CHAPTER 10

BEYOND THE LEARNERS’ PERSPECTIVES AND THE HANDSHAKES

The new education policy in South Africa favours the incorporation of the everyday in mathematics. As highlighted in the literature, debates on the effects of the everyday in mathematics and mathematics are on-going and inconclusive. In the third section of this chapter, I contribute to this debate from a learners’ perspective. In particular, I attempt to speak back to the new policy position and the everyday-mathematics debates highlighted in the literature.

My investigation of the learners’ perspectives on the incorporation of the everyday in mathematics was itself not innocent. The process of seeking answers to the key questions raised (in Chapter 1) was itself clouded by some tentative conjectures on how learners would respond and why they would respond in particular ways. Thus, beyond the learners’ perspectives, I outline and discuss a theoretical framework within which the learners’ perspectives can be made sense of. This discussion will constitute the first section of this chapter.

In the second section of this chapter I reflect on another aspect regarding the process of seeking answers: the methodology. In Chapter 3 I discussed in some length the implications of collaborative research. In this chapter I focus on the relationship between the researcher and the researched environment. A number of studies (including this one), provide some details regarding the preliminaries of data collection. These include outlining the intentions of the study and compliance with the research ethics. This is often followed by what data was gathered. A detail that is seldom reflected on is how the environment influenced what and how data was collected. I discuss this aspect in the second part of this chapter. I close this chapter by reflecting on this study and suggesting possible areas of improvements in both the theoretical and methodological domains.
Mine was not the first study to discuss the way in which learners made sense of the everyday in mathematics. Though in different ways, studies by Cooper and Dunne (2002), Skovsmose (1994), (Dowling, 1998) provide different explanations on the implications of incorporating the everyday in mathematics. What can be distilled from these explanations is some attention to the context (for example, the socio-economic status of learners). In the case of this study, I confined the context within which the learners perspectives could be explained to the type of the everyday incorporated and the way in which the tasks were introduced in class. Below, I elaborate on how a theoretical account can be sketched within each of the given contexts.

**Type of the everyday incorporated:** Initially, I viewed the everyday as any out-of-school and non-mathematical activity. In analyzing the activities, it occurred that different ‘everyday’ activities have the potential to evoke different responses, level of engagement and interest among learners. These responses and levels of engagement may, in turn, shape learners’ perspectives on the incorporation of the everyday in mathematics (I will return to this point in page 244). It was on this account that I focused on the qualitative difference in the type of the everyday incorporated in the tasks.

A number of distinctions regarding the ‘everydayness’ have been discussed by other researchers (e.g. Arcavi, 2002; Nyabanyaba, 2001). I add to these discussions some distinctions (in the concept of everydayness) which may be drawn on the basis of the extent to which learners may relate with the everyday. This motivated the introduction of authentic/inauthentic and near/far framework.

I compare the influence of the qualitative nature of the everyday on the learners’ perspectives with the way in which people relate to movies. Notwithstanding limitations in relation to this comparison, movies and mathematics activities are planned with an ‘audience’ in mind. Some movies arouse interest due to their entertainment appeal (e.g. comedies). Such movies are unambiguously fictional and have no intended or deliberate
bearing on any particular person’s experience – they may thus be considered inauthentic and far. As a result, for example, very few people would register a concern about Charlie Chaplin being white. However, some movies purport to draw from real life experiences of other people (for example, Passion of Christ or Cry Freedom)\(^*\). Since these movies are not fictional but purport to draw from authentic experiences, the use of a white character (for Jesus Christ) and black character (for Steve Biko) is not coincidental. The type of discussions provoked by these movies may include the extent to which the location of the movie, the characters and the language used resonates with what is documented elsewhere – considerations which may not be elicited by a Charlie Chaplin movie.

Reflections and perspectives on fictional movies and non-fictional movies can be paralleled with discussions provoked by authentic and inauthentic contexts in mathematics. The effect of the qualitative difference in the everyday cannot be taken for granted. Whether the everyday illuminates the mathematics, the everyday or both may well be function of its qualitative aspect.

