Epistemological beliefs and perceptions of education in Africa
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Chapter 7

General discussion

Introduction

This chapter brings together and discusses in a systematic way the main findings of the study, reported and preliminarily examined in the preceding two chapters. To do so, the chapter is organised in five sections. Findings pertaining to each of the four research questions of the study are succinctly reviewed and discussed in the first four sections (Sections 7.1 to 7.4). Thereafter, the last section (Section 7.5) presents a précis of the discussion.

7.1 Findings regarding research question 1

Research Question 1 is primarily about the prospect for typical patterns of epistemological beliefs and perceptions of education amongst the target group. It reads as follows:

What kinds (patterns) of epistemological beliefs and perceptions of education are to be found amongst Mozambican high-school students, and how far do these constructs interplay?

7.1.1 About the epistemological beliefs patterns

Multidimensionality of epistemological beliefs

The interpretation and labelling of the factor-solutions of the two studies on epistemological beliefs (Study A and Study B), reported in detail in Chapter 5, yielded the belief factors that are contrastively presented in Table 7.1. Both studies suggest a multidimensional character of epistemological beliefs amongst Mozambican high school students, more specifically a 4-dimension model. Multidimensionality is one of the structuring principles of the epistemological beliefs system paradigm (Schommer, 1990), as already discussed in Chapter 3. The view that multidimensionality is to be seen as an intrinsic trait of personal epistemology, in general, seems to be gaining currency amongst theorists. For instance, Pintrich (2002) has made the point that “there are
more than one and less than ten independent dimensions that are necessary to define an individual’s personal epistemology” (p.394).

Table 7.1. Belief dimensions in Study “A” and in Study “B”

<table>
<thead>
<tr>
<th>Belief dimensions in Study “A”</th>
<th>Belief dimensions in Study “B”</th>
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<tr>
<td>Certain Knowledge and Simple Learning</td>
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<td>Quick Learning and Authoritative Knowledge</td>
<td>Certain Knowledge and Simple Learning</td>
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<td>(Looking for) Certain Knowledge</td>
<td>Quick Learning</td>
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<td>Quick Learning and Simple Knowledge</td>
<td>Certain and Authoritative Knowledge</td>
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Much as there is a consensus about the multidimensional nature of personal epistemology, there has been less clarity as to a fair number of dimensions that can be extracted within such a wide range of possibilities. In our literature review (Chapter 3) we remarked that 4-dimension models have emerged in a number of analogous epistemological beliefs studies, using the same or similar questionnaires and analytical procedures. That has been the case in the USA (e.g. Jehng et al., 1993), in Europe (e.g. Strømsø & Bråten 2003), and also in Asia (e.g. Mori, 1997; Lin, 2001; Chan & Elliot, 2002). Meanwhile, other equally analogous studies worldwide (e.g. Hofer, 2000; - USA; Clarebout et al., 2001; Rozendaal et al., 2001 – Europe; Youn et al., 2001 - Asia) failed to replicate 4-dimension models. Thus, it can be held that the 4-dimension model of our study suggests, on the one hand, that the multidimensional structure of epistemological beliefs appears to hold also in an African context. On the other hand, it adds to the prevailing inconclusiveness about the number of belief dimensions that can be extracted in epistemological belief studies.

While the multidimensional structure of epistemological beliefs seemed quite obvious, a further analysis of the belief-factors extracted in our study was indispensable, in order to settle on whether a clear belief pattern of the target group could be endorsed. In view of that, the belief-factors extracted in our two sub-studies (see Table 7.1) were subject to comparison. To accomplish that, a Procrustean Target Analysis was performed. This technique allows the assessment of the degree of equivalence of factor solutions (refer to Section 5.3 of Chapter 5 for
further details). The outcomes of that comparison revealed that despite some apparent similarities, the underlying patterns of the belief structures of the two studies could not be considered significantly identical. In other words, while at the interpretation level (factor labelling) the factor solutions of the two studies seemed alike, the entrenched connotation of the items yielding those factors was found dissimilar. Consequently, no sensible ground was found to state and sustain the materialisation of a clearly typical Mozambican epistemological belief pattern.

Complexity and specificity of epistemological beliefs
While assuming that the belief-factors extracted (see Table 7.1) carry inner undertones implying that no claim can be made about a plain epistemological belief pattern amongst our target group, a closer inspection into those factors seems to suggest that two relevant features appear to characterise the belief profile of the targeted group. Those features are the complexity and the specificity of the subsumed beliefs. We deem that a further discussion of these features is compelling, a propos an insight into plausible epistemological traits of our target group.

7.1.1.1 Beliefs complexity
Instead of the plain, simple and relatively independent theoretical dimensions proposed by Schommer (1990), most of the belief factors that have emerged in our study are clearly mixed. As a matter of fact, on closer inspection to Table 7.1, four of the six patently complex belief factors appear to be composed of a combination of theoretical dimensions pertaining to the two complementary poles of the epistemological beliefs theory: the beliefs about knowledge and the beliefs about learning. This finding is interpretable as suggesting that our target group may hold epistemological stances sustained by an association of beliefs about knowledge with beliefs about learning. Putting it in actual terms, it appears that Mozambican high school students’ beliefs about knowledge are not dissociated from their beliefs about how knowledge is acquired. Eventually, this implies that, contrary to what has been considerably generalised with respect to USA and European students, the Mozambican (African) ones may hold rather multifaceted epistemological beliefs. To render this interpretation clearer, we refer to the following tentative verbatim interpretation of the four belief-factors under analysis:
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Certain knowledge and simple learning\textsuperscript{70}:

