

FINDING MEANING IN MATHS : AN INTRODUCTORY PROGRAM FOR ABORIGINAL CHILDREN

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Many teachers involved in school education of Aboriginal children have, for a variety of complex reasons, found it difficult to design programs that begin with the things children know and move to those things that children have to learn. All too frequently school education offered to Aboriginal children has been conceived in Western terms and delivered in our language. Programs designed for children from mainstream Australia have simply been transposed with minimal adaptation into Aboriginal schools. In many curriculum areas the results have not been exciting. In the area of mathematics they have been dismal if not disastrous (see Williams, 1979). The introduction of bilingual education into many of the remote traditionally oriented communities of the Northern Territory has made it possible for educators to re-examine the assumptions on which many of our mathematics offerings have been based. This paper outlines some of the initiatives that have been taken in the Northern Territory to enable children to formally organise and classify local Aboriginal mathematical knowledge as well as begin to acquire some ideas related to the Western view of the world and so provide more meaningful introductory mathematics programs for Aboriginal children.

MATHEMATICS: A WAY OF ORGANISING RELATIONSHIPS

As children grow up, they inevitably learn those things that they need to know if they are to function effectively within their particular society. Although much of this knowledge is to do with everyday concrete realities and skills, much is in fact quite abstract and has to do with the way their particular society organises itself. Children growing up within mainstream Australia acquire, without being aware of it, a great deal of knowledge about the organisation of relationships that are vital to the functioning of a modern, technological society. In time, they come to know that people buy, sell, measure and count and that the society about them is classified and organised in certain predictable ways. This system of organisation of relationships can be called mathematics. Even people from our society who claim they know nothing about mathematics are in fact living their lives within this mathematical framework. These mainstream children bring this mathematical knowledge with them to the classroom. For example, when they start

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school they know people use counting in their daily lives and so they find meaning and purpose in learning to count for themselves. This interaction between the mathematics experiences of the home, school and society continues throughout the children's school life with the school clarifying, organising and extending the mathematical ideas children have gained in the life they live away from school.

In contrast, the hunting-gathering society of Aboriginal Australia that developed in isolation from the rest of the world, is little concerned with the organisation of the relationships between objects in the technological world, but is vitally concerned with the organisation of relationships among people. Hiatt (1965, p.53) points out that not only are Aborigines placed in relationship with all other people in the group, but that this relationship bestows on a person a series of obligations to others and so provides an organisational framework for the ritual, economic, social and sustaining life of the group. Aboriginal children, therefore, grow up in a society where the emphasis is more to do with 'who' rather than 'how many' and with 'whose land' rather than 'how much' land. They learn to classify materials from the environment according to moiety, totems and in other ways, such as whether or not they are edible. In addition, many Aboriginal children are able to use mathematics in a way that is quite unfamiliar to non-Aboriginal children. For example, in the study by P. Harris, (1980) Laughren, a linguist based at Yuendumu, makes the following comparison:

Now, while Number is considered basic and primary to the conventional European view of Mathematics and hence European children are introduced to counting at an early age and in fact the ability to count up to certain numbers is taken as a sort of intelligence test, it is also true that Mathematics covers other fields such as directional, spatial, temporal measurement and relations. It is mastery of these which is valued by the Warlpiri, and their children's ability to handle directional and spatial terminology in particular is taken as a sort of intelligence test similar to the counting prowess test amongst Europeans. Warlpiri children of 3, 4 and 5 handle directional terminology (up, down, on, under, hither, thither, here, there, etc.) including the points of the compass and positions and directions relative to the points of the compass with ease and competence.

(P. Harris, 1980),

When Aboriginal children from such traditionally oriented communities come to school, teachers too frequently ignore the local knowledge that they bring with them into the classroom. But sound

educational theory would suggest that teachers should use those things children already know to help children acquire those things they need to learn. It is this familiar and predictable local knowledge that must be drawn on to help create an effective introduction to the learning of mathematics in the school situation. This local knowledge may not necessarily lead on to a study of similar Western content for this is frequently not possible. However, the information the children bring with them can be classified, organised and extended in ways that help children begin to acquire the unfamiliar and highly verbal learning strategies which are essential if they are to learn how to learn in the formal school setting. Harris, J., (1979) supports this:

An Aboriginal child entering school has, in common with all children, already started to develop cognitively. The adult community has already influenced the child's cognitive development so that he has begun, albeit at a very elementary level, to comprehend himself and the world about him in terms of the world view of the community in which he is growing up. As the child matures learning to label and order his experiences it is inevitable that his cognitive development will be very strongly influenced by an Aboriginal system of knowledge.

(J.Harris, 1979, 143)

Harris goes on to say:

This is the base upon which later cognitive development and learning will build irrespective of what is attempted by the school. If it is ignored, it is doubtful whether the school will play a significant part in the cognitive development of the Aboriginal child. If the school fails to recognise the importance of the child's previous cognitive development, the cognitive structures he has acquired and the Aboriginal system of knowledge which provides the context in which his cognitive development has occurred, it is unlikely that the school will succeed in assisting the child to acquire Western concepts and skills.

(J.Harris, 1979, 149)

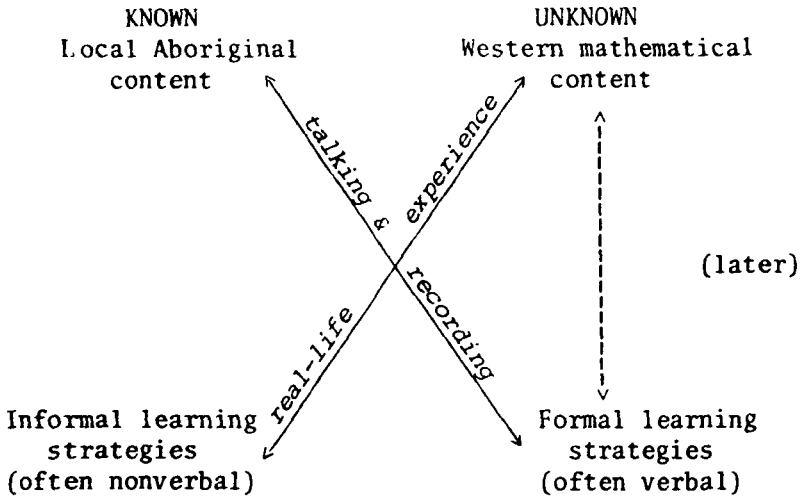
In view of these realities, it can no longer be regarded as appropriate to transpose introductory mathematics programs designed for mainstream Australian society into Aboriginal classrooms or even expect that they will easily translate into Aboriginal languages. The early mathematical experiences now being provided for

Aboriginal children from traditionally oriented communities in the Northern Territory are designed to enable these children to formally organise and classify local mathematical knowledge in the language they speak. The language they use to describe the experiences can then arise directly from the experience and not from a translation of English terminology which often causes confusion. Much of this content is related to areas that we call space and measurement, although the classifications inherent in the various kinship systems will also provide a focus for many activities.

After wide experience which involves thinking, talking about and recording familiar Aboriginal knowledge in the classroom setting the children can be gradually introduced to some of the mathematical ideas that reflect the way English speakers organise reality and which therefore can be most easily expressed in English. Many of these ideas are not readily translatable into Aboriginal languages (e.g. Aboriginal people do not use superlatives, for they, like many other people around the world, find that comparatives adequately express their view of reality). So they will say, for example, "She is tall" (in relation to the others) instead of "She is the tallest". In addition, non-Aboriginal teachers often wrongly assume that because Aboriginal people now use such things as money, that Aboriginal children develop the same attitudes and understandings of the relationships that underlie our economic system as do children who grow up within the mainstream culture. (See Appendix I for a comparison of Aboriginal and non-Aboriginal traditions, attitudes and values in relation to money and economic systems which was developed by Harris in 1982 as a result of her research into Aboriginal Mathematical understandings). Without an understanding of the difference between two cultures in relation to introduced and traditional mathematical understandings, teachers fail to appreciate the confusion that children experience as they are shunted from one mathematical milieu to another. Therefore, when teaching Aboriginal children in English, teachers are not just adding a verbal label to concepts that children have already acquired, but in fact are frequently introducing a different conceptual view of the world. This means that to learn these different concepts and a different way of organising reality, children will need many experiences that allow labelling in English (input) before they are asked to demonstrate understandings of these concepts for themselves (output).

The remainder of this paper outlines some ways in which activities and ideas with which Aboriginal children are familiar can be used or adapted in the school context to either teach (or to formalise when already unconsciously used in different Aboriginal contexts) those mathematical skills that these students must consciously control if they are to cope successfully with Western mathematical/ technological demands. In general, the position taken is that where

possible the processes and content of mathematics should at first be drawn from Aboriginal society. As children study familiar content within the school situation they should be gradually encouraged to acquire the more unfamiliar verbal learning strategies which are essential for learning in the school setting. Where aspects of maths that do not occur in Aboriginal society are to be taught, the children should first be exposed to these through a variety of informal real-life experiences in many different contexts before they are exposed to formal teaching about these topics. The following diagram summarises this approach.



SOME EARLY MATHEMATICAL IDEAS

Classification: One of the first mathematical ideas that all children develop is classification (or putting things together that belong together and labelling them). In the Aboriginal classroom, this may simply mean that on many occasions children are grouped or group themselves in ways that are relevant to their culture. These may be related to moiety, sections, sub-sections, totems, clans, dance groups, geographical location or other meaningful categories. The initial experiences may simply involve labelling the groups orally and then perhaps performing some appropriate activity in these groups. To help record this knowledge and so help children "know what they know", children may draw themselves, and the pictures can be grouped, displayed and labelled at the children's direction, e.g. "Ngilimurru Yirritja", ("We are Yirritja"). Many similar sorting and labelling activities are readily available in the surrounding environment and so in this way children come to

realise that they can put things together in ways that they perceive belong together, and label their groups. As the children are working within their own culture, their own language and their own systems of knowledge, the "belonging together" which is the essence of classification is predictable and so the activity is meaningful.

At some later time many classification experiences may be repeated and the resulting groups compared. From such experiences children will increase their understanding of one-to-one correspondence and other mathematical ideas such as 'more', 'the same', and 'not enough' will gradually emerge. In addition, children will continue to develop language and recording skills and become more conscious of the way they view their world. This is a necessary step for a child who must ultimately learn not only another language, but another way of viewing the world.¹

Space: As previously noted, Aboriginal children have understandings of spatial relationships that are very different from anything that we can expect from non-Aboriginal children of the same age. Children from such places as Yuendumu will say: "I am going south to the camp". Such language can be encouraged when planning and going on walks and excursions and the children can then record their experiences through creating or watching adults create maps of the area. Other activities such as making models of their communities in sand trays or playing games similar to "Here, There and Everywhere" provide other opportunities for verbalisation and so help children to become consciously aware of what they know. Using this knowledge that the children bring with them into the classroom provides opportunity for children to concentrate on developing, organising and recording skills in a way that makes sense to the children because the results are predictable.

Pattern: Although such classification and space activities provide the major thrust for many of the mathematical activities that are planned for Aboriginal children in their first year at school, there are other mathematical ideas that children need to be developing. Baratta-Lorton (1976, 20) has reminded us that one of the underlying themes of mathematics is pattern. The skill of recognising and using pattern is a valuable problem-solving tool for children to learn to use, for she maintains that it can have a profound effect on children's mathematical understanding. The visual patterns found in Aboriginal sand designs or on bark paintings do not seem to provide a link with the patterns they will need to discover in Western mathematics. However, if patterns in sound are considered, a rhythmic combination can usually be found which

See *Mathematics in Aboriginal Schools T-3. Part One : Transition*, for more information on this topic.

Aboriginal children know intimately for it has been acquired as they sat on their mother's shoulder or stomped beside their father in the frequently experienced rhythm of traditional dancing. Patterns in sound can be interpreted in many ways. The short-short-long of the clapsticks can be interpreted in bodily movement and can become clap-clap-shake. This in turn can give way to an interpretation of the sound pattern using a group of children, e.g., sit-sit-stand, and from there it is not such a big step at some later stage to square-square-triangle or whatever is required. The use of such patterning activities encourages predicting. As these patterns are frequently represented in a line, it also enables children to begin seeing pattern as a progression (as it is in sound) rather than as an array as it is in so many of the visual patterns in Aboriginal culture. This is an important distinction and one which children need to become aware of at an early age if confusion is not to occur when they are faced with such things as number lines which of necessity progress in one direction across a page or board and the 'number after' is simply not the same as the 'number before'.

Measurement: Aboriginal people do use informal measures to organise distance and other aspects of their environment¹. Five-year-old children bring much of this knowledge with them into the classroom and it is now being used to provide content for activities that will provide a meaningful starting point for a study of measurement. However, there may be no one-to-one correspondence between these ideas and those inherent in the Western view of the world that is expressed in English. For example, when North East Arnhem Land people talk about a big *yindi* (fish) they use their hands to demonstrate the width. In English when we talk about big fish our hands demonstrate length. Hence as children begin to learn English they are not only learning words but perhaps new concepts and a different way of organising reality.

Many teachers of Aboriginal children have found that the acquisition of many aspects of the Western concepts of measurement present great difficulty to Aboriginal children. For example, Aboriginal languages have quite satisfactory names for the significant times of the day and the passing of the days and seasons are noted. This information provides a satisfactory introduction to a study of time in the vernacular and at a later stage provides a basis for the acquisition of similar Western knowledge. However, measuring the passing of time in hours, minutes and seconds is quite unfamiliar in Aboriginal society. If Aboriginal children are to learn to tell the time and use that knowledge in ways that are meaningful they need to become 'time-telling' people. This means

¹See Harris, P., *Measurement in Tribal Aboriginal Communities*.

that in the early years of school, teachers will have to create an environment in which children can perceive when and why we use clocks, before they are expected to learn to tell the time in the later years of primary school. Hence non-Aboriginal teachers need to consciously refer to the clock during the day just as mothers do in Western homes and comments on the relationship of time to the activity in hand. Comments such as "We'll go out to play in two minutes", or, "It will be lunch time when both hands point to the twelve" need to be made for perhaps many years before such things are formally taught. In this way children have the opportunity through informal experiences to lay down a foundation of ideas on which more formal teaching can be based. Therefore, while Aboriginal teachers are consolidating the measurement ideas inherent in the vernacular, the non-Aboriginal teacher must begin to verbalise for children the mathematical relationships which govern the way they, as Westerners, live their lives in the day to day life of the classroom, if Aboriginal children are to be able to learn these things for themselves at a later more appropriate time.

Cardinal Number and Counting: Although most Aboriginal mathematical knowledge is to do with what we call space and measurement, there are some starting points for the development of the number strand. Aboriginal languages usually have words for one, two or three and some go further. It would seem, however, that in many instances these words are not used for counting but simply as labels to indicate the size of the group. The children of North-East Arnhem Land, if asked "how many?" will, if the group is small enough, often respond by just displaying the appropriate number of fingers, clearly indicating their awareness of the quantity involved. Five is another term that is often a fairly familiar concept in an Aboriginal society. People often refer to a 'hand' and in one community where turtle eggs are gathered they are distributed in groups of five (four, with one on top). This is referred to as *wangany rulu* or one group (of five). All such knowledge can be grasped by teachers to provide content for the early experiences that are planned to provide effective starting points for the acquisition of numerical ideas.

Aboriginal children, however, have other opportunities to recognise and have their attention focussed on small groups. Aboriginal societies perceive people in groups of one, two and more than two and most languages reflect this by dividing personal pronouns not only into singular and plural as we do in English, but into singular, dual and plural. By providing activities that enable children to move about in small groups, there is an opportunity for children to use language appropriate to the situation, e.g., "We (two) are running," "They (more than two) are walking". The

question "How many children?" can then provide children with an opportunity to label the group numerically, e.g., "three", or to count the people, "one, two, three".

Teachers must constantly remember that Aboriginal children will have to acquire many mathematical ideas related to the number strand that are not in evidence in Aboriginal society. Counting, even today, is a largely unfamiliar approach to the organisation of life in many Aboriginal communities. Before any new or largely new mathematical idea is introduced, children must have the opportunity to experience or live the idea. Therefore, before we teach children to count they must be immersed in a counting environment. The classroom must become the equivalent of a counting home. At any appropriate time the teacher should count. In time, children (who have learned the sequence of number words through rhymes and rhythmic activities) should be encouraged to join in. In this way they become counting people before they are formally expected to learn to count, just as we encourage children to show reading-like-behaviour before we help them to become independent readers.

PLANNING FOR CHILDREN TO LEARN

The process of education should be concerned not only with what children learn but with how they learn. There is no doubt that Aboriginal children can learn many mathematical facts by heart. The problem with this type of learning, however, is that children get their sums right in the early years of school but they are not able to go much further than this and they are not able to talk about what they have done or discover which process to use when faced with mathematical problems which are hidden within the language of daily life. Although such mathematical responses can be 'tested' in classrooms, unless they are related to meaningful experiences they are rarely applied outside the school situation and are often soon forgotten once the student has left school. Those people who have lived in an Aboriginal community can appreciate this situation operating in reverse. For example, non-Aboriginals in remote communities frequently learn to respond to the Aboriginal sub-section or relationships system - much as children respond to sums - but they cannot predict and are unable to use or apply their knowledge in new situations. Soon after they leave the settlement the information is forgotten for it is irrelevant to the life they live away from an Aboriginal community.

If we are to provide children with programs that achieve understanding and not just memorisation of isolated facts, we need to ensure that the content of their early mathematical experiences not only provides them with meaningful learning strategies that they

bring with them to school. In addition, if they are to learn to handle Western information in a mathematical way they will also need to begin to acquire new learning strategies. Hence all teachers of Aboriginal children need to develop the following understandings if they are to help these children acquire progressively more difficult mathematical concepts. The approach involving *experiencing*, *verbalising* and *recording* outlined in the following section builds on the work done by Western at the Aboriginal Teacher Education Centre at Batchelor. Her approach is best seen in the book, *Mathematics for Young Children*.

EXPERIENCING

All the concepts (or mental pictures or ideas) that people acquire are developed through personal sensory experiences. Even those concepts developed through imagination have their roots in sensory experiences. All through our lives these ideas are being refined as new experiences expand our horizons. Many concepts, like 'tree', 'bird' or 'fish' are easy to acquire because they can be seen, tasted, touched and so on. Concepts inherent in relationship systems, however, are more difficult to acquire as the central idea is more abstract. This is true whether it is a relationship between people, e.g., cousin, or a relationship between things, e.g., size. Aboriginal people, however, intuitively know how to help their children acquire ideas about relationships between people. It is a familiar experience when walking through a N.E. Arnhem Land Aboriginal community to see a mother who is sitting with a small child, attract the child's attention and point palm up, to a passing relative and name the relationship. Language is used to focus on what Aboriginal society regards as significant in such a situation, and so the relationship rather than name is labelled. From many such experiences Aboriginal children are able to expand and refine their understanding of such relationships. The oral labels they acquire for these 'ideas' help them build a bridge between the real-life experiences and abstract thought so that in time they come to be able to manipulate the complex kinship systems in a purely abstract way.

Aboriginal teachers need to be helped to become consciously aware that in the life children live outside school, they acquire ideas through these real-life experiences that are labelled for them (see *Wangkami: A Handbook for Aboriginal Teachers in Early Childhood Education*). Aboriginal teachers also need to appreciate that this experience - verbalisation approach - can be used to help children develop and extend the ideas they bring with them into the school situation and at an appropriate time can be used as they acquire new ideas inherent in the system of relationships that we call mathematics. Even children growing up in main-stream society find

difficulty in discovering some mathematical ideas because although they are in use in our society they are in themselves quite abstract, that is, they cannot be tasted, eaten, touched, etc. However, in certain real-life situations the concept can be experienced and labelled. For example, although 'eightness' is an abstract idea, we can touch eight fish or eat eight chips. From many such experiences the concept of eightness can be extracted. As these experiences are labelled for children, they gain the language they need to share their ideas with others and in time to use this knowledge of 'eightness' in quite abstract ways.

VERBALISING

The importance of language in cognitive or intellectual development has only fairly recently been appreciated (see the work of Vygotsky, 1962, Tough, 1976, and others) and language is now recognised as a major intellectual tool. As Douglas Barnes says:

If we know what we know then we can change it. Language is not the same as thought but it allows us to reflect upon our thoughts. The metaphor contained in 'reflect' is here highly appropriate: what we say and write mirrors our thought processes and enables us to take responsibility for them. Thus children and adults alike are not only receiving knowledge but remaking it for themselves.

(In Thompson et al. 1978, 7)

If mathematical knowledge is to be usable it needs to be held in the conscious levels of children's minds where they know what they know and how they can apply it. Therefore, to function mathematically children need to do more than simply label their experiences. They need to be able to describe what they are doing or what is happening (i.e., verbalise the process) and ask and respond to a wide range of questions about their experiences.

Such strategies not only build bridges between concrete experiences and abstract thought but they effectively diminish the time required for this to occur. It is also verbalisation that allows children to move more easily from context-specific learning to context-free principles. This is an essential goal if children are to be able to understand and apply mathematical knowledge and not merely get sums right. Such deliberate verbal learning strategies are unfamiliar in traditional Aboriginal societies (Harris, 1980). Today Aboriginal children not only need to continue to acquire age-old knowledge in traditional ways, but they have to acquire new knowledge (particularly in mathematics) and they need to develop new ways of learning. Inevitably this involves new ways of using language, or perhaps a new emphasis on the use of language.

As Aboriginal teachers are the only people who can effectively communicate with Aboriginal children in their first language, they will of necessity have to be the teachers who provide the early learning experiences for the children they teach. To be effective, they must begin to *consciously* appreciate the value of the largely informal learning styles of Aboriginal society and use and plan real-life or concrete experiences that they label for the children. However, in addition, they must develop an appreciation of the importance of helping children acquire the *more verbal* styles that these children will need if they are to learn how to learn in an increasingly complex Western society. (See Graham, B, 1979 and 1981 for strategies to use in school-based Aboriginal teacher development programs.)

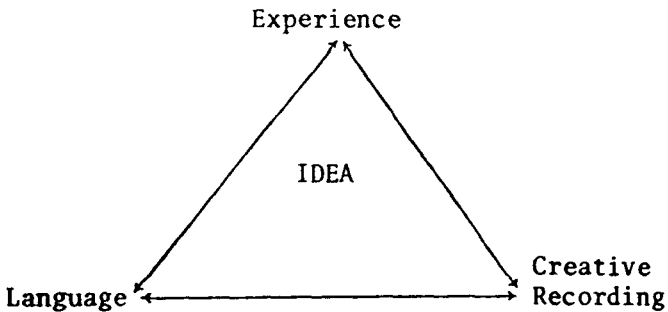
RECORDING

Creatively recording children's experiences is another way in which we can help children see their ideas more clearly. All societies record their knowledge. Pre-literate societies use song, stories and art to provide records to help succeeding generations remember and recall information. All these traditional ways of recording can be brought into the classroom. Children growing up in a modern world, however, need to learn some new ways of recording information. They need to begin to be aware that experiences can be 'caught' in either three dimensional or two dimensional representation and in words and other symbols. Records allow experiences to be referred to again and so allow for more talking. They certainly help children to remember, but they also provide an opportunity for them to organise their experiences so they see the actual idea more clearly. In time they will need to learn to use a whole range of short-hand-like symbols to record the mathematical ideas they are developing, but that is not part of the mathematical program for the first year at school. Instead, recording should involve collecting, drawing, pasting, modelling, labelling and so on so that children begin to be able to represent the ideas that they are developing. Recording activities need to be seen by teachers not as something to keep children busy but as something that will help them to learn. It is one of the tools they will need to acquire on the way to becoming people who have learned how to learn in the formal ways of the classroom.

EXPERIENCING-VERBALISING-RECORDING

Through this experiencing-verbalising-recording strategy an approach to mathematical education is developed that Aboriginal and non-Aboriginal teachers can pursue. Objectives can be defined in terms of the mathematical ideas children need to develop, which will help them move in a systematic way from those things they know

to those things they need to learn. As the focus is on the acquisition of mathematical ideas or concepts, teachers can be helped to see that this can be achieved by planning experiences that can be talked about and recorded. As teachers plan they need to consider questions such as "Does this activity help children experience this idea?", "How can I talk about this idea with the children?", "How can I enable children to talk about the idea they are experiencing?" (If questioning is not appropriate, can children be encouraged to tell a story?) "How can I help children record the experience so they can see the idea more clearly?" This simple diagram more clearly outlines the approach.



CONCLUSION

Much more remains to be learned about the difficulties that Aboriginal children have in learning mathematics. Experience is teaching us, however, that sound educational theory rather than expediency will provide solutions to the problems that confront us in the provision of relevant curricula for Aboriginal children. This means that curriculum writers and teachers need to understand how Aboriginal children perceive and talk about their world. Not only must teachers be aware of what Aboriginal children know but also how it was learned, for it is on this foundation that meaningful programs