



# **Thought, word and deed: The roles of cognition, language and culture in teaching and learning in IB World Schools**

**Michael Allan**

# Introduction to IB position papers

This paper is part of a series of papers commissioned by the IB and written by IB practitioners. Each paper addresses a topic or issue related to the IB's philosophy or its educational practices.

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## Abstract

This paper examines three themes—culture, language and cognition—which are of fundamental importance for teaching and learning in linguistically and culturally diverse schools, and explores the synthesis of all three. Indeed, the central thesis of this paper is that they are not only connected, but that both language and cognitive processes are cultural artifacts, whose nature varies from culture to culture. This has profound implications for teaching and learning in IB World Schools.

Evidence from the fields of cognitive, discursive and cross-cultural psychology is considered, as well as neurolinguistics and sociocultural theory. Culture is seen as a discursive practice, in which meaning must be understood both in cultural terms and in the light of individual contexts (in the way that individuals use language to construct their own explanations of reality). It is our culture that determines our language, which in turn reflects the way that we categorize our thoughts about the world and our experiences in it.

Language and thought are seen as interdependent manifestations of culture, rather than having any causative relationship. Indeed, it would not be unreasonable to suggest that there is little difference in their nature in terms of cognitive processes. The cultural link between language and cognitive processes is explored and it is asserted that as the nature of higher cognitive functions varies among cultures, continued education in a different cultural setting will cause dissonance and inhibit learning.

The paper identifies three areas in which cultural dissonance among teachers and students from differing linguistic and cultural backgrounds is particularly problematic:

- the effects of language and culture in the cognitive realm
- the difficulties caused by the differing classroom discourse patterns to which different students are accustomed
- the effect of the predominance of the target language in the school on the development of the cultural and linguistic identity of the students.

## Introduction

Whatever cultural views there may be as to what education is or should be, at its heart lies communication. However, communication is not neutral. The way in which information is communicated also transmits a certain way of seeing and knowing things, and determines the context in which this information is evaluated. It implicitly transmits the values that are not only attached to the information, but are also a manifestation of the social structure of the society (Allan 2004).

Communication, or the use of language in its widest sense, is thus culture-bound in that it is not only developed within specific cultural contexts, but also embodies the culture itself. The connection between language and cognition is also fundamental in understanding the teaching and learning process. This is particularly so in international school classrooms, where there may be a multiplicity of language backgrounds among teachers and students.

This paper therefore examines these three themes—culture, language and cognition—and explores the central thesis that they are not only connected, but that both language and cognitive processes are cultural artifacts, whose nature varies from culture to culture.

## Language as a cultural tool

The concept of language as a cultural tool had already been recognized in the early 20th century by Vygotsky, who saw that cognitive processes (language, thought, reasoning) develop through social interaction (Vygotsky 1978). Language to Vygotsky is a tool of culture—developed in contexts, and for tasks, specific to that culture—crucial in the development of inner speech as an important way of organizing perception, understanding and voluntary action. Psychological development proceeds from the social-cultural to the individual and mental. Mental development, according to Vygotsky, is transformed by the use or mediation of cultural tools and signs, especially language, which are learned in social interaction—described as “an interpersonal process”—during cultural learning (Vygotsky 1978: 57). Language then becomes the critical link between the social and psychological planes of functioning and is central to cognitive development, which proceeds from social speech via private speech to thought. This process is explained by Edwards.

Mental contents and operations are at the same time both individual and social, formed developmentally through, and for, engagement in cultural life.

Edwards (1997: 44)

Culture is also constitutive of mind, and the ways

by which social interactions are coordinated become the means by which the child's understandings are constructed.

Edwards (1997: 43)

Social anthropology and sociolinguistics theorists did not really embrace this concept until the advent of post-structuralism. While structuralists took the view that both culture and language contained deep structures that determine the way in which their subjects act and speak, in post-structuralist theory, the “deep structures” of culture and language only exist in so far as people act or make use of them in their activities and behaviour. In other words, meaning structures do not use people, people use meaning structures to make sense of the world and their place in it.

To say that two people belong to the same culture is to say that they interpret the world in roughly the same ways and can express themselves, their thoughts and feelings about the world, in ways which will be understood by each other. Thus culture depends on its participants interpreting meaningfully what is happening around them, and “making sense” of the world, in broadly similar ways.