“Knowledge is certain and therefore its acquisition is simple”

Quick learning and simple knowledge:

“Knowledge is simple and therefore, can be learnt quickly”

Simple learning and authoritative knowledge:

“Knowledge is delivered by authorities and therefore, it can be learnt in a simple way”

Quick learning and authoritative knowledge:

“Knowledge is delivered by authorities and therefore, can be learnt quickly”

Hence, it seems fair to ultimately conjecture that the apparent intertwining between beliefs about knowledge and beliefs about learning illustrates and sustains what has been contended and discussed as being the integrated nature of African epistemology (see Chapter 2, Section 2.3). In discussing that, we learnt that African epistemology is built on the assumption that the practice of knowing does not occur in isolation or detached from the reality in which the actual knowledge is to be found. In précis, African epistemology is based on the principle that one learns and comes to know by actually doing, in real life circumstances. We could go further to posit that the mixed character of epistemological beliefs found in our study is somehow convergent with the perspective of post-modern epistemology, which argues that knowledge ought to be perceived as dynamic phenomenon, conditioned by contextual experience (Chapter 2 has provided an elaborated discussion on this regard).

The point being made here is that there might be a symbiosis between beliefs about knowledge and beliefs about learning amongst our target group. Such argument can, perhaps, be made stronger if we bring into consideration the fact that our outcomes suggest that a belief in inborn ability is not part of our target group’s belief profile. This interpretation is inferred from the fact that items pertaining to the theoretical dimension \textit{Innate Ability} collapsed, right in our first study (Study “A”)\textsuperscript{71}.

\textsuperscript{70} This belief dimension could be found in both studies. It seems to suggest that the view of knowledge as ‘something certain and therefore to be learnt in a simplistic way’ may be a common ground; a widespread epistemological stance amongst our target group.

\textsuperscript{71} Meanwhile, we do acknowledge as a constriction the fact that in face of that outcome in our first study (Study A), we decided not to include items belonging to this dimension in our second study (Study B) to confirm if they would again fail to load into any factor.
Theoretically, *Innate Ability* and *Quick Learning* are dimensions ascribed to beliefs about learning, and are meant to capture students’ beliefs about the importance of their own involvement in the learning process. In short, if we think of a coherent link between the belief-factors extracted - composed of associations of a beliefs about knowledge with beliefs about learning, and the apparent disbelief in innate ability to acquire knowledge, then we find more ground to sustain that our subjects are indeed more likely to conceive of knowledge as deriving from and associated to one’s actual learning practice.

### 7.1.1.2 Beliefs specificity

**Belief in Omniscient Authority**

Perhaps the most remarkable outcome of our investigation, perceptible from Table 7.1, is the emergence and meaning of items related to the dimension *Omniscient Authority*. Theoretically, *Omniscient Authority* is a ‘knowledge’ dimension, one that, specifically, reflects individuals’ beliefs about the source of knowledge. In education, *Omniscient Authority* is a dimension concerned with how students perceive their teachers and how teacher-student interaction comes about. Reportedly, items ascribed to this dimension have consistently failed to be factorised in epistemological belief studies in the USA and in Europe (e.g. Schommer, 1990; Strømsø & Bråten, 2003). Allegedly, that has to do with the fact that students in those ‘low power distance’ contexts are believed not to develop teacher-attached beliefs, given their substantially higher independence and low risk avoidance attitude.\(^{72}\) In view of that, we contend that the significant loading of *Omniscient Authority* items in our study unfolds some specificity of the belief system of our target group, thus challenging the assumption of cross-cultural generalisability of the system of beliefs principle put forth by Schommer (1990). In the following paragraphs we develop that argument under two perspectives. Firstly, the sociological underpinnings of this dimension will be raised. Subsequently, we will endeavour to set up some inferences about the noticeable mixed loading, whereby *Omniscient Authority* items appear factorised with items from other theoretical dimensions.

The sociological underpinnings of the dimension *Omniscient Authority*

The issue of authority, epitomising the dimension *Omniscient Authority* in epistemological beliefs research, can be pertinently addressed by

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\(^{72}\) These aspects are elaborated in the forthcoming sections.
borrowing some conceptual lenses from Social Psychology. One of those lenses is the concept of power distance. According to Mulder (1977) power distance is “the degree of inequality in power between a less powerful Individual (I) and a more powerful Other (O), in which I and O belong to the same [loosely or tightly knit] social system” (p.90). The distance underlying human inequalities is supposed to carry power overtones, expressed in terms of one or more of the following attributes: status, prestige and wealth. Thence, the power distance norm has also been applied in combination with other criteria as a one specific dimension in studies on national cultures\(^\text{73}\) (Hofstede, 2000). In that context, the operational definition of power distance is that of “the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally” (Hofstede, 2000, p.98). In collectivist cultures, such as the African and the Asian ones, power distance is found to be relatively higher and with strong implications in education, particularly in teacher-student (inter)relation. Consequently, in high-power distance contexts, education is generally regarded as a strongly teacher-centred, allowing little or no room, at all, for a two-way communication in the classroom. With specific reference to education in Asia, Hofstede (2000) summarises the foregoing characterisation in the following terms:

In the large power distance situation, the parent-child inequality is perpetuated by a teacher-student inequality that caters to the need dependence well established in the student’s mind. Teachers are treated with respect (and older teachers even more so than younger ones); students may have to stand up when a teacher enters the room. The education process is teacher centered; teachers outline the intellectual paths to be followed. There is sometimes a need for rote learning. In the classroom there is supposed to be a strict order, with the teacher initiating all communication. Students in class speak up only when invited to (...). The teacher is a guru, a term derived from the Sanskrit word meaning

\(^{73}\) - Controversies around this matter have been acknowledged and discussed in Section 1.3 of Chapter 1. There, we have also provided the rationale for borrowing Hofstede’s theory for the interpretation of the findings of the present study.
“weighty” or “honorable”, which in India and Indonesia\textsuperscript{74} is, in fact, what a teacher is called (Hofstede, 2000, pp.100-101).

