CHAPTER 2
DEVELOPING A FRAMEWORK TO CAPTURE BLURRED BOUNDARIES

The central aim of this thesis, as highlighted in the previous chapter, is to explain learners’ perspectives on the incorporation of the everyday in school mathematics. In this chapter I describe the theoretical framework used to describe and explain these perspectives. This framework emerged out of two sources: the ‘tentative conjectures’ (Cobb, 1998:33) regarding the possible classroom factors which may shape learners’ perspectives (about the incorporation of the everyday in mathematics) and my own interaction with empirical data. These tentative conjectures were sparked by views, arguments and studies on the possible effect of incorporating the everyday in mathematics as cited in the previous chapter. I will refer to the framework influenced or shaped by tentative conjectures as theoretical framework a priori since its development precedes collection and interaction with empirical data.

The limitation of a priori framework is that it tends to cloud and determine the observations that the researcher makes. As Popper (1972:35) observed, “A Marxist could not open a newspaper without finding on every page confirming evidence for his interpretation of history”. It was thus necessary to remain open to the possibility that theory may emerge from the empirical. I use the expression, theoretical framework a posteriori* to describe theoretical framework emerging as a result of engagement with empirical data. I will structure my discussion in this chapter with respect to these two themes: Theoretical framework a priori and theoretical framework a posteriori.

* I use the concepts a priori and a posteriori similar to the way in which they are used in probability. Probability a priori is not dependent on experimental observations whilst probability a posteriori is (De Jager, 1996: 143).
2.1 THEORETICAL FRAMEWORK A PRIORI

When incorporated into mathematics, not only does the everyday change the mathematics content, it also becomes subjected to some form of modification to fit in with the mathematics. For example, when he espoused the chasm between school mathematics and folk mathematics, Maier recalls watching a crew of workmen who were replacing metal gutters and downspouts on a three-story building. Reflecting on how this experience might be presented in a school textbook, he wrote “I imagined all the standard school geometry and trigonometry the textbook would contain, and how the crew I was watching would see no relationship…” (1991:64). The relevance of Maier’s experience for this study is that along with merging mathematics and the everyday is the modification of the everyday itself with an eye on teaching or learning. This is one reason underlying studies, cited in Chapter 1, that do not support the incorporation of the everyday in mathematics: After all, the studies suggest, mathematics and the everyday are different domains which should be kept separate.

In order to make sense of the learners’ perspectives on the inclusion of the everyday in mathematics, I used a framework whose focus went beyond explaining the blurring of the boundaries between mathematics and the everyday. In particular, I recruited a framework which enabled me to zoom in on the following three elements of pedagogy: recruitment of the everyday in mathematics, learners’ engagement with the activities in the classroom and the way in which the teacher set up the context for engaging these tasks. Bernstein’s theory of pedagogic discourse provides a language by which each of these three aspects can be described and analysed.

Incorporation of the everyday into the mathematics: Incorporating the everyday into the mathematics, as the new curriculum expects, entails bringing together two different categories by blurring the boundary between them. Bernstein (2000) uses a construct, classification to describe a relationship between categories. He draws a distinction between weak classification and strong classification.
We can distinguish between strong and weak classifications according to the degree of insulation between categories, be these categories of discourse, categories of gender, etc. Thus in the case of strong classification, we have strong insulation between categories. In the case of strong classification, each category has its unique identity, unique voice, and its own specialized rules of internal relations. In the case of weak classification, we have less specialized discourses, less specialized identities, less specialized voices.

(Bernstein, 2000:35)

The incorporation of everyday into the mathematics renders both mathematics and the everyday less specialized voices. The mathematical or non-mathematical nature of such tasks becomes less clear.