Hall (1997: 2)

On the other hand, it is stressed that the meaning structures commonly used constitute the culture of that society, and it is precisely this dual nature of meaning systems that the post-structuralist concept of language seeks to understand by examining its function in juxtaposing reality and internal constructions of reality (Allan 2007).

Edwards links this post-modernist idea to the Vygotskian perspective thus:

by apprenticeship in cultural competence the social becomes mental, and language is the principle form of cultural “mediation” through which social interactions and thence mental life are organised.

Edwards (1997: 44)

From this perspective, culture is a discursive practice, in which meaning must be understood both in cultural terms and in the light of individual contexts (in the way that individuals use language to

construct their own explanations of reality). This view is indebted to Wittgenstein, for whom meaning is not just **found** in the world—people give meaning to what they encounter via language, and language is part of a culture, based on rules that are the product of deep cultural agreement, which forms the context in which sentences make sense (Wittgenstein 1953).

Language thus represents the hidden values in societies' cultures, as well as the way in which these values are transmitted and become apparent and significant in the narratives of groups or individuals as they make sense of the world. In other words, language is a representation of culture as well as a culturally specific form of communication.

It is perhaps more instructive to see language and thought as interdependent manifestations of culture, rather than having any causative relationship. Indeed, it would not be unreasonable to suggest that there is little difference in their nature in terms of cognitive processes. This cultural link between language and cognitive processes will be further explored in the following section.

## Culture and cognitive patterns

Few studies of human intelligence have explicitly examined the values and beliefs of a culture as interdependent variables on cognition. "Basic" processes such as categorization, learning, inductive and deductive inference, and causal reasoning were generally presumed to be the same among all human groups. This assumption of the universality of cognitive processes was adopted by 20th-century mainstream psychology, where it has been predominant from the earliest treatment of cognitive psychology by Piaget, through mid-century learning theorists, to modern cognitive science (which, it must be said, is nearly all Western in its epistemology).

Although the range of cognitive potentials may be constrained by biological programming, the question of which potentials develop and find expression depends, to a great extent, on cultural experiences. That is to say, the mental life of individuals is inseparable from the culture that gives it direction and meaning (Thanasoulas 2003). The evidence emerging from various disciplines is that human cognition is context-specific, and this—together with evidence of the strong influence of culture on cognitive development—provides the empirical basis for the assertion that intelligence is a culturally dependent construct.

Howard Gardner expresses it in this way.

An intelligence is the ability to solve problems, or to create products,  
that are valued **within one or more cultures**

Gardner (1993: p. x)

Intelligence has also been said to be

a multifaceted set of abilities that can be enhanced depending on the  
social and cultural contexts in which it has been nurtured, crystallized,  
and ultimately assessed.

Armour-Thomas and Gopaul-McNicol (1998: 129)

In the field of cognitive psychology, prominent writers like Jacqueline Goodnow, Jerome Bruner and Howard Gardner reinforce and develop this perspective of the interdependence of culture and cognition. According to Goodnow, cognitive problems or tasks do not exist in a vacuum, nor are they connected to some abstract set of principles or framework. Rather, they are bounded by a culture's definition of the problem to be solved and its definition of "proper" methods of solution (Goodnow 1976). Furthermore, she contends (Goodnow 1990) that cultural values contain tacit understandings of what constitutes an appropriate goal and posits that individuals learn "cognitive values". In short, culture defines not only what its members should think or learn but also what they should ignore or treat as irrelevant—aspects that she terms "acceptable ignorance or incompetence".

There is a large body of research in cross-cultural psychology that describes and categorizes the differences among cultures manifested in their cognitive thought processes. Richard Nisbett and colleagues have conducted a variety of tests and experiments comparing the ways of understanding of North American and East Asian subjects (Peng and Nisbett 1999; Nisbett et al 2001; Nisbett and Noranzayan 2002). They conclude that culture affects cognitive processes in two basic ways:

- indirectly, by focusing attention on different parts of the environment; and
- directly, by making some kinds of social communication patterns more acceptable than others.

Their research also supports the idea that cognitive processes triggered by a given situation are not generally universal but depend on context and the particular metaphysical way of explaining the world that distinguishes one human group from another (Nisbett et al 2001). They found that:

- the “Western” ontological viewpoint is that, broadly speaking, things exist by themselves and can be separated from their contexts and defined by their attributes
- the “Eastern” perspective is that things are contextualized, interrelated and that various interdependent factors are involved in any event.