Such a top-down and rigid teacher-student relation, purportedly typical of Oriental societies, might explain why, contrary to what reportedly happens in Europe and in the USA, the dimension\textit{Omniscient Authority} has been quite systematically extracted in Asian studies on epistemological beliefs, for example, in Korea (Lee, cited in Chan & Elliot, 2004), in Hong Kong (Chan & Elliot, 2000), and in Taiwan, (Lin, 2001).

In Hofstede’s (2000) framework, Sub-Saharan African countries/cultures have also been sweepingly ranked amongst those with high\textit{power distance}. In the most conservative settings (e.g. semi-urban and rural areas), evidence for that are to be found, for instance, in postures such as kneeling of female and youngsters in their formal interaction with male and elder people, respectively. In fact, that kind of ‘socially recommended behaviour’ reflects part of the basic principles framing traditional communication ethics in Africa. According to Moemeka (1996), communication in the African tradition is established and guided by norms based on five principles: the supremacy of the community, the utility of the individual, the sanctity of authority, the religious way of life and the respect for old age.

Obviously, nowadays African societies, in general, are no longer so communalistic. Neither are so ethnocentric nor so isolated up to a point of being impermeable to external influences. On the contrary, from language (at the official level, at least) and religion, to systems of government, the African continent has been strongly influenced by values other the traditional ones. However, it can be fairly sustained that, like in Asian societies, where modernity seems to go along with traditional values, in Africa (Mozambique\textsuperscript{75}), to a certain extent,\textfootnote{In a \textit{Power Distance Index} (from 0 to 100), the indexes and ranking order of some countries/regions are: Philippines 94 (rank order 4), Indonesia 78 (rank order 8), India 77 (rank order 10), West Africa 77 (rank order 11), East Africa 64 (rank order 21), Sweden 31 (rank order 49), Denmark 18 (rank order 51), and Austria 11 (rank order 53). Statistical parameters: N=53, Mean = 57, Std Deviation = 22. Hofstede (2000, p.87).}

\textfootnote{In Mozambique, particularly in the semi-urban and in the rural areas, behaviours and practices attached to traditional values are more likely to be reinforced by the so-called ‘traditional authorities’. These are traditional community leaders, who act as the guardians of national, regional, and ethnic heritage on matters of history, language, traditions, and culture,\textsuperscript{72}}
principles such as those pinpointed by Moemeka (1996) may still influence norms, values and behaviour in people’s relationships, in general, and in communication, in particular. If so, and since schools (classrooms) are, by excellence, settings of communication (primarily between the teacher and the students), a culturally based explanation could be found as to why Omniscient Authority is a prevalent element in students epistemological beliefs, particularly in those from relatively more communalistic environments, as suggested by the findings related to School 3 of our study. It should be noted that in Mozambique, teacher-student interaction patterns resemble, to a large extent, those found in Asian countries, and depicted by Hofstede (2000). A standing greeting to the teacher, for instance, has been a regular and unquestionable rule in Mozambican schools and it is approved and reinforced by the society. Taking Moemeka’s (1996) framework as a reference, it can be argued that, in Mozambique, where education is highly treasured for being a ‘social good’, the culture of respect towards a teacher is to be regarded as associated to a perception of the utility of the teacher (the one conveying that ‘social good’) to the community.

**Omniscient Authority:** A dominant belief in Mozambican students’ belief system?

The impersonal nature of the Western teacher-student relation is believed to rest upon an overall culture of weak-uncertainty avoidance (Hofstede, 1986) and low power distance relationship (Hofstede, 2000). That kind of teacher-student (inter)relation has also been held as the explanatory reason for the Western students’ independent self-construal, thence to justify why the dimension Omniscient Authority has not been extracted in epistemological beliefs studies in the USA and in Europe (e.g. Schommer, 1990, 1994; Schommer et al., 1992; Schraw, Bendixen, & Dunkle, 2002; Strømsø & Bråten, 2003; Cano, 2005). Conversely, in the present study, though not in an independent way, the theoretical dimension Omniscient Authority emerged quite strongly, suggesting the significance of a belief in the authoritative source of knowledge amongst Mozambican students. Utmost, the way in which items from this dimension loaded in both sub-studies (Study A and Study B) seems to imply that, to a certain extent, ‘authority’ underlies most knowledge belief stances. In fact, **Omniscient Authority** items loaded significantly and

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in general. The existence, functions and power of these authorities are recognised by law (Article 118 of the country’s constitution).
quite transversally across a number of factors (refer to the item loading pattern and to items content in Chapter 5 and to Table 7.1). It is as if, amongst our target group, ‘authority’ was regarded as a ‘conditioning’ element for the beliefs on the certainty of knowledge, simplicity and quickness of the learning process.