Classification offers a language to identify whether the everyday or the mathematics is visible in school mathematics. On its own, however, it does not describe how the process of incorporating the everyday into mathematics takes place. Instead, Bernstein’s construct of pedagogic discourse can be used to describe such a process. Pedagogic discourse relates two discourses, the regulative and instructional discourse (Bernstein, 2000:183). Regulative discourse is a “discourse of social order” (1996:46). It is a discourse which regulates both the moral discourse (which gives rise to character, posture, manner, and conduct) and the instructional discourse. I will elaborate on the moral discourse when I discuss the classroom context below. My interest is currently on the regulation of what constitutes school mathematics. Through the process of recontextualization, non-school activities like chemistry, mathematics and physics are appropriated into teachable school subjects by selection of ‘what’ should constitute school chemistry, school physics and school mathematics. Bernstein elaborates on this process:

In the process of the de-and relocation the original discourse is subject to a transformation which transforms it from an actual practice to a virtual or imaginary practice. Pedagogic discourse creates imaginary subjects. We must sharpen our concept of this principle which constitutes pedagogic discourse. It is a recontextualizing principle which selectively appropriates, relocates, refocuses, and relates other discourses to constitute its own order and orderings. In this sense it has no discourse of its own, other than a recontextualizing discourse.

(Bernstein, 2000: 184)
Chapter 1 cited a policy statement on what should constitute school mathematics in a post-apartheid South Africa (see Taylor, 1999 cited earlier). I have also cited literature on what should constitute school mathematics in general (see Skovsmose, 1994 cited earlier). Arguments in this literature can thus be viewed within the realm of a recontextualizing principle. Some of the studies argued for the use or non-use of the everyday on pedagogic and political grounds. Incorporating the everyday in mathematics would, for example, make

1. Mathematics sensible to learners as it will be appealing to the familiar (pedagogic).
2. Mathematics curriculum to be reflective of the country’s ethos of non-separateness (political).

Bernstein suggests that the recontextualizing of mathematics into school mathematics, for example, cannot be derived from the internal structure of mathematics nor the practices of mathematicians. Using physics as an example, he argues:

> The rules of the reproduction of physics are social, not logical, facts. The recontextualizing rules regulate not only selection, sequence, pace, and relations with other subjects, but also the theory of instruction from which the transmission rules are derived. The recontextualizing rules regulate not only selection, sequence, pace, and relations with other subjects, but also the theory of instruction from which the transmission rules are derived

(Bernstein, 1990:185)

Bernstein’s elaboration is referencing the transformation of mathematics into school mathematics. It is from a perspective of a subject. For this study, it is possible to view the composition of mathematics from the everyday contexts’ perspective. In other words, to reflect on the transformation that the everyday may have to undergo in order to be appropriated for school mathematics. The everyday may itself have to be modified for school mathematics purposes. The substance of Bernstein’s argument is, however, that the political nature of the process by which school mathematics derives its identity in the new South Africa can be attributed to social factors.
The call for the everyday in school mathematics provokes the following question in relation to learners’ engagement with the tasks: Will learners recruit the everyday or mathematical considerations in engaging these tasks? On what basis will learners recruit either of these considerations? In order to address these questions, I appeal to Bernstein’s constructs of recognition rules and realization rules. These constructs provide a lens on learners’ engagements with weakly classified tasks.

**Engaging the tasks:** Incorporation of the everyday in mathematics triggers a variety of responses from learners. Learners may view the context as a see-through, in other words, as bait towards the mathematics. Alternatively, they may regard the everyday as an object to be reflected on for its own sake. Bernstein argues that the different ways in which the context is interpreted by learners can be explained in terms of the children’s socio-economic background. Bernstein (1996) observed that children from different socio-economic groups viewed the value of the everyday in schools quite differently. He explains this difference in his elaboration of non-specialized recognition rules and specialized recognition rules.

In the case of working class children, I suggest the coding instruction is taken at its face value, ... The children, from their point of view select a non-specialized recognition rule which in turn, regulates the selection of non-specialized contexts (Bernstein, 2000:20)

The selection of both rules (specialized and non-specialized), with a preference for specialized recognition rules is associated with middle–class children who, as Bernstein elaborates, “initially recognized the context as specialized. Thus, for the middle-class children,… this context is a specialized context and must be treated in a particular way.” (2000:20-21).

In relation to mathematics and the everyday, learners who recruit the everyday considerations in engaging the tasks may be regarded as selecting non-specialized recognition rules. In other words, they fail to recognize the specialty of the context (that the context is summoned for advancing the mathematical intentions). They view the context as an object of reflection and thus become disadvantaged in terms of accessing
mathematics. Learners who pay less attention to the everyday or treat it mainly as a see-through may be regarded as having chosen specialized recognition rules. Such learners are thus able to draw in mathematical considerations without being digressed significantly by the context.