This distinction is reflected in the pioneering cross-cultural studies of Triandis, who highlighted the different importance placed on context by different cultures in terms of understanding and learning (Triandis 1994, 1995). He characterized some cultures as being “low context”—where thinking and communication tend to be logical, linear and communication-specific—generally pertaining to Northern European and Anglophone societies. Value is placed on the ability to extract information from texts, and learning takes place in a context-free setting in order that it may be transferred to other situations. This dualistic structure in Western thought, derived from the Aristotelian logic that underpins its reasoning, is reflected in the linear structure of European languages.

In “high context” cultures, including Eastern, Latin American and Mediterranean societies, communication and thought tend to be more relational and associative, the holistic meaning of text being more important than its parts and the context of the learning more important than its content. In contrast to the Western model, Eastern sentence construction is more associative and less susceptible to Aristotelian logical analysis.

Later studies elaborate on these differences (Hofstede 1994).

- The tendency of individualist cultures is to focus on the point at issue. This is reflected in a learning style that is stimulus-centred and parts-specific. Learners can extract information embedded in a text and easily find linear relationships.
- In collectivist cultures, learners are more relational and work to find a special or personal relevance in context. They are more global in focus, have greater difficulty finding direct linear relationships, but find meaning in text and can exhibit sustained emotional expression.

Research into the attainment of collectivist students in schools in the USA, Australia and Germany has found that the learning of abstract concepts, without any contextual relation, is particularly difficult for them (Kağıtçıbaşı 1990).

In summary, there is strong evidence from different disciplines that patterns of thought vary from culture to culture and that this is illustrated in the differing linguistic systems developed in each one. The following section examines this conclusion in the light of recent socio- and neurolinguistic research.

## Language and cognition in cultural contexts

In what has become known as sociocultural theory, Vygotsky and Bruner show how language provides the fundamental link between culture and cognitive development. Cognitive processes are at the same time both individual and social, formed developmentally through, and for, engagement in cultural life (Vygotsky 1978). Unlike Piagetian or Skinnerian ideas of development, Vygotsky saw that it is social interaction with an adult or more advanced peer that enables the child to progress to higher levels of cognitive development via the “zone of proximal development”. Bruner elaborated this social interaction into the specific pedagogic technique of “scaffolding” the zone of proximal development (Bruner 1996). New learning is collaborative and accessible through the contextual use of prior knowledge and cognitive patterns. Cognitive development relies on the active intervention of expert others and, therefore, interpersonal communication is necessary for development. The nature of the whole process, from context to communication, is culturally determined.

There are two important aspects to a Vygotskian approach to social interactions (Adamson and Chance 1998).

- First, it is fundamentally cultural. Caregivers (including teachers) will automatically interpret infants' expressions and nascent actions within the meaning system of their own culture.
- Second, it denotes a pattern of developmental change in which a phase of adult support precedes a phase of independent infant accomplishment. After many experiences of supported expression, the child gradually masters an action that is qualified with cultural meaning.

Evidence that this process of development in the cognitive plane is paralleled in the linguistic domain has also emerged in recent years from research on early language and brain development, in studies of how young children learn. From such research, demonstrating how early exposure to language alters the brain, Kuhl concludes that language, social and cognitive development follow the same path (Kuhl et al 1992).

The findings of Engstrand and his colleagues support this theory. In the first years of life the brains of children are constantly and rapidly forming connections or synapses. Newborns have relatively few, but by the time they approach the age of 3, estimates are that the child's brain has twice the number of connections as the adult brain. Furthermore, their synapses create three times more brain activity. In order to produce coherent patterns of thought from this confused activity, once all the connections are formed, the brain begins to discard or “prune” excess connections. This pruning process continues until the end of puberty, and the brain begins to “filter out” information that is not considered relevant. In the same way that irrelevant sounds will be discarded, linguistic structures and cognitive patterns not considered important in the society in which the child is socialized will also fail to develop (Engstrand et al 2000). This echoes the sociocultural development theory expounded earlier.

More concrete evidence has been provided via the recent discovery that magnetic resonance imaging (MRI) can be used to map human brain functions. In a study of bilingual subjects, Kim and Hirsch used functional MRI to study two language areas in the brain:

- Broca's—believed to manage speech production, and
- Wernicke's—thought to process the meaning of language.