It is noteworthy that when addressing the construct of perceptions of education in the present study (Chapter 6), we also found that students highlight the teacher as the most important requisite for them to learn (study) an academic subject. Additionally, the teacher is regarded as their main source of self-regulation. Otherwise, teacher (authority) dependency had been previously found to be one of the characteristics of Mozambican students, specifically regarding their self-regulation (or self-regulated learning76). As a matter of fact, in a survey undertaken in the year 2000 with a sample of 208 first-year graduate students at the Eduardo Mondlane University, using Zimmerman and Martinez-Pons approach (1986, 1990), evidence was gathered suggesting that ‘Seeking peers’ assistance’, ‘Goal setting’, ‘Seeking teacher’s assistance’, and ‘Using will power’ (a non-strategic behaviour) were the mostly reported learning regulatory strategies (Sitoe, 2004). Quite the opposite, findings from a similar study by Zimmerman and Martinez-Pons (1986) had revealed that North American students privilege self-regulatory strategies such as ‘Reviewing’, ‘Seeking information’, ‘Monitoring’ and ‘Organizing/Transforming the learning environment’. In discussing those rather contrasting findings, our tentative interpretation was that the self-regulatory strategies pinpointed by the Mozambican students “could reflect teacher/peer dependency, yielded by the teaching tradition. This teacher dependency is, probably, exacerbated by the lack of [independent] study habits that imply visiting libraries and other sources of information” (Sitoe, 2004, p.55). Against the outcomes of the present study on Mozambican students’ epistemological beliefs, an update of that interpretation is workable, to add that such teacher-dependency appears to be also influenced by the specific feature of Mozambican students’ epistemological beliefs with regard to teachers. That feature may comprise the potential to induce students to regard teachers as unfailing (or the sole) sources of knowledge.

76 - Self-regulation is “an active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features in the environment” (Pintrich, 2000, p.453)
Belief in Certain Knowledge

Certainty of Knowledge is another theoretical dimension that has come out in a rather relevant way in our investigation. In Study A items from this dimensions loaded significantly in two factors. In one factor they loaded jointly with items from the dimension ‘Simple Knowledge’, yielding a belief-factor that has been labelled ‘Certain and Simple Knowledge’. A similar belief-factor emerged in Study B. In one factor of Study A, items from ‘Certainty of Knowledge’ loaded quite neatly as a plain independent belief-factor. Notably, the contributing items were those suggesting students’ preference or search for certainty, the reason why ‘Looking for Certainty’ was the label assigned to that factor. In Study B, ‘Certain Knowledge’ items loaded on two different factors. In one case, they yielded a factor together with items from the dimension ‘Simple Knowledge’, and in another case they emerge jointly with items from the dimension ‘Omniscient Authority’. This may suggest that Mozambican students tend to associate beliefs about the certainty of knowledge either to the (authoritative) source or to the (simple) manner in which they believe knowledge can be learnt. To illustrate this assumption bluntly, we quote a couple of answers that appeared to reflect a typical view of our respondents when asked to give their perception about knowledge:

- “Knowledge is to know something taught in a definitive way”
- “Knowledge is everything we have in our minds, which is conveyed to us by the teachers and also by our parents”
  (The respondent were a 20 years old female student, and a 19 years old male one, respectively)

7.1.2 About the patterns of perceptions of education

As alluded to and argued for earlier (Chapters 4 and 6), our understanding of the construct of perceptions of education is built upon two broad dimensions: the perceptions about schooling, and the conceptions about learning. To lend our discussion consequent and clear as possible, in discussing the outcomes regarding this construct we will elaborate upon and around those two dimensions.

Regarding perceptions about schooling

From our Study C (an interview based study), categories of description established from our interviewees’ viewpoints on this matter had allowed a variety of perceptions about schooling (‘getting educated’) to
be identified. These included perceptions of schooling as driven by both personal and social motives. Personal motives were expressed in terms of material needs, intellectual development needs, and self-esteem needs, somehow in conformity with Maslow’s (1943)\textsuperscript{77} theory of human motivation. Material needs were overwhelmingly reported as the driving force for an individual to get schooled. Reported social motives behind getting schooled were mainly those of fulfilling a social duty or obligation, and contributing to the country’s development, hence conveying the idea that getting educated is a social duty and a patriotic act (see Chapter 6).

From Study D (a questionnaire based study), two factors emerged. The first was labelled ‘Motivational perceptions of Education’ and the second ‘Goal and Motivational perceptions of Education’ (refer to Chapter 6). This outcome has been interpreted as suggesting that the beliefs of our target group regarding schooling are more influential in shaping their overall perceptions about education than those beliefs regarding the learning of academic subjects. A closer inspection into the item loading in the first factor suggests personal motives to override the social ones and as being the main driving force towards schooling. The nature of the loaded items still suggests that material personal needs seem to constitute the ultimate expectation regarding education. Such pattern of perceptions of education reflects individualistic rather than collectivistic motivations and expectations about schooling. Thus, we regard this outcome as challenging the presumption that altruistic motives, purportedly inspired by African traditional values, could be influential in shaping corresponding expectations about education in the minds of our subjects. In actual fact, it appears that what has come to light from our study is that formal education strongly conveys and shapes values and views about knowledge other than those allegedly imparted by the values of collectivistic societies, like the African ones. History shows us that in the first decades after attaining political independence, African countries tended to fervently expect formal education to echo and promote socially valuable ends of schooling\textsuperscript{78}. In reality, however, schooling seems to have remained geared towards individualistic and urban inspired values\textsuperscript{79}. Given this apparent dissonance between

\textsuperscript{77} - Reviewed and summarized in Child (1986).
\textsuperscript{78} - In Mozambique, the ‘motto’ in that era was that the education should be “a stronghold to empower people”.
\textsuperscript{79} - A remarkable criticism of African formal secondary education in the 60s can be found in the words of the late president of Tanzania, Julius Nyerere. In his view, secondary education
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hypothetically expected and the actually revealed students’ values regarding education, we may have to ultimately admit that, nowadays, there has been a shift in both students and communities’ values and views about the usefulness of getting schooled.