However, possession of recognition rules is a pre-requisite, not a guarantee, to producing appropriate responses. In order to produce appropriate responses, learners need to possess realization rules. Bernstein makes the following connection between recognition rules and realization rules;

Many children of the marginal classes may indeed have a recognition rule, that is, they can recognize the power relations in which they are involved, and their position in them, but they may not possess the realization rules. If they do not possess the realization rules, they cannot speak the expected legitimate text.

(Bernstein, 1996: 34)

Thus, from a pool of learners not digressed by the context, some may be able to offer appropriate responses and some may not. In this way, possession of recognition rules enables awareness of the specialty of the text whilst possession of realization rules elicits appropriate responses. In a classroom situation, owing to the asymmetric relations between teacher and learners, the teacher’s voice weighs more in determining what is legitimate. Bernstein’s concept of framing provides a lens through which to think about classroom interactions.

*Classroom context:* For this study, learners will be observed engaging tasks which incorporate the everyday in the classroom context. Thus their view of what is to be legitimized will be influenced and shaped by inputs and comments from the teacher and other learners. Bernstein uses the concept of framing to describe a pedagogic relation between transmitters (such as the teachers) and acquirers (such as learners) who are on the ‘receiving’ end of inputs. Thus, “as an approximate definition, framing refers to controls on communications in local, interactional pedagogic relations: between parents/children, teacher/pupil, social worker/client etc” (Bernstein, 2000:12).
A teacher-learner relationship is a contextual relationship; a point observed by Steiner (1987) - though with regard to the teaching of mathematics.

Generally speaking, all more or less elaborated conceptions, epistemologies, methodologies, philosophies of mathematics (in the large or in part) contain – often in an implicit way – ideas, orientations or germs for theories of teaching and learning of mathematics

(Quoted in Ernest, 2004: 04)

In order to apply framing to a school setting, I found it useful to view it within a context within which the transmitter-acquirer relationship takes place. The two notions, regulative discourse and instructional discourse provide such a context. For example, in a classroom setting, what is legitimate, can be viewed at the level of instruction and the level of student behaviour, that is, “instructional discourse” and “regulative discourse” (Bernstein, 2000). As already noted in page 31, Bernstein (1996:46) draws a distinction between the two discourses as follows: “We shall call the discourse which creates specialized skills and their relationship to each other instructional discourse, and the moral discourse which creates order, relations and identity regulative discourse” (Ibid) (original emphasis). He suggests that in educational settings, the one discourse may be about values and the other may be about competence. Bernstein (1996:48) sees the regulative discourse in two ways: As a moral discourse and as a discourse which produces the order in the instructional discourse (emphasis original). As a moral discourse, it creates criteria which give rise to character, manner, conduct, posture etc. “In schools, it tells children what to do, where they can go, and so on” (Bernstein, 1996: 48). As a discourse which produces order in the instructional discourse, the regulative discourse appropriates non-school activities like chemistry, mathematics and physics into teachable school subjects by selection of ‘what’ should constitute school chemistry, mathematics or physics, selection of ‘how’ it should be taught and its sequencing and pacing (1996: 48 – 49).

Thus Bernstein maintains, “There is no instructional discourse which is not regulated by regulative discourse” (1996: 48). In sum, what is taught in schools (i.e. the content) is
informed by the regulative discourse; how learners behave (pedagogy) is also influenced
by the regulative discourse. The regulative discourse is dominant in school context.

Like classification, framing may be weak or strong. In the case of strong framing, 
Bernstein (2000:13) writes,

We shall have a visible pedagogic practice. Here the rules of instructional
and regulative discourse are explicit. Where framing is weak we are likely
to have an invisible pedagogic practice. Here the rules of regulative and
instructional discourse are implicit, and largely unknown to the acquirer.