Kim and Hirsch's findings were that both early and late bilinguals used the same part of Wernicke's area in deriving meaning from both first and second languages, but although early bilinguals used the same part of Broca's area for both languages, late bilinguals used a different area for their second language (Kim et al 1997). In research at the Institute of Neurology at University College London, scans revealed that the density of the grey matter in Geschwind's territory—a third region

of the brain that is also indispensable for language—was greater in bilinguals than in those without a second language and that the effect was particularly noticeable in "early" bilinguals (Mechelli et al 2004). These discoveries go further in demonstrating how the stimulation of learning languages changes the structure of the brain.

These findings obviously have important implications concerning culture, language and the development of cognitive abilities. Early bilinguals, by using the same synapses or neurological pathways, can superimpose a second language on the structure of their first. This enables them to develop metalinguistic abilities, which will not only aid their learning and performance in other languages, but will also evolve a metacognitive capacity. This gives them an advantage over monolinguals in their ability to understand contexts and solve problems. This premise has been supported by extensive findings on the relative academic performance of monolingual and bilingual students. Cummins identifies 250 studies since the early 1960s that report significant advantages for bilingual students on a variety of language awareness and cognitive tasks (Cummins 2001). The most significant of these is probably that of Collier and Thomas, who found that bilingually schooled students, after between four and seven years of dual-language schooling, outperform comparable monolingually schooled students in standardized tests across all subject disciplines (Collier and Thomas 2002).

This neurolinguistic evidence, taken together with the sociocultural view, is obviously of very pertinent interest to international teaching and education. If language and cognition are both rooted in culture, then exposure to other cultures—the cross-cultural fertilization of ideas—can be expected to create metacultural or metacognitive abilities that are not possible with monocultural learning (Allan 2004). The differing communication patterns, thought processes and ways of understanding the world that students in culturally diverse classes bring with them have, however, profound implications for pedagogy in IB World Schools. The importance of this interdependence of cognition, language and culture for teaching and learning in the classroom will be considered in the final section.

## Conclusion: Implications for teaching and learning in IB World Schools

Linguistic differences reflect deep cultural differences in cognitive, communicative and learning processes. In fact, it might be said that although the human brain may have biologically universal characteristics, it is thoroughly dependent upon culture for its very operation. This has critical repercussions for the learning of children from differing cultural and linguistic backgrounds, and is perhaps understated in saying that

teaching to a student or student body with a cognitive profile different from what the teacher is accustomed to is evidently problematic.

Hofstede (1986: 305)

A logical, and perhaps obvious, conclusion to this paper would be that a monocultural and monolingual education will not develop the skills needed for a multicultural global society. The problem in delivering an international education does not lie primarily in the curriculum and resources. The problem lies in:

- the interactions or discourse in the classroom
- the perspectives, or world views, that are presented as orthodox or correct
- the dominant status of the target language.

The resources to introduce other perspectives are widely available—the principal among these being the diversity of the student body. It is important both to situate new learning within a cultural context familiar to the student and also to connect with prior knowledge. This builds a bridge that is



essential before scaffolding any new learning can begin (Rothstein-Fisch et al 1999). In this respect, IB teachers have to be ethnographers, familiarizing themselves with the cultural and linguistic background of each student and then endeavouring to connect with these contexts (Government of South Australia 2011). Although teachers cannot expect to be familiar with all these concepts, they can encourage students to transfer ideas and examples independently and collaboratively in order to situate them in their own individual experience (Allan 2007). To achieve this, however, will involve democratizing the process of international education by allowing other cultural and linguistic contexts and discourses into the classroom.

This process begins with the physical context—the classroom—where displays should be multicultural and in as many of the students' languages as possible. Classrooms should be arranged to maximize student interaction and allow collaborative learning in the students' own languages (Allan 2005b). Textbooks in different languages are readily available online, and the translation capacity of modern search engines allows for other multilingual resources to be introduced into the classroom. IB teachers must also be aware of the differentiation techniques needed for their students' inherently different cultural and linguistic learning styles (see, inter alia, Hofstede 1986; Cushner 1990; Alexander 2000; Allan 2005a). This is essential if the cognitive advantages of bi- and multilingualism described earlier are to be exploited, and if learning is not to be inhibited by monolingualism.

Above all, the IB teacher has to be continuously aware of the discursive power of the target language. He or she must compensate for this, in some cases through positive discrimination, by recognizing and valuing discourses and cultures associated with other languages. Research examined here has shown that teaching in an IB World School is not the same as teaching in a school in any national system. IB teachers have to expand their own cultural horizons, modify their individual and national perspectives and, in doing so, not only enhance their professional skills but gain access to a wider world of thought and knowledge.

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