Regarding conceptions about learning
From the interview based study (Study C), learning (interpreted as the goal of studying an academic subject) was found conceived of as:
   i. A mechanism of accumulating information;
   ii. A process of understanding a subject;
   iii. An unspecified process towards performing in specific situations, namely in assignments;
   iv. An unspecified process towards boosting one’s ego.

Active and passive processes (mostly note taking, and discussing/solving exercises, respectively) were referred to in relation to learning. Searching, preparing, and experimenting were almost not mentioned, casting the idea that these are not part of students’ pool of strategic learning practices.

Teachers were highly ranked as both the most important condition/requisite for learning and the most important source of regulation in learning, which confirms a teacher dependency pattern of the target group.

From Study D, based on a questionnaire that included items related not only to the perceptions of schooling but also to the learning process (namely to the requirements for learning, to the activities, and to the sources of regulation in learning), no factor pertaining to the learning process could be extracted (see details of these outcomes in Chapter 6). Eventually, that could have enlightened into the most significant aspects of learning, from the viewpoint of our target group. However, such outcome was not surprising in itself since most of the items pertaining to the dimension ‘conceptions about learning’, specifically those from the sub-categories ‘Behaviour/Activities’, and ‘Regulation’ had been alienating and irrelevant, as it would not provide to the youngsters the necessary skills for them to do relevant things in their communities. Consequently, according to Nyerere, secondary education was producing graduates incapable of contributing to NGP, yet unfairly consuming the output of older and weaker people, the ones active in the productive rural sector (Nyerere, 1967). In its essence, formal secondary education in most African countries remains as described by Nyerere, some 40 years ago.
dropped, given their insignificance in the scale. Those remaining (namely the items pertaining to the subcategory ‘Requisites’) had just wavered low through the factors, confirming the low reliability of the scale, in general, and of the subscale ‘conceptions about learning’, in particular.

In sum, only two Factors of perceptions of education could be extracted and considered for further analyses. Both belonged to our dimension ‘perceptions of schooling’, and were labelled as: (i) Motivational perceptions of education, and (ii) Goal and motivational perceptions of education. The nature of these factors unveils that our target group may perceive education under its long term individualistic aims. Scale related shortcomings prevented further analysis regarding our target group perceptions of learning to be undertaken in Study D (a questionnaire based one), though a qualitative survey of those perceptions had been accomplished through an interview-based study (Study C).

7.1.3 About the interplay between epistemological beliefs and perceptions of education

This aspect was addressed based on the outcomes of the second study on epistemological beliefs (Study B). It is recalled that the sample of Study B was also involved in the overall study on perceptions of education. Thus, the belief-factors considered for analysis were: (i) ‘Simple learning and authoritative knowledge’, (ii) ‘Certain knowledge and simple learning’, (iii) ‘Quick learning’, and (iv) ‘Certain and authoritative knowledge’, emerging in Study B on epistemological beliefs. As for perceptions of education, the factors considered were those just reported as having emerged from the study on perceptions of education, namely (i) ‘Motivational perceptions of education’, and (ii) ‘Goal and motivational perceptions of education’.

As reported in Chapter 6, low yet significant correlations were found between the belief dimension ‘Simple Learning and Authoritative Knowledge’ and each of the two factors of perception of education (‘Motivational’ and ‘Goal-motivational’), and between the belief dimension ‘Quick learning’ and the ‘Motivational’ perceptions of education. Such outcome suggests that there is a moderately low interplay between epistemological beliefs and perceptions of education amongst our target group. Specifically, the two belief factors appear to impart the
'Motivational' perceptions of education, while ‘Goal motivational’ perceptions of education appear just related to the belief in ‘Simple learning and authoritative knowledge’. Believing that learning is simple and quick, and that knowledge is delivered by authoritative sources appears to influence students’ propensity to perceive education as schooling. As already discussed, schooling (‘getting educated’) appears to be perceived by our target group as associated to personal and material benefits, in the future.

7.2 Findings pertaining to research question 2

Findings from Research Question 2 were supposed to hint at eventual hallmarks of the present study, given the context in which it was conducted. The question reads as follows:

*To what extent the identified epistemological beliefs and perceptions of education are culture-specific?*

Concerning the culture load of epistemological beliefs
The cultural traits characterising the epistemological beliefs portrayed by our target group have been identified and discussed quite extensively in Section 7.1.1 of the present Chapter, when discussing the complexity and the specificity of some of the belief factors identified in this study. The significant loading of items pertaining to the theoretical dimension *Omniscient Authority* in different factors has been interpreted as hinting at culturally based specificity of the epistemological beliefs held by the target group of the study. Such claim has been made on the grounds that, while apparently bearing significance in an African context, items from this dimension are reported to have consistently failed to load significantly in North American and European studies. That standpoint finds support on the fact that *Omniscient Authority* has also emerged as a clear dimension in epistemological beliefs in Asia, prompting its connotation with cultural aspects. In the Asian context, the rather strong belief in authority, allegedly imparted by Confucianism and by other similar Oriental philosophies, is thought to underpin the emergence of authority related belief-factors in personal epistemology research (e.g. Chan & Elliot, 2000, 2004; Lin, 2001).