In relation to a mathematics class setting, weak framing will be characterized by the
learners’ freedom to engage the worksheet or tasks by relying on their own devices and
strategies. In a weakly framed classroom, the authority of the teacher is underplayed or
backgrounded. In strongly framed classes, the teacher makes explicit ways in which
learners should engage the tasks (as individuals or in groups) and suggests methods
learners should use to engage tasks. In other words, the teacher’s control of the situation
is visible.

Central to the concepts of framing and classification is visibility. Framing is about
visibility of pedagogy (what is legitimized in the classroom) whereas classification
highlights visibility of content. Even though I have discussed classification and framing
separately it is the interplay between the two that influences what may be legitimate from
the learners’ point of view. On the one hand, strong framing and strong classification is
characterized by a teacher-centred pedagogy and foregrounding of a particular discipline.
Apartheid education fits in within this category since it provided learners “little control of
the learning process” and was based on “rigidly defined school subjects” (Kraak,
1999:23). On the other hand, weak framing and weak classification are characterized by
learner-centred pedagogy and foregrounding of learners’ everyday’s experiences.
People’s education would fit within this category as it advocated a “learner-centred,
learner-paced’ pedagogy and ‘integrated studies’ (ibid). The movement from apartheid
education to people’s education would have been a shift from a strongly classified and
strongly framed curriculum to a weakly classified and weakly framed curriculum.
In between these two extremes are the following two categories: strongly framed and weakly classified curriculum and weakly framed and strongly classified curriculum. A strongly framed and weakly classified curriculum is characterised by a teacher-centred pedagogy and integrated studies. Thus, even though the teacher has more influence over the classroom goings-on, there is an underspecification of content or disciplinary knowledge to be covered. A strongly classified and weakly framed curriculum is, on the other hand, characterized by a learner-centred pedagogy and rigidly defined school subjects. In this respect, learners’ have a say over classroom proceedings but the content to be covered is clearly specified. The Revised Curriculum Framework (DoE, 2000) may be located in this category since it specifies content and privileges active learners’ participation. The following figure outlines the possible effects of classification-framing interplays.

Table 2.1 Possible effects of interplay between framing and classification

<table>
<thead>
<tr>
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<th>Strong Framing</th>
<th>Weak Framing</th>
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| **Strong Classification** | • Teacher-centred pedagogy, with limited or no student influence on preferred instruction method.  
• Rigidly-defined content, with no incorporation of the everyday. | • Learner-centred pedagogy, taking into account learners’ preferred instruction method.  
• Rigidly defined content, with no incorporation of the everyday. |
| **Weak Classification**  | • Teacher-centred pedagogy, with limited or no student influence on preferred instruction method.  
• Foregrounding and privileging incorporation of context. | • Learner-centred pedagogy, taking into account learners’ preferred instruction method.  
• Foregrounding and privileging the incorporation of context. |
2.2 THEORETICAL FRAMEWORK A POSTERIORI

As highlighted at the beginning of this chapter, development of a posteriori theoretical framework was a result of my interaction with data. My initial assumption was that the everyday was one entity: any common observable phenomenon. Common, as Bernstein (2000:157) outlines, “…because all potentially or actually have access to it, common because it applies to all, and common because it has a common history in the sense of arising out of common problems of living and dying.” The need to revise the notion of the everyday was provoked by (i) the way in which the everyday was incorporated into classroom activities, (ii) the type or nature of the everyday incorporated and (iii) what these activities were meant to achieve.

With regard to the first point, I will illustrate, using Dowling’s description of mathematical tasks, that distinctions can be drawn between tasks which are weakly classified on the basis of how they are presented in a text. With regard to the second point, I will argue that different contexts may appeal differently to learners. In this regard, it is useful to view the everyday as more than an entity. In a similar way, Nyabanyaba observed that the notion ‘realistic’ was more than an entity; it could refer to contexts which are ‘familiar’ to students and those which are ‘authentic’ (2002:79). Regarding the third point, I focused on the way in which the everyday was modified in order to enable mathematical discussions.

Description of weakly classified mathematical tasks: The following are two examples of tasks used by the two teachers whose lessons I observed. Task 1 is selected from a set of tasks used by the teacher in one school and task 2 is selected from a set of tasks used in another school. Both are school mathematics tasks that summon the everyday contexts.

Task 1: John’s age is p years. Write down Sue’s age in terms of p if Sue is 6 years younger than John
Task 2: If the number of people suffering from AIDS in 2000 is 133.6 million and the world population is 6 000 million; calculate the percentage of people suffering from AIDS in the year 2000.

These tasks may be grouped together as weakly classified since the boundary between the mathematics and the everyday is weakened. Grouping task 1 and task 2 in the same category, however, fails to highlight the different expressions used in presenting the tasks and the different ways in which learners may relate to each context. In the first task, knowledge of mathematics symbols is assumed and in the second task that assumption is not made. Dowling’s framework provides a language of description which enables a distinction between the two tasks cited above. In describing these tasks, Dowling (1998) uses two categories; mode of expression and the nature of context drawn. Tasks which have a highly classified mode of expression are those which communicate information in ‘unambiguously mathematical’ terms (Dowling, 1998:135). Such tasks can either draw from the mathematics context or the everyday; in which case they will respectively be labeled ‘esoteric’ and ‘descriptive’. Other tasks employ a weakly classified mode of expression and thus communicate information using non-mathematical expressions. Likewise, these tasks may also either draw from the mathematics or the everyday contexts; they will respectively be labeled “expressive” or ‘public’. The four possible categories emerging from this discussion can be presented in the quadrant below.

Table 2.2: Categories produced from an interplay between mode of expression and content

<table>
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<tr>
<th>Strong classification of mode of expression</th>
<th>Strong classification of content</th>
<th>Weak classification of content</th>
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<tbody>
<tr>
<td>Esoteric Domain</td>
<td>Descriptive Domain</td>
<td></td>
</tr>
<tr>
<td>Expressive Domain</td>
<td>Public Domain</td>
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These categories enable a distinction between the two tasks cited above. Task 1 uses a strong classification of mode of expression, characterized by the use of symbols, and it also draws in the everyday context. Thus, it can be categorized as a descriptive domain task. Task 2 can be categorized as a public domain task because it employs a weakly classified presentation mode, characterized by the use of ordinary language and it also draws in the everyday.

Whilst Dowling’s notions offer a useful description to distinguish between the two tasks, authenticity in relation to how the context is used and the way in which the context resonates with learners’ experiences is concealed. Thus, ‘John’s age’ and ‘percentage of people suffering from AIDS’ still belong to one category of ‘weak classification of content’. However, these two contexts may appeal to learners in different ways. It was thus necessary to develop a framework which, though not exhaustive, tries to unpack and provide for different types of the everyday. I reflect on the different types of the everyday below.

Categorization of the everyday: That the everyday is not one entity is implied by Freudenthal (1973: 78) when he writes: “When speaking about mathematics fraught with relations, I stressed the relations with a lived-through reality rather than with a dead mock reality that has been invented with the only purpose of serving as an example of application”. (My emphasis)

I view these two Freudenthal-based categories as two opposite extremes. On the one extreme, ‘dead mock reality’ as using or making reference to the everyday in a way which is highly unlikely or impossible. An item, for example, which makes reference to an African-American president in the United States of America before 2004 is using a known concept (American president) inauthentically (there has never been an African-American United States president). I use the term inauthentic for such contexts. On the other extreme, ‘lived-through experience’ makes reference to genuine or not far-fetched use of the everyday. For example, a task which makes reference to ‘John who went fishing with his friends’ is appealing to a context we know little about. However, the
possibility of such an event cannot be confidently dismissed. To the extent that such a context is not obviously a make-belief, I will use the term authentic to describe it.

A context, authentic or inauthentic, may reference a scene or event which resonates with learners’ experiences. These would include events that relate to the areas where learners stay and or which take place and are topical during the learners’ lifetime. Such events are ‘near’ to the learners in terms of space (locality) and/or time (period of occurrence). Alternatively, a context may reference a scene or event which does not resonate with the learners’ experiences either because it took place a long time ago or it took place in a place situated physically far from where the learners reside.