**Introduction of the everyday in the classroom:** Learners, in this study, were not left to interrogate the activities on their own. The everyday was discussed and clarified by the teachers. In this regard, learners were more like guided tourists than movie-goers. For this reason, the teachers’ own views on the role of the everyday and how they introduced it in class influenced the sense that learners made of the everyday. It is also for this reason that a draft paper\(^*\) emerging out of this study was critiqued. The reviewers concern, having learned that the research project upon which the paper was based is learners’ perspectives, was that there ought to be more space for the learners’ actions and discussions and less space for the teachers’ actions and views. This revealed to me the tension I continuously face in balancing learners’ perspectives against the teachers’. In what way do I enrich a theoretical account for the study if I draw little of the context in which the learners experienced the everyday?

\(^*\) Passion of Christ is a film which draws on life experiences of Jesus Christ and Cry Freedom draws on the experiences of Donald Woods and Steve Biko.

\(^*\) The paper was presented at the 9th Association of Mathematics Education in South Africa in 2004 held in Cape Town
Both teachers, though for different reasons, acknowledged the significance of the everyday in mathematics. The everyday was either regarded as a vehicle towards the mathematics (in which case its authenticity nature was irrelevant) or an aspect which warranted discussion on its own (in which case its authenticity was relevant). In introducing the everyday, the teachers straddled the untransformed and the transformed aspects of a context. For example, AIDS or flowers or Kelly’s age would interchangeably be recruited as authentic or inauthentic.

**Learners’ perspectives:** There was some resonance between the way in which the teachers introduced the tasks and their views on the role of the everyday on the one hand and the learners’ perspectives of the everyday on the other. Thus, learners whose teacher regarded the everyday as a vehicle towards the mathematics mainly viewed the role of the everyday as such. Learners whose teacher viewed the everyday as an aspect which warranted discussion for its own sake in a mathematics classroom also viewed the role of the everyday as such. There was also some resonance between the nature of the tasks recruited in the classroom and the learners’ perspectives on these tasks. The use of tasks which recruited inauthentic contexts seemed to invite the perspective that the everyday is a means to a mathematical end and the use of tasks which recruited authentic contexts seemed to invite a perspective that the everyday is an aspect which may be discussed in the classroom for its own sake.

In sum, the type of the everyday and the way it was introduced seemed to have some bearing on whether the everyday is viewed as a means through which the mathematics can be accessed or as an aspect which can be discussed alongside mathematics. However, learners’ awareness of the everyday as a vehicle towards the mathematics did not secure them successful access to the mathematics content intended. Such learners understood that mathematics (and not the everyday) was the intended goal, however, they failed to negotiate their way through to the mathematics. On the other hand, learners whose perspectives were that the everyday was an object to be discussed for its own sake in mathematics class were not necessarily digressed by this view from the mathematical
focus of the tasks. Such learners were able to invite or adjust the everyday considerations and the mathematical considerations as the tasks required.

On the basis of this discussion, one may discern two extreme positions regarding the nature of tasks against the learners’ engagements with the tasks. On the one extreme, learners who fail to access the mathematics through the use of inauthentic contexts are doubly disadvantaged. Firstly, they derive no practical and usable benefit of the everyday and secondly they do not access mathematics. On the other extreme, learners who access mathematics through the authentic everyday are doubly advantaged in that they gain access to both mathematics and practical aspects of the everyday recruited. In between these extremes are learners who are digressed from the mathematics by the use of authentic everyday contexts and learners who access mathematics on the basis of the inauthentic everyday contexts. This description produces the following matrix.