Our contention for the significance and culture specificity of the dimension ‘omniscient authority’ in our study is twofold. On the one
hand, we deem that respect for and belief in authority is part of the values of African tradition, particularly embedded in two of the African philosophical trends discussed in Chapter 2, namely Ethophilosophy and Philosophic Sagacity. Under those values, a teacher enjoys high status, noticeable through the respect and trust bestowed on him, not only by students, in the school environment, but also by the society, in general. On the other hand, we posit that the actual teaching environment and material conditions, characterised by scarcity of educational opportunities, shortage of textbooks, and by a lack of complementary sources of information (knowledge), lend the teacher to be regarded as the unique source of knowledge by the students; a sort of ‘knowledge authority’. In short, the fundamental claim is that our study suggests that the *Omniscient Authority* dimension bears cultural and contextual overtones and is to be taken as valid with respect to Mozambican high school students’ belief system, similarly to what has been found in Asian cultures (Chan & Elliot, 2004). Under the assumption of an embeddedness of authority-related values in African epistemology, discussed in Chapter 2, we conjecture that *Omniscient Authority* is likely to be a commonly valid and relevant epistemological beliefs dimension in Sub-Saharan Africa.

We have also discussed that the complexity of four other belief-factors extracted in our study may bear some cultural underpinnings. Those are the belief-factors labelled as ‘Certain knowledge and simple learning’, ‘Quick learning and simple knowledge’, ‘Simple learning and authoritative knowledge’, and ‘Quick learning and authoritative knowledge’. They all share the trait of being composed of beliefs regarding knowledge (nature and source), and beliefs regarding learning (speed and simplicity of the learning process). Our argument for a cultural load of these belief-factors is based on traditional practices of learning in Africa. There, an individual gets involved into actual community activities early in life. Furthermore, in that context, learning is not dissociated from doing socially useful things. In such circumstances, learning occurs essentially through experience and discovery. In short, one does not learn how to learn, but learns how to do, by actually doing. Whether such practice of learning is actually based on or followed by analytical thinking and theorising has been a matter of unsettled discussions, which are beyond the scope of the present study. As discussed in Chapter 2, it has been on grounds of the aforementioned practice of learning in traditional African societies that some theorists
(e.g. Nasseem, 1992) have sustained that genuinely African epistemology does not conceive of knowledge by dividing its domains (the rational, the empirical and the mystical), but rather by integrating those domains into a single mode of knowing. Hence, even though it can be argued that, in general, the influence of the traditional epistemology has become weaker in African modern societies, it is our presumption that believing in knowledge as attached to learning (as revealed by the kind of belief factors extracted in our study), may be somehow and pervasively imparted by the vestiges of what has been described as African traditional epistemology.

Regarding culture specificity of the ‘perceptions of education’
It has been already observed that in the present study only two factors of ‘perceptions of education’ (schooling and learning) were extracted. Both pertain to ‘perceptions about schooling’ and have been treated as ‘Motivational perceptions’ and ‘Goal-motivational perceptions’. The first factor, the most significant, was found fully loaded by items suggesting clear individualistic motives behind school attendance, such as ‘earning lots of money’, ‘be a real person and not a marginal’, and ‘getting a good job’ (See Chapter 6). It becomes clear that such motives and expectations attached to education by our target group are far from reflecting values of a communalistic society that, according to Hofstede’s (2000) classification, characterise African countries. At least, two streams of interpretations can be offered to explain this ‘phenomenon’. One could be that such outcome reflects the idea that when it comes to education and its respective benefits, communalistic values do not apply if, at all, they still can be thought of as elements with any effect on nowadays modern societies in Africa. An expansion of that interpretation could lead to the assumption that in itself, formal education (schooling) worldwide embodies specific values80 which are conveyed to those inside the educational system and, through that very system, reproduced within the society. Another stream of interpretation could be that there has been a generalised erosion of traditional values in today’s African societies and that, consequently, those values no longer emerge as to be considered attainable and conveyable through formal education. All in all, the perceptions of education portrayed by our target group do not

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80 - A rather pessimistic view about the values conveyed by the school system has been sharply expressed by Ivan Illich in the following terms: “the pupil is ‘schooled’ to confuse teaching with learning, grade advancement with education, a diploma with competence, and fluency with the ability to say something new” (Illich, 1973, p.9).
mimic African traditional values. Otherwise, those perceptions seem to reflect universally held and dominant values regarding education, specifically motives and expectations behind ‘being schooled’. After all, we have also discussed in Chapter 1 that accredited formal knowledge (the knowledge normally acquired through formal education and granting academic and social status to individuals) has become a longed for ‘good’; a kind of commodity in nowadays knowledge-driven World.

7.3 Findings with regard to research question 3

In view of the fact that, generally, epistemological beliefs studies undertaken in the USA and in Europe do not address any possible relationships between epistemological beliefs and socio-cultural variables, the present study sought to approach this aspect. To do so, Research Question 3 was purposely formulated. It is now recalled:

To what extent students’ epistemological beliefs are related to demographic and socio-cultural variables?