I have used the concept of ‘near’ similar to the way in which Royer (cited in Billet, 1998: 8) uses ‘near’ as a qualification for knowledge transfer. He, for example, regards the ability of a university lecturer to teach with ease in another university as a case of ‘near transfer’ since it permits deployment of skills to a similar context. In a similar way, Royer uses ‘far’ as another qualification for knowledge transfer. Carrying on with an example of a ‘university lecturer’, Royer regards a requirement of a university lecturer to teach at a vocational college or primary school as far knowledge transfer. This is because in this case, there will be a deployment of a skill to a novel situation. In sum, the concept of ‘near’ is related to familiarity or similarity and ‘far’ is related to novelty or unfamiliarity.

Using the concepts of authenticity/Inauthenticity and close/far to describe a context, the following four categories emerge (see table 2.3). For each category, I provide an explanation and an example of a task.
Table 2.3: Different categories of the everyday non-mathematical

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<th>AUTHENTIC</th>
<th>INAUTHENTIC</th>
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<tbody>
<tr>
<td>CLOSE</td>
<td>Authentic and near</td>
<td>Inauthentic and near</td>
</tr>
<tr>
<td>FAR</td>
<td>Authentic and far</td>
<td>Inauthentic and far</td>
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**Authentic and near contexts**: These refer to mathematical tasks in which the context is used genuinely or without major modifications and resonates with the learners’ own experiences. This category is in line with what Freudenthal (1973) terms ‘lived-through experiences’.

Example: In a Grade 8 mathematics textbook, *Mathematics at Work*, Human, Olivier and Murray (2000:48) provide a task that may be categorised as authentic and near. In this task, a picture of a South African flag is depicted. Learners are informed that ‘according to our Constitution, we are allowed to change the size of the flag, but not the shape’ (Human et al, 2000:48). With six other flags similar in colour to the South African’s, learners are asked the to respond to the following task.

*Look carefully at these pictures of the flag. Which flags have the correct shape (are similar). Explain your answers.*

Human, P.G., Olivier, O., & Murray, H. (2000:48), *Mathematics at Work Grade 8*, task number 1

Being one of South Africa’s most noticeable artifacts, the flag is a familiar and significant symbol with which most South Africans, including learners, identify. The exercise is based on an authentic constitutional aspect: that the size but not the shape may be changed. Mathematically, this implies that all correct drawings of the flag should be
similar. Therefore the task draws on a genuine constitutional aspect and uses a context with which South African learners are familiar.

**Authentic and far context**: These are tasks in which the context, which does not resonate with learners’ experiences, is genuinely drawn in. Such contexts, for example, could be based on events that took place either long before the learners’ lifetime or at a locality far away from where the learners stay or both.

Example: There is an ancient method of multiplication based on repeated halving and doubling which, according to a Grade 7 mathematics textbook (Makae et al, 1999) is still used in Ethiopia and some rural parts of Russia. Having illustrated the method, the following is one of the questions learners are to respond to.

*Apply the ancient method to 49 times 35. Then calculate 49 times 35 in your normal way or with a calculator to check whether the ancient method produces the correct answer in this case.*

Makae, N; Shembe, M, van der Merve M and Wilkens, F (1999:58), *Let’s talk Mathematics*

From this example, the historical facts about the method seem authentic; however, reference is made to a place far from the South African learners and to a practice that was mainly dominant in ancient times. Thus, the context incorporates a practice which is far for learners in terms of space and time.

**Inauthentic and near contexts**: These are tasks in which context, which resonates with learners’ experiences, is not genuinely summoned.

Example: The following is task is taken from a Grade 11/Standard 9 school mathematics textbook.

*In a mathematics test you must answer algebra and trigonometry questions. Six trigonometry questions are compulsory and you cannot answer more than 12
questions on each section. The time for the test is 60 minutes. Each algebra problem will take 3 minutes and each trigonometry problem will take 6 minutes. An algebra problem is worth 9 marks and a trigonometry problem 16 marks. How many questions should you answer in each section to obtain the maximum marks? What is that maximum?

Strauss, J.P & Dreyer, J.C.E Creative Mathematics (page 89 number 15)

This question draws on a context quite familiar to mathematics learners, a mathematics test comprising algebra and trigonometry. However, the data used in this context is highly modified for mathematical purposes. For example, there is a specified amount of time that it takes for a candidate to solve a trigonometry task and an algebra task and 60 minutes is the total available time for learners to engage the questions. Time is the main determinant of the number of questions learners are able to solve, though in practice, other aspects such as the complexity of each task and the pace of the learners will contribute significantly towards a mark a student ultimately obtains. Therefore, whilst the context makes reference to a familiar practice, the practice is itself highly modified to substantially reduce the ‘noise’ often associated with it.

**Inauthentic and far contexts:** These are tasks in which the context, which does not resonate with learners’ experiences, is highly modified. The following is a mathematics task that can be classified as such.

*Mrs. X makes two types of overalls. She wants to make at least 5 of each type but no more than 20 in total. The cost of making type A is R2 and of type B is, R3 and the maximum that she can spend is R54. How many must she make of each type to give her the maximum profit if she makes R3 profit on type A and R4 on type B?*

Strauss, J.P & Dreyer, J.C.E Creative Mathematics (page 88 number 3)
This task makes reference to an imaginary person, Mrs. X, and imaginary brand names, Type A and Type B overalls. This already inauthenticates the context. The context appealed to in this example is not authentic, it is a context just sufficient for learners to carry out the calculations. The context also makes reference to a practice of manufacturing overalls for purposes of selling. It is not a practice familiar to school-going individuals. Therefore in this task, reference is made to an inauthentic context and a practice which does not resonate with the learners’ experiences. This would be more in line with Freudenthal’s (1973) notion of ‘dead-mock reality’ or Dowling’s (1998) view of descriptive domain tasks.

From the discussion above, it should be apparent that these categories are not fixed to the tasks. For example, if the first task (categorized as authentic and near) were to be engaged by non-South African learners, it would not lose its authenticity, however, it would be making reference to a scene far from these learners. So it would be categorized as authentic and far. The categories do not also account for the qualitative differences in respect of which the everyday may affect learners. One context may evoke different memories and emotions to different learners, depending on the learners’ experiences. For example, a context such as drugs may arouse different emotions to learners who regard a drug as a medicinal commodity to those who abuse it. However, the categories attempt to highlight that treating the everyday as one entity may result in a superficial account on why learners engage tasks embedded in different contexts differently.

Extent to which the everyday was incorporated: The everyday was incorporated in different ways at the two schools. At Settlers, word problems, characterized mathematical symbols and simulated contexts were drawn in. The non-authENTIC nature of these tasks seemed explicit. For example it is highly unlikely that with respect to task 1, John and Sue may be regarded as references to real people. My analysis and discussion of these tasks will therefore draw mainly from Dowling’s notions (and less from the authentic/inauthentic and near/far framework). At Umhlanga, the tasks were characterized by an absence of letter symbols and contexts whose non-authentic nature was not obvious. For example, it is only against studying data on AIDS statistics that the
information in task 2 may be deemed false. My discussion and analysis of tasks at Umhlanga will thus mainly draw on the authentic/non-authentic and near/far framework. I will elaborate the use of these different constructs further in chapters 5 and 8.

Exposure to data thus influenced my choice of theoretical framework in two ways. Firstly, Bernstein’s notions needed to be complemented by Dowling’s notions and the authentic/inauthentic and near/far framework. Secondly, the use of Dowling’s notions and authentic/inauthentic and near/far framework was used with different emphasis in each school as a result of the tasks used.

CONCLUSION

In this chapter, I outlined the theoretical landscape for this thesis informed by both the tentative conjectures and the empirical data. So, whilst theory provided a crucial lens on what aspects of the data needed to be privileged, data also shaped and informed the theoretical orientation I needed to draw in. Bernstein’s sociological constructs provided a language to describe and explain the blurring of the boundaries between the everyday and the content. However, on the basis of activities used by teachers, the blurring of the theory fell short with respect to explaining the various forms in which weakly classified mathematical activities might look like.

Dowling’s notions and the authentic/inauthentic and near/far framework were, as outlined above, motivated by engagement with empirical data. For example, some weakly classified activities were expressed in mathematical language whilst others were not. With the theoretical landscape highlighted, the next chapter focuses on the way in which data was collected and why it was collected in that particular way.