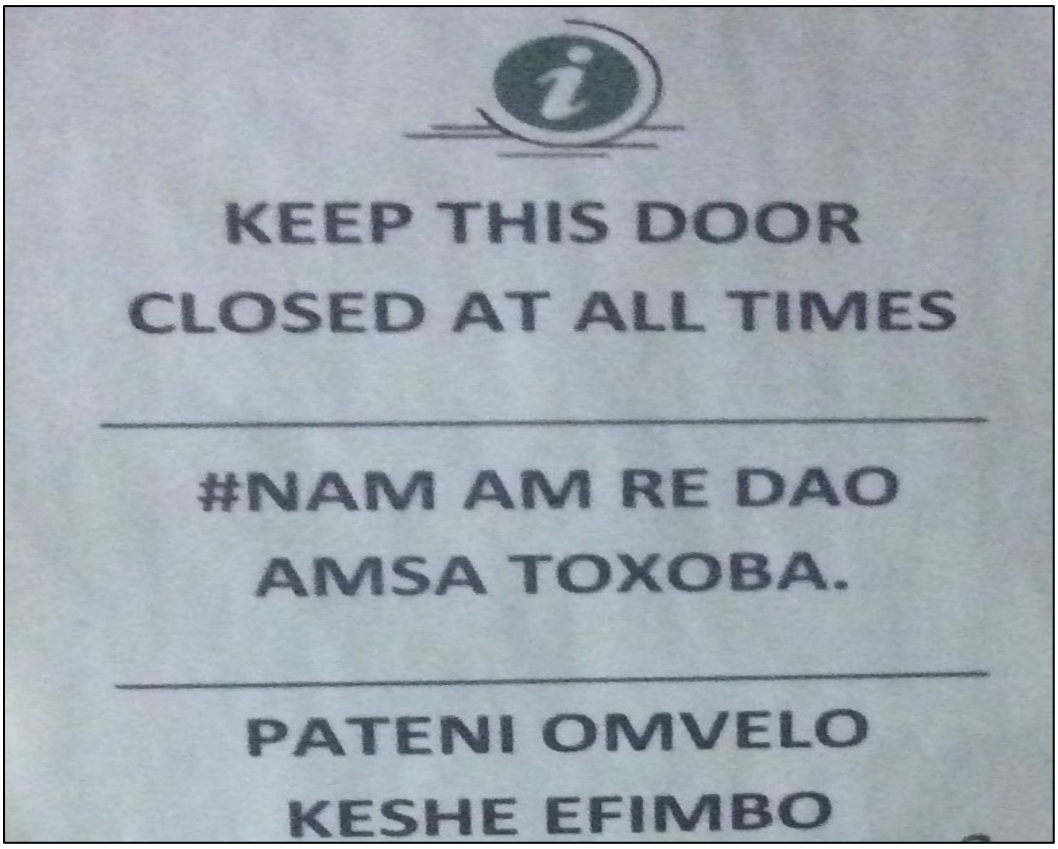

Figure 27. Namibian African languages sign (photo). Overing, 2015.

This was taped to an exit door in the Training and Development division, where all other postings were in English only.

In addition to general safety warnings, much of the equipment, and all of the chemical products used on site carried their own instructions for correct/safe use, and standardized hazard indicators. An example of the latter, related to the Confined Space training, was shown in Figure 21, above. All text on warnings and hazard indicators that were not represented by icons alone was in English.

During a group interview with four workers who used a variety of industry-related precision machinery, instruments and tools, they criticized training as being too theoretical, with not enough practical. They particularly emphasized the difficulties presented by the use of English manuals and materials for the theory. English language abilities within this group were varied, from excellent to requiring translation support. Some of the interview participants had recently attended a Fire Fighting training session, where they "never touched an extinguisher!"

(P6-9, May 21, 2015). Instead, the presentation relied on PPTs and handouts. An example of the types of materials used in Fire Fighting training is shown below (Figure 28):

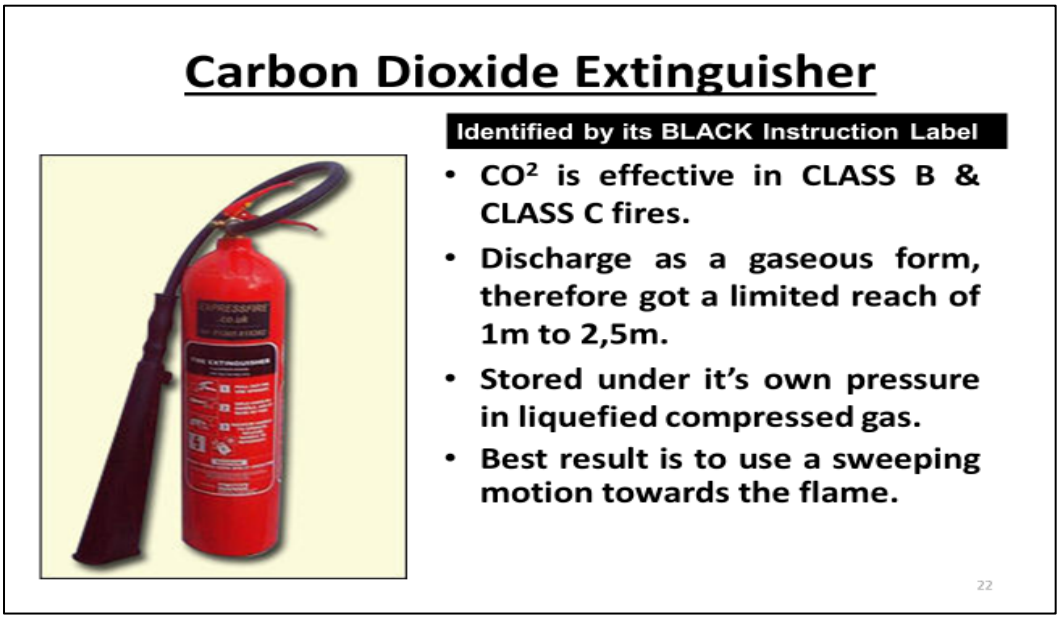

Figure 28. Carbon Dioxide Extinguisher (PPT slide). Reprinted from *Fire Fighting-Basic Course* (PPT presentation), with permission.

Fire extinguishers are present throughout the facility, and installations do include instructions for their use; these are in English. There are four different types of fire extinguishers that correspond with different fire hazards; for example, as distinguished from the Carbon Dioxide Extinguisher pictured above, the Foam (AFFF) Extinguisher is identified by its "biscuit cream" coloured instruction label, and is used in Class A and B fires. These distinctions are not clarified in the Health and Safety Induction training module; the PPT frame used in the Health and Safety Induction training is shown below (Figure29):

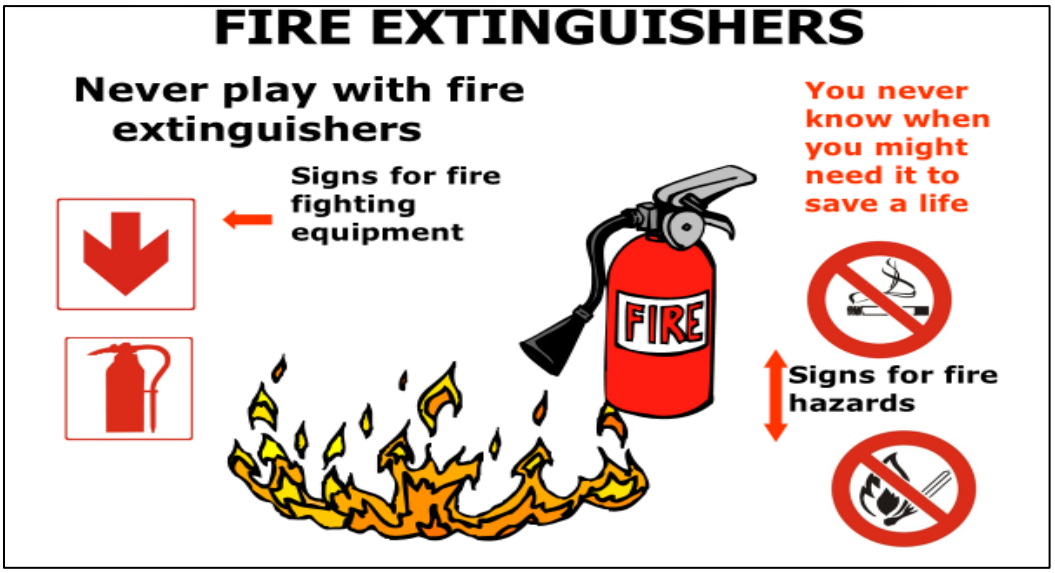

Figure 29. Fire Extinguishers (PPT slide). Reprinted from *Health and Safety Induction* (PPT presentation), with permission.

The message here seems to be that there is a generic "fire extinguisher," to which it would be expected that all extinguishers would conform. Rather than instructive, the focus of the frame is proscriptive; the tone reminded me of the COSDEC Plumbing and Pipe Fitting class described above, where the instructor regularly warned students about breaking equipment. No instructions for the correct use of fire extinguishers were given in the Health and Safety Induction module. Instruction for new shop floor workers would rely on more experienced co-workers. Without this training support, the ability to follow instructions and/or comply with the regulations concerning fire hazards, as well as swift response to a fire situation would very likely be inhibited by the limited English language abilities attributed by the majority of interview participants to the average worker. Apart from linguistic challenges, the ST language would be all but incomprehensible. Translation would be necessary.

ST language: Lost in translation. During informal conversations with management personnel in Training and Development, it was noted that words for science and technology concepts don't exist in Oshiwambo. An interview participant confirmed that,

> *[Workers] say they understand, but they don't. [They] cannot shift concepts.* (P13, May 19, 2015)

This challenge is not unique to Oshiwambo, or Namibia. A health and safety specialist with whom I spoke, who had many years of training experience across Africa, emphasized the difficulties of providing instruction in English, due to the fact that words for concepts were often missing in local languages.

Thus, as a number of HSE personnel pointed out, direct translation of English ST words would not necessarily lead to conceptual understanding. An example of this difficulty, related to compliance with ventilator/respirator regulations, was given by an HSE Rep. Shop floor workers must wear ventilators (for oxygen) in certain parts of the facility, and respirators (equipped with filters) in others. The physical distinction between these two pieces of equipment is understood, but the specific, different health hazards attached to not wearing one or the other are not always grasped,

> *. . . even though they are told over and over. [Workers say,] "You force us to wear the respirators.* (P3, May 26, 2015)

Concerning workers' understandings of occupational health and hygiene in relation to the facility environment, one health professional cited challenges presented by workers' inability to understand terms, concepts, tests, and results. S/he pointed to the example of risk-based medical assessments—a selective process, based on the particular hazards presented within certain work environments—saying that workers often don't understand why some are tested, some not. This resulted in claims by some that they were not being looked after (Overing, April 20, 2015).

In order to avoid the complication of trying to explain to workers without ST knowledge or language terms and concepts that do not translate well into local languages, simplistic explanations—such as those given in the Health and Safety Induction module—and overly general warnings are given. One HSE Rep described just such an occurrence in one of the training modules at the facility:

> *Acid described as **dangerous**, and this scares the workers. If its dangers were explained, then workers would understand **why** handling it carefully is important. Without this explanation, they just try to avoid it.* (P2, May 25, 2015)

And, in avoiding it, the necessary actions to deal with acid incidents would also not be apparent and/or taken.

Direct translation from English to Namibian African languages being so difficult, and some workers having not even Afrikaans abilities, understanding of technical terms and

procedures—as well as compliance with them—would require negotiations of meanings between shop workers. This was one of the compensatory methods adopted in the multilingual facility.

Summary

Despite the language and communication challenges raised by interviewees, all was not mayhem on the shop floor; there was not a chaos of health, safety, and environmental incidents during my time at the subsidiary. I was aware of one accident that had sidelined a shop floor worker prior to my entry into the research field, and there was a shut-down of one major division of the facility, due to dangerous conditions, during my time in the field.

Based on informal conversations, observations, and study participants' input, workers' linguistic accommodations and adaptations appeared to play an influential role in the avoidance of hazards and risks. The ways in which these adjustments were incorporated are explored in Chapter 8.

Chapter 8: "How do workers compensate?"

Introduction

Code-switching and code-mixing emerged as the primary adaptive tools used by shop floor workers faced with linguistic challenges. Code-switching/mixing occurred informally during interactions between bi/plurilingual speakers of different languages. It was also sometimes used more formally in the training sessions, when the facilitator was able to switch languages, with the specific purpose of clarifying meaning.

Relying on more experienced workers, though sometimes a negative influence in terms of shop floor health and safety behaviour (as discussed above), did work positively to mitigate language barriers. This was particularly evident during Tool Box Talks.

Namlish and Lovanailonga[37]

Linguistic adaptations are a common occurrence in multi-lingual environments—Franglais in Québec, or Yiddish in Europe are examples of this phenomenon. In Namibia, combinations of Namibian African languages, Afrikaans, and English produce an adaptive communication mode that is commonly referred to as Namlish. One of the training facilitators referred to their English usage in this way.

In addition to these types of national adaptations, context-embedded language abilities also develop within multi-lingual professional and educational environments. In my own professional experience working in dental clinics in Québec, for example, Anglophone colleagues developed a facility in "dental French." In Namibia, I encountered a medical student who was studying in China; s/he spoke of having learned "medical Chinese."

Similar to these context-related linguistic adaptations, on multilingual shop floors, it is not unusual for workers to develop a job-based, shared language in order to facilitate quick and easy communication. In South Africa, for example, where there are 11 official languages, "the accepted lingua franca of the [mining] sector has been a local pidgin language known as

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[37] *Lovanailonga* means *worker* in Oshikwanyama, one of seven Ovambo languages spoken in Namibia, and is used here to represent a shared language that has evolved within the multilingual mining subsidiary. Because the local name used for the shared language includes the particular type of mining facility, it has been replaced in order to respect confidentiality agreements.

Fanakalo" (Tuchten, 2011, p. 139). At the Namibian facility, although Afrikaans was said to be the *lingua franca*, it was not universally spoken by shop floor workers.

Absent an established shared language, "workers may create their own mix of languages" (Lüdi et al. 2010). This was the case at the facility:

> *In groups, workers help each other with language.* (P16, April 30, 2015)
>
> *Group uses the many languages that are present and interpret for each other. It's about* ***understanding****, so whatever language is needed for that.* (P3-May 26, 2015)

According to workers, this use and shifting of languages back and forth resulted in the development of words and phrases that neatly and quickly conveyed essential information and knowledge within, and sometimes across divisions. It is referred to here as Lovanailonga. I was first introduced to the use of Lovanailonga by a shop floor Superintendent, who told me that when the shift siren sounded, the workers responded with the Lovanailonga equivalent to, "The car is crying." Informal conversations with union representatives confirmed that Lovanailonga served to accommodate workers' linguistic diversity (Informal Conversation, April 17, 2015).

The code-switching and code-mixing[38] of local words and concepts would assist in drawing out experiential and/or Indigenous knowledge, creating the sort of learning moments described by Mukwambo (2017), above. This conceptual translation of OHS information was thought by some to contribute to better understandings of rules and procedures (Overing, April 10, 2015; Informal Conversations, 2015; P3, May 26, 2015; P16, April 30, 2015).

Peer Education

Concerning the reliance on more informed and/or experienced workers, one HSE Rep said that,

> *For training, [the] Supervisor will choose those who will understand to go to training so they can share knowledge. . . . This does happen in my area.*
> (P3, May 26, 2015)

Occupational health and hygiene personnel stressed the importance of peer education in the communication of risks and hazards. This is one of the aims of the Health and Wellness Peer Education programme. As one of the interview participants noted,

> *One-on-one [workers are] not shy to ask questions, engage, and interact.*

---

[38] Code-mixing refers to a switch in language that takes place *within* the same sentence (Brock-Utne, 2004, p. 2).

[This] will respond to lack of understanding." (P17, June 3, 2015)

Even in small groups, with the right facilitator, workers were said to be more likely to engage in OHS learning. One such facilitator, a wellness specialist, was said to "speak their language" (P18, April 20, 2015). In fact, this person spoke five languages, and was adept at moving from one to another. S/he also encouraged learning groups to assist each other with language, promoting code-switching/mixing among participants.

Tool Box Talks

As discussed in Chapter 6, Tool Box Talks were considered by both shop floor workers and supervisory personnel to be an effective on-the-job training approach. One Superintendent referred to formal training sessions as being "seldom" translated from English (Informal Conversation, April 10 2015). In my field research experience, formal training materials were not ever provided in any other language than English. Oral presentations/discussions were sporadically translated, primarily into Afrikaans; only two facilitators made an effort to use Namibian African languages—and then, only if there were strong indications of non-comprehension.

Tool Box Talks, on the other hand, presented opportunities to ensure understanding by allowing co-workers to discuss and exchange both new and existing OHS knowledge in familiar languages, using terms and conceptual understandings from their own experiences.

Summary

What do management agree to do for the worker? (P15, April 30, 2015)

This discussion of the ways in which shop floor workers compensated for, and adapted to linguistic challenges to assure their health and safety highlights a one-way set of accommodations. From shop floor supervisory personnel to the lowest level of facility workers, language-related risk issues were recognized, and efforts were made to avoid the dangers that might result from them.

As discussed in Chapter 4, language-related issues were not generally acknowledged as contributing to non-compliance and risk by executive personnel. This lack of recognition was not unique to this particular facility, or industry (Belin, Zamparutti, Tull, Hernandez, & Graveling, 2011; Daly, 2014; Faulk, 2012; Lindhout & Ale, 2009; Lindhout et al., 2012; Neufield, 2011; Paul, 2013; Premji, Messing & Lippel, 2008; Prochner, Cleghorn, Kirova & Massing, 2016;

Tuchten, 2011; Worksafe Victoria, 2008). With the exception of Tuchten (2011), what does stand out as different from situations explored in the literature, is that workers faced these linguistic challenges in their own country, not as immigrants to foreign nations.

What complicated the multi-lingual, ESL/EFL situation in Namibia was the fact of English as the only official language, and the language of instruction in formal educational contexts. Without an understanding of the complexities of language policies in the country, and their effect on educational outcomes for a significant portion of the Namibian population, assumptions of workers' English language abilities, and dismissal of the need for multi-lingual OHS training could be justified—if only barely. Once brought to the attention of subsidiary management, however, a number of company-initiated changes were recommended.

These recommendations are presented in Chapter 9.

Chapter 9: **"**How might the 'language problem' be mitigated?"

Introduction

The recommendations for change to be discussed in this chapter were based primarily on study participants' input, which often corresponded with suggestions for change in the literature concerning language-related OHS hazard and risk management.

While considering these recommendations, it is important for the reader to keep in mind that the purpose of this research study was not to suggest that English should be removed as the MOI for OHS training. As the official language of Namibia, English is there to stay. Rather, the study sought to describe the linguistic landscape of OHS instruction and communication at the subsidiary; to understand the influence that the 'language problem' might have on workers' OHS learning and compliance; to explore workers' linguistic adaptations; and, then, based on these multiple perspectives, to elaborate ways in which linguistic barriers to learning and informed compliance could be mitigated.

Recommendations for Change

Plurilingual Training Facilitators

According to a number of study participants, the ideal solution to language issues in training sessions would be facilitators who can speak the many languages represented within the facility:

> *Hire and train people who **know** languages. . . . Training often does not translate well.* (P4, May 21, 2015)
>
> *. . . lecturers who know/learn languages [or] two or three lecturers, representative of participants' languages. . . .* (P12, May 18, 2015)
>
> *Trainers **should** learn the necessary languages.* (P13, May 19, 2015)

This recommendation is supported by Lindhout and Ale (2009), whose study listed best practices in training that related to language issues; these included the need for "instructions in various languages," and "training in workers' own language" (p. 254).

In addition, shop floor workers suggested that it was not enough to only know the languages spoken, but also important for the trainer to be "technically knowledgeable" (P12, May 18, 2015), to know the facility well, and the terms, concepts and practices, "including ST language" (P4, May 21, 2015), related to each division:

> *Facilitator must **know** the [facility], and understand the processes.* (P2, May 25, 2015)

Some interview participants acknowledged that, although plurilingual trainers would be ideal, this might prove difficult to implement. An alternative suggestion was to have two to three facilitators, "representative of participants' languages" (P12, May 18, 2015), in the classroom. During an informal conversation, a local education specialist suggested that students studying mining and technology in the nearby town might be hired part-time by the subsidiary to assist in providing this service (Informal Conversation, March 31, 2015). These students could also work with training class participants to assist them while taking tests (P6-9, May 21, 2015).

Multi-lingual Language Glossary

During Informal Conversations (March 31, 2015), and Interviews (P13, May 19, 2015; P14, April 21, 2015), it was suggested that a Glossary of terms would be a helpful addition to the present training materials. A standard English OHS glossary does exist (Industrial Accident Prevention Association, 2007), and an on-line dictionary has been created in the Netherlands (Paul, 2013). The latter tool offers over 400 OHS-related words in 12 different languages and includes phonetic pronunciations; it was built collaboratively, and Paul reported that "the method of co-creation was an effective method" (Paul, 2013, p. 71). O'Connor et al. (2014), also recommended "involve[ing] members of the intended audience in the design and development of the materials. If this is not possible, the materials should at least be focus-group-tested with the target audience" (p. 9). In addition, "the use of graphics that are meaningful and relevant to the target audience" was recommended (O'Connor et al., 2014, p. 9).

In order to build employees' understandings of essential terms and concepts in English, the glossary recommended here would include graphics and corresponding vocabulary in all languages spoken by employees within the organization. Below are some initial ideas for the design, build, and applications of the Glossary.

Design and Build

- Pictographs, icons, etc. would correspond exactly with those used in the facility, and would be representative of the essential day-to-day knowledge required by workers to ensure a safe and healthy work environment;
- A term would appear in English first, followed by all of the languages represented within the subsidiary;

- A corresponding audio program would provide pronunciations of the words, beginning in English as spoken in the various local accents, then following with each of the Namibian African language and Afrikaans terms;
- The Glossary would be built **collaboratively**, within each subsidiary department/division, and with the inclusion of 2 speakers of each language from all employee levels: upper and middle management; superintendents, supervisors, foremen; training designers, facilitators; shop floor operators, assistants, attendants;
- The product from each department would then be consolidated to include all key terms.

The Glossary could be incorporated into training sessions in a number of ways.

Pre-Test

- A copy of the Glossary with only the pictures and the English language word, and sufficient blank spaces to include all languages represented within the subsidiary to be given to each Health, Safety and Environment Induction training participant. A copy also to be projected at the front of the classroom.
- This uncompleted copy of the Glossary to be used to pre-assess employees' knowledge of these key terms, at the beginning of the Health, Safety and Environment Induction Training session.
- Once participants have completed this work, the facilitator and class members to work collaboratively to complete the Glossary that is projected on the screen.

Post-Test

- At the end of the Induction training sessions, another blank Glossary to be used to post-test for knowledge retention.

Knowledge Maintenance

- A plasticized, pocket-sized copy of the Glossary Sheet to be given to each employee at the end of the Induction training.
- The Glossary Sheet to be included for easy reference in all Training Manuals, and/or supplied to participants as needed during all training sessions.

- The Glossary Sheet to be enlarged to poster size and posted in all divisions of the facility.

Translation

The need to translate materials into local languages, as well as that for direct translation in training classrooms was strongly emphasized by many study participants (P6-9, May 21, 2015; P10-11, June 6, 2015; P12, May 18, 2015; P13, May 19, 2015; P17, June 3, 2015). In line with participants' recommendation, Burkhardt (2014) suggested that, "when instructing employees who have only minimal or limited English skills, consider using a translator. . . .Give the trainees handouts in the language or languages they can understand" (n.p.).

Bearing in mind that the required translation would be conceptual as well as verbal, some approaches to translation were also suggested.

- Before beginning training sessions, the facilitator should find out what languages are represented in the classroom. This might be done by including a column for "Language(s)" on the attendance sheet—and attending to it—and/or asking each participant what language(s) s/he speaks.
- Participants should then be grouped in such a way that promotes code-switching/mixing, so they can assist each other with translation. The facilitator would need to pay attention to these group interactions in order to be certain that key concepts and information are correctly understood and explained.
- Assessments of participants' knowledge levels (from Glossary pre-tests) and language abilities (from introductory probes) should be used in tandem to designate participant groups and group "leaders/mentors".
- Facilitators, such as Bursar Students/Interns or students studying mining and technology might be incorporated into training sessions as translators, as well as to assist participants in completing post-tests and assessments.
- Facilitators should receive prior General Orientation, and Health, Safety and Environment training before taking on translation duties.
- The use of "Whisper Translation" should be considered. This method is used in local churches; for example, Damara/Afrikaans, or Oshiwambo/English speakers sit together and whisper the translation between them (P17, June 3,

2015). Once again, the training facilitator would need to be vigilant about the possibility of "broken telephone" syndrome.

- Grouping by knowledge and language ability, Bursar Student/Intern involvement, and/or "Whisper Translation" might also be employed to mitigate any lack of technical language abilities.

Demonstration/showing

Interview participants were almost unanimous in their belief that the best way to conduct effective OHS training was through the use of hands-on demonstration and practice—the dominant method of transferring knowledge in Indigenous rural communities. The need to "show" and "demonstrate" was also raised during informal conversations with employees at various levels within the subsidiary. This strategy was considered by workers to be particularly important as a linguistic accommodation, and is an approach to OHS training for non-English employees suggested by Burkhardt (2014). A number of implementation possibilities were suggested by study participants. One shop floor worker in a group interview said very succinctly what many other study participants expressed:

When I do, I learn; when I hear, I forget. (P6-9, May 21, 2015)

Role-playing and attempts at situated learning did happen in the Confined Space training session; however, as discussed above, class participants seemed unfamiliar with the approach, and uncertain about their roles in the teaching/learning situation. Learning by doing was more successfully used during Health and Safety Peer Education Workshop, though opportunities to become familiar with texts and tools, i.e. pamphlets, were missed.

Providing that suitable guidance and preparation are provided to participants, Faulk (2012) highly recommended the use of simulations in OHS instruction, as did O'Connor et al. (2014). As a way of avoiding the types of difficulties encountered by participants in the Confined Space training activity, small groups were recommended (Faulk, 2012; O'Connor, et al., 2014). Burkhardt (2014) suggested that "employees demonstrate new skills during the training session" in order to ensure that information has been understood (n.p.). A number of study participants proposed videotaping practical sessions, to be used for debriefing after simulations (P1, June 1, 2015; P13, May 19, 2015; P14, April 21, 2015).

Focus on "Showing"

- Training modules should include videos, visuals, samples of equipment, and pictographs, coupled with the necessary text(s) in all languages.
- Using video recording to observe new workers as they learn and improve on-the-job, and then showing them their progress, as well as their learning needs.
- Simple signage, must be clean and readable; where text is included, printed in the languages represented within the entire worker population.
- Taking videos of the practical segments of training sessions. During follow-up in the classroom, this will illustrate to employees what is done correctly and incorrectly, and open up discussion.

Learning by doing

- OHS training should be hands-on so that employees understand deeply.
- A central, hands-on Training Materials and Equipment room within the Training and Development building is recommended for use in conjunction with training sessions. This might hold: area specific PPE, fire extinguishers, samples of hazardous materials tags, the Glossary Poster, a video library, and the like.
- Connections between theory and practice should be emphasized and demonstrated more consistently. For example, the facilitator might follow this procedure:
    1. Present a case study/perfect scenario, using video.
    2. Present the theory, referring back to case study video.
    3. Facilitate the practical application and video-tape it.
    4. Refer back to the case study and theory, comparing with the video of participants' practical session; do the practical and record again; then, compare the first and second trainee videos.

Pictorial Tool Box Talks

As mentioned a number of times above, shop floor workers believed that spontaneous Tool Box Talks were a particularly effective teaching/learning strategy. Workers believed that

they provided opportunities for situated learning and knowledge exchange about health, safety and environment policy and practice in familiar languages. It was suggested by some participants that opportunities for these types of open discussion amongst workers be provided during training sessions as well.

Reporting from a study that employed pictorial tool box talks, Cameron et al. (2011) found that, "training with pictorial materials improves knowledge and understanding among second-language migrant workers better than text alone. . . .One month later, test scores remained high" (p. 7). One illustration from a multi-frame Tool Box Talk about Personal Protective Equipment is shown in Figure 30, below. Notice how clean and simple the graphics are, without being in any way simplistic. Hand-out materials produced in the various languages represented in the subsidiary, and prepared for the numerous discussion possibilities that workers might raise could be kept in the designated Training Materials and Equipment room; these would be used in conjunction with the Multilingual Glossary in order to reinforce English usage and to facilitate discussion.

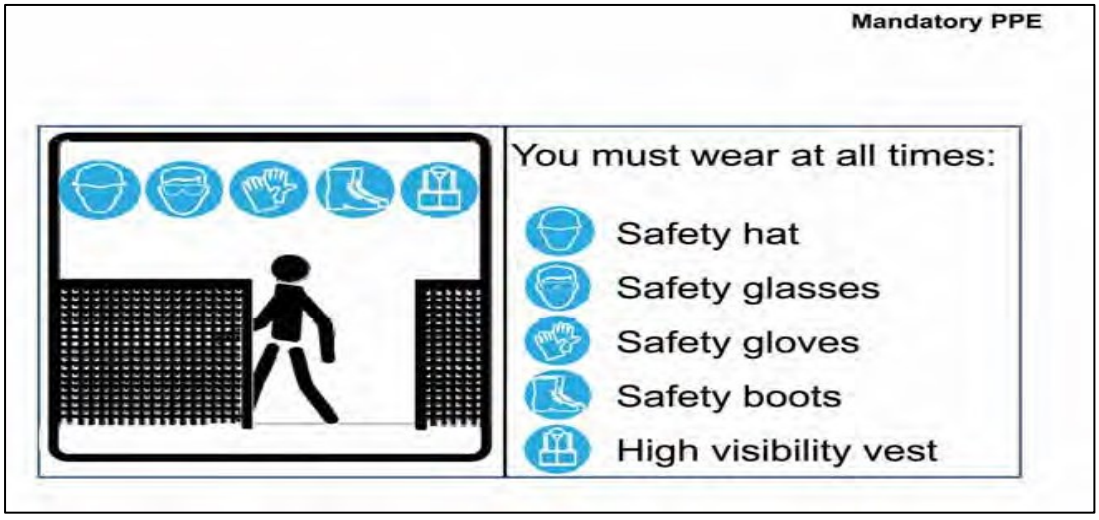

Figure 30. Mandatory PPE. Reprinted from *Using pictures in training: The the impact of pictorial OSH training on migrant worker behaviour and competence*, by Cameron et al., 2011, p. 93).

Conclusion: The Panoramic "Completed"

Effective communication of OHS information, both to and between employees, is an essential element of hazard and risk control (Lindhout & Ale, 2009; Neufield, 2011; Tuchten, 2011). Communication fundamentally entails language and, though to a lesser degree, literacy. Among shop floor workers, the exclusive use of English as the language of OHS instruction and materials emerged as perceived barriers to health and safety knowledge transfer. Literacy, rather than language, was seen by executive management as a particular limitation among workers; literacy abilities in English specifically were not raised as particular problems. With reference to literacy limitations among workers, one management level employee pointed to the necessity of "telling and showing people what to do" (Informal Conversations, October 2014) as the only way to communicate.

Health, Hygiene, Safety, Environment and Protection Services department employees talked about the difficulties of translating the meaning of concepts from English to local languages, as well as assessing workers' comprehension of health and safety information. Health, Safety and Environment personnel suggested that language issues during Induction training sessions might affect the communication of, and compliance with health and safety policy. One shop floor worker, who was also a Safety Officer, and whose responsibility was to communicate health and safety information to co-workers and respond to their concerns, reported that s/he must work to find a common language in which to do so. The sole use of English as the language of instruction and materials was a particular concern.

> *[Health and safety] information is all in English. I understand, but I know that others don't.* (P12 May 18, 2015)

Another worker, and HSE Rep, believed that,

> *Educated [people] don't have a problem, but there are old and young without English skills*. (P5, May 25, 2015)

A number of workers pointed to a problem when training facilitators asked participants if they speak English or Afrikaans: some could not speak either—let alone read and write—but would not be inclined to say so. Then, according to some interview participants, shop floor workers used "tribal languages" in attempts to translate, communicate and interpret the information amongst themselves. However, as noted above, the translation of concepts into some African languages is not simply a matter of missing vocabulary, and is constrained by the

fact that concepts (such as 'microscopic') may not exist in a particular African culture. Without the guidance of a knowledgeable and local language facilitator who can transfer the information correctly,

> *This can result in 'broken telephone'.* (P16, April 30, 2015)

This interview participant viewed the possibly misinterpreted results of these attempts at knowledge transfer between the different language speakers as particular risks on the shop floor.

Shop floor workers who participated in interviews were very much aware of the ineffectiveness of training that depended on English language abilities. Given the known language and literacy related challenges faced by many of their co-workers, the link to training effectiveness, integration/internalization of information, and OHS policy compliance issues was more than evident to them. Many of the recommendations presented above are the results of study participants' suggestions about using additional methods and media to communicate health and safety information. As represented by one shop floor worker, the overarching message guiding these proposals seemed to be:

> *Hire and train people who know languages, including science and technology language. Information should be presented in [workers'] language with diagrams, visuals, and videos that are local and relevant.* (P4, May 21, 2015)

The ability to transfer knowledge effectively at all levels within any large organization is bound to be inconsistent; language and literacy issues are certainly not the only ones affecting that transfer. However, the flow of health, safety and environment information was described as moving from the Health, Hygiene, Safety, Environment and Protection Services department, to the training and development division, to middle management, to line management, then to workers. Within this structure, health and safety policy-makers needed to be able to communicate content requirements to training and development personnel, who then had to design modules that training staff could use to communicate the policy requirements. The training facilitators had to communicate with class participants—linguistically, conceptually, and personally—in order to convey the course content. The HSE Reps were charged with communicating OHS information, and addressing co-workers' health and safety concerns. The Supervisors and Foremen had to be able to communicate with their teams—in order to ensure that tasks were attended to properly and safely. The shop floor workers were expected to internalize the information in order to automatically conduct their tasks in a safe

manner. From all reports, the unaddressed linguistic diversity on the shop floor presented a barrier to fulfilling these multi-level communicative needs, which was strongly perceived to influence OHS policy compliance.

The discussions and recommendations contained in this dissertation were premised on in depth observations and interviews conducted over a five-month period at the mining subsidiary. The observations recorded in the Narrative Snapshots worked to provide a backdrop on which to illuminate study participants' perceptions concerning links between English language instruction and non-compliance with OHS policy at the subsidiary. Although sourced from the relatively small number of participants in this case study, within the limited boundaries of the one subsidiary in which they worked, and the larger but nonetheless single context of one southern African country, I suggest that the proposals for change that resulted from the final panoramic are applicable to similar contexts in which like linguistic challenges in OHS information transfer amongst plurilingual, but ESL/EFL shop floor workers pertain.

There is, also, much room for further research. As discussed in Chapter 1, the interview data collected for this case study was for the most part limited to English speaking participants. To reiterate, a wider ranging exploration of workers' perspectives concerning the constraints presented by English MOI in OHS instruction would most certainly benefit from the collaboration of fluent speakers of local languages.

An obvious next phase to this case study would be the implementation and pilot testing of the recommendations for change. There is an interesting opening for pursuing a Participatory Action Research (PAR) approach to developing the suggested Glossary, offering an opportunity for shop floor workers to take leading roles within that collaborative work. Workers' linguistic abilities in their own languages, and the capacity of their existing knowledge would likely come to the fore, perhaps garnering recognition from peers and management personnel. Likewise, a closer—and collaborative—study of shop floor workers' adaptations to linguistic constraints might produce helpful tactics that can be introduced into existing training modules.

There is a paucity of literature concerning the effects of second/foreign language instruction on occupational health and safety teaching and learning in African industrial contexts. The growing body of research concerning language related risks in the parallel

context of immigrant labourers within foreign host countries points to the need for similar attention in, for example, 'Anglophone' countries where foreign industry employs ESL/EFL workers. In its exploration of the effects of English medium of instruction on occupational health and safety learning, communication, and compliance in one southern African mining facility, this case study aimed to illuminate that need.

A larger goal of this project was to contribute to research and theory in education, language, and development with particular reference to Namibia, as one southern African country among many experiencing similar challenges. This case study presented a single example of constraints to skills and livelihood achievements that can be linked to English MOI in ESL/EFL learner environments. OHS education within the mining industry may, I contend, be seen as representative of informal, non-academic learning environments in which many individuals—due largely to language of education policies adopted by southern African nations at independence—find themselves. The hope is that further and more in-depth research regarding historical, social and political precursors, consequences, and possible solutions may be constructed on the foundation of this detailed, on the ground account.

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Appendix A

Study Information Letter

Optimizing Safety and Health Knowledge

Information Letter

This study is investigating health, safety and environmental knowledge sharing between community members, workers, and managers within and surrounding the [mining facility][39].

It represents an innovative pairing of industry and academia in research and development: on the one hand, it involves a business contract between [The Company] and the consultants; on the other, with the support of [The Company] and in collaboration with education students and faculty at [The University], the required fieldwork will contribute to the dissertation of Linda Overing, who is a doctoral candidate in Comparative and International Education in Canada.

Key outputs of this study will be tools to assist all concerned stakeholders to learn, live and work more safely and sustainably, as well as industry and academic publications and presentations pertaining to Language, Education and Development.

The study takes a socio-linguistic/cultural research approach to understand:

- Why workers do not always follow health and safety procedures that are directly linked with the control of environmental hazards;
- Why confusion persists among workers and community members concerning [facility] emissions and health, especially sulfur dioxide emissions and possible arsenic poisoning.

Its initial hypotheses suggest the following:

- Link between health & safety not well understood;
- Instructions given in English, which many employees do not know well;
- Insufficient/inadequate schooling, underdeveloped reading and writing skills in any language;
- Limited and/or poorly taught Science & Technology education; inability to understand 'modern' ST terms & concepts;
- Disjunct between local and Western ways of thinking, coming to know, sharing knowledge.

Preliminary findings from a partial sample of all potential study participants (management, internal health & training personnel, supervisors, operators, external voc/tech trainers, educators, students, community members, union leaders) lend good support to these suggestions.

It is anticipated that continued data collection and analysis would fulfill the study objectives:

- Uncover a better understanding of what it is that employees and local community members need to know and/or understand concerning HSE policy, procedures, and practice.
- Find out what workers and local community members already know, and how they represent that knowledge.

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[39] 01/17/17: Town name removed to ensure confidentiality

- Identify specific barriers to knowledge transfer and/or compliance with HSE rules and recommendations.
- Suggest ways to integrate the “missing” knowledge into existing HSE information, training systems and safety procedures, in order to improve communication and compliance amongst all stakeholders.

Appendix B

Information & Consent Form

Optimizing Safety and Health knowledge: A case study at a [mining facility][40] in Namibia

INFORMATION & CONSENT TO PARTICIPATE IN RESEARCH

Information

I, Linda Overing, am an independent consultant who plans to conduct a study concerning health and safety knowledge sharing between workers and managers of [the Company] [41]. I would like to ask for your help with this project.

It is reported that on-site health and safety performance still needs some improvement for both the continued health of employees and the efficient operation of the company. One suggestion to explain this situation is that there may be gaps in information and knowledge sharing amongst employees. The aim of this study is to:

1. Get a better understanding of what workers need to know or understand.
2. Find out what workers already know and how they represent that knowledge.
3. Identify specific barriers to knowledge transfer and/or compliance with the rules.
4. Suggest ways to integrate the "missing" knowledge, e.g. What workers already know and ways of representing that knowledge, into the existing health and safety training system so that compliance makes sense and is made easier.

In order to gather this information, meetings, interviews and on-site observations will be ongoing until May 15, 2015. Because you are the people who know the situation best, we are counting very much on employee participation in this process. It is hoped that this can be done with minimal disruption of people's daily routines.

If you agree to take part in this project, your participation will be confidential. You will be asked to sign a consent form that explains the conditions of participation, including our commitment to maintaining confidentiality.

The research plan is:

1. To carry out individual informal interviews of about 1 hour, off company grounds at a meeting place that is convenient for participants. These discussions aim to gather more information, as stated above, about what health and safety knowledge is needed, known, and lacking. We would like to offer you light refreshment at the time of our meeting.

2. To hold informal group discussions. You may be asked to participate in a group discussion, which will include other participants. You are free to decline this invitation, and if you do there will be no consequences to you. These group discussions aim to share and build on the

[40] 01/17/17: Function of the mining facility removed to ensure confidentiality
[41] 01/17/17: Company name, address removed to ensure confidentiality

information that you have given during the interview, in the hope of coming to some agreement about the most important issues that we should work with in order to improve health and safety knowledge sharing.

3. To observe and/or informally engage with employees and local community members in the course of daily routines that may contribute to knowledge gathering about behaviours and attitudes concerning the mining facility.

4. To gather participants who work at different levels of the company to discuss the ideas offered, and to see which of these can be included in the existing safety and health training model, and how.

If, after this meeting, you need more information, please feel free to speak to me or to [To be completed], the project's Research Assistant, or to contact me at the coordinates given below.

If you agree to participate in this project, you are free to withdraw your consent and

discontinue your participation at any time ***before May 15, 2015*** without negative consequences.

Consent to Participate in Research

I understand that I have been invited to participate in a research project being conducted by Linda Overing, Consultant, Montreal, Quebec, Canada under paid contract to [The Company]

A. PURPOSE

Safety and health performance still needs some improvement for the efficient operation of the Company. It has been suggested that health and safety information and knowledge sharing among employees could be improved.

The purpose of this research is to:

1. Get a better understanding of what workers need to know or understand.

2. Find out what workers already know and how they represent that knowledge.

3. Identify specific barriers to knowledge transfer and/or compliance with the rules.

4. Suggest ways to integrate the "missing" knowledge, e.g. What workers already know and ways of representing that knowledge, into the existing health and safety training system so that compliance makes sense and is made easier.

Company employees (management, health personnel, line workers) and local community members are being asked to be part of a research team in which their participation and knowledge will be valued as an important source of information for the study.

B. PROCEDURES

I understand from the information already given that this research will be carried out on Company grounds, in the Town, and in surrounding Communities. The research methods to be used are: on-

site observation, and interviews and discussion groups to be conducted off-site and outside of working hours at a convenient place to be chosen by me and the interviewer. When necessary, a language facilitator will assist the interviewer during interviews, focus groups, and meetings. S/he is a research team member who has signed a Confidentiality Agreement.

I understand that scheduling of interviews, discussion groups, and meetings will take into account my existing work and/or family obligations—as indicated on the returned recruitment form—in order to disrupt these as little as possible.

I understand that I will be asked to participate in discussions concerning health and safety knowledge transfer between management and employees.

I understand that excerpts of audio/video/written transcriptions may be used for educational purposes, as well as other possible secondary uses, and that confidentiality will be maintained should this occur.

____ I have **agreed** to the audio/video recording of these interviews/group discussions. OR

____ I have **not agreed** to the audio/video recording of these interviews/group discussions.

____ I have **agreed** to note taking by the interviewer/language facilitator during these interviews/discussion groups. OR

____ I have **not agreed** to note taking by the interviewer/language facilitator during these interviews/discussion groups.

C. RISKS AND BENEFITS

<u>Possible Risks</u>

Participation in this research involves no greater risks to safety and health than those encountered in the normal aspects of your everyday work life.

The researcher is employed and paid by the Company. It would be understandable if the potential participants perceived the researcher as an informer trying to elicit insider information for management.

However, the researcher is an independent consultant, who has voluntarily committed this research to ethics review by an Independent Review Board and will be bound by both Namibian and Canadian ethics rules that define the conduct of research involving humans.

Measures have been taken in negotiations between the researcher and the Company to ensure that the Contract Agreement and Scope of Work protects the participants 1) from feeling compelled by management to participate in this study, and 2) to the greatest extent possible from future prejudicial treatment by both the employer or fellow workers.

Having read the above,

I understand that I will receive no direct or concrete benefit for taking part in the study.

I understand that the utmost attention has been given to my protection from any risk to my employment status and/or my relations with co-workers, and that the Company has underwritten this guarantee.

I understand that the probability and magnitude of possible harms implied by participation in this research are no greater than those that I encounter, involving safety and health considerations, in the normal aspects of my everyday work life.

I understand that I am not compelled by management to participate in this study.

D. CONDITIONS OF PARTICIPATION

I understand that my participation in this study is entirely voluntary. Should I choose not to take part, or to withdraw at some later point, there will be no negative consequences.

I understand that I am free to withdraw my consent and discontinue my participation at any time ***before May 15, 2015*** without negative consequences. In addition, should I withdraw I understand that I am also free to withdraw all data and samples that have been collected from me up to and including the date of my withdrawal.

I understand that, throughout the course of the research project, information that may be relevant to my decision to continue or withdraw from participation will be provided in a timely manner.

I understand that the results of this study may be published.

I understand that my participation is CONFIDENTIAL, in that the researcher will know who I am but my identity will not be disclosed in any written or oral presentation of the study results. For example, any verbal quotes from interview data will be treated in such a way that the quotes cannot identify me.

E. CONTACT

This study has been reviewed and approved by Veritas Independent Review Board (IRB). If you have any questions about your rights as a research participant or the Investigator's responsibilities, you may contact the Manager of Veritas IRB 24 hours per day and 7 days per week at 514-337-0442 or toll-free at 1-866-384-4221. An IRB is a group of scientific and non-scientific individuals who perform the initial and ongoing ethical review of the research study with the subject's rights and welfare in mind. If you have any study-related comments, complaints or concerns, you should first contact the study investigator. Please call the IRB if you need to speak to a person independent from the Investigator and the research staff, and/or if the Investigator and the research staff could not be reached.

I HAVE CAREFULLY STUDIED THE ABOVE AND UNDERSTAND THIS AGREEMENT. I FREELY CONSENT AND VOLUNTARILY AGREE TO PARTICIPATE IN THIS STUDY.

NAME (please print) _____

SIGNATURE _____

DATE _____

If at any time you have questions about the proposed research, please contact the study's Principal Investigator:

Linda Overing, Consultant
Language, Education & Development
12 Ch. de Saverne
Lorraine, Quebec
CANADA
J6Z 2V3
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Appendix C

Invitation to Participate in a Research Project

Optimizing Safety and Health knowledge

INVITATION TO PARTICIPATE IN A RESEARCH PROJECT

My name is Linda Overing. I am an independent consultant, conducting a study concerning health and safety knowledge sharing between workers and managers at [The Company][42].

It is reported that on-site health and safety performance still needs some improvement for both the continued health of employees and the efficient operation of the company. One suggestion to explain this situation is that there may be gaps in information and knowledge sharing amongst employees. The aim of this study is to:

1. Get a better understanding of what workers need to know or understand.
2. Find out what workers already know and how they represent that knowledge.
3. Identify specific barriers to knowledge transfer and/or compliance with the rules.
4. Suggest ways to integrate the "missing" knowledge, e.g. What workers already know and ways of representing that knowledge, into the existing health and safety training system so that compliance makes sense and is made easier.

In order to gather this information, meetings, interviews and observations will be ongoing until May 31, 2015. During all of these activities, confidentiality is assured.

Because you are the people who know the situation best, I am very much counting on employee participation in this process.

If you agree to take part in this project, your participation will be confidential. You will be asked to sign a consent form that explains the conditions of participation, including our commitment to maintaining confidentiality.

If you are interested in participating in this study, I invite you to put your contact information at the bottom of this sheet. I will be in touch with you soon.

[42] 01/17/17: Company name removed to ensure confidentiality

I hope to meet with you.

Linda Overing

EMPLOYEE CONTACT INFORMATION

NAME:

MOBILE:

Appendix D

Interview Guidelines (Sample: Operators)

Optimizing Safety and Health Knowledge

Interview Guidelines

NAME:

AGE:

POSITION:

HOMETOWN:

YEARS IN PROFESSION:

1. What is the language that you are most comfortable speaking?
   - *Second/third language?*
2. Do you live in the local community?
   - *Or, do you travel from elsewhere to work here?*
3. How long have you worked here?
   - *Have you worked somewhere else?*
   - *In mining or something else?*
4. Have others of your family worked here?
   - *When, and for how long?*
5. Did you go to school?
   - *If so, how many years?*
   - *In what language(s) were you schooled?*
   - *Can you read and write in that(those) language(s)?*
   - *Can you read and write in your preferred language?*
6. Have you received occupational health and safety training?
   Yes No
   - *If yes, in what language?*
   - *Was it easy for you to understand?*
   - *What were the hazards and safety measures that were explained?*
7. Did you understand all of the information that was given?
   - *If not, why not [language/technicality]?*
   - *Were you given a chance to ask for clarification?*
8. Are Tool Box Talks given regularly in your work division?
   - *Do you understand the information given?*
   - *Do you find them helpful?*
9. Do you think that safety training has anything to do with your personal health?
   - *If yes, How are they connected?*
10. Did the training personnel talk about your personal health?
11. Did the training personnel talk about the connection between safety rules and your personal health?

12. Do the health and medical people give you all the information you want concerning your health?
13. Have you ever had an accident or hurt yourself at work?
    - *If so, what was the cause?*
    - *Was this a hazard that you had been told about in your training?*
    - *Did you miss work as a result?*
    - *Have you recovered completely?*
    - *Was your general health affected?*
14. Why do you think the company gives safety training?
    - *Do you think that it is important for you to receive this training?*
    - *Do you think that it is important for you to follow the safety rules?*
        - *For your health and safety? Or, to follow the management rules?*
15. Do you think that health and safety information could be explained better?
    - *If so, How? What would make the training better for you?*
    - *Language? Technical Language? Presentation?*
16. Do your HSE Reps, Supervisors, Foremen follow the safety rules?
17. Do they/you sometimes take "shortcuts" that may be unsafe?
    - *If yes, Why?*
18. Are you given time to attend H & S refresher classes?
19. Is H & S information about training sessions communicated to you in a clear way?
20. Do you know that [The Company][43] has an Information Centre in town?
    - *Do you know where it is?*
    - *Do you know what it is for?*

[43] 01/17/17: Company name removed to ensure confidentiality

Appendix E

Organizational Flow Chart (Facsimile)