In the design of our first sub-study (Study A), demographic and socio-cultural variables included Name of the School (to mean school location), Age, Gender, Religion, and Mother Tongue of the student, Science or Arts Orientation, Study Habits (Library and Internet Use), Source of Assistance in School Matters, Marks in Language (Portuguese), Marks in Mathematics, Parents’ Level of Education, and Family Income Level. Due to their low relevance or to inconsistent answers they elicited, variables Source of Assistance in School Matters and Family Income Level were dropped. Thus, Study B proceeded with the remaining variables. Of those, and after correlation and regression analyses had been performed, Mother’s Level of Education, Name of School, and Science or Arts Orientation were the ones found significantly related with the belief on Simple Learning and Authoritative Knowledge. Variable Science or Arts Orientation was also found (and was the only one) significantly related to the belief in Simple Learning and Certain Knowledge. Again, Science or Arts Orientation, together with Name of School were found significantly related with the belief in Quick learning. Gender of the Student appeared significantly related with the belief in Certain and Authoritative Knowledge (see detailed analysis in Chapter 5). In the following, the most relevant demographic
variables, the ones with relatively stronger predictive power in relation to ‘patterns’ of beliefs are discussed.

Family level of education and students’ epistemological beliefs

The negative relationship between Mother’s Level of Education (which correlated quite strongly with Father’s Level of Education, r = .65) and the belief in Simple Learning and Authoritative Knowledge, suggests that students from parents with good level of education (i.e., those who succeeded reaching the end of general secondary education, at least) are less likely to believe in ‘Simple Learning and Authoritative Knowledge’. In order words, the educational level of the parents appears to play an important role in the moulding and sharpening of ‘sophisticated’ beliefs about knowledge and learning. On the basis of such outcome, it sounds fair to conjecture that literacy and adult education in countries like Mozambique, apart from their specific objectives, may collaterally contribute to ‘epistemological growth’ (or ‘epistemological sophistication’) of the respective children, namely by engendering on them the perception that learning is not an orderly or a simple process, and that teachers are not the only (and the unfailing) sources of knowledge. Conversely and perhaps because in Europe and in the USA a good level of education of parents is taken for granted, the issue of ‘naïve’ versus ‘sophisticated’ epistemological beliefs amongst students has never been associated to their home educational environment.

(Name of the School) School environment and epistemological beliefs

Variable Name of the School has to do with the environment (urban versus rural) in which the schools of our sample are located. Rural and semi-urban environments, generally associated to low education levels of the respective populations, appear to impart negatively the beliefs under consideration in this discussion, namely the belief in ‘simple learning and authoritative knowledge’, and the belief in ‘quick learning’. This is a much telling outcome with respect to priority environments (i.e., the rural ones) were access to education an education quality improvement are more needed. Commonly, one of the patterns of underdevelopment is the acute asymmetry between urban and rural areas. That is noticeable through discrepancies in levels of ‘industrialisation’ (small factories) and life standards of the respective populations. However, those discrepancies also underscore differences in terms of levels of education. Hence while relatively more educated people are in urban areas, the environments of those less educated tend to be the rural areas.
7.4 Findings regarding research question 4

Research question 4 rests on the assumption that efficiency and quality outcomes are the major concerns of educational systems. Identifying and controlling internal (student related) and external factors that may influence learning has been at the focus of research in education and educational psychology. In line with that, research question was phrased as:

*Is there empirical indication that the epistemological beliefs and the perceptions of education held by Mozambican high school students may impart their learning outcomes?*

This question was specifically meant to lead into the examination of the impact of the identified epistemological beliefs and perceptions of education factors on academic achievement. As already reported (Chapter 5), academic achievement was measured through students’ self-reported average marks in two subjects: Language (Portuguese) and Mathematics.

The outcomes of the study (Chapters 5 and 6) and the discussion thus far in the current chapter have brought to light a rather complex chain of relationships, which go beyond linear interrelations between epistemological beliefs and learning outcomes. Therefore, we propose to discuss this question within that comprehensive chain of interrelations. In view of that, the relevant relationships amongst variables are portrayed graphically. Figure 7.1 presents the interrelations observed between the two patterns of perceptions of education, the belief in simple learning and authoritative knowledge, and the relevant independent variables. Figure 7.2 depicts the interrelations between the two patterns of perceptions of education, the belief in quick learning, and the relevant independent variables.
Chapter 7

Figure 7.1. Interrelations between Belief in Simple Learning and Authoritative Knowledge, Perceptions of Education and relevant independent and dependent variables.

Figure 7.2. Interrelations between Belief in Quick Learning, Perceptions of Education and relevant independent and dependent variables

Legends for figures 7.1 and 7.2:
- Relation between Belief and Perceptions of Education
- Relation between Belief and Academic Achievement
- Relation between Perceptions of Education and independent variables
- Relation between Belief and independent variables
- Relation between independent and dependent variables
- No significant relationship
The relationships depicted in the previous Figures were merged, in order to provide an overall picture of the relevant relationships found in the study. That picture is provided in Figure 7.3 in a path model format. According to Keitz (cited in Cano, 2005, p.10) path models allow the examination of the relative contribution of some variables in predicting other variables, both directly from one variable to another, and via other variables positioned in between. That property of path models matched our interest in observing both the direct and the indirect influence of epistemological beliefs on academic achievement.

Figure 7.3. Significant relations between relevant belief factors, patterns of perception of education, background variables, and academic performance

It should be noted that because all variables were measured one single time and simultaneously, no feedback looping can be accounted for. That would be the case if this was a longitudinal study, with repeated measures. Therefore, the model applicable to our study and presented in Figure 7.3 is recursive (e.g. all arrows flow one way).

The goodness-of-fit of the model was tested using a structural equation model (LISREL 8.5, Jöreskog & Sörbom, 1993). The standardised parameters for the model and their level of significance are presented in Figure 7.4.
Figure 7.4. Path diagram of epistemological beliefs and perceptions of education in relation to some relevant backgrounds and academic performance (standardised parameter estimates; χ²/df ratio = .80; p = .78; RMSEA = .00) (significance levels: * p ≤ .05; ** p ≤ .01)
The summary of the fit indices ($\chi^2/df=.80; p=.78; \text{RMSEA}=.00$) suggest a good fit to the data, since Chi-square/df ratio is below 3, the critical value for this statistics, and the Root Mean Square Error of Approximation is below the critical value of .08 (Hoyle & Paynter, 1995). This indicates that the model is generally consistent with the general pattern of relationships reflected by the data in the study.

Concerning the relationship between demographic and background variables and academic achievement, the model reveals the following: On the one hand, variables **Age of Student** and **Science or Arts Orientation** have direct and negative influence on academic achievement (**Marks in Mathematics** and **Marks in Language**), which highly correlate ($r=.35$). Specifically, this suggests that older students and those taking science oriented subjects tend to score lower in both language and mathematics, while science oriented students tend to score lower than the Arts oriented ones. As for the variable **Name of School** (social and cultural environment of the school, the model indicates that while scoring poorly in Language, students from semi-urban and rural schools score better in Mathematics than their counterparts from the urban area. This outcome seems obvious considering that in rural and semi-urban areas Portuguese is a second or even a third language for the majority of the students, contrary to what tends to happen in urban centres. Meanwhile, **Academic Achievement** is indirectly influenced by the variable **Gender of the Student**, via **Orientation**, (Science/Arts). This suggests that, in general, Arts oriented students, mostly female, score relatively lower.

Regarding the relationship between academic achievement and the main constructs of the study (epistemological beliefs and perceptions of education), the following interpretations can be drawn from the model:

Epistemological beliefs do not appear to be directly related to academic achievement. Their influence is rather indirect and it is exerted through perceptions of education. Distinctively, believing that learning is simple and that knowledge is delivered by authority seems to influence the likelihood of the perception that education is reduced to getting schooled, for personal and material benefits. In turn, this perception of education, which privileges the ultimate ends of education rather than the learning process, seems to have positive impact on academic achievement in mathematics. Based on previous studies suggesting the impact of epistemological beliefs on approaches to learning (Cano, 2005),
we can tentatively conclude that this outcome may imply that naïve beliefs about knowledge and learning may work out well when it comes to fostering strategic approaches to learning, specifically the mastering of rules and principles embodied in mathematical procedures, leading to good scores in assignments in this school subject. Apparently, instead of developing critical thinking and engaging themselves in deep approaches to learning, the students targeted in this study may, in general, tend to develop strategic approaches to learning, vis-à-vis good results in assignments and exams. That may also be boosted by the ‘quick learning’ requirement imposed by the school system. As observed and discussed earlier in Chapter 5 and above in the model, ‘Quick Learning’ has appeared as one of the important and influential belief-dimensions of our target group. It is likely that ‘learning quick’ may imply and foster the adoption of strategic approaches to learning. The ongoing speculative interpretation could assist us understanding why students who have successfully completed high school do face serious learning problems, particularly in mathematics and science, at the very beginning of their graduate degrees at the university. Unlike high-school, university education requires students to develop and substantiate analytical thinking and deep approaches to learning (Marton & Säljö, 1976a; 1976b).

7.5 Summary of the discussion

A multidimensional (a 4-dimension) model of epistemological beliefs seems applicable to Mozambican high school students. However, the belief-factors that have been identified in our study with a sample of this target group do not mimic the plain theoretical dimensions. Instead, most of the factors extracted suggest the target group to posses a system of complex and intricate beliefs, composed of a combination of ‘knowledge’ and ‘learning’ dimensions. Our interpretation has been that, to some extent, this finding seems to reflect African epistemology underpinnings, wherein the practice of knowing is inextricably based on an inextricable link between theory and practice. The significant extraction of Omniscient Authority items is also interpreted as suggesting cultural overtones. Nevertheless, fine-tuned statistical analysis did not provide a solid ground for a contention about a typically Mozambican pattern of epistemological beliefs. In all, this
outcome is interpretable as confirming the rather sneaky character of the construct of epistemological beliefs. The discussion has also suggested that the overwhelming perception of education as schooling (‘getting educated’) for individualistic and materialistic aims appears dissonant with what could be expected as the impact of traditionally African values, based on collectivist principles. Amongst the demographic variables, ‘Family level of education’ was found negatively associated to naïve epistemological beliefs. This outcome has been discussed as implying that in Mozambique, at least, and probably in other 3rd World countries, home educational environment seems to play an important role in moulding children’s beliefs about knowledge and learning. The surfacing slight interplay between epistemological beliefs and perceptions of education has been discussed as suggesting that perceptions of education act moderately as a mediating variable between epistemological beliefs and academic achievement. On that, we have posited that the apparent relation between ‘good performance’ and the manifest naïve beliefs about the quickness of the learning process and about the simplicity of authoritative knowledge may be explained by probable students’ habits of solving academic problem with recourse to strategic learning approaches.