Table 10.1: The influence of the everyday on learners’ access to mathematics

<table>
<thead>
<tr>
<th></th>
<th>Authentic everyday context</th>
<th>Inauthentic everyday context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successful access to mathematics</td>
<td>Doubly advantaged</td>
<td>Mathematically advantaged</td>
</tr>
<tr>
<td>Unsuccessful access to mathematics</td>
<td>Advantaged from the everyday perspective</td>
<td>Doubly disadvantaged</td>
</tr>
</tbody>
</table>

Learners who are referred to by Bernstein as possessing specialized recognition rules (through which they can identify the special nature of the context) and who are therefore not digressed by the context from engaging the tasks are those identified in the matrix as mathematically advantaged. Learners who possess non-specialized recognition rules and for whom mathematics is hidden are identified in the matrix as advantaged from the everyday perspective. A view flowing from this study is that the net may be extended to highlight consider extreme possibilities: empowering learners both socially and mathematically as well as disadvantaging learners both socially and mathematically.
10.2 METHODOLOGICAL CONSIDERATIONS

There are two broad aspects that most studies (including this one) highlight in relation to methodological issues:

- Important preliminaries to data collection such as how the rationale and the rights of participants were explained to participants and
- A discussion of and reflection on observations made at the research sites.

What is seldom discussed is a step in-between the two aforementioned: the influence of a research environment on the researcher. In this way, the barriers that researchers often negotiate in order to obtain data are often concealed.

It is taken for granted that in a case study with an interpretative paradigm, researchers need to adjust to a researched environment in order to understand the subjective world of human experiences. With regard to this study, our physical presence at the research sites provoked two extreme possibilities. In one site (Umhlanga) we imposed our rules on the environment and in another (Settlers) we adjusted to the environment. I discuss this aspect with respect to the way in which we related with the researched environment and the language we used in engaging the researched.

**Relationship with researched environment:** Umhlanga created a comfortable research environment for the research team. In other words, they went an extra mile to accommodate us. For example, on our first visit we were offered tea as a symbolic gesture that we were welcome. In one instance, Bulelwa and her learners were willing to stage a lesson for us in spite of the principal having suspended the lessons and sent learners home to collect school fees. In addition, Bulelwa also availed herself for two hours for a teacher interview, in spite of other commitments she had. There was thus an attempt by the research site to fit into what they perceived to be our needs.

In contrast, Settlers operated on a set of fixed rules within which we had to fit ourselves and needs as researchers. For example, Mr. Smith could only grant us a thirty minutes interview and in one case, two learners could only sit for ten minutes for a scheduled
thirty minutes group interview. Unlike in Umhlanga, we were never invited for tea nor gained access to the staff room.

The use of English language: Even though we conducted some interviews in isiZulu, most interviews were conducted in English. In agreeing to be interviewed in English, most learners at Umhlanga were being accommodative of us as researchers because not all of us could speak isiZulu fluently. In contrast, English was the first language for most learners at Settlers. In this regard, they did not need to be accommodative.

The main point I aim to highlight is that our presence in the two sites was acknowledged in two different ways. In particular, the acknowledgement at Settlers remained a constant reminder of my ‘outsider’ status. The freedom with which I could interact with the teacher and ask questions was controlled. This study therefore draws from two contrasting experiences. Whilst this may not influence the trustworthiness of data, it is a significant aspect to highlight. From a novice researchers’ perspective, it is useful to be informed that beyond the handshakes and consent forms, there are further practical complexities which may impact on the observations made.

10.3 TALKING BACK TO POLICY AND LITERATURE

This study was conducted within a new South African education policy which favours the incorporation of the everyday in mathematics and the mathematics education literature in which the effects of the everyday on mathematics still remain unresolved. Having conducted this study, I speak back to these two issues.

New education policy: The South African education policy advises teachers to ‘try’ to incorporate the everyday in the teaching of mathematics. Perhaps the use of the verb ‘try’ is an acknowledgement of the possible difficulties and challenges characterized by the use of the everyday in the teaching of mathematics. This study has illustrated the challenges that teachers experience in attempting to balance the everyday and mathematical interests. For example, during a feedback session following my
presentation at an AMESA* conference, a concern was raised about Bulelwa’s use of incorrect data to present the ‘escalation of AIDS’. Yet, from Bulelwa’s perspective, the use of correct data would defeat her intention to illustrate the mathematics content of number patterns.

I have argued elsewhere (Sethole, 2004) that when the everyday is incorporated into the mathematics, inauthenticating either the mathematics or the everyday is inevitable. If a task is to foreground the mathematics interests, then the authenticity of the context may be difficult to accommodate. If, however, the everyday interests are to be foregrounded, the authenticity of numerical data may be difficult to accommodate. This, for me, is more a consequence of merging two different discourses than a reflection of the teachers’ ability or inability or a pedagogic environment.

The literature cited: The literature cited in Chapter 1 mainly addressed the consequence of incorporating the everyday into mathematics, particularly for teaching and learning purposes. The main argument was that in the process, either the mathematics or the everyday is compromised or trivialized. What this study suggests is that learners seem to know which considerations (mathematical or everyday) they need to recruit for different tasks. In other words, they are aware of the dimension brought by the everyday to the task; failure to access the mathematics is not solely a result of the inclusion of the everyday.

10.4 LIMITATIONS AND RECOMMENDATIONS

Even though this study has provided valuable experience in gathering, analyzing and presenting data, there are some areas whose improvement or modification could benefit or provide a new perspective regarding mathematics-everyday relation and the pedagogic consequences of tasks which incorporate the everyday.

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* AMESA is an acronym for Association of Mathematics Education in South Africa. The paper was presented in the 9th annual conference held in Cape Town.
At a theoretical level, I have consistently made reference to untransformed everyday aspects such as AIDS and flowers. In this way, I emphasized what happened or did not happen to the everyday. However, it is necessary to emphasize that mathematics content (or its aspect) may also be modified on account of the mathematics-everyday merger. In this regard, it is possible to refer to untransformed or authentic mathematics content or transformed or inauthentic mathematics content.

Inasmuch as the everyday may be conceived as a vehicle though to the mathematics, the mathematics can also function as a vehicle towards the everyday. To illustrate this point; it is common practice in South Africa to categorize schools which have obtained 100% pass rate (in grade 12) as the best performing schools. In this case, different numerical values (raw scores) are modified and presented as percentages. The use percentage, in turn, imposes a condition of similarity among the different contexts that these different numbers describe. Therefore through the transformed numbers, different everyday settings which exist in different schools (such as the number of students and different facilities) are concealed.

Secondly, I would revise the definition of a ‘good’ teacher. For the current study, a good teacher is one who is regarded as excellent or competent by his or her peers, the school management and members of the community. My definition of a good teacher would reference a teacher who embraces the new Curriculum and who is enthusiastic about trying C2005 ideas. This is because the incorporation of the everyday into mathematics is emphasized by the new curriculum. From this study, it could be argued that Bulelwa was such a teacher. However, Bulelwa was only in the study because she was considered a ‘good’ teacher; it just so happened that she was positive about the new curriculum.

At a methodological level, a survey on the learners’ perspectives on the everyday could be attempted. The empirical data for this study comprised of thick and detailed descriptions of the classroom events in two classrooms. Consequently, the claims made in

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*I am grateful to Prof. Renuka Vithal for pointing out the need to reflect on and discuss this possibility. Mathematics can be unintentionally modified or intentionally manipulated to make a particular point about the everyday.*
the previous section cannot be generalized for other schools. If the study is to inform the majority of schools, a survey of a representative sample of South African learners could be administered in order to gain a broader picture of the situation in schools. Results of such a survey may be used to complement the data already collected.

The use of a survey may also significantly reduce the possible influence of the teacher. In this study, learners were asked to reflect on the incorporation of the everyday in mathematics. It was perhaps idealistic to expect learners to take a critical stance against activities introduced by their teacher. That the activities were brought to class in the first place does somehow announce their legitimacy. Given this argument, it is perhaps not surprising that learners viewed the incorporation of the everyday positively.

**CONCLUSION**

This study was about the learners’ perspectives on the incorporation of the everyday. The argument presented suggests that there are various contexts against which these perspectives can be described and explained. At a methodological level, various approaches may be used to access learners’ perspectives on the incorporation of the everyday in mathematics.

Whichever method one chooses, an important point for me is that there is always some ideology, implied or explicaded, which influences what one sees and reports. Hence the need to go ‘beyond’ perspectives and empirical data.