



School of Education

Faculty of Humanities

University of Cape Town

**Textual and social aspects of accessing high school
Economics and Management Sciences (EMS):**

**A case study of literacy, learning and identity in a social
semiotic domain**

Minor Dissertation

Submitted in partial fulfilment of the requirements for the award of the degree
of Master of Philosophy in Applied Language and Literacy Studies

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DATE: July 2008

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Abstract

The focus in this study is on literacy and learning in Economics and Management Sciences (EMS). EMS comprises integrations of language, mathematics, social elements and practical actions. The research identified ways of constructing knowledge in the EMS genre and evaluated application of principles of effective literacy learning in learners' practices. The research asked therefore: what are the semiotic practices, communication exchanges, and accompanying learning activities in the EMS classroom studied, and how do these constitute a productive domain of learning for students?

The research site was a girls-only High School located in a middle-class suburb. An ethnographic-style case study method was used. To gain access to the variability of social life in the site and discern layers of meaning there, relatively long periods were spent recording classroom interaction. The analysis was concerned with the building of textual and social meanings related to which semiotic systems were made relevant and how. Key theoretical resources used included the situated practice approach of the New Literacy Studies (NLS), sociocultural models of cognition, and Gee's (2003) classification of learning principles in a social semiotic domains framework.

It was found that various modalities were used in the classes and the teacher's conscious attention to making links between the different modes of communication, the written numbers and the visual, modelled talking about, responding to and interpreting information from visual texts. Learning was co-operative and distributed across people and the technologies of language, writing and numbers. The learning environment was set up so that learners could in dialogue with the teacher discover elements of the domain in an active way. Literacy practices enacted in a framework of everyday activity made learning events embodied and hence apprenticeship-like. A weakly framed simulation assignment meant that control over learning was largely vested in the learners themselves. Students came to appreciate interrelations across multiple sign systems as a complex system; they learnt that learning involves critical thinking about the relationship between semiotic domains at a meta-level.

A typical teaching strategy was to scaffold learning to help learners take on knowledge in degrees and build up a complex understanding of the EMS domain. At times the teacher assumed knowledge on the part of learners and this acted as an obstacle to learners accessing the EMS genre.

In the course of learning specific elements of EMS literacy, learners became exposed to social events and individuals from outside of the classroom and school. The way learners reacted to and interacted with these discourses resulted in the creating of positionalities for themselves at that time, as South Africans, as rational 'scientists' or academics, and in relation to one another. Teacher feedback on recognition from authority figures of learners' specialist EMS knowledge facilitated learners seeing themselves as insiders who have a recognizable level of achievement in the EMS domain, and helped them to bridge from their earlier (less experienced) identities to new ones as 'experts' in the domain. Through the stockbroker simulation assignment learners could develop identities through feeling the emotions, values and beliefs and experiencing the actions of a real-world broker. They thus had a scaffold to support later literacy learning and experience.

The study showed that students were actively and critically learning the semiotic systems of EMS, developing an identity as part of the social group attached to the EMS domain, and being prepared for learning in the domain and future learning. These facts mean that it is possible to evaluate the classes researched as being a productive domain for learning.

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Abstract

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Chapter 1 INTRODUCTION AND BACKGROUND

1.1 Overview of study

My approach to the study of literacy in this thesis is as situated social practice. This means that it is variable in every instance and hence multiple and multimodal, or including for example numerical and graphical ways of communicating in addition to verbal ones. There are authors who hold that what is known about literacy as situated practice should be applied to thinking and learning as well (e.g. Gee, 2003). This study adopts this approach in its analysis of literacy and learning practice in a Grade 9 Economics and Management Sciences (EMS) class. This class, the participants and their practices related to a variety of semiotic modes, constituted a semiotic domain. Literacy in genres or semiotic domains like science and EMS have been described as: “complex integrations across language, mathematics, visual representations, and practical actions” (Lemke, 2007: 13). In addition to comprising multiple semiotic systems, a semiotic domain is characterised by having a social group attached to it, its “affinity group”, with its own values, goals and norms, an “appreciative system” (Gee, 2003: 97) that needs to be learned. This study considers the social and semiotic aspects of literacy and learning in EMS. ‘Practical actions’ signify that social processes, including ones involving identity, are aspects of literacy, in addition to predictable semiotic systems locked into numbers, words and the visual.

The “ideological model” (Street, 1993: 5) of literacy sees literacy practices and events as always situated in specific social, cultural, and historical relationships and embedded in relationships of power. In this view language and other practices connected with literacy are linked with overarching social structures and interactions. A consequence of literacy being viewed as specific in each case is that the domain in which it takes place becomes important in any analysis (Bartlett, 2003). The study thus used a **social semiotic domains framework** for analysis of observed constructed practice in EMS, and evaluation of whether the study site represented a productive domain of learning for students, the study’s main concerns.

The research used a qualitative paradigm and an ethnographic case study method for collection and analysis of data. Data was collected specifically through observation and audio-recording Grade 9 classes over a month in 2005. The study used critical discourse analysis and theoretical tools related to:

- embodied, active and critical literacy learning;
- the use of language, tools and technologies to mediate literacy learning;
- dialogical talk and the zone of proximal development;
- the role of language in identity construction;
- integration of popular and school literacies, the impact of techno-literacies, and academic literacy.

1.2 Research focus

Literacy in Economics and Management Sciences (EMS) is the focus of this study. I view literacy in EMS from a variety of angles but predominantly from the perspective that literacy is constructed and learnt in the course of social activity, as social practice. Literacy is often understood in research and theory as a unitary concept that is the same and has the same effects in and across contexts. Literacy studies have, however, over the last twenty years, begun to examine literacy contextually, in conjunction with the actions, beliefs, attitudes and values of the people and groups who read and write or refer to reading and writing while taking part in wider activities of particular kinds. I bring these resources to bear on the study of literacy and learning in the teaching of EMS as a school subject in Secondary School. EMS is a newly developed school subject in the South African school curriculum. A focus on EMS has relevance not only because of its newness as a school subject in the South African Curriculum Framework but because its teaching of commerce- and economics-related subject matter takes place against a backdrop of increasingly transnational labour distribution and global economic activity (Luke, 1995). I am concerned here to study the literacy practices of an EMS class in Cape Town as one instance of literacy as situated social practice.

1.3 Literacy as multiple and multimodal social practice

EMS was introduced as a school subject in South Africa in the late 1990s and the first learners to complete the full syllabus, Grades 3-9, have done so only in recent years. The subject combines aspects of accounting, business economics and typing (Western Cape Education Department, 2001) syllabi in terms of its content focus. Literacy in a subject like EMS comprises multiple ways of making sense through a number of distinct but related

semiotic modes. In scientific genres, as in other literacy and language genres, being literate goes beyond words, and involves ways or modes of communicating, including numbers, graphics, and images for instance. In a technologically driven world it is easy to recognise that there are many “languages of science” (Lemke, 2002: 4). Fields like science and EMS have been described as constituted by “complex integrations across language, mathematics, visual representations, and practical actions” (Lemke, 2002: 17). However to focus too narrowly on the technical systems of literacy would be to ignore it as a cultural manifestation (Street, 1993). That ‘practical actions’ are included as one of the modes of communicating meaning in this description demonstrates and draws attention to literacy as a social manifestation in addition to being one concerned with the technologies of texts such as writing and mathematics. If literacy is always embedded in social practices (Gee, 1996; Street, 2003; Barton, 1994), then it is possible to infer that social identities are constructed through actions related to literacy. Logically the attitudes to and values motivating people's use of texts are therefore also aspects of literacy.

The New Literacy Studies (NLS) refers to a body of researchers (for example, Gee, 2008, 1996; Stein and Slonimsky, 2006; Larson and Marsh, 2005; Prinsloo, 2005; Street, 2003; Prinsloo and Breier, 1996; Barton, 1994; Heath, 1983) who study literacy practices in the context in which they are situated. They see literacy as more than a behaviourally acquired cognitive skill which simply ‘resides’ in individual's heads. In line with the broad ‘social turn’ in the humanities, researchers in the NLS draw on social scientific theoretical resources from education, linguistics, sociology and cultural psychology theory among others (Gee, 2000), for making sense of literacy. New Literacy Studies’ approaches view practices of producing and using texts as connected with the variety of conditions and activities of humans as social beings. As social practice literacy is therefore particular in each instance – and as such there are many literacies. An aspect of the idea of literacy as social is that it depends for its ‘shape’ or particular manifestation, on the participants and the power balance in their relationships, the place and time of literacy events or practices, the physical objects involved, and influences of history on all of these elements. Thus literacy is social; it is culturally, physically and historically ‘situated’.

The situated, multiple and multimodal nature of literacy and learning, as well as its social character and role in identity work as described above, are points that this study explores in relation to the subject-specific genre of EMS.

1.4 *Learning as a lens to view literacy*

Recent research in the NLS applies what is known about literacy as situated social practice to human thinking (cognition) and learning (development). Kress, Jewitt, Ogborn and Tsatsarelis (2001) for example studied school science learning. The authors examined the relationship between the characteristics of multimodal scientific literacy and ways of 'being a scientist', analysing the characteristics or "affordances" of the communicative modalities that teachers and students used to make meanings. Gee (2003), on the other hand, researched what principles of learning are embedded in playing video games and what playing them can teach one about literacy and learning in other domains of activity, schooling in particular. Gee drew on social semiotics, (the study of human sign making for communication), and constructionist theory on language and thinking, as well as connectionism, a theory of mind in cultural psychology, to explain human learning as built in social interaction. I similarly examine literacy through a lens of learning and thinking in this study, drawing on Gee's work, in order to understand more about what literacy in EMS is.

Learning, attending school and being a teenager developing "identity discourses" (Pal and Buzzanell, 2008) are all distinct practices, or ways of being in the world. At the same time these three sets of practices inform and interpenetrate one another and are inextricably tied in to language and literacy practices. It follows that one should examine learning and social identity development connected to school and literacy in researching school subject-specific literacies. This research therefore answers questions about literacy, learning and identity in a high school EMS class from a situated practices/NLS perspective.

1.5 *Research question*

The research examines what counts as successful learning and teaching in Grade 9 EMS classes at a secondary school. Literacy in the EMS classroom setting is studied as multimodal, situated social practice.

My research question is as follows:

- What are the semiotic practices (textual and visual literacies), communicative exchanges, and accompanying learning activities in the EMS classroom studied and how do these constitute a productive (or unproductive) domain of learning for students?

This question arises from an interest in what constitutes language and subject-based literacy in well-resourced and academically achieving South African secondary schools today, and what views of literacy are currently represented in teaching and learning in school subject-specific genres. To put the results of my research into perspective, the following section introduces key contextual information and theoretical notions being used in the interpretation of the study data.

1.6 Literacy in South African schools

Reading and writing in contemporary South African schools is often reported as being in crisis. Most recently it emerged from the 2006 Progress in International Reading Study (PIRLS) (in Plüddemann, 2007: 16) across 40 countries that many South African school children do not possess basic reading skills and strategies. South African Grade 5s came last with an average combined reading score of 302 (PIRLS scale average, 500). Around 80% of Grade 4s and 5s did not even reach the 'low' benchmark on the test as against 6% internationally. This means that they could not even "begin to make connections across parts of text [or] retrieve explicitly stated details from literary and informational texts" (Plüddemann, 2007: 16). The range of home languages that students bring to English-language classrooms do not help matters:

The mismatch between learners' reading abilities and the cognitive demands of science, maths, history and geography texts are exacerbated when learners are confronted with texts in a language they do not understand (Heugh and Alidou, 2007: 24).

Learners' strategies to disguise their inabilities points towards two areas of development and change: teacher education and curriculum, according to Heugh and Alidou (2007), as well as pedagogy. Research on teaching and learning in subject-specific genres, such as in my study, builds knowledge about the relationship between literacy, language and learning that could contribute to changes in teacher education, curricula and pedagogy and is therefore an important avenue of research.

In the Western Cape, where my research took place, reading and numeracy testing of learners by the Western Cape Education Department (WCED) in 2007 indicated that learners were performing poorly in reading and mathematics in the majority of schools. The Deputy Director of the WCED has said that poor ability in reading and writing literacy on the part of students in Western Cape schools has a negative impact on learning in all subject-

specific genres right through primary and secondary school (Bekker, 2007). I suggest that clarity could be brought to the relationship between language, literacy and learning by focusing on the conditions required for effective learning in a subject-specific genre such as my study tries to do.

1.7 Secondary schools and teaching in South Africa

Students in South African schools come from diverse backgrounds socially, culturally and linguistically. They therefore have widely different literacy histories and experiences. In more affluent communities there are financial resources available to ensure that computers, the internet, books and wide exposure to popular and specialised media and technology are widely available and commonplace. In contrast, there are children from less affluent homes that have no books and whose home literacies do not prepare learners for the demands of school.

Any teacher evaluating what works in a classroom and even recognising what affects the outcome of events in classrooms requires awareness on many levels. Psychological factors that affect the thinking and behaviour of learners, including their development and use of language, are intertwined with sociological factors such as home community experiences, media exposure and technology that shape their attitudes and interests. These factors combine to make teachers' jobs complex if they recognise that their teaching practices probably need to be adaptable and responsive to the practical implications of these factors influencing their classrooms. These conditions call for research that can make a positive contribution towards policy, curriculum, and pedagogical practices, as well as build knowledge in teaching and literacy strategies.

1.8 The field of applied language and literacy studies

The linkages between language, education, employment/labour markets and socio-political participation have not been systematically explored within either applied linguistics or sociolinguistics (Deumert and Mabandla, 2007). Yet human capabilities are necessarily exercised through language; it plays a vital role in enabling people to act and make choices. Applied language and literacy studies as exemplified by NLS research arguably can and does fill the 'gap' between language and the key spheres of human capability and development: education, employment/labour markets and socio-political participation, which Deumert and Mabandla describe as unexplored. For example, in South African research in

applied language and literacy in the NLS model, a study into the movement of texts across the four pillars of the justice system shows what impact inefficiencies have on the effectiveness of police, prison, court and legal services in the justice domain (Arend, 2004).

Studies in the NLS through an ethnographic perspective address “the need to re-frame theory and methodology to view variation in the communicative practices required in contemporary society” (Brian Street, interviewed in Larson and Marsh, 2005: 38). Instead of emphasising ‘skills based’ programmes, they are examples of research on ways in which teachers “build on the actual uses and meanings of literacy students engage with and on their meaning-making and creative potential” (Larson and Marsh, 2005: 39). My study, an ethnographic case study of Grade 9 classes in one school, aims to contribute to this research in a similar fashion.

1.9 *Ethnography and research in education*

A cornerstone of the NLS is the methods employed for doing research. An overview of studies (for example, Larson and Marsh, 2005; Prinsloo and Breier, 1996; Heath, 1983) shows that the studies tend to be qualitative, with ethnomethodologies predominating. Observing study participants in their natural settings over extended or shorter periods of time provides opportunities to discern lines of intelligence, social dynamics and phenomena which the researcher may never have anticipated discovering. On the other hand quantitative studies and diagnostic testing of literacy is limited in what it can measure and selective in what it measures, circumscribed by the abilities and interests of those setting the test. Learners potentially can be regarded as deficient, instead of tests being recognised as inadequate to the task of assessing learners’ true abilities and the processes that impact on their performances.

Finding out what is happening “ground-up...not [from] a God’s eye perspective” (Gee, 2003: 82) in classrooms, requires research methods adapted to the needs of the research questions. My research through qualitative ethnographic case study methods describes literacy events and practices and reaches conclusions that show, without predetermining categories of focus, what is happening in one classroom as regards literacy, language and learning.

1.10 Orientation to Study of EMS Literacy: Personal work in literacy and commerce education

The emphasis on literacy and learning in this research stems from my own professional and personal interests. I have been involved with teaching written and oral communication for professional and business purposes to commerce, engineering and science students at university, and in the workplace. I have also taught English as a foreign and second language in South Africa and Asia. As a result of this experience, my own consciousness of language has increased with regard to syntactic and pragmatic structure in English, and linguistic and culturally-specific ways of expressing meaning, values and identity.

I set out before I chose to focus on EMS, with two things certain: to study literacy in a school subject and to do this using qualitative research procedures. I was informed in the early part of the research process only by my personal experience as a teacher, and by knowledge of literacy theory and research predominantly from the New Literacy Studies (NLS). As I teach in a commerce faculty I chose EMS as the school subject that I would use to explore current classroom literacy practices in South African schools. I surmised that literacy in EMS is a precursor to literacy in a business science or bachelor of commerce degree, so that examining it would help me gain insights into the types of literacy and learning issues related to my own students' literacies and learning.

As a teacher I have been concerned with developing curricula which are relevant to students' needs and interests and with inducting students into ways of thinking about and using language that are appropriate to the communicator's purpose, audience interest and the occasion. I have been concerned with finding effective and efficient ways of scaffolding learning of subject-specific knowledge; building work and learning routines that facilitate learning for students, for example choosing between lecturing (telling) or workshopping (doing); and grading exercises from strongly framed ones to those where students themselves select topics and explore the best ways of finding and communicating knowledge. This is an ongoing process of learning for me.

1.11 Scope and limitations of study

The study does not assume that what is intended in terms of content, or as set out in an official curriculum, is what is learned in school. For this reason it does not focus on describing in depth the curriculum goals and content of EMS as a subject. It aims instead to

detail, through close analysis of all classroom activity in one setting, but particularly classroom talk, *what* and *how* knowledge is actually being constructed by and for learners. That is, is learning concerned with specific cognitive skills; visual and textual constructions of knowledge; methods of learning and attitudinal development with regard to learning (and hence setting children's trajectories as learners and EMS experts); and/or shaping learners' sense of identity? What resources and creativity youths and children draw on in their studies are thus an important part of what the study explores.

1.12 Value of study

The overarching objective of the study has been to identify practices in the study site that stimulate effective learning and literacy events in EMS that are worthwhile and relevant. This included identifying the multiple modes of signing meaning: Lemke's (2002) "languages of learning", or semiotics, and their role in stimulating learning in EMS. The creative potential of learners, the resources they draw on and what pedagogies are effective are described and assessed. The intention is to gain understanding of the complexity of literacy and learning in the EMS genre, and to shed light on, or draw attention to, school subject-based genres in general, by way of this case study. The research might offer some insight into the current situation relating to teaching and learning practices in South African schools. Teachers, including myself, may look critically at their own knowledge and gain an extended view of learning.

Chapter 2 CONCEPTUAL CONTEXT

2.1 Overview

In this chapter I introduce, outline and examine the major assertions of New Literacy Studies researchers as regards language, literacy and learning. I point out the significance of these assertions for conceiving of school literacy in particular. I go on to set out a broader base of theory relating to the interpretation of the language and literacy practices observed, including sociocultural-historicism, genre theory and theory related to technology, communication and the media.

2.2 *Precepts of the New Literacy Studies (NLS) and implications for the study of literacy and learning*

The NLS perspective is on literacy as social practice, where literacy is seen to be embedded in social, cultural, historical, and political relationships (Larson and Marsh, 2005: 23). This view of literacy also means that it is “ideological”, or shaped by power relations in institutional settings and in everyday life (Street, 1993: 5).

Ideas of literacy that were predominant prior to the influence of the social turn in current literacy studies, have been termed the literacy myth (Graff, 1979 in Arend, 2004: 2) among literacy theorists. Street has termed the notions associated with the literacy myth to constitute an ‘autonomous’ model of literacy:

Exponents of this [autonomous model of literacy] conceptualise literacy in technical terms, treating it as independent of social context, an autonomous variable whose consequences for society and cognition can be derived from its intrinsic character (Street, 1993: 5)...

Educationalists, linguists and psychologists conceptualise[] literacy as a universal constant whose acquisition, once individual problems can be overcome by proper diagnosis and pedagogy, will lead to higher cognitive skills, to improved logical thinking, to critical inquiry and to self-conscious reflection (Street, 1993: 11)

These claims by exponents of the autonomous model of literacy were tested empirically. Scribner and Cole (1981), in a wider study that tested proponents of three distinct literacies and scripts within one African country, observed that literate and illiterate adults in cities shared some skills. They concluded that these cognitive aspects were the result of social experiences connected to schooling or factory work and not directly from the acquisition of literacy (in Arend, 2004: 2). Bartlett (2003) and Crawford (1995) similarly argue that the

autonomous model problematically portrays literacy as a uniform skill learned gradually as the individual moves through universal stages of cognitive and physical development. Larson and Marsh (2005) contend that it is generally an autonomous model of literacy which underpins the construction of curricula in many countries.

In the autonomous model literacy is defined apart from social context and becomes “content to be taught through authority structures whereby pupils learned the proper roles and identities they were to carry into the wider world” (Street, 1995: 118). In other words students learn the discourses required for school practices and purposes “and are not considered legitimate contributors to these practices and purposes” (Larson and Marsh, 2005: 22). Clark and Ivanic (in Arend, 2004: 3) have described an approach to literacy where there is a focus on writing as a technology such as in early literacy research and phonics-based skills instruction, as dismissive of literacy as “‘meaning making’, ‘negotiation of identity’ and ‘social participation’”.

The NLS provides an alternative model for theorising literacy that contrasts with the individual paradigm: the ‘ideological’ model (Street, 1993, 2003). Literacy practices and events in the ideological view are always situated in social, cultural, historical and political relationships and embedded in structures of power (Larson and Marsh, 2005; Bartlett, 2003; Gee, 1996; Barton, 1994), and the participants associated with the events and practices can be seen as constituting a speech community (Heath, 1983) or a community of practice (Lave and Wenger, 1999). In addition literacy is seen as “tied to contexts of use or what people *do* with literacy in formal and informal settings, both inside and outside school” (Larson and Marsh, 2005: 20-1). Literacy’s significance varies across time and socio-cultural settings, getting meaning from the situation in which it is embedded (Bartlett, 2003). The NLS thus takes a “social turn” (Gee, 2000), in linking language and literacy events and practices with overarching social structures and with social interactions. The ideological model therefore joins a social analysis of power relations as well as language and literacy ideologies, to a cultural awareness of the ‘bottom-up’ invention of meaning (Bartlett, 2003).

2.3 Implications of the multiplicity and multimodality of literacy

Units of analysis: events, practices, situations, and discourses

Because of the importance of context, culture and singularity in socially constructed literacies, there is a strong focus on the unit of analysis and the boundedness of contexts in

NLS studies. Ethnographic research in the early NLS focused on 'literacy events' (Arend, 2004) as a unit of analysis. These are events or activities involving reading or writing. The notion of events was adapted by Heath (1983) from Hymes's work in ethnography of communication (Gumperz and Hymes, 1972, in Bartlett, 2003: 4). Street (1993) introduced the idea of 'literacy practices', "...the overarching sociocultural systems from which we draw in any communicative event" (Larson and Marsh, 2005: 69), which "contextualised the event in the power structures and cultural meanings at play" (Street, 1993: 7). Prinsloo and Baynham (2008: 3-4) suggest that NLS researchers have typically observed or recorded particular literacy events at their site of research and then tried to understand the wider discursive framings and social practices that cause such events to take their particular form and shape. 'Literacy events' have thus provided the empirical units of analysis in the study of literacy, whereas 'literacy practices' have provided an analytical frame that includes both activities and conceptualisations of reading and writing, and this is the approach in my study.

The notion of multiple events and practices derives from a key characteristic of a social practice view of literacy, that of the local, situated nature of literacy. An effect of this orientation is that much NLS research emphasises the domain in which literacy practices take place (Bartlett, 2003), and hence the structured, patterned contexts within which literacy is used and learned. Such contexts include institutional places like schools, prisons and home, and their concomitant discourse communities (Bartlett, 2003). The common ways of associating, using language and making meaning at each of these sites are held together by what Gee (1996) termed a Discourse, with a capital 'D': "...socially accepted association[s] among ways of using language, thinking, valuing, acting, and interacting in the 'right' places and times and with the 'right' objects, as members of socially meaningful groups" (1996: 131). (I will refer simply to discourse (with a small 'd') below and take it to have Gee's wider meaning, as distinct from the meaning of discourse in some approaches to linguistics as that of simply an extended piece of text or narrative.) In Luke's (1995: 9) terms, schools and other significant social institutions are constituted by discourse and discursive relations; or, put another way, texts are constructive of social formations, communities, and individual's social identities. The notion of a discourse encapsulates the link between individual and social structures.

2.4 Social semiotic domains framework

The claims about multiple and multimodal aspects of socially situated literacy practices mean that researchers in the social practices paradigm, as stated, emphasise domains of literacy. These claims have many implications for conceptualising literacy practices. The most obvious implication is recognising that literacy is concerned with much more than encoding and decoding printed text. Drawing on this broadened notion of literacy, Kress et al. (2001) critique some literacy theory as based on theories and practice associated with language learning. The authors argue for a framework with which to examine literacy, which decentres language and recognises the many languages of learning; i.e., the multiple modes of communication and meaning-making, including through image, sound, diagram, and action, as well as through spoken and written language. Through the framework literacy's social and situated character could be examined, as well as the role of individuals as agents in literacy-related activities, for instance in terms of their selection of modes for representing and communicating meaning. Such selection is based not only on the specific characteristics or affordances of modes, but also on the personal preferences and the social dispositions of the actors. "Social semiotic domains" (Halliday and Hasan, 1985; Halliday, 1978) or simply "semiotic domains" (Kress et al., 2001) therefore constitute a further conceptual tool through which to examine literacy events and practices in educational settings.

In the most fundamental way, the idea of a social semiotic¹ domain is based on recognising people as members of a variety of social groupings, acting in ways to support the norming and goal-setting functioning of these groupings (Prinsloo, 2006; Gee, 2003) in part through enacting specific textual behaviours. Kress et al. (2001) contend that the semiotic domains conception of communication as multimodal social practice is a new model of communication. My view is that the framework opens new ways to conceive and research the context in which literacy events and practices take place and exist respectively. It provides a theoretical model for defining and describing and theorising in detail, human

¹ Semiotics is the study of human sign making for representing and communicating meaning, for instance writing, numbers and body language among myriad others. Gee (1996, 2004) has named the carrying out an occupation such as being a teacher, gymnast or scientist, as a mode of coded social practice, or as semiotic practice.

processes and products, including enacting specific textual, (oral and written), behaviours and states as they are embedded in broad social structures.

The idea of a social semiotic domain provides a frame for describing and analysing the distinct classroom social languages, events, and extended activities in a classroom situation such as the one I study here. This approach provides for effectively identifying and conceiving of the specific elements and processes involved in becoming literate in the contexts, with teenagers growing their participation in a school environment or community of practice (Lave and Wenger, 1999). Teenagers are neither children (very young ones), nor adults, and hence have unique issues socially, psychologically and physically. Learning in school is also different from learning in symbolic play (Prinsloo and Stein, 2004; Gee, 2003; Moss, 2001), the workplace (Prinsloo and Breier, 1996) or self instruction. However, as I discuss later, there can be influences across domains that impact on the effectiveness of learning. What works for learning in play or work might be incorporated or embedded into literacy learning at school. Similarly, differences as regards meaning-making, interacting and identity construction processes across domains might put up barriers against student learning, if they are not appropriately addressed in class.

2.5 SITUATED MEANING MAKING

2.5.1 Embodied experience, apprentice-type learning and effective learning

A feature of literacy and meaning making as socially situated is that it is “deeply embedded in embodied experience” (Gee, 2003: 73). A view of ‘thinking’ or cognition that is compatible with this approach suggests that thought is shaped by sets of relationships or “mental models” (Mogogo, 2005) that are created, based on experiences, such as of a typical bedroom which gets modified when seeing a student bedroom with a stove in it (Gee, 2003). Such a model of cognition is based on a theory that the mind is a powerful pattern recogniser, adept at finding complex patterns. Learning in the theory is about revising these patterns and sub-patterns or stored mental networks of associations, “through action and reflection” (Gee, 2003: 92).

According to Gee (2003) the idea of literacy and meaning as situated and embodied fits well with psychological research on how comprehension of oral and written language works when it works well. “Abstract notions are encoded in words that constitute metaphors based on concrete, embodied experience of a material world... [and] as language builds

abstractions on the basis of concrete images from embodied experience of a material world, so, too does human learning” (76). Lemke (2002) also describes abstract forms of knowledge as arising out of concrete experience or existence. An implication to be drawn from these arguments is that activities at school that are themselves forms of situated social practice strongly shape and entrench patterns for life, forming the foundation of who students are “in mind, body and culture” (Gee, 2003: 92), and more, or less successful patterns of association and viewpoints can arise and guide the trajectory of mental development, positively or negatively. For successful or effective learning and/or teaching, it is clear therefore that learning needs to focus on experience and practice (doing) as well as direct instruction (telling).

In an apprenticeship relation, such as learning to be a midwife or a ship’s navigator, the method of learning is primarily through socially and institutionally embedded action and practice under the guidance of (an) expert/s (Lave and Wenger, 1989). The learning process in an apprenticeship is experiential (embodied), aimed towards mastery of appropriate knowledge for succeeding in the subject, and recognition for doing this is granted by authorised experts. There may also be theoretical input. We can think about school learning in terms of an apprenticeship dynamic as well, while conceding that there are certain differences. In school there is a corpus of knowledge to be acquired (a curriculum and curriculum goals), and not predominantly practices related to executing the goals of the institution as in an apprenticeship. In school there is greater emphasis on explicit teaching (and learning) as opposed to ‘learning by doing’, as is arguably the predominant method of learning in an apprenticeship. Knowledge is examined and sanctioned by authorities in schools by way of generalised testing, to a greater extent than in apprentice learning processes, where demonstrations of competence are more practical in function. Nonetheless, one can view the roles and relationship between a teacher and learners in a school domain as those between an expert and apprentices in a social semiotic domain, and thus describe at least some of the learning in school as apprenticeship-like. Apprenticeship-type learning involves embodied experience in and through which mental networks (or patterns) can develop effectively. Exactly because it is embodied action, apprenticeship-style learning is more powerful than relying on memory and purely cognitive abstractions such as in rote learning of facts and simply being told important generalisations (passive learning) in teacher-led instruction (Gee, 2003; Kress et

al. 2001; Lave and Wenger, 1989). More success in learning can therefore be gained by using real-world embodied scenarios and allowing students to learn actively (Smart and Csapo, 2007; Gee, 2003) as well as critically.

2.5.2 Active and critical learning

Smart and Csapo (2007: 452) argue that in active learning students are involved in more than listening; they get engaged, explore their own attitudes and values, develop skills (rather than have them transmitted) and engage in higher order thinking.

Critical learning, in Gee's (2003) terms, happens when students *reflect* on what they have learned, and gain meta-knowledge of the internal design ('grammar') of the domain as a complex system of interrelated parts (23). Appreciating how a semiotic domain relates to *other* semiotic domains is an aspect of critical learning too (Gee, 2003: 39).

Critical literacy described in this way arguably equates with Vygotsky's notion of scientific thinking (1978). Scientific thinking differs from the thinking that develops when a young child internalises the ability to use tools such as language through scaffolded interpersonal 'mediation' or intervention, and socially assisted learning. In other words, critical learning or scientific thinking are about being able to manipulate the elements of domains, such as the grammar and social languages (or styles (Grant and Borchers, 2002)) of language use, both those *internal* to a semiotic domain as well as those *external* but related to it. Using critical learning or scientific thinking means being able to produce (write) and design in a semiotic domain as opposed to simply being able to interpret (read) or manipulate domain components (Gee, 2003). This can come about through both explicit instruction and apprenticeship-like learning. Active and critical learning in school arguably allows students to discover principles and innovate in semiotic domains (Gee, 2003). They allow students to have experience in ways similar to their counterparts involved in the real world - for instance, the experience of being a scientist. The models that students generate of learning and of themselves as learners are affected by the teaching and learning culture and practices such as are gained from apprenticeship-style active and critical thinking, and learning and doing (Gee, 1999, 2003). It is important therefore that learning is an active process, not simply one of passive memorising, for example, and that learners get a chance to be reflexive, to think in a critical way, if we are to consider learning to be effective.

2.5.3 Accessing situated literacies: bridging between everyday and specialist domains; precursor domains and successful trajectories

It follows from a view of literacy as situated and variable across social settings that there are domain-specific literacies (literacy practices); for example, attached to the home domain. Such domain literacies have been called 'everyday' and "life world" literacies (Gee, 2003: 17). There are also domains which involve specialised ability and knowledge, which are not acquired in the course of everyday existence. Gee (2003: 36) points out, however, that whichever of these an individual is accessing, whether they are everyday or institutionalised domains, s/he will be learning domain-specific ways of knowing, thinking, valuing and acting. One could infer that moving between everyday and specialist domains could be a delicate process. It is easy to imagine that bridging between everyday and specialist domains ought to be a challenging issue in teaching and learning in school, given that students in multilingual and multicultural settings arrive in school with sometimes very divergent ways of knowing acquired at home.

Gee (2008) has pointed out the importance of prior learning in linked domains for setting a person on a trajectory of success in learning. He suggests that specialised domains will generally have "precursor domains" (Gee, 2008: 9), which, if a person has mastered their resources, will make the more complex domain easier to access. Heath's (1983) early work in the New Literacy Studies found a correlation between success at schooling in her study in the south Carolinas, USA, and the home literacies of middle class families. The middle class homes tended to have reading matter like books and magazines and parents read to their children in ways that were pre-cursors for teacher-student exchanges in school. In contrast, working class families in her study engaged in literacy and talk in contrasting ways to those of schooling, with the result that their children had no pre-cursory experience of classroom dialogue patterns or of taking meaning from texts in school-like ways.

2.6 SOCIAL MIND AND LEARNING

The role of the social environment in shaping cognitive structures is theorised in sociocultural psychology associated with the work of Vygotsky. Vygotsky treated consciousness as the internalised modes of behaviour one got from one's social environment, and theorised the role of signs and objects in mediating these processes. Socio-cultural theories drawing from Vygotsky assume that humans need and are able to "mediate their actions through artefacts and ... arrange for the rediscovery and

appropriation of these forms of mediation by subsequent generations” (Cole and Wertsch, 2004: 2/3). Vygotsky (1978) saw tools (artefacts) and their uses as culturally representative, explaining that tools, in the form of objects or signs, (concrete ones such as books, and mental constructs such as discourses or genres) are used to organise the inner thoughts and states of mind of humans, thereby making things possible that otherwise would be difficult (Bomer, 2003).

Making cultural mediation central to mental operation and development in this socio-cultural orientation has various implications. Firstly language and other tools are seen as fundamentally shaping and transforming mental processes, not just facilitating them. This point is significant in considering whether learning is about reproduction or transformation of knowledge. It is also important in understanding the role for objects and language in the learning process and hence in literacy. The most novel implication however is that mind is seen as “no longer located entirely in the head” but includes the biological individual and the culturally structured social and natural environment persons are part of (Cole and Wertsch, 2004: 4). The concept of ‘distributed cognition’ points to the argument that cognition is distributed across individual minds, other people, language, objects, processes and technologies (Gee, 2003; Lave, 1988). This perspective is significant for my study for recognising the role of objects, technologies and words in holding knowledge, so that teaching and learning are about leveraging knowledge through networks of activity involving people and things. It is also relevant in recognising that a group as well as an individual can learn something or that an entire situation can ‘hold’ meaning.

2.6.1 The Zone of Proximal Development

Effective teaching and regulation of higher order skills and linguistic ability are in part about when to provide or obtain assistance for understanding and when to allow learners to operate alone. Learning in what Vygotsky called the zone of proximal development (the ZPD) illuminates this issue, explaining ‘when’ the ontogenesis of children, (essentially a process of learning and development), and the microgenesis of individual skills take place at any point in a child or adult’s life (Tharp and Gallimore, 1998: 47/52). Simply put the ZPD is “the distance between the child’s individual capacity and the capacity to perform with assistance” (Tharp and Gallimore, 1998: 43). “The zone of proximal development defines those functions that have not yet matured but are in the process of maturation [...] currently in an embryonic state “ (Vygotsky, 1978: 86).

“Co-construction” is a process where there is an “active individual” and an “active environment”, and where “culture [is] the medium within which the two active parties to development interact” (Cole and Wertsch, 2004: 2). Learning in this model is not about “learning transfer” (Lave, 1988: 9). Rather, communication and learning are a process of negotiation (Grant and Borchers, 2002: 10) within contextual constraints. Actor-network theory, as described in Bowker and Star (2003), stresses the effects on the action of *all* the elements in a networked system, including materials, artefacts and inanimate objects, as well as categories, classifications and constructs, with each element having effects on and shaping the course of events in the networked setting.

Teaching in the ZPD is arguably about developing learning strategies that build up “new systemic relationships between basic functions” (Tharpe and Gallimore, 1991: 47), a process of scaffolding. This process allows higher order mental processes to move from happening, in Vygotskian terms, on the ‘intersocial’ plane, (that is with expert assistance), to the ‘intrapsychological’ plane, (that is as independent performance). The changing relationship between self-regulation and social regulation has relevance in not only mental and bodily learning, or “psychogenesis”, but also in cultural processes, or “sociogenesis” (Cole and Wertsch, 2004: 1).

The notion of the ZPD illustrates a principle of learning; that learners need to learn within their “regime of competence” (Gee, 2003: 70). Assistance at too high a level “will disrupt child performance” (Tharpe and Gallimore, 1988: 57). At the same time learners need to be challenged at the ‘edge’ of their ability for them to remain interested and to extend their learning. Mind development/learning seen in this light makes visible how contexts for learning can be “reconstructed to enable the fundamentally social and cultural processes of learning” (Larson and Marsh, 2005: 100). In this situation students’ practices can be regarded as valuable resources for curriculum and for conceiving of classrooms as learning-centred contexts.

2.6.2 Meaningful dialogue

The idea of thinking and learning as mediated in sociocultural theories brings up the issue of meaningful dialogue, with researchers from many paradigms, for instance, New Literacy Studies, cognitive psychology and enactivist theory generally agreeing that students need to talk more in classrooms (Dyer, 2007). Collaborative literacy experiences are likely to

stimulate student engagement (Gee, 2008) enhancing “the development of logical reasoning through a process of active cognitive reorganisation induced by cognitive conflict” (Cazden, 1988 in Dyer, 2007: 45).

Larson and Marsh (2005) describe an instance of exemplary teaching: “Gatto’s use of dialogic script supports the co-construction of knowledge and affords space for student-initiated ideas for learning activities, questions for investigation and problems to solve” (29). The authors also cite Freire’s tenet that dialogue is at the heart of meaningful learning (Shor and Freire, 1987b): “In this model, students and teachers are partners in the learning process, rather than participating in hierarchical models of power” (Larson and Marsh, 2005: 41). Hall’s (2003) review of literature on effective literacy teachers in the USA and UK, points out that effective teachers use more varieties of discourse structure than less successful teachers do, including dialogic interaction. Working alone, in pairs or in small groups leads to different dynamics in interaction and dialogue and hence there are different learning opportunities offered by each organisational set up.

Dyson (1993) points out how children use talk to organise their social worlds and articulate who they are relative to others. To Dyson (1993) dialogue always involves negotiation between differences, social borders such as race and class, and accomplishes kinds of social work. In terms of critical literacy, in the sense of literacy concerned with awareness around social justice (Larson and Marsh, 2005), dialogue is seen as ensuring that taken-for-granted practices, authorised texts and commonsense knowledge are subject to question. Meaningful interaction would create truly dialogic spaces for young people to interrogate, question and learn about how other people think and live.

2.7 LITERACY AND IDENTITY

2.7.1 Language and identity

When the statement is made that literacy and language are social practices, this means that they are not value-free actions; nothing is said or done, written or read in a vacuum. Everyday concepts and activities such as teaching are also contingent on social processes. Language is used by people with a specific purpose in every context on every occasion; the particularities of the surrounding circumstances, place and people shape this use. It is possible to express this as language and culture mediating the construction of knowledge and reality, and hence identity.

A social practices model of literacy is built on the recognition that literacy is also constructed in day-to-day practices, always carrying particular meanings and imbued with power (Larson and Marsh, 2005). People's identities and identity constructions play a role in these processes. Teaching is as an arena where dominant sociocultural discourses compete to construct and position teachers and students. The role of language use in assisting or interfering with learners accessing a domain intellectually and as social identities is important in respect of assessing whether a school domain is a productive domain for learning.

2.7.2 Negotiating identities in learning

My study centres in part on learners' discursive and material (re)constructions of their different identities and identifications in the light of new learning in EMS. It shows how learners negotiate old and new identities and make sense of how these emerging identities change their relationship with fellow learners and out-of-school contexts.

Teenagers (re)construct and negotiate their identities through school, home, media and other discourses. Through these negotiation processes, they invoke strategic identity(ies) and reframed (Pal and Buzzanell, 2008) family and out-of-school discourses and practices. The spaces and cultures of these discourses offer arrays of possible positional identities in social networks, and discursive as well as linguistic, historical and cultural devices "that guide individual's interpretations of events and action and influence their representations of self....[Students] can draw on these when they choose their different identifications and (re)position their identities" (Hall, 1996; Kuhn 2006; Kuhn and Nelson, 2002 in Pal and Buzzanell, 2008: 32). Relating the negotiated construction of literacy directly to identity, Bartlett and Holland (in Bartlett, 2003) suggest that literacy learners can employ books, letters, and what teachers say for instance "to manage their own feelings, thoughts, behaviour and actions... These symbolic elements of identity can be used to challenge and overcome ascribed, positional identities firmly rooted in social structures, such as class and race" (5). Analysis of phenomena connected to identity work could throw light on the relationship between social change and formation of identity/identities.

2.7.3 Identity and learning in semiotic domains

An attribute of belonging to and of being insiders in social semiotic domains is recognition of other individuals, and being recognised oneself, as members of the domain or as part of

the affinity group connected to it as well as developing an appreciative system: “the set of goals, desires, feelings and values in respect to the domain being engaged with” (Gee, 2003: 96) in the semiotic domains framework (Kress et al. 2001; Gee, 1999). The appreciative system attribute of being literate in semiotic domains demonstrates how thinking and learning are embodied and tied in with psycho-cultural aspects of individual and group human existence like having emotions, attitudes, values and beliefs:

[An] appreciative system is the place where not only the affective and cognitive merge and come together; it is the place where the social, cultural and the personal merge and come together as well (Gee, 2003: 97).

According to Bartlett (2003), becoming and being literate is as much about social work, “passing for literate”, as it is about any cognitive shift. In other words a person’s sense of self or their identity can be tied in to literacy behaviours. Since literacy is situated and thus variable a sense of identity can vary along with the setting changes; identity is not static or fixed and it is possible to have more than one identity. To Gee (2003),

[a]ny specific way of reading and thinking is...a way of being in the world, a way of being a certain ‘kind of person’, a way of taking on an identity. In that sense each of us has multiple identities. ... But as we take on new identities or transform the old ones, this core identity changes and transforms as well (3/4).

So how one is, changes through acquiring new literacies in different semiotic domains. It follows that “identity work” (Street, 2003) and “recognition work” in terms of appreciative systems (Gee, 1999) and affinity groups of social semiotic systems (Gee, 2003), are integral to literacy and should therefore not be neglected in any study of literacy and learning, or indeed in devising teaching strategies, organising classroom interaction and doing curriculum planning in schools (Hall, 2003).

2.8 MEDIA, TECHNOLOGY AND LITERACY

2.8.1 Integration of popular culture and school literacy

As already argued literacy practices are always situated and hence affected reciprocally by the elements in the context in which they take place. School literacy is no exception and neither are literacies related to everyday home, media and popular culture and technologies. The interplay or overlap between school and other literacies has a bearing on

whether or not a subject-specific genre such as EMS is a productive domain for learning. As Larson and Marsh (2005: 68) put it: "New information and communication technologies have changed, irrevocably, the nature of literacy". Kress (2003: 1) points out that there has been a move from dominance of writing to the image, and one from the book to the screen. It is thus relevant and worthwhile to examine how the character of home, popular and technical literacies overlaps with that of school literacy, and what impact the "digital turn" (Larson and Marsh, 2005: 68) has had on teaching and learning practices.

Moss (2001) highlights the specific character of school literacy by contrasting it with literacy in non-pedagogic settings. She argues, drawing on Bernstein (1996), that school knowledge is uniquely sustainable in its 'vertical' sequencing, standardising of learning, and on a specific trajectory: "knowledge enacted at a particular moment in formal settings is never self-contained, but always points both onward and backward, creating strong developmental trajectories" (Moss, 2001: 155). In contrast informal media-driven literacies, described as horizontal discourses, Moss argues, cannot be sustained beyond the immediate eliciting context (Moss, 2001: 154): "[T]he object of regard changes all the time [as do] the competencies required to demonstrate knowledgeability in relation to it " (Moss, 2001: 159). According to Moss (2001: 153), organisation of such media-related literacy tends to be influenced by trends in adult and child leisure activities such as taste in movies; her research showed for example that children's informal knowledge of horror movies waned after this genre of movie went out of fashion in the late 1980s.

In contrast to the view of a clear-cut division between vertical and horizontal literacies, there are proponents advocating incorporation of principles from popular and media-related literacies with school literacy. Gee (2003) for instance, examines how people learn to play computer games (a horizontal literacy in the view of Moss, 2001) and extrapolates 36 principles of effective learning embedded in this type of activity. Gee's argument is that if schools incorporated content and methods of learning from popular culture, learning would be more efficacious. Learners would be motivated to explore and develop identities and be prepared for 'critical' learning in domains related to school knowledge. Based on the evidence that Gee (2003) provides in his study of learning to play computer games, it could be argued that teachers could identify content and formats in popular discourses and trends in technology use (such as email, the internet and gaming) and extrapolate these and the

techniques or principles related to learning in such instances; and may thereby be better able to 'get through to' learners.

2.8.2 Technoliteracies, teaching and learning

Larson and Marsh (2005) make the point that the size of the gap between home and school experiences with regard to information and communication technology (ICT) activities "can lead to disaffection and disengagement" in school settings (Larson and Marsh, 2005: 70). They add that schools usually lag behind in implementing popular trends in technology use so that there is likely to be a lack of synergy between the two domains. The authors support a call for curricular and pedagogical changes that are underpinned through attention to the epistemological and ontological changes that have followed the advent of digital literacy practices.

In classrooms digital technologies impact on literacy processes and have significance for the role of the learner and teacher. For example, the roles assumed by authors of digital texts include those of designer, mediator, producer and critic (Larson and Marsh, 2005: 71) and have to be considered. Teachers need to develop the ways to support, co-construct and consult on design with learners as they negotiate these processes/roles. In addition, if they wish to enhance children's learning, teachers need to recognise more and more the range of resources children draw on as they engage as designers, mediators, producers and critics of the new media (Larson and Marsh, 2005: 71).

Larson and Marsh (2005) examine several proposals for curriculum change in response to the new media. One study (Burnett et al, 2004 in Larson and Marsh, 2005: 74) describes two conceptions of curriculum and pedagogical change offered in relation to new media: where teaching and learning are either 'transformed' or 'enriched'. Schools change learning environments and curricula in the former; or traditional pedagogy is enhanced (for example with smartboards) in the latter. There is potential for the adaptation of new media styles of design, production and presentation to be incorporated into teaching in for example the formats of teaching materials and assignments and overall in curricula. Lankshear and Knobel (in Larson and Marsh, 2005: 75) however argue that educational practice should preferably be thoroughly transformed, so that

a) learning is connected in meaningful ways to learners' social and cultural practices;

- b) it takes place inside 'practice' (discourse) and relates to students' identities;
- c) the learning process does not involve conflict between identities; and that
- d) learners experience different and competing discourses and are able to navigate contested spaces. That is, learning ought to develop a kind of critical literacy in relation to ICT practice.

2.8.3 Dominant classroom discourse structures, learning and identity

Patterns of discourse use in classrooms have consequences for learning. Discourse structures differ in the degree to which they use strong or weak framing, visible pedagogies, ideological literacy and responsive-collaborative structures or those in which the boundaries of participation are relaxed, where there is elaborated student initiation of topics and student responses and the implicit goal is shared knowledge (intertextuality). According to Larson and Marsh (2005) the dominant discourse structure in classrooms is the IRE pattern – or initiation-response-evaluation pattern. Teachers typically ask a question whose answer they know, a student responds and the teacher evaluates that response. A model where the teacher initiates topics, strongly frames activities and the goal is transmission of information is strongly underpinned by an autonomous view of literacy (Larson and Marsh, 2005: 14/15). The significance of the patterns of discourse for learners in terms of discovery, learning about their own strengths and interests (identity formation), motivation and cultural models in the classes under study is a concern of this research.

2.9 LANGUAGE AND ACCESSING SOCIAL SEMIOTIC DOMAINS

2.9.1 Social languages, design grammars, affinity groups and learning

In my study the differences between and challenges with using everyday social languages and academic social languages and the design grammar of EMS are examined. Pedagogy and learning around this issue is considered, as are the processes to get the students 'into' using the social languages and design grammar of the EMS social semiotic domain.

In every interaction using language people select the words they use differentially. They adjust their style depending on the purpose with co-participants or for example the status between the listener and themselves. The distance in social and affective involvement they wish for (e.g. more or less formality); and possibly the wish to stress cognitive involvement (sounding objective and 'intellectual'), or maybe express solidarity and co-participation in

meaning making (saying 'you know'), may affect their style too. Such adjustments in language use under different conditions are referred to at times as register: "a variety of language corresponding to a variety of situation" (Halliday and Hasan, 1985: 38) in respect of what is taking place; who is taking part; and what part the language is playing (Halliday, 1978); or "social languages" (Gee, 1999, 2003, 2008).

Beyond grammar relating to nouns, verbs and clauses for example, the researchers using the framework of a social semiotic domain refer to the 'design grammar' of a domain (Gee, 1999, 2003, 2008; Kress et al. 2001; Halliday and Hasan, 1985). This relates to how the different elements of the domain get manipulated in a way that is recognizable by other members of that domain (insiders). Mastery in a domain is signified by being able to interpret (read) and produce (write) texts using the social languages and grammar fluently (Gee, 2003).

2.9.2 Strategies: "bootstrapping", "mushfake" and "black boxing"

The strategies that get used to gain access to a social semiotic domain including using its social languages and design grammar, have variably been described as "bootstrapping", and "mushfake" (Gee, 1999, 2003). Bootstrapping refers to apprentices to a domain for instance emulating or 'trying out' the model provided by the person guiding their induction, (the 'master' or expert). This is achieved in teaching at times by modelling activities, providing prototypical cases or simplified exercises (Gee, 2003) that allow for practice of key basic elements in an order which allows building up or 'scaffolding' of experience and knowledge in the sense of vertical discourses discussed earlier. Using props or making do with or modifying different materials to simulate the 'real thing' has been referred to in prisons as mushfake, where a prisoner will for example make a hat for keeping warm out of trousers (Gee, 1996, 1999, 2003). One can extrapolate this idea in education to practices where learners simulate the roles, objects and general practices that are integral to an activity that happens in a more complex way in the world outside of school.

On a negative point, the induction of apprentices to a domain can be subverted when an expert fails to recognise the need to bring them into the practices of the domain gradually, assuming knowledge or experience on the part of the apprentices. Teachers sometimes "black box", or think of their subject as being self-evident, "as if by magic", in their everyday practical dealings with it (Bowker and Star, 2003: 1; also Prinsloo and Stein, 2004). They

thus sometimes fail to clarify situated meanings of common sounding words, assuming familiarity with the language used to talk about domain specific processes, or expect learners to recall linguistic descriptions of, say, economic principles, without learners having any grass roots, bottom-up experience of the principles in action (Gee, 2003).

2.9.3 Genre theory and explicit focus on language

Genre theorists such as Halliday and Martin (1993) and science educationalists (for example Bennet, 2003; Atkin and Black, 2003) hold that educators need to focus explicitly on the forms of language used to achieve different communicative functions in scientific and academic discourse. Genre theorists are concerned about disadvantaging of minorities whose home literacies do not mimic school literacy, and as such are concerned with democratizing educational processes through a focus on language. Although in my view this need not be the case, according to Lemke (in Halliday and Martin, 1993: 3):

The language of classroom science sets up a pervasive and false opposition between a world of objective, authoritative, impersonal, humourless, scientific fact and the ordinary, personal world of human uncertainties, judgments, values, and interests,

and is alienating in this way. There has also been a growing knowledge base as to what factors affect successful education for second language (L2) learners and where it has been necessary to discern whether challenges arise because of problems with understanding language, or scientific concepts (Rollnick, 1998). Language is understood as not simply a means of labelling: correlating objects and words; but as instrumental in obtaining understanding and making meaning, as already discussed. Specifically in relation to science literacy, “[L]earners need logical connectors in their language to express their thoughts and to understand the thoughts of others” (Rollnick, 1998: 123). According to Halliday and Martin (1993: 181) technical terms and the grammar constructions that are foregrounded in science language have to be explicitly modelled and taught to learners, and this should be done indicating “the purposes it serves in a particular context”.

There is, however, a case to be made for a focus on language aside from the cases set out above. This is in respect of using language to reflect on learning. If learning is to be critical as well as active, then learners need to be able to use language to talk about their learning. This meta-use of language is also a mark of being accomplished or expert in a social

semiotic domain (Gee, 2003). From this point of view, a focus on meta-language and generally using language reflectively would enhance and demonstrate effective learning.

2.9.4 Academic literacy

EMS as an academic discipline, albeit at school, is characterized by various forms of abstraction: for instance, relationships between objects, or objects and people, are represented mathematically. Gold, measured in dollars per ounce, is one example. When scientific events are described, it is common for nominalisations to be used, where the action and the actors disappear into a noun that summarises the processes. Martin (1990: 93) gives a telling example of language which typifies science language to illustrate this point:

The destruction of a land surface by the combined effects of abrasion and removal of weathered material by transporting agents is called erosion. ...the production of rock waste by mechanical processes and chemical changes is called weathering.

'Weathering' which is a noun, and thereby implicitly static, actually represents a dynamic process on one hand and subsumes two processes on the other, one mechanical and one chemical. Such 'science' terminology/literacy tends to comprise dense layers of distilled meaning and abstractions. The frequent use of passive grammatical constructions, which background the dynamic nature of events, is a further example. The treatment of specialized language pedagogically and the effects of these practices in terms of learner response are given attention in the analysis of classroom data later in this study.

This chapter has dealt with NLS theory, a social semiotic domains framework, theory on situated meaning making, social mind, identity and literacy, media and technology and the uses of literacy as well as language and accessing semiotic domains. The resources and debates summarised in this chapter will be used to frame the research topic and to engage with the data.

Chapter 3 RESEARCH DESIGN

3.1 Overview

This chapter describes my research focus and provides an overview of the methodological issues to do with identifying and accessing the research site, as well as the collection and analysis of data. It provides detail on the methods of data collection and outlines the rationale and strategies for data-analysis. The chapter describes the setting for the research and the procedures involved in collecting data. Finally, the ethics related to the research are considered.

3.2 Research agenda

Broadly speaking, my agenda in conducting the research was about identifying the ways of constructing knowledge in the Economics and Management Sciences genre, and evaluating the principles of effective literacy learning in learners' practices. I furthermore aimed to pay attention to the role of language and other semiotic systems, and their communication, in engendering learning. Finally I try to contribute, by way of research, to the development of forms of pedagogy that recognise the 'social learning' aspects of education, and that account for the role of context in devising curricula.

3.3 Qualitative approach

Qualitative research is seen by certain researchers as having its own strengths such as allowing a focus on different aspects of phenomena and processes to those available to quantitative studies. This attention to processual knowledge in qualitative research, offers, at an epistemological level, "a representation of reality, but one that can only ever be known partially, not totally" (Woods: 1999). The strengths and features of qualitative research include an interest in meanings, perspectives and understandings. Of interest are how the participants in the study, including the researcher, make sense of events and how their understandings influence their behaviour (Woods: 1999). Of significance is the way that the researcher is a central instrument in qualitative research (Woods: 1999) as opposed to a tool such as a questionnaire or statistics, in quantitative research. This is so because the researcher has to select, as she goes along, so to say, what is significant out of a wide flow of events, behaviours, activities and practices. In quantitative research this selection tends to happen at the early design stages, when sample sizes and characteristics are decided on, and research tools, categories and methods are selected.

3.4 *Ethnographic case study method*

To obtain detailed descriptions of classroom life that would reveal answers to my research question, I used an ethnographic-style case study method, situated in the qualitative paradigm. Woods (1999) identifies a focus on natural settings as one of the main features of qualitative research. I was concerned with viewing classroom life as it happened and not how the academy expected it to look. I tried to be unobtrusive in the methods I used and made as few assumptions as possible in advance on what issues would be found. So as to gain access to the range and variability of social life in the site and to be able to discern many layers of meaning there, I spent relatively long periods observing and recording classroom interaction.

There is debate about whether observations made in qualitative research represent reality and hence there are questions about its validity. Hammersley (1992: 28) is concerned that ethnographic phenomena are sometimes portrayed as if there is a single, objective description of each phenomenon, whereas descriptions and explanations are influenced by what the observer believes is true and relevant, and the purposes for which the explanation is being developed. In my view, it makes sense that the researcher should explicitly clarify her commitments and theoretical perspectives as they apply to the research, in order to be as transparent as possible and to make space for critical judgement on the reader's part.

3.5 *Discourse analysis*

Dialogical talk and written texts are the main sources of data reported in my study. The question arises as to how this data gets analysed. Archer (2004: 19) draws on the work of Gunter Kress to argue:

Meaning potential is actualised in the form of text. In other words knowledge does not exist until it is realized, given representational form.... The significant factors that are fixed and framed by text are discourse, genre and mode. Discourse is the expression of what is being talked about. The expression of the social matters (who acts in relation to what) gives a shape to text, the 'genre'. Finally, the stuff of communication is fixed in 'mode', providing the material resource through which text is materialized.

The questions this research is particularly concerned with in reference to the building of textual and social meanings relate to what social semiotic systems are made relevant and how: what situated meanings of words and phrases are foregrounded in this context and how are these connected to one another, following what kinds of models for doing so? My

analysis has therefore to enquire what relationships and identities and concomitant personal, social and cultural knowledge and beliefs, feelings and values seem relevant. How are these relationships, patterns and values stabilised or transformed? What discourses are relevant to these relationships and identities, including how are they made relevant (Gee, 1999: 93)? Discourse analysis, as I apply it in my study, is a tool for identifying, describing and analysing these phenomena and relationships.

According to Luke (1995:19), Critical Discourse Analysis (CDA), commonly associated with the work of Norman Fairclough and his colleagues, offers tools for the “denaturalization of text, for revealing that the representations of texts ... often hide their own status and authority through linguistic techniques”. In this view, CDA can model the possibility of alternative readings and interpretations. This version of discourse analysis offers the resources for identifying patterns of language in ways that “reconnect instances of local discourse with salient political, economic, and cultural formations ... to document how larger patterns of social reproduction and cultural representation occur in everyday classroom life” (Luke, 1995: 11). CDA can also make transparent “the devices with which texts position and manipulate” (Luke, 1995: 19) readers and listeners; and “reveal the textual techniques by which texts attempt to position, locate and define, and in some instances, enable and regulate readers and addressees” (Luke, 1995: 20). Thirdly, Luke (1995: 20) argues, CDA can be used to trace particular discourses “to see how they create different material effects in the way that they construct subjectivities, constrain and shape particular subjects’ life trajectories and construct and instantiate particular institutional relations of power and social formations”. I attempt to be responsive to these different levels of connections in my own analysis, with some qualifications. The limited scope of this study means that my focus is at the level of how successful teaching and learning are produced. I do not engage in depth with how these practices articulate with the wider practices of capital accumulation and social power at a larger sociological level. Nonetheless, I draw on tools of critical discourse analysis as they apply to my concerns here.

3.6 Research setting

The girls-only High School where the research took place was a Model C school under the pre-1994 Department of Education, meaning that the children who attended in those days

were all White² until the early 1990s. The school is located in a middle class suburb, charges high school fees (though there are some scholarships available) and the children who attend are White, Coloured and Black, mostly from middle-class backgrounds. Some of the children come from suburbs and townships previously designated for Coloured and Black (previously disadvantaged) groups. English is the medium of instruction although this is often not the mother-tongue of the Black children, or of many of the Coloured children. The classes have an average of 30 students.

3.7 Choice of school

I chose the school because it was convenient to access for the extended observations I intended doing as well as for the reason that, being a former Model C school, regarded as a 'lead' school, in a relatively affluent area, it would possibly provide a good example of competent teaching and learning in the school subject I was interested in studying. I had been a pupil at the school in the past so that I was aware of some aspects of the school ethos and hoped this would serve as useful background information. I tried to take account of my background and links to the school, which might influence my analysis.

3.8 School context: incentives to succeed

The study of EMS, a school subject which is generically related to professional and commercial socio-economic activity, took place against the backdrop of institutionalized actions related to encouraging commerce at the girls' High School. These actions were in respect of providing incentives for achievement in the commercial sphere. For example, those learners who had achieved a certain minimal mark level in EMS in the final year of EMS (Grade 9) were selected to do Accountancy from Grades 10 - 12. Getting high enough marks to 'get in' to Accountancy carried some prestige. Secondly, the school has an annual Entrepreneurship Award for the learner who has best succeeded in being entrepreneurial in the view of the staff at the school. The award in 2005, the year my fieldwork was completed, was given to a Grade 11 learner who had designed, made and sold clothing successfully. Learners also participated in fundraising activities and the most successful class (in money-raising) received recognition. This valuing by the school of success in

² With regard to terminology, 'White', 'Black' and 'Coloured' are common designations which were used to identify social groups by race in the Apartheid era, and are today still commonly used to describe physical and social locations of people in South Africa. I use these terms without any racist intent.

EMS, by using it in a gate keeping role for further specialization and through the valuing of entrepreneurial accomplishments in the granting of an award and for successfully participating in fundraising activities in the school, arguably influenced the attitude of the learners towards the study of EMS, giving status to the school subject.

3.9 Participants

The EMS teacher was a male who originally qualified as an Accountancy teacher, with approximately 8 years of teaching experience, all at this girls' High School. He studied at the Cape Technicon (now known as the Cape Peninsula University of Technology) and at the University of Stellenbosch. At the time of the research he was Department Head of Accounting and EMS at the school. Teachers with other disciplinary training, for example History teachers who taught EMS, consulted with him to get guidance in their EMS teaching.

The Grade 9s who participated in the research were the second class to have completed the full cycle of learning in the newly introduced subject of EMS from Grades 3 to 9. The learners in the class mostly came from the surrounding suburbs (some were boarders at the school boarding house), and therefore came from families that could be classified as middle class in socio-economic terms. Many but not all of them had access to televisions, computers and the Internet at home. They mostly spoke one of a variety of languages at home, either Afrikaans, isiXhosa or English but encountered English often outside of school, where it was not their home language. English was the language of instruction and for running the school.

3.10 Data collection methods and procedures

Observation: The primary sources of data were lessons observed over a month in August and September 2005. I sat in on 29 classes lasting 35 minutes each, all of them taught by the same teacher. I audio-recorded as much of the interaction in the class as possible, and took hand-written notes and photographs of board and student work. I also photocopied portfolios of students' work at the end of the 4th term.

Interviews: I had a preliminary interview with the participating teacher at the beginning of the observation period and then, while accompanying him to lessons over the month long period, I talked with him informally.

Researcher role: The learners were told that I was doing research for a Masters degree and seemed satisfied with this explanation. They appeared not to mind my presence and did not often refer to me while teaching was underway. A few learners asked me for help with their work, assuming that I was also an EMS teacher, but I explained that I wasn't one. During periods in classes which were whole class teaching the recorder mostly only picked up the teacher's voice or a student who was speaking alone to the class. When the learners were working on their own or in pairs, as they did for one exercise, I would place the recorder on the desk where there were students working, in order to pick up student-to-student talk.

3.11 Data analysis strategies

After the data collection period I transcribed the recorded lessons. Initially I attempted mapping the moments of teaching and learning from my data by way of Gee's (2003) 36 'principles of effective learning'. Gee developed these principles drawing on his study of video-gaming but developed them to explicitly engage with schooling debates. However, I found some of them to be too broad in scope and lacking a clear sense of context, with regard to schools. I tried a similar process of coding the transcribed data according to Hall's (2003) categorization of effective literacy teachers' curricula, organizational and pedagogical practices, but found that there were not enough categories there to carry the analysis.

I finally resolved to develop my analysis in response to broad questions concerning observed teaching and student practices in EMS classes and to evaluate whether these constituted a productive domain of learning for students/learners. In this process I noted language and action that appeared typical of the teacher and learners, and identified those practices that could be seen as 'telling' as regards pertinent literacy theory, primarily those of sociocultural models of cognition and writing and also that of the situated practice approach of the New Literacy Studies. I continued to draw on Gee's (2003) and Hall's (2003) classifications, but, as explained, not exclusively. The criteria/categories I developed relate to: learning of semiotic systems related to EMS, how active and critical the learning engendered was, whether the activities encouraged and recruited situated, experiential, and embodied forms of literacy leading to good perspectives on learning, thinking, and problem-solving, and finally, whether learners got to take on new identities through their literacy activities.

3.12 Ethics, validity of research and limitations of methodology

I have complied with the requirements of the University of Cape Town Humanities Faculty's Research Ethics Committee, in terms of getting permission to do the research and protecting participants, and received clearance for this research from that Committee by way of my research supervisor. All attempts were made to conceal the names of the school, the teacher and learners. Because the number of well-resourced all-girl, ex-Model C schools in Cape Town is limited, I have taken care not to give support for informed guesses as to the school's identity. I also offered to make available the results of the research to the teacher and principal of the school concerned. I explained that my focus was on teaching and learning practices rather than on evaluation of teachers or learners.

Although an attempt has been made to triangulate the results of the research by using different sources of data: (written and spoken texts from the classes observed, together with my own observations as well as interviews with the teacher concerned), I should point out that I observed only a limited slice of events, given the nature of the research and the time constraints as regards the completion of this research exercise. On occasion, my observation started part of the way through a procedure that had begun in an earlier class, for example. At times I perhaps attributed a weakness to the teacher when it might well be the learners who were not listening appropriately. I was aware that constraints of time and space and other resource limitations can contribute to certain teaching practices being less than ideal, and made all efforts to take account of these limiting effects, as regards teaching and learning.

Data Analysis

My aim in the chapters that follow is to identify how knowledge was constructed by the teacher and learners in their lessons and to identify what kinds of literacy and learning practice characterised these processes. The detailed transcriptions of talk and notes of classroom activity that I draw on gave me a view of the practices, genres and materials that make up EMS as a school subject at the research site. I look at teacher-and-whole class, teacher-and-specific learner dialogue and interaction, and peer-to-peer talk. I examine teacher modelling and induction strategies aimed at enabling learners to access the social semiotic domain of EMS. I reflect on how productive a learning space the EMS classes were. The excerpts I analyse here come from lessons to do with: investing on the stock exchange; identifying and labelling 'added value' between levels of industry; doing calculations related to production and other costing processes exemplifying the principle of economies of scale; and going over a test.

I enquire as to what the elements are that make up EMS as a social semiotic domain; what active and critical learning is about in this domain; how situated meaning is made in this domain; and how knowledge is socially constructed in the domain.

Transcription

The transcription of dialogue in the following chapters is set out as follows. 'T' stands for teacher, and 'S' for student or learner. Each speaker is transcribed on a new line. Lines are numbered. The exception is when the teacher is the dominant interactant and the learners' responses are brief, in which case the learners' speech is in square brackets: [], immediately in between the teacher's speech. This is to maintain the flow of the dialogue and to save page space. Actions of speakers appear in round brackets: ().

Chapter 4 LEARNING THE SEMIOTIC SYSTEMS OF THE EMS DOMAIN

4.1 Learning domain-specific codes

Hall (2003) and others (for example, Knapp et al., 1995; Wilkinson and Townsend, 2000 in Hall, 2003) hold that effective literacy teachers combine two major aspects of a subject. On the one hand, they provide extensive opportunities to read and respond to texts on the subject and to use and work in the genre for a number of authentic purposes. On the other hand, they attend to the codes of the genre – in the case of the semiotic domain of EMS, this would be vocabulary, text structures, social languages and the design grammar. What was key in effective teaching, according to the authors, was the integration and balancing of the codes of the genre with uses and purposes of literacy that are meaningful to the learner. According to Gee's (2003) semiotic principle of learning, part of active learning is coming to appreciate interrelations within and across multiple sign systems as a complex system of images, words, actions, symbols and artefacts, for example. This chapter focuses on learning these sign systems.

4.2 Multi-media presentations for teaching and learning

Cole and Wertsch (2004), Gee (2003), and Vygotsky (1978) among others writing in or about the cognitive psychology field pay attention to the role of tools and objects in holding and mediating knowledge. As a field EMS deals with concepts concerning quantity. It employs symbols, numbers, and mathematical equations to represent relationships and operations between elements. Teaching and learning maths and calculations in the study site relied on multi-media presentations.

The following picture is an example of the board work on calculating portfolio value generated in the EMS lessons. Not only were numbers and symbols/signs used to hold information but this was augmented by the use of colour coding, a different colour, green, blue or black being used to support the message according to the function in the calculation: individual investment value, total portfolio value, share or commodity price, or exchange rate value.

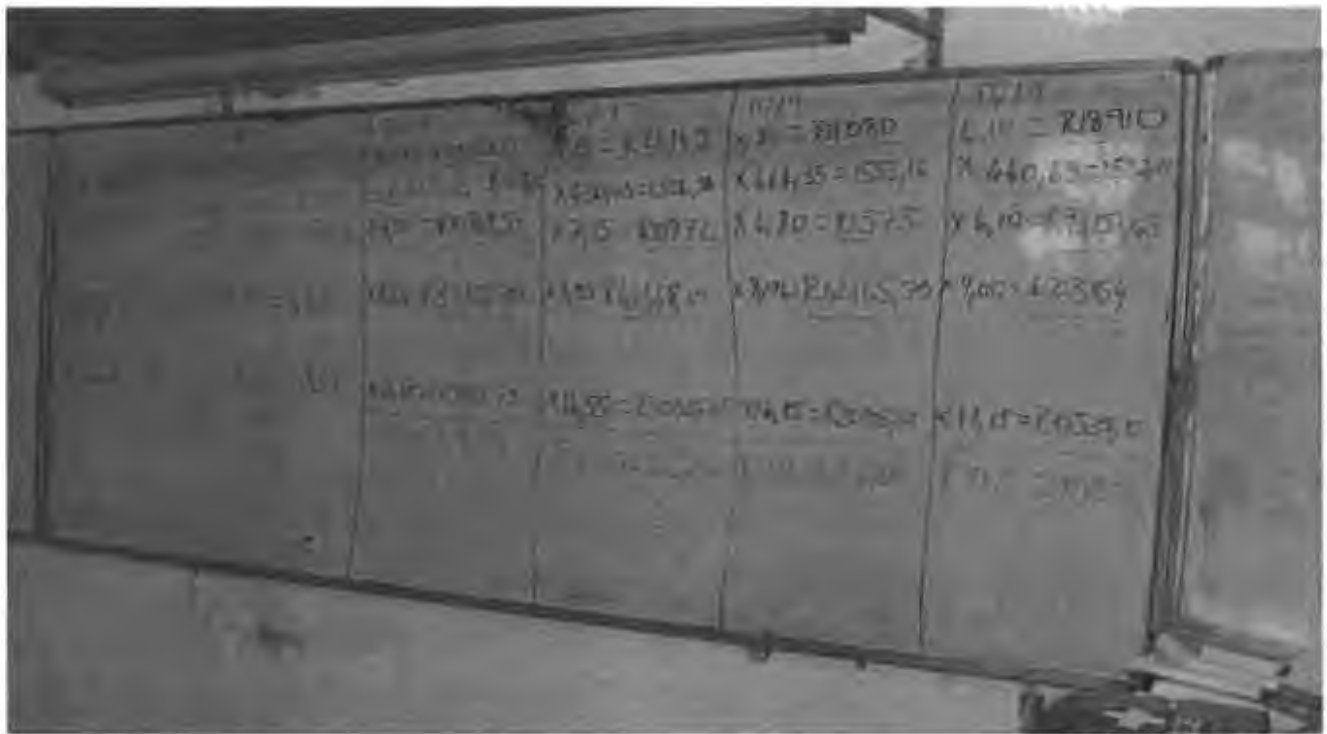


Figure 1: Tools and multimodal technologies for holding knowledge: colour-coded calculations for working out the value of investments for the stockbroker simulation.

In this use of numbers, colour, graphs (not pictured here) and explanations it is evident that "meaning and knowledge are built up through various modalities (images, texts, symbols, interactions, abstract design, sound, etc), not just words" (Gee, 2003: 107). The conscious attention by the teacher to making links between the different modes of communication, the written numbers and the visual "modelled a way of talking about, responding to and interpreting information from visual texts" (Stein and Slonimsky, 2006: 10).

The purpose of the lesson which resulted in the board work pictured was to work out and compare the value of a (fictional) investment portfolio on different dates. This comparison was built up, starting with the allocation of the original total investment (R100 000) to Dollars, a commodity (gold) and two shares (Shoprite Holdings and Famous Brands). Rands had to be converted to Dollars using the exchange rate of the day. The number of ounces of gold that could be bought for the amount allocated for the commodity had to be calculated. The number of shares that could be bought for the allocated amount depending on their particular value had to be calculated. As the exchange rate and share price changed each day the value of the portfolio changed. The work built up on the board was led by the teacher with the learners contributing answers from their own calculations (already completed for homework) on cue from the teacher. Learning was social and

cooperative, spread or distributed across people and the technologies of writing and numbers. The following excerpt shows the teacher working through the calculations with the learners using the board to record the EMS calculations:

1. T: Yesterday you were working out your share portfolio at certain dates, using
2. future values. (Teacher walked around looking at students' homework. He
3. wrote on the board as he explained.) First what we are going to do
4. is have a look at a comparison of the different dates by their portfolio value, so
5. I'll write down the formula and then we'll write down the answer...So to start our
6. first investment is dollars...then at the exchange rate R6.45 and that was on
7. 29/08 ... $20\,000 \text{ rand} / 6.45 = 3100 \text{ dollars}$, that was on 29th. Our next date
8. was 2/09 and our exchange rate on 2/09 was R7.20 ...and we get an answer of
9. R22 320. Okay...the next date 6/09, ...Our exchange rate, R7.50. That
10. gives us an answer of R22 165 ...
- 11.S: Sir did you have to work out...that price as well...for [10 September]?
- 12.T: On 10 September R6.80...and our last day ...14/09, and our exchange rate
13. there R6.20. Our rand value is R21 080. Can you all see what we are doing
14. here? We are just taking our investment which was 20 000; we converted it to
15. dollars and then we times it by the exchange rate to get our Rand value,
16. because the amount of dollars we own doesn't change. All that changes is the
17. exchange rate. What is the last one Sophia?
18. S: I'm not sure
19. T: Lindsay?
20. S: R18 910
21. T: R18 910..ok a considerable drop. Right you can see the drop (gesturing)
22. starting off at R20 000 and then it started dropping consistently. Everyone
23. happy with how we do that calculation?
24. S: (some of the learners) Ja.

Gee (2003) holds that it is important in the modern world to know what people can think and do with others and with various tools and technologies. He puts it this way that "each of us

lets other people and various tools and technologies do some of our thinking for us” (183). Gee (2003) has also pointed out that the power of storing knowledge in other people and tools and technologies, is in the way “they are interconnected, not in any one mode (person, text, tool or technology), but in the network as a whole” (185).

Gee (2003), discussing assessment, holds that to an extent a person has to be assessed as a node in a network and seen how they function, how well they can leverage knowledge from the network, and how well positioned they are in the network that connects them in rich ways to other people and tools and technologies. This is a very different concept to one that views all knowledge as stored in a person’s head.

The interaction demonstrated in the excerpt shows that learners in this study site, perhaps not consciously, nonetheless would have learned a cultural model of learning in the EMS classes that the network (their minds, the teacher, worksheets and (colour-coded) writing/calculations) stores powerful thinking, problem solving and knowledge, and ensures knowledge moves quickly to other parts of the system which need it at specific times.

The use of technologies like writing and numbers, networked the classroom and children in it into a larger knowledge system; “together they form[ed] a zone of joint activity as in the ZPD, the distance between a person’s current level of comprehension and levels that can be accomplished in collaboration with people or powerful artefacts” (Gee, 2003: 190). The core idea is that novices would have internalized or accommodated to the goals, values, and understandings of those more expert than themselves through scaffolded joint activity with those others and their associated tools and technologies in the classroom. The structure of the activities, not just the traditional teacher, took on the role of scaffolding and structuring expert.

In the following literacy/learning event, learners were encountering new aspects of the ‘code’ of EMS in school (including discourse, register and graphic features - verbal, written and visual elements). Learners were reading through the business section of a newspaper in order to find out which investments they were going to make in a project where they were simulating putting together an investment portfolio for their (fictional) client:

1. S1: So what exactly must we do?
2. S2: Okay, we must pick some companies to like invest in and how much
3. money, or ...
4. S1: Can't we go to the internet...and get it off the internet?
5. S2: Ja, I think we can also get this on AOL. I'll check the ...AOL. Okay now
6. roughly what type of...invest in dollars um, ..in stocks and then in gold. We
7. can also invest in something like pounds and platinum.
8. ...(short silence)
9. S2: Then the price goes up and down.
10. S1: I'll look on the news tonight.
11. S2: Well we can just like..."to invest in platinum" (reading)
12. S1: "Week's volume in 1000s."
13. S2: I don't understand the symbols.
14. S1: I think it's like...
15. S2: Here it says .."price, earnings..."
16. S1: And then there's "yield...12 month higher..."
17. S2: Now what are these funny symbols?

Learners firstly planned how to get information for the project, considering the internet and television news as alternative sources to newspapers for share and commodity prices (L.3-4). We see how learners were familiar with more than the conventional printed mode in their ability to use and access the internet.

Learners encountered domain-specific vocabulary and concepts in the process of reading the paper – 'week's volume in 1000s', 'price earnings', 'yield' (L.9, 12 and 13). One learner said "I don't understand these symbols...What are these funny symbols" (L.11 and 15), evidently negotiating new codes and meanings.

As they read, and learned and practised calculating the value of their portfolios, also a part of the domain-specific code locked into numbers, the new elements of the domain which had been unfamiliar, for example vocabulary (L. 11, 14 and 15) would become familiar and

hence useful to the learners. If they were useful they could be considered worthwhile learning, at least at the level of task completion. But their usefulness would also be around picking up terms and practices that were specific to the semiotic domain of EMS.

4.3 Learning new vocabulary and concepts

In the following literacy/learning event the focus was on learning about value as a key concept in EMS, and about how value gets added to goods and materials at different levels of industry. The teacher handed out a worksheet (see appendix 2) and read general explanations of what the primary, secondary and tertiary levels of industry are. On the flip side was an explanation to the effect that retail goods were not always in their packaged or processed form. Underneath the explanation were 3 circles, one under the other and connected by arrows, one circle for each level of industry, each with a text-box attached containing the question 'What value has been added?' Homework had been to stick or draw pictures of a material or good at different levels of industry.

The teacher drew a diagram on the whiteboard, with 'added value' written on the left, and 3 lines leading from this towards the right with the levels and types of value written at the end of each line (see figure 2 below). The schematic representation provided an overview and a scaffold learners could use to support their negotiation with the concepts of levels of industry and added value.



Figure 2: Diagram used to explain the concept of 'added value'.

4.4 Overt explanations versus experience and discovery

Preparation for learning, and the order in which new knowledge is presented, impact on how successfully elements in the domain of practice get learned. The opening exchanges of two lessons I observed are presented below as they indicate how the teacher prepared the learners for the exercise of identifying what had happened to products at different points in the chain of development. One of the classes started as follows:

1. T: Okay guys, let's have a look at value, okay. What value is added? ...I want
2. to see how much you were able to work out yourselves. Okay. Right. We
3. will call it 'added value'.
4. S: Are you supposed to give it an amount?
5. T: No, no. ...let's see.

The teacher did not distinguish a domain-specific meaning of 'value' from an everyday one. He gave no definition at any point. The learner's question (L.4) indicated her understanding of value here as of an amount, a numerical quantity purely, whereas the meaning here is a qualitative one. The teacher's statement " I want to see how much you were able to work out yourselves" ((L.1-2) indicates that he expected the learners to discover meaning through practising examples, without any overt explanation or guidance other than that which appeared on the worksheet.

A learner responded to the question "Has any value been added?" with a question:

1. S: Is that a 'yes/no' answer or is it like, does something have to be added, like
2. because...?
3. T: You have to specify what value has been added. Why is the product more
4. valuable at the tertiary stage than at the primary stage?

The teacher explained added value in the following way in another instance:

1. T: Throughout the production process, various types of value, Grade 9s, various
2. types of value are added to the product. And Phumi don't confuse value with
3. price. Value refers to the benefit that us; that we as consumers can take from
4. the product. Okay? ...not the price we are prepared to pay. The price we are
5. prepared to pay is related to the value or the benefit but they're not the same

6. thing, right.

Here the teacher talked about value: "various types of value are added to the product," (L.1-2), but did not actually define value. Another explanation of value was however quite specific in saying what it is *not*: "Don't confuse value with price" (L.2, and 4 and 5). In L.2-3 there is a definition of value, "the benefit that...we as consumers take from the product". In none of these nonetheless did the teacher focus on language or meaning directly and provide the domain-specific meaning of 'value' in this context. Explanations from the teacher focused on giving lots of examples. In a further event a learner asked:

1. **S3:** But how would you – like I know what it is, but what's like the value? What
2. calculation do you do? "Value to be added." (repeating teacher's words or
3. reading from the worksheet).

The teacher follows with an answer:

4. **T:** I'd say value of process, value of manufacture. Right. ... What else, come on
5. guys?
6. **S4:** Labour.
7. **T:** Labour? No no, how, as a consumer, right, how can we identify value in a
8. product? ...[...]

The teacher's responses begged the question completely in this instance. He identified the types of value being added but once again did not explain the term in the qualitative sense in which it was being used in the specific context. It is possible that the teacher's understanding of what value means in EMS was so deeply and tacitly held that he could not explain it clearly. It is worth pointing out therefore, that 'value' has a specific sense in EMS and is about exchange value in a domain where the market is seen as the key engine of all activity. The value of goods (as well as knowledge, ideas and people) is their market value. This value can be enhanced through 'beneficiation processes' (for example, uncut diamonds can be cut, people can be trained or educated). Providing that the costs of 'value-adding' are less than the value added, then such value-adding activities are likely to be profitable.

These exchanges around value demonstrate the difficulty that teachers face in finding a balance between giving overt explanations and generalisations and providing opportunities

for experience and discovery. There is a challenge in teaching to find a balance between the two.

These difficulties point to the challenge of introducing a new learning area by first explaining key new elements that are fundamental to a domain. While the difficulties appear to be around vocabulary, they are conceptual issues. 'Value' and its meaning are part of the 'grammar' of the domain – the key ways of making sense and making meaning that follow the key logics of the domain – to do with market-driven activity.

The key issue which this discussion of value raises in relation to literacy, meaning-making and learning, is that of whether a teacher needs to consider the order in which to teach elements of a domain. If a key item, such as vocabulary or a concept, is not learned and the exercise or knowledge rests on the understanding of the item, then such difficulties as were experienced by the teacher would recur, such as having to repeatedly try to explain what a word means in response to repeated questions on the same issue from learners. The difficulties also point to the issue of whether one can teach simply by giving learners lots of practice with numerous examples without giving overt explanations, and simply expect students to 'pick up' the meaning of key vocabulary and related concepts through drilling with examples. On the other hand, the teacher could be said to be modelling for the students how meaning should be made and taken in the domain. By not getting students to learn the rule, explicitly, the teacher might be opening a space for students to acquire domain competence, by forming the rule for themselves, implicitly. While not following a lock-step process of rule learning, the students are challenged to absorb a particular logic and domain-specific meaning of words. This process echoes, indeed, the way infants acquire language, not through rule-based instruction but through extracting a vocabulary, grammar and logic from the flow of words and meaning that surround them. However, it is probably incumbent on teachers in classroom learning contexts to make explicit the rules of the domain to assist the bootstrapping activities of learners.

4.5 Academic literacy

The following are questions and statements that learners came up with at different points in the lessons on 'added value'. They make a point about language and literacy in a semiotic domain, including academic literacy:

1. **T:** Has any value been added, right?
2. **S:** To the primary...?
3. **T:** Ja...
4. **S:** Between what? Between the primary and secondary?
5. **T:** No, in the primary stage.
6. **S:** What value has been added ...? (repeating teacher's question)
7. **T:** Okay. So what value has been added *during* the primary stage. Does any
8. value get added?

The learner here tried to locate the change in value and focused on the preposition 'between' to do this (L.4). It is clear that she was trying to visualise 'where' value was added or located and the preposition 'between' did not assist with this. The use of the preposition 'during' clarified that *at* each stage there is value added. This distinction emphasises the relationship between language and meaning. Language was key in clarifying the process of adding value: The learner appeared to be trying to gain a more embodied understanding of the physical processes being discussed by using language to envisage a concrete process.

These events around introducing key vocabulary illustrate a phenomenon in relation to apprenticeship-like learning in a semiotic domain. This is the situation where an expert takes a particular way of making sense as a given. This phenomenon has been described as 'black boxing' (Bowker and Starr, 2003, as discussed in Chapter 2) and in this case the repeated questions of the learners as described earlier indicate that the teacher had black-boxed the knowledge of the domain. He was perhaps so much inside the domain himself, he had forgotten that the learners were in the process of accessing it and therefore needed certain types of scaffolded introductions to topics, such as definitions of domain-specific meanings of common words; the word 'value' in this case. The result was that many of the learners, apprentices to the specialised EMS domain, were frustrated in their induction into it.

There is a further process exemplified in the previous excerpts which is known to take place in regard to apprentices being inducted into a domain and which is connected with language use. For example, in the following cases learners talked about 'added value' but

using a common-sense or “lifeworld” (Gee, 2003: 36) understanding of the phrase and semiotically imbued action (hand movements to indicate magnitude);

1. **S1:** You know if they have like cheese or something, okay and they take it from
2. the farm and they have to transport it all the way to the shops; won't they...;
3. 'cause the transport; doesn't it cost like money? So won't they add that?

In the following example, the learner's explanation was also in colloquial terms:

1. **S:** Sugar is like, sugar cane is like that big (gesturing broadly), and when you like
2. refine it, it becomes smaller. Like this much sugar cane becomes like uum
3. (gesturing a smaller size). When you process it to a pieces of grain, it's probably
4. only about that much. [Right]. You could be getting like the same....

As apprentices to the EMS domain, the learners used everyday language and movement to describe domain-specific elements and relationships. Learners showed that they were learning to move between modes (life world and domain-specific) even though they were only understanding the teacher's language and not using it themselves. On the one hand, they comprehended the teacher's language to describe domain-specific knowledge, and on the other they talked about this knowledge, albeit in lay terms. These events demonstrate bootstrapping techniques, where apprentices to a domain try out ways to get ahead in the domain with the everyday language and reasoning resources they have, as a preliminary step to 'expert' competence in the domain.

4.6 Academic conventions

The following transcript of a learning event illustrates a further case of apprenticeship-type learning. In this event a learner showed that she was learning academic conventions, part of academic literacy. In L.1 she asked about how to support her point:

1. **S:** ... Must I give an example? Like say my product is bacon, right. And in the
2. first stage I just had the animal and had to feed it, and breed it so and, prepare
3. for stage two. And in stage two it got processed. It got cut into pieces (laughter).
4. I know it sounds very wrong. The pig got cut to pieces to be the ... convenient
5. quantities. Because then I had to try ...

6. **T:** Quantity is the secondary level. Right?

Exemplification is a form of evidence and hence of emphasis, a type of rhetorical device. The learner asking if she should give an example indicates that she was learning the reasoning strategies of academic literacy. In academic literacy an argument must generally be supported and substantiated with evidence, and giving examples is one of the techniques that can be used as evidence.

The following excerpt demonstrates a characteristic of academic language which makes accessing an academic domain challenging:

1. **S:** What if a product's rare?
2. **T:** If it's rare? [Ja]. Well the rarer something is, the more expensive it is because
3. But Grade 9s. Let's think of a gold mine right? Now gold mine, normally
4. what happens is... When [gold's] inside the earth we walk on it without even
5. knowing it's there right; worth pretty much nothing. Once it's been removed,
6. taken out, all of a sudden it has value. So value has been added by extracting.
7. So at this stage we can refer to it as (writing) 'value of [extraction] extraction'
8. ...[extraction]. By extracting it value has been added to it.

In the situation being described, the active verb 'to extract' became nominalised into 'extraction' (L.7). Nominalisation implies a fixed state which belies an active process extending over time. The changes in form from active to the more fixed noun abstracts the meaning and removes it from the concrete process it represents. But the nominalisation is preceded in this case by a concrete example, inviting students to grasp the abstraction and condensation of meaning.

These challenging linguistic moves would be one of the reasons why accessing the domain is challenging for novices. Thus genre theorists (e.g. Halliday and Martin, 1993) advocate an explicit focus on language forms to assist learners to access specialised domains such as physics and EMS. A focus on language where such forms as nominalisations are unpacked and explained as processes can arguably assist learners in their bootstrapping efforts and can help them to acquire the domain-specific social language and forms of meaning-making. If students became consciously aware that learning how to grasp and

express ideas through language is part of the learning process, there might be easier mastery of subject-specific genres.

4.7 Worksheets and screen design

Use of the World-Wide-Web/Internet was not required for any tasks in the classes, despite there being a computer laboratory at the school and instruction in the use of computers. However learners referred to the Internet from time to time and a number of the investment portfolio graphs used in class were computer-generated. In addition there was no textbook for the course. Rather the teacher used worksheets generated by himself or from books such as Western Cape Education Department resource packs. These materials were often stand-alone charts or exercises. The designs of many of these were screen-like in the sense of having textboxes and pictures, and were not predominantly word-based. Word-based texts tend to have to be read linearly, from left to right or from top to bottom of the page, whereas screen design often has the centre as the focal point with menus and images and text boxes on the periphery.

The more screen-like design of teaching materials, although they were printed, indexes a move towards a more eye-minded approach to design, and represents a movement brought about by the digital turn that now requires audiences or readers to have developed a type of visual literacy. This type of literacy requires that learners interpret the specific types of organisation of screen pages as well as images which have their own semiotic systems (Kress, 2003). Clearly reading and interpreting are not purely about understanding the verbal mode under these conditions.

Chapter 5 **ACTIVE AND CRITICAL LEARNING**

The texts of the EMS genre can potentially be more deeply meaningful and better understood if they can be actively connected to social practice to do with the activity in which they are embedded. Deep conceptual understanding and active and critical enquiry are goals of learning if learning is to be considered worthwhile for learners (Gee, 2003). In an increasingly high-tech and global social world learning styles and hence teaching, should arguably be adapted to the conditions in which they take place. Lessons can be designed to encourage effective and quick learning. In this chapter I examine examples of literacy events, and use them to examine what counts as active, effective and critical learning at the study site.

5.1 *Probing and testing hypotheses*

Active learning has been described as involving a cycle of hypothesising, probing, re-hypothesising and probing (Gee, 2003). In the following excerpt of a teaching/learning event a learner asked a number of questions showing how she was building her understanding of the topic of production costs. The teacher had taught the learners the concepts of fixed and variable costs and went on to use the example of making a desk to model how to calculate production costs. The following exchange occurred:

1. **S:** Mr C., does buying in bulk have anything to do with [production costs
2. being cheaper]?
3. **T:** Well...because you're producing more, you need to buy more materials, you
4. might get a discount from your supplier. You get a bulk discount. Does that
5. make sense?

6. **S:** But what about if you lose money? What if you buy too much, and you don't
7. sell it fast enough?

8. **T:** Correct, that's important as well. That's the job of the purchasing manager. To
9. make sure there is enough stock.

10. **S:** Sir, another thing, if you have like a little things that you are selling, and you
11. sell for a more expensive price, then um people won't buy as much than if you
12. have, you sell, if you have a lot and you sell for cheaper?

12. **T:** Ja?

13. **S:** So that's why [goods are] more cheaper, because more people buy from you.

14. T: More people buy from you, so you decrease your selling price? [Ja]. But that's
15. selling price; it means you are selling more so you don't have to make that
16. much profit, right? [Ja]. But that's still talking about our selling price; that's our
17. profit we get from our selling price. But now we are looking at the production
18. cost, right. How much it costs to produce. Okay.

In many respects the learning environment in the teacher's classes was set up so that learners could ask exploratory questions, and in dialogue with the teacher, discover elements of the domain in an active and not passive way. In asking whether there is a relationship between cost of production and buying in bulk (L.1-2) a learner was showing that she had a hypothesis that there is a causal relationship between 2 elements of the semiotic domain, buying in bulk and production costs. The teacher pointed out that there is an indirect effect on production prices of buying in bulk (L.3-4) causing the learner to have to slightly adjust her theory although confirming that there is a relationship between the elements as she had proposed, and that therefore she had been partly correct. The learner asked another question in L5-6, this time trying to ascertain whether having a lot of goods and selling them at a low price would lead to more sales. Once again the teacher clarified the effect of a low selling price on sales for the learner but made his point that this is a separate issue from production costs (L14-18).

This sequence of events was typical in the lessons. Learning in these instances involved a cycle of learners forming a hypothesis, probing the world in some way (asking a question or taking an action), forming a new hypothesis and then testing this; in other words knowledge learning was about learning to see the world in new ways. Gee (2003) referred to the presence of the cycle as an indication that learning is active. Gee pointed out that the cycle of hypothesising and testing resembles what workers do in complex semiotic domains such as law, medicine or teaching. It is thus possible to say that these learners were learning the thinking and reasoning practices that would prepare them for further learning in the EMS domain and in future learning.

5.2 Apprenticeship-type learning: the modelling of thinking in the domain

The teacher regularly instructed work at a higher level of complexity once basic elements of knowledge were established. This happened in lessons which were constructed as exercises as in the example below, or at times when the teacher saw an opportunity to expand on a core element during the course of classroom discussion. In the following event learners were working out the selling price and other costing issues that a fictional character Joshua needed to manage in order to sell his vegetables and break even:

1. **S** (reading aloud): "Joshua decided to name his business Joshua's Fresh
2. products. His competition is the friendly greengrocer....Joshua plans to sell
3. sweets...."

At this point the teacher interrupted and said:

4. **T**: He has another business as well...What he can possibly do is not wait until his
5. fruit and veg business becomes unprofitable, but starts at the same time
6. so he has what we call 'diversified business interests'. Because sweets and
7. fruit are very different, aren't they? Consumer preference changes from
8. wanting fruit to wanting sweets. He's captured [both] ends of the market,
9. okay?

The reading (L.1-2) about a fictional character starting a business described how, in addition to selling vegetables, the character was going to sell sweets. The teacher used this as a cue to model for the learners how to reason and think in a genre-appropriate way in the domain of EMS. He took the opportunity to explain the practice of diversifying business interests (L3-5) and the reason for this, capturing "both ends of the market" (7). The method of working through a fictional character made doing calculations, such as working out the cost price of the vegetables, a more embodied process than merely doing the calculations in a vacuum, with no context. This literacy practice enacted in a framework of everyday activity (Joshua's entrepreneurial practices) made it an embodied and hence apprenticeship-like learning event. Researchers such as Lave and Wenger (1999) and Lemke (2002) hold that such learning is more powerful than relying on purely cognitive abstractions, or simply being told generalisations by a teacher. Lemke (2002) contrasts learning as activity with learning as understanding. Lemke rejects a mentalist model of learning in favour of an activity model of learning where learning is both social and active.

The teacher's framing of the learning through the character of Joshua, meant that the boundaries between the learners' concerns and those of the fictional character were

blurred. Learners could take on a fictional persona while learning to be active in the domain. The interface of this persona with the learners' 'real' identities and their identity as learners becoming competent in EMS is a process that according to Gee (2003) should be important in schools as a process, where learners can enact the activities and experience the feelings, values and attitudes of a real-world practitioner, in this case a business person.

5.3 Framing and discovery in teaching new material through dialogue

In the following event not only did the teacher frame new material in the action of teaching new vocabulary (L.2-6), he also encouraged active participation in the domain:

- 1 T: Most of the stuff on page 15 we are not going to deal with. However there are
2. some things at the bottom of page 15, um specifically in regard to vocabulary. At
3. the bottom you can see the guy jumping up and down, that's [name] and he
4. says this is important new vocabulary. (laughter) A new term which we haven't
5. looked at yet is 'break even point'. We are going to have a look at that next term.
6. And anyone know what it means 'to break even'?
7. S1: Paid all your debts
8. T: Paid all your debts.
9. S2: You've made no profit.
10. T: You've made no profit. In fact what it is; it's a point, say if you sell 52 units
11. and once you've sold 52 units you've made enough money to cover your
12. expenses, to cover your expenses. Right, but you haven't made any profits for
13. yourself yet. It's a point where your income equals your expense. So in other
14. words, if you are in the business, your break even point is the minimum
15. number of sales. Okay does that make sense? Because at that point you've
16. sold so many units, you've covered your expenses. So if you sell less than
17. that, what are you making?

In this dialogue the teacher allowed the learners to volunteer their knowledge first before providing a specialised definition: He asked in L.5-6 if anyone knew the meaning of, 'break even'. Two learners attempted to provide definitions (L.7 and 9). Finally the teacher told the learners what 'break even' means (L.10-16). Thus the teacher allowed the learners to

explore and discover the meaning as opposed to simply telling them the meaning. Smart and Csapo (2007) argue that in active learning students are involved in more than listening; they get engaged, which is what the learner's attempted definitions were, and thus develop skills and higher order thinking.

5.4 Indexing the importance of lessons

When I arrived to start observing EMS classes in the Grade 9 classes, they had started a project where they had to simulate being stock-exchange brokers and invest and manage a fictional person's portfolio. This gave learners exposure to a wide range of domain sub-genres, such as articles on finance (and hence specialised vocabulary), domain-specific symbols such as '£' (British pound) and acronyms such as 'CP' (Closing Price), and the workings of an important part of economic life, the stock exchange. The activity was also the most weakly framed of the literacy and learning activities that the learners were involved in during my observation period. Learners were free to make personal choices about which companies they invested in; they could pursue their own interests in this regard. They could choose how much they would invest in each company, and how they would research the information they needed on share and commodity prices, whether through the newspaper, internet or television news. Learners could achieve their objectives via multiple routes, and work to their own strengths. Thus when the teacher said to the learners that what they had been learning was "a detour...only to prepare you for your project" and that "now we are going back to our class work... to do with the economy" it sounded as if he was signing that syllabus-related content was more important than the project they had just finished, and as if he was more concerned with getting through the syllabus. He prefaced these remarks with saying that he did not want the learners to get confused, presumably because of the change in direction. The weakly framed character of the assignment had meant that control over learning was vested in the learners themselves to a large extent.

5.5 Critical Thinking

In the following literacy event a learner is seen to be actively and critically engaging with the EMS domain through asking questions:

1. S: I was gonna say, can't the government bring down the inflation rate and then
2. more people can buy things?
3. T: Okay well you see the inflation rate isn't controlled by the government. What

4. controls inflation? [The economy]. Right and specifically what does affect
5. inflation? [Demand and supply]. Demand and supply, right? Okay.... Now if we
6. have more people with purchasing power, buying power right? They're wanting
7. goods. We need to have production ...to satisfy the increase in needs. So we're
8. looking at production; we're looking at a factory and ...now the specific part of
9. what we're doing now, the economies of scale and production costs and that
10. sort of thing, is a crossover point for accounting, economics and management,
11. okay. Because if you are the manager of a factory, you are going to use
12. economic theory to determine how much to produce so that your factory is as
13. efficient as possible. So your use of resources is as low as possible and your
14. output is as high as possible. Can you remember that definition of efficiency?
15.[...]. Ja what is efficiency? Input versus...output. [laughter] Okay let's have
16. a look at this economic theory now. If you have a look at the top of the page,
17. there's a graph which says "NB". Right and it says here: "According to the
18. economic theory of economies of scale, the more a factory produces, the
19. cheaper it becomes to produce."

Firstly in response to a learner's probe about the role of the government in controlling inflation (L.1-2), the teacher pointed out that the government does not control inflation (L3), thereby clarifying the relationship between an element 'outside' of the EMS domain, the government, and an element 'inside' the domain, inflation. He then elicited from learners the factors in the economy affecting inflation (L.3-5) before moving directly on to the elements which were to be the focus of the lesson, production costs and the theory of economies of scale (L.5 onwards).

The teacher however asked: "Specifically what does affect inflation?" (L.4), and a student answered: "demand and supply" (L.4-5). At this point the context for learning about demand and supply was removed from the then current context. A student did give the correct answer but it did seem like disembodied knowledge at this point. The teacher however was indicating the connection of the current learning to elements of the semiotic domain of EMS that had been learned at an earlier stage, which would have added coherence to the learners understanding of what they were doing.

The teacher went on to make a link between the concept of supply and demand to the forthcoming lesson focus, which was production costs. He did this by explaining that the forthcoming lesson demonstrating the economic principle of the economies of scale was a “crossover point for accounting, economics and management” (L.8-13). According to Gee (2003), learning about and coming to appreciate design and design principles is core to the learning experience.

Not only did the learners therefore learn about and come to appreciate interrelations within and across multiple sign systems (images, words, actions, symbols, artefacts, etc.) as a complex system, they learnt that this is central to the learning experience and that learning involves critical thinking about the relationship between semiotic domains at a meta-level. Through the highlighting of the relationship of economics, management and accounting, the learners would also have realised that texts are a family, or genre of related texts. Having had some embodied understanding of these texts, the teacher’s comment would have helped learners to make sense of the design of the EMS genre and see how it is connected to social practice.

Chapter 6 SITUATED MEANING MAKING

I start my analysis in this chapter with the stockbroker project. I do so because the things that learners needed to do in this activity encouraged and recruited situated, experiential, and embodied forms of literacy to the greatest degree of all the literacy activities I observed. The activity encouraged and incorporated “good perspectives on how learning, thinking, and problem-solving work in the world and should work in schools” (Gee, 2003: 76).

In this project learners had to simulate being stockbrokers investing on the stock exchange for a fictional client, as has been explained. The teacher introduced the scenario and roles and tasks for the project: Learners (stockbrokers) had to invest R100 000 in 4 different investments: 2 shares and 2 commodities, for a fictional client. This was explained in a rubric that set out the specific tasks as well as the criteria and standards by which the learners’ work would be assessed. The main objectives and specific outcomes of the exercise were therefore made explicit. This would have achieved the requirements of outcomes-based education, which holds that the goals of learning ought to be set out clearly for learners.

Genre theorists such as Halliday and Martin (1993) advocate that one way to ensure that marginalised social groupings are not excluded from entering the mainstream of knowledge is by focusing on the forms of language that are required to complete tasks. Arguably, a rubric would serve a similar purpose in terms of making explicit requirements for completing a literacy task/s and thereby creating a clear path into the ways of knowing or practices learners were expected to obtain, helping them to situate this knowledge into their existing literacy knowledge.

6.1 *Modelling*

In terms of inducting the learners into the project the teacher modelled the thinking and ‘action’ process which he wanted the learners to go through. He started by reading articles from that day’s newspaper, one each on the economic performance of Shoprite Holdings and Famous Brands which owns Debonairs and Steers (see Appendixes 1a and b). The teacher cited the information from the companies’ annual reports that had motivated his choice of share. A rich array of learning arose from this reading. Gee (2008) states that:

situating meanings requires embodied experience of a domain and the ability to situate meanings in terms of that experience. One of the key types of embodied experience one

needs in a domain and needs to be able to simulate... is dialogic talk with others within and about the domain (3).

Reading the articles led to discussing, for example, whether R29 billion is a large amount of money (A learner asked: "Is that a lot?"), and the difference between profit and turnover. In the following literacy event we see learners bridging by way of dialogue across their experiences of everyday life and the specialist knowledge of the EMS domain:

1. **T:** Right, at R16. 31 per share, my portfolio of shares will include some Shoprite
2. shares. [...] In addition to that – now I've always known that Debonairs is a good
3. company. However, Debonairs wasn't on my list when I decided my portfolio
4. because I wasn't aware that Debonairs is listed on the stock exchange until I read
5. the paper.
6. **S:** Ahh – (mocking the teacher good-naturedly).
7. **T:** Right..and I found..shhh...that it isn't listed on the stock exchange, but Debonairs
8. is owned by a holding company called Famous Brands.
9. **S1:** But you know that Steers and Debonairs are in a partnership.
- 10.**T:** Yes, right, well not a partnership. Famous Brands, [is] the holding company,
11. which owns Debonairs AND Steers.
- 12.**S1:** If you just look out next time when you go past Debonairs, you often find Steers.
- 13.**S2:** In [local suburb], for example.
- 14.**T:** Right, ja, and they hold shares... 'cause that makes sense when they are going
15. to deliver right. If you are going to deliver goods to the one, deliver to both and
16. Your warehouse, they share the same warehouse.... Okay, so there's an article
17. here about why to buy ah Debonairs... shares in Famous Brands, at R8,50 a
18. share.
19. Okay, right!

When the teacher brought up that he wanted to invest in Debonairs, that he had not known that it is listed on the stock exchange, and that it is owned by a holding company, Famous Brands (L.3-8), a learner explained that Steers and Debonairs are in partnership (L.9). The learner went on to point out that "when you go past Debonairs, you often find a Steers"

(L.12). A second learner added to this saying that there was an example of this in the local suburb's shopping area (L.13). The teacher followed on by explaining the rationale for having shops owned by the same company in the same location (L.14-16). In other words, dialogue was stimulated by the reading of the article and more was learned beyond the immediate content of the article. This represented an expansion of the EMS domain knowledge and was achieved because an exchange of ideas was accommodated in the lesson format, through dialogue.

In this instance we see in addition how for a moment a learner became the master, the one in charge of knowledge generation, and guide of the conversation. We also see how this process took place through dialogue and how this dialogue connected learners' experience and domain-specific literacy knowledge. We can see further that the centre of power can shift between apprentice and master in a semiotic domain and that this is brought about through dialogue. Such a consequence of dialogic talk has positive implications for ensuring learner-centred classrooms.

Reading the article also modelled domain-specific language and practice. Learners could get familiar with specialist and lay forms of expression related to economics and finance. The article for example states that the company sold 25 000 kilometres of 'boerewors' (sausage) and that this was enough to go from Cape Town to Cairo, Mumbai and back to Cape Town again. The writer had used a spatial analogy that could easily be visualised for representing numerical quantity. There was also a map of Africa and India alongside the article, with lines connecting the 3 locations. The author was thus exploiting different modes, creating metaphors of meaning, so that a less accessible, more specialised modality (commerce/EMS) could be accessed.

The teacher pointed out that the article was about high finance but written in layman's terms, indirectly a comment on this process of shifting between modalities. A reading of the article would have drawn attention to the existence of various writing styles (technical versus general) and sub-genres within the world of finance. Thus the teacher's reflection on different sub-genres (specialist and non-specialist) was an awareness-raising exercise which invoked a form of meta-knowledge (Gee, 1999) in learners, a necessary requirement for critical mastery of literacy in a social semiotic domain (Gee, 2003).

6.2 Scaffolding

One of the teacher's typical teaching strategies was to scaffold learning to help learners take on knowledge in degrees and build up a complex understanding of the EMS domain. The scaffolding took a variety of forms. In the stockbroker project for instance, the first step after the initial framing of the investment project by way of reading the newspaper articles, was for the teacher to provide a worksheet with a sample of his (hypothetical) share portfolio and use this to demonstrate/model the calculations needed to work out the value of individual investments as well as the total portfolio. He thereby modelled the problem-solving and reasoning typical of the EMS genre/literacy. This included calculating, recording and tracing the value of the investments learners had chosen, as well as the total portfolio, and representing this graphically. In this step the calculations were done on the board with the learners following and the teacher doing most of the explaining/demonstration.

As a second step a set of investments was given (on a worksheet) where revision of earlier formulae were incorporated. Learners had to complete the calculations and graph at their desks, - with the teacher available to help out - and then finish them for homework and hand them in. The marked 'answers' were gone over in the next class as a whole class with the teacher eliciting learner's co-operation in completing the calculation on the board. In other words, the ratio of teacher-learner talking time had increased in favour of the learners.

In the final scaffold after this, pairs handed in their completed assignments about a month later when they had had time to record their investments 10 times, calculate the total value of their portfolios and complete the requirements as set out in the rubric. This included copies of articles motivating their choice, rationale for choosing their particular investments and the conclusions they could draw on their performance at the end of the investment period. Finally they presented their portfolio orally.

By way of this process the teacher amplified the learners' involvement from more-or-less passive engagement when he was demonstrating the calculation methods, to finally having to produce a finished product in their own time, (working in pairs), and to formulate this knowledge orally. In addition, the variety of modes, numerical, graphical and scriptural, would have contributed to the integration of the literacy knowledge into the repertoires of the learners and were thus in themselves forms of scaffolding, forms of situating meaning

for learners. In all of these ways learning was scaffolded. Each step extended the learners' Zone of Proximal Development until finally a section of the EMS domain was mastered.

6.3 Elicitation and dialogue as a scaffold

Inducting learners into a process of active learning can be achieved in different ways; one of these is through elicitation and dialogue. Typically the teacher either elicited understanding from learners with questions or prompts or allowed those not abreast with the progress in the class as a whole to voice their uncertainty, after which he would go back a few steps to trace where the learner had stopped understanding. He would then work directly with that learner to bring her back to the point of general understanding in the class. The following is a case in point:

1. T.: Lauren, what do I do? ... Get out your calculator. [...times it by 2] Times it by 2.
2. Get out your calculator please. [I don't have one.] Who's got a calculator for
3. Lauren? [here].....R15.50? [Ja] Lauren [yes] Good. Lauren. 50 Euros is how much
4. in Rands? [How much in Rands? 7.75×50]. Gold plates? [...] (T. writing on the
5. board) [R387.50] R387.50. And 6361 Euros is worth how much in Rands?
6. ...[divided by..] No, no, no. okay [50 000 (whispered by other learners)]. Okay what
7. is a hundred Euros worth? ... Use your calculator....[7 hundred and...] R775. Now
8. what do we do here? In each case we want to find the value of Euros in Rands.
9. Okay? [Ja.] So I multiply by the price of 1 Euro, R7.75. That gives me the value of
10. my total Euros. Now Lauren, how many Euros do I have? [6 thousand and...] So
11. you want to find the value of that in Rands. I multiply by 7.75, like I did in these
12. cases. Now what do I get?...[...] ...[49 300]... 49 300 (writing) [and 23 cents...].

In this case and in many others the teacher would ask random learners to do parts of calculations or provide answers in an IRE–type interaction. As the teacher elicited a step he would write this down on the board. In the literacy situation cited here the task was to calculate how many Euros could be bought for a specified number of Rands. The learner could not provide the 'required' answer. To ensure that the learner could participate fully the teacher got someone to lend Lauren a calculator (L.2) and with a series of questions (L.3-10) compelled the learner to become actively involved by eliciting every micro-step in the calculation. Gee (2003) describes such a situation in the following way: the learner had

been brought to the outer edge of her “regime of competence” (70). In other words, by gradually extending into the learner’s ZPD, through dialogue and elicited response, the learner could develop her literacy and participation in the domain.

6.4 *Buying shares on the internet*

While doing the calculations around share and portfolio value, a learner asked if it is possible to buy shares on the Internet, which the teacher confirmed is probably the case. The learner probed further:

1. **S:** Do you have part, a shares (sic), part of a business?
2. **T:** Do you have power in the business?
3. **S:** I don’t understand – I don’t know how you buy something and you don’t, you don’t get
4. the bill.

The teacher then provided background which arguably should have been supplied as contextualising and embodying information at the beginning of the project. He explained about ownership, share certificates, entitlement to a share of the profits and voting rights at annual general meetings. Clearly the concept of a share was something to grapple with as another learner said “[you] never actually have a rock solid share?” And a third learner in the class said “Ja, so what do you own, a car?” In a different class but on the same subject, the following interaction occurred:

1. **S:** Mr C, do you always have to buy a whole share? Can’t you buy a half share?
2. **T:** No you can’t. It’s a good question. In other words, when you do your portfolio,
3. round off to your nearest share when you are dealing with shares...Any other
4. questions at this point?
5. **S:** Why can’t you buy half a share?
6. **T:** Because they aren’t sold in halves. Do you go into Pick n’ Pay and buy half a
7. chocolate?

The learners' questions in all of these literacy events showed firstly that learners were actively probing and trying to understand domain-specific concepts. However understanding the ideas of doing transactions on paper and ownership on paper, and not dealing with actual products that get handled, would seem to be precursors to appreciating what shares are and where they fitted into the picture in terms of the calculations the learners were expected to do. That the teacher had not explained these fundamental concepts makes it appear as if this knowledge was a side issue or that it was assumed that the learners knew it already. Yet these are specialised notions, particularly abstract and far from everyday experiences of buying, selling and ownership of goods or property that would have been in the learners' ambit of experience.

If the questions had not been asked by specific learners it appears that the whole class would have gone on doing calculations in a vacuum, disconnected from any embodied knowledge or experience. The teacher in this instance assumed knowledge which learners did not have. This acted as an obstacle to accessing the EMS genre, as evidenced in the numerous questions from learners.

6.5 Practice principle and meaning from exemplification

One way to situate meaning and learning for students, is to give them lots of practice in the domain. Through committed practice students can extend their learning constantly. Skills become automatised (Gee, 2003: 70), where students carry out cognitive procedures effortlessly. When strategies no longer suffice to get ahead, learners have to undo their learning and revise their strategies to be able to go on with their literacy learning in the domain.

Practice that does not happen with appropriate contextualising information or experience can be counter-productive, however. For example, in the lessons on the concept of 'added value' at different levels of industry, the practice centred entirely around learners' own examples. The learners had received a worksheet with a short description of what the levels of industry were (not more than about 10 lines) with 3 circles joined by arrows for the different levels. They were required to go home and cut out from magazines or draw their own examples of products at the different stages of the value chain.

At the beginning of the lesson the teacher put up a simple diagram indicating the terminology for describing what value had been added at different levels. For example at the primary stage, value added was that of 'extraction', and at the tertiary stage, the value of 'convenience' was added. He walked around the class checking students' pictures.

The selection of pictures by the learners was a way for knowledge to get situated as learners had to choose material and think through how value would be added at each stage. In other words learners had to provide the resources for learning themselves. In a further manner this practice made the distinction between home and the classroom more permeable than a traditional textbook lesson would have. Learning was also learner-centred in that learners were not simply 'receiving' knowledge but generating it. In addition learners were free to make their own choices of product so that they could pursue their own interests in this regard, and so control and add to, and situate their own knowledge. This process offers a contrast to a situation where the teacher would provide the materials and learners would merely have to categorise them.

The provision of lots of practice in whichever aspects of literacy in the EMS domain learners were studying was one of the major strategies of the teacher. It could be criticised however, for being a form of drilling without there necessarily being sufficient contextualisation and embodied experience being gained in parallel to the practice/drilling. One case demonstrated how learning was disembodied in the classes. A learner, two weeks after being introduced to the project on tracking and calculating portfolio values, and after completing numerous practice calculations, was not aware that she had to select her own portfolio and calculate its value.

This was one example of how a learner was boxed in to simply mechanically doing calculations with little useful understanding of the reasons why and the meaning of what she was doing. Other instances of learners not practising or not being engaged in learning came to light in my observations. While girls worked among themselves their conversation indicated their attitudes to their work. Statements such as "I don't know what I'm doing" indicated that learners were not practising specific literacy elements in the domain effectively and so would not really have been learning anything useful to situate their knowledge at these times.

Chapter 7 SOCIAL CONSTRUCTION OF IDENTITIES

Literacy learning in school can be successful and powerful if it is active and critical. One way for this to happen is through encouraging learners to take on new identities and build bridges from older identities to new ones through their literacy activities. It is also possible that learners identify with personalities or events which they come across in learning a genre, where people connected to the discourse of commerce are involved, for example. In this way this learners' cultural models of the world can be shaped in clear and powerful ways. This chapter sets out some examples from the lessons I observed that illuminate these phenomena.

7.1 *Competing identity discourses*

What people are is a function of their social and cultural environments. This is not different in the classroom where dominant practices/discourses compete to construct and position teachers and students. In the course of learning specific elements of EMS literacy learners became exposed to social events and individuals from outside of the classroom and school. The way learners reacted to and interacted with these discourses resulted in creating positionalities for themselves at that time.

The following literacy event took place when learners were researching their stockbroker investments. A learner came across an article where the bank ABSA was mentioned:

1. **S1:** Oh, ABSA. Oh did you hear the other, the other thing on the radio. This other
2. girl; you know like on the Apprentice, Tokyo Sexwale made a joke of like the Zim
3. Dollar [mmm..did he?] Ja. And then like this other girl phoned in and he said,
4. and she said like, on the radio, she said like South Africans don't appreciate umm
5. other countries; like neighbouring countries.
6. **S2:** Yes we do; just not Zimbabwe (quite vociferously).
7. **S3:** mmm. Come on Kyla. I mean she was like crazy because she like, Sexwale
8. based everything like on the facts. The Zim dollar is like low.
9. **S1:** The Zim dollar is low. What date is this? 25, I think ja, we had that.

The listener being cited by the learner (L.3-4) clearly was offended that negative sentiment about Zimbabwe and its currency (L.1-2) could be allowed such wide exposure in the media

and by such an influential person as Tokyo Sexwale, a well-known businessman and politician in South Africa (L.2-4). Presumably the learner who had recounted the story had been impressed by the broadcast and perhaps was not sure whether to support what Sexwale had said, or to support the view that it was insensitive. The learner who defended Sexwale and said: "We do, just not Zimbabwe" was clearly influenced by current popular discourse that Zimbabwe is not a successful economy and is a 'failed state' signalled in the political turmoil and devaluation of their currency, in particular. A third learner indicated that she was developing a rational mode of thinking when she made recourse to an academic or 'scientific' argument that facts are the basis of reality and are therefore indisputable (L.6-7). This is not a primarily sentimental or patriotic stance.

It is possible to view the multiple and at times conflicting discourses the learners were drawing on as reflecting aspects of South African social discourse and even different identities or positionalities within one individual, some of whom identify with the suffering of the Zimbabwean people and expect sensitive treatment of the country and others who take a more impersonal or neutral stance towards it. The analytical point here is that, in the course of becoming literate in EMS, learners' identity construction was directly influenced as South Africans, as rational 'scientists' or academics, and in relation to one another.

7.2 *In-groups and identification processes*

Bartlett and Holland (in Bartlett, 2003) theorise that literacy learners employ texts to manage their feelings, thoughts and behaviour, and that such symbolic elements of identity can be used to challenge positional identities such as race and gender. An analysis of learners' responses and interactions stimulated by literacy-related activities throws light on how South African society is changing. In the stockbroker investment project a set of learners were selecting what companies to invest in by scanning through the business section of the *Cape Times* newspaper, when this literacy event took place:

1. **S1:** Maybe we should read the newspaper...(reading) fishing ... Mvelaphande
2. **S2:** Where's ...wait wait wait! Where's Mvelaphande? Oh I so wanna read!
3. Okay....(reading)..."South Africa's largest Black-owned mining company." Tokyo's
4. company.
5. **S1:** The biggest company in South Africa.

6. **S2:** Ja and it's Black owned.
7. **S3:** South Africa?
8. **S2:** Ja partly Black..."made more money from the interest earned on loan..."
9. **S3:** It has nothing to do with the colour of your skin.
- 10 **S1:** We didn't say it had to do anything (sic).
10. **S2:** Whatever, anyway. (continuing to read aloud) "Jo'burg ... Mvelaphande
11. resources, South Africa's second-largest Black-owned mining company made
12. more money from the interest it earned on loans it advanced Goldfields South
13. Africa than it did from mining in the year"...okay..."The Minerals and Mining arm
14. of Tokyo Sexwale's (said with great passion and interest) Mvelaphande Holdings
15. said"...well. On Friday's, they did turn around...oh I like this...oh he earns...
16. Look at this! [How much does he earn?] Oh my word! 30 million, "...which owns
17. 'magnese' (sic) mines."
18. **S4:** Can't you talk to us as well (somebody feels like they're missing out)
19. ...
20. **S2:** Tokyo Sexwale's told Mvelaphande Holdings on Friday that...guys how much
21. money this guy makes a week. Wish I could...(reading to herself)...[]... Oh, quite
22. a complex company!

The most notable part of the above situation was a learner's (S2) excitement, which was quite palpable and sustained through the entire event, when her partner (S1) read about the company Mvelaphande owned by the previously mentioned Sexwale. S2 said " I so wanna read!" (L.3), at the mention of the company. She read further that the company is South Africa's largest Black- owned mining company (L.4.). In L. 6 the same learner emphasised mention of race in the article: "Ja, it's Black-owned" (L.6). S2 who was Black herself, was clearly identifying strongly with Sexwale and his success and leadership, and taking pride in being aligned with him/the company in terms of race.

A third girl, a White girl, followed making the statement:"It has nothing to do with the colour of your skin" (L.9). This statement represents a discourse in post-Apartheid South Africa that race is no longer an issue in the country. S1, also a Black girl, made a response to this

which sounded defensive and indicated that she did not want to make an issue of race, almost buying in to this discourse, but also indicating a tension around talking about race. However the article had mentioned “Black-owned” and S2 had reiterated this point, so race clearly was being profiled here.

The literacy event continued when a fourth learner (S4), also a White girl, sitting a little separately from the group, on hearing the ‘buzz’ in the group indicated that she wanted to be included, saying “Can’t you speak to us too?” (L.18), sounding and looking left out.

The dynamic in this situation is significant in that it is a type of social barometer for emerging middle-class perceptions on race and class in South Africa, with almost an exact inversion of relations when White culture represented the dominant political culture in Apartheid. In terms of literacy and whether the EMS domain is a productive domain for learning, learners would have been able to meditate on the relationship between their identities and to issues of change, as well as to strengthen their sense of identity through this literacy event. We can say therefore that learning has been set up in this classroom in such a way that “learners come to think consciously and reflectively about some of their cultural models regarding the world, without denigration of their identities, abilities, or social affiliations, and [could] juxtapose them to new models that may conflict with or otherwise relate to them in various ways” (Gee, 2003: 166).

7.3 *Bridging between home and school identities*

Particular literacy events brought about learning in relation to identities by connecting home/cultural literacies with EMS genre literacy pertaining to added value and levels of industry. The following is an example:

1. **S1:** Mr C., is it cheaper to buy a cow and then like..., okay say there’s
2. something happening in your home and you need a cow, like traditional stuff. Is it
3. cheaper to buy a whole cow and then cut it yourself, than buying a cow off the
4. shelf?
5. T: What do you think?
6. S1: I don’t know!
7. S2: What was the question? (curiosity aroused)

8. T: I would say yes, because probably the whole cow is probably cheaper than
9. buying all the meat of the cow.
10. S3: And when you like eat the head...
11. S4...your grandmother would take a goat, kill it and eat it.

In this instance S1 brought her home literacies in to the classroom by talking about the use of cows (for eating) at traditional feasts (L.1-2). She brought the cow in to locate or situate her knowledge in relation to the subject matter in the lesson: classification in terms of added value of the processes at different levels of industry. The learner asked: "Is it cheaper to buy a whole cow and then cut it yourself, than buying a cow off the shelf?" (L.2) Through the question and subsequent answer from the teacher (L.6-7) she would have added to and adjusted her cultural model of the world in relation to her cultural ways.

The curiosity of her fellow learners who did not share her cultural background was also aroused (L9-10). Their statements reflect what they believe and feel about this aspect of the Black learner's background. Clearly this is an instance where learners were negotiating their identity positions in relation to a set of cultural ways. In a similar fashion to the previous literacy event cited, these learners would have reconsidered their theories of the way the world works, both for themselves and for each other. Learners could reflect on their values and beliefs, which means they were engaging in active and critical literacy practices. This happened in an open climate in the classroom without there being denigration of any learner's identity.

7.4 Identity work and regulation in a bonded affinity group

The existence of affinity groups, the people attached to a semiotic domain, means that there will be times when awareness of membership of a domain gets established. A number of literacy events in the classes observed revealed occasions when these identification processes were taking place. The following event took place just as a lesson was starting:

1. T: I've heard very good reports from the Mrs Dyson, at the Media Centre. Your
2. class has been working with her [yes, yes (in chorus)]. She said that the Grade 9s
3. know all about companies and sole traders, closed corporations and dealing with
4. investments, and that's very good to hear right. Because it shows that you do
5. listen. Right. Okay.

The teacher reported to his class what a figure with a certain amount of status and authority, one of the teachers in the school, had said about the EMS learners (L.1-3). From their unified response “Yes, yes” in L.2 learners appeared to appreciate that they had received recognition. The teacher added his own praise (L.3-4) saying he was pleased to hear the report. In this instance the report would have facilitated the learners seeing themselves as insiders who have a recognisable level of achievement in the EMS domain. It would have helped them forge new identities and to bridge from their earlier (less experienced) identities to new ones as ‘experts’ in the domain.

7.5 Regulation and identity

The statement “Because it shows that you do listen.” (L.4 above) notably indicates a transmission idea of education, as if learners listen to something and it goes straight into their heads intact. At another point the teacher referred to “the ladies at the back”, implying that they should keep quiet. This reflects a somewhat Victorian notion of schooling for girls which aimed to make ‘ladies’ out of girls. In my interpretation the teacher used the term with a mild level of sarcasm and as a form of polite admonishment.

These regulatory statements, rather than reflecting any anachronistic relationship of teacher to students are part of the ethos of the school though, which does have its origins in times strongly influenced by Victorian codes of conduct. These types of statement, although they positioned learners in terms of a ‘banking’ view of education and a Victorian idea of status and identity respectively, contradicted the more assertive positionalities that the report from Mrs Dyson, for example, had reflected. Mrs Dyson’s praise and other positive comments from the EMS teacher meant that the learning environment was generally constructed in such a way that learners learnt about themselves and their current and potential capacities. Gee (2003) has termed this the self-knowledge principle. With this embedded into the learning it would have ensured that learners were bonded primarily through shared endeavours, goals, and practices as they learnt to belong to the affinity group connected to the EMS social semiotic domain.

7.6 Recognition work

With regard to affinity groups, a few instances highlighted how bonding and belonging work in semiotic domains. For example, on an occasion when the teacher omitted to look over a learner’s work, she looked quite upset and said “What about me? I did my work so...” The

learner was concerned that she be treated equally within the group. In addition, to being regarded as a part of the affinity group, it is necessary to be regarded as producers in the domain. Hence it would seem that the learner wanted to be recognized by the major representative of the affinity group as a producer as well as by the other members as a participant and insider in the EMS domain.

7.7 Interplay between real-world and virtual role-played identities

The stockbroker simulation assignment allowed learners to obtain depth in simulating the practices of being a stockbroker, from reading daily listings, share prices, annual reports, company performances and making and losing money. The activity would have engendered in the learners a feeling of the sentiments and tensions of a real-world stockbroker. The interplay between their own identities as learners, and as 'role-played' investors was a form of practice pointing towards their being real stockbrokers one day. In a nurturing environment related to teaching a literacy, learners could develop identities through feeling the emotions, values and beliefs and through simulation could experience the actions of a real-world broker. They thus had a scaffold to support later literacy learning and experience.

Chapter 8 SUMMATIVE CONCLUSIONS

I set out in this study to research literacy and learning in an EMS class through the lens of a social practices approach to the study of literacy; and to establish whether this class activity constituted a productive domain of learning. I did not establish any formal quantitative way of rating or measuring the extent of productivity. The scope of the study excluded assessing the criteria or themes set up to view activity in the classroom; it did not examine the official results of the EMS course, or make any links between such evaluations and to what extent I as the researcher thought the activities observed were representative of a productive domain. The study however demonstrated instances where students were actively and critically learning the semiotic systems of EMS, developing an identity as part of the social group attached to the EMS domain, and being prepared for learning in the domain and future learning, features which Gee (2003) claims establish whether a domain is a productive one. The findings that have been discussed against these criteria showed that not all literacy events and practices were immediately productive but that ultimately the balance was in favour of calling the EMS lessons observed a productive domain of learning.

Literacy activities could be learned through a variety of strategies such as dialogue, practice and a cycle of probing, testing and re-probing characteristic of more complex domains.

While the teacher scaffolded practice for learners, they showed that they were 'bootstrapping' themselves into the domain using everyday language to describe domain-specific meanings as an interim literacy practice (Paxton, 2004). There were times however when the teacher mistakenly assumed expert knowledge on the part of the learners and their access to the domain was thereby frustrated. It was also debatable how successful straight drilling through repeated use of examples or exercises was, without relevant concepts and terminology being explained and understood first. Learners countered the negative effects in these circumstances, nonetheless, by actively probing and searching for meaning through dialogue with each other and the teacher. Such a climate was conducive for learning.

Students were exposed to the multimodal codes of the domain and demonstrated that they could toggle between a variety of semiotic systems relevant to the domain including numerical and graphical modes. This multimodal sense-making included grappling with elements of academic-type literacy such as dealing with nominalisations. A variety of activities provided opportunities for experiential learning that gave students embodied

experience of the EMS domain. The learners could, to an extent, have 'lived experience' of the EMS domain knowledge and their learning was thus not purely mental abstraction removed from the physical and material world of experience.

Participation in the domain was built up through scaffolded activity with learners able to work to the level of difficulty with which they felt comfortable, while those who had the capacity were provided with challenges. Learners were given opportunities to generate knowledge in the domain and to bridge between home and school by bringing their experience and knowledge into their domain-specific learning, thus helping them to take charge of their own learning. Weakly framed lessons at times meant that learners could choose the subject matter in the lessons and so take some control of their own learning and grow in their mastery as productive members of the EMS domain.

In terms of identity, students learned about themselves in relation to their work in EMS and as members of the EMS class, in terms of race and as South African citizens. This could happen because of some permeability between school and home literacies, dialogue with the teacher and each other and reflection, for instance, on role-models they were exposed to in the media.

Digital literacy in terms of internet and computer use was only an optional add-on in the lessons. However many learners evidently had access to computers and the Internet and the influence of digital technology could be seen in the screen-like design of materials, indicating the current trend from word to image and page to screen. Learners also interacted with the media and out-of-school literacies in their literacy activities, using newspapers and magazines in lessons. This meant that they could bridge between home and school modes/literacies as well as become more dexterous in using verbal, numerical and graphic modes internal to the EMS domain. This reduced the gap between home and school literacy in terms of what and how students learned.

In terms of active learning students showed that they were using problem solving approaches of hypothesising and testing and thereby building their knowledge in EMS. Learning was set up to take place through dialogue for instance so that students could learn through discovery and not purely through being given important generalisations. Learners could also take control of aspects of their learning, not only taking some of the responsibility for, and control of learning, but ensuring engagement and deep learning. Students learned

critical thinking in the domain when the teacher modelled reflection on design features of the domain.

Learning was embodied and useful to learners through the teacher situating their meaning making in real-world scenarios and creating opportunities to experience the feelings, activities and values of 'real-life' people and occupations. Learners could help generate knowledge by drawing on their own experience out of school, and make learning situated in this way. By scaffolding learning, with greater active participation for learners at each step, using interactive dialogue and bridging from familiar to unfamiliar, learning became an apprentice-like induction into domain-appropriate ways of knowing. Through committed practice of increasingly complex aspects of the domain, learners could expand their competence in EMS gradually, undoing learning strategies when they did not work anymore and reforming them appropriately.

Finally, learning encouraged students to take up new identities and build bridges from older identities to newer ones. Through exposure to role-models in EMS-related domains learners could identify with real-world characters and actions, and develop subjective positions in the light of these. Learners showed that they appropriated texts to manage their feelings, thoughts and behaviour in terms of, for example, nationality and race. Learners could bridge from home to school identities through relating their own experiences through dialogue. Students learned about themselves as expert members of the EMS domain from the teacher's reporting of opinion from significant others, indicating where they stood in relation to the domain, whether their knowledge could be useful in other domains, or whether they could be regarded as experts in the EMS and not simply as lay people. This approach indicates knowledge on the teacher's part of how identities work in learning: "All learning in semiotic domains requires identity work. It requires taking on a new identity and forming bridges from one's old identities to the new one" (Gee, 2003: 51). These strategies recruited identity work and reflection on identities in a clear and powerful way, helping learners to situate their own identities in a positive light.

In the respects set out above, literacy in this site was generally not in the autonomous model of 'skilling' and 'drilling' except at moments where learners were assumed to have knowledge which they did not in fact have. These particular instances point to the significance of focusing on specific language-related elements such as timeous definitions

and explanations. Another practice that inhibited accessing the EMS domain smoothly was over-emphasis on drilling. In other words learners were learning from 'doing' on its own and not from a combination of being 'told' important definitions for example and 'doing' (practice) of examples.

Rather literacy activity in the Grade 9 EMS class constructed a community of practice with literacy events and practices situated in social and cultural relationships, with a bottom-up as well as top-down invention of meaning (Bartlett, 2003).

Inasmuch as literacy was 'ideological' in this site, it was setting learners on a trajectory of fruitful participation in future learning and practice within a particular domain. While this domain might be seen, in terms of its ideology, as being linked to specific sets of middle-class accumulation practices in the context of a global economy which is characterised by growing levels of inequalities between groups of people, that has not been my focus in this thesis. I have assessed the activities in this classroom as having been an example of what good teaching and learning literacy in a domain-specific subject constitutes.

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APPENDIXES

Appendix 1a

Shoprite sold about 25 000km of boerewors over past year

DIRK DE VYNCK

Cape Town - In a world where performance is all about rands and cents, it is good to know that there are other measurements, like the length of boerewors sold, for example, to gauge a company's achievements.

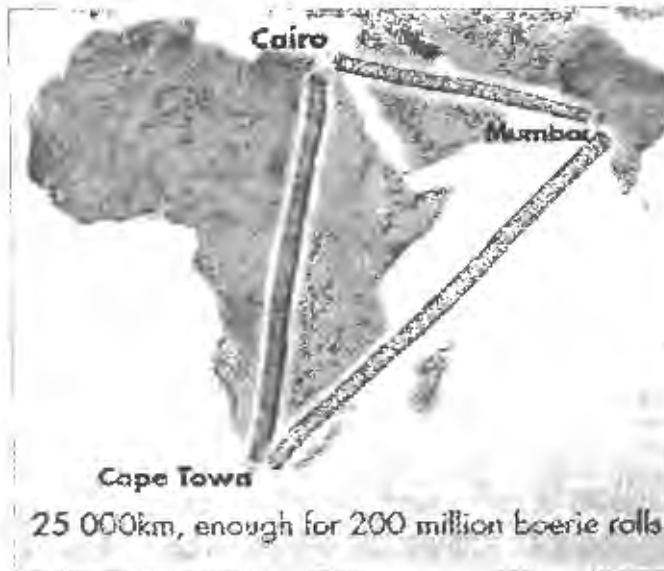
This is especially true for the person in the street who lacks the financial aptitude of those exposed to the doings of the corporate world on a more regular basis.

Shoprite Holdings, Africa's largest fast-moving consumer goods retailer, last week released its financial results for the year to June, which showed an increase of 11.9 percent to R29,813 billion in turnover.

The local supermarket division - consisting of 327 Shoprite outlets, 95 Checkers and 23 Checkers Hyper stores, and 84 Usave outlets - boosted sales growth by 12.8 percent.

However, for most people, the fact that Shoprite's local supermarkets sold enough boerewors in the year to stretch from Cape Town to Cairo in Egypt, to Mumbai in India, and back to Cape Town is a far more telling statistic.

This is roughly 25 000km as the crow flies and would be enough to make more than 200 million boerie rolls, which is



about four and a half boerie rolls for each South African.

If the group increased its boerewors sales by 10 percent in the current year, that would mean another 2 500km, which is equal to a return car trip from Cape Town to Johannesburg.

The local supermarkets also sold enough Coke to fill 43 Olympic swimming pools, which equates to almost 110 million litres of Coke a year. Just think of the number of brandy-and-Cokes one could have.

Through its sales of All Gold Tomato Sauce, the group sold

more than 187 million tomatoes, based on All Gold's claim that each bottle of tomato sauce contains 36 tomatoes.

And for the parents with babies and toddlers, the group sells enough nappies per year to supply all the babies of South Africa for 11 days.

Washing powder sales are sufficient to do 100 million loads of washing a year.

And finally, the cream on the top is that the group's dairy sales keep 24 000 cows in full-time employment, producing about 720 000 litres of milk a day.

(De Vynck, 2005)

Appendix 1a: First article read to learners by teacher as an introduction to portfolio investment project.

Debonairs records highest turnover

SAMANTHA ENSON

Durham - Debonairs, the quick-service pizza franchise owned by JSE-listed Famous Brands, has recorded its highest turnover since opening 32 years ago and is scheduled to open its 200th store in the next few months.

Kevin Hedderwick, Famous Brands' chief operating officer, said on Friday: "May to end July is traditionally a fairly sluggish trading period, although we do derive some benefit from the tail end of the Easter holidays and the July school holidays."

"However, this strong performance from our brands is due to a range of factors, rather than simply seasonal success."

"The strong economic influence afforded by the emerging middle class and the demand for convenience continue to drive the group's profits."

Famous Brands will report its interim results in October. In the three months to July retail sales across the group's key brands, Debonairs, Steers and Wimpy, increased 15 percent.

Ricoo Fendrich, an analyst at Sanbon Investment Management, said: "The group

is incredibly resilient."

"Sales growth of 15 percent in existing stores is phenomenal if you consider that their inflation must be low. Combined with new stores opening, turnover growth for the year could be close to 20 percent."

This recent performance followed on from the good results the group delivered for the year to February, which showed headline earnings a share had increased by 58 percent to 51.3c.

Famous Brands also owns the Fishways, House of Cakes, Brazilian and White Stop restaurant brands and health food business Penyalba Foods.

The group, which is on an aggressive expansion drive, has opened 32 stores in the quarter under review. The group, which has 1,113 restaurants, plans to open 189 more stores by 2010.

It is also seeing results from stores opened in traditionally black areas.

Hedderwick said: "Particularly encouraging is the success of new restaurants opened in and on the fringes of traditional black areas. These restaurants have exceeded our expectations and we are optimistic regarding



CHANGING LIFESTYLES (via Marketing) of Steers

further new stores in traditional black areas."

Crunch is the group's core market but strong growth was also seen in KasiZito-Steak and

the Eastern Cape.

Recent acquisitions of Rally Juice, an ice cream manufacturer, and Trufruit, which makes juice, have shown turnover

WIMPY FRANCHISES FROM SANBON

growth of 30 percent and 25 percent respectively. This has been due to supplying products in the group's franchise network.

The acquisition of Wimpy in

2003 is still being bedded down but within the next few years, following Wimpy's full integration into the group, the food services division is expected to double turnover.

To date R12 million has been spent on resources and technology to facilitate the integration of the food services supply side of the business and a further R20 million has been budgeted.

Hedderwick said: "The integration has been slower than originally anticipated. We have some way to go before realising the full benefits of... integrating the Wimpy food service supply business, but early indications are positive."

"I suspect the slower-than-expected integration of the Wimpy business is to do with increasing the internal sales of the food division into Wimpy franchisees. If this is the case then it means the group is not yet in a position to manufacture efficient food supplies. The slower integration is disappointing but not a major concern."

Famous Brands shares were unchanged at R9.50 on Friday while the index did little to rise 1.96 percent.

Appendix 2

Levels of Industry



The Primary Level

In this stage, the raw materials used in production are extracted from the earth.

The Secondary Level

It is during this stage or level of Production that raw materials are Manipulated or changed during the Manufacturing process into products Either for use in further manufacturing processes, or goods that are ready for consumption.



The Tertiary Level

In this stage the goods are sold to the final consumer. It includes retailers and service providers.



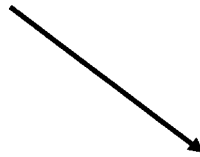
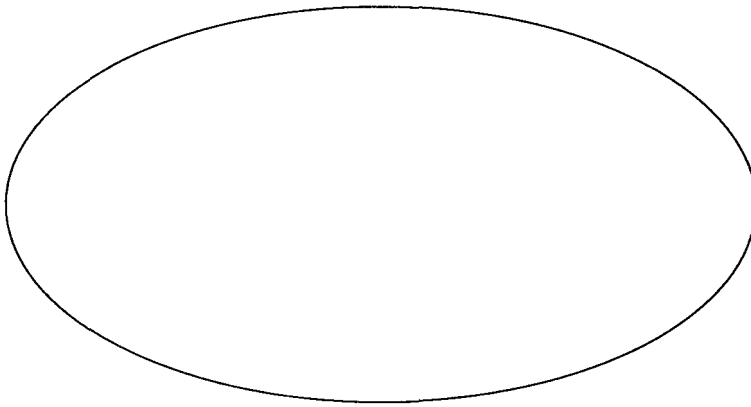
Appendix 2: Worksheet (side 1) with explanations of primary, secondary and tertiary levels of industry and (side 2 overleaf) spaces for students to illustrate materials as they pass through levels and get value added.

Appendix 2 CONTINUED

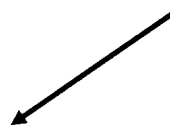
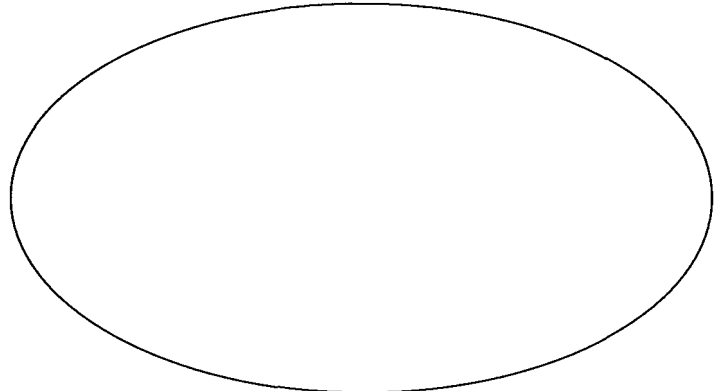
Levels of industry:

The Following three levels of industry can be identified, complete the following note by writing a brief explanation of each. Try to find an example of an industrial process, from primary to tertiary level that you can show visually (look in magazines for pictures and examples.) Note that products in their original shape were not always packaged as you find them in the shops.

Primary Level



Secondary Level



Tertiary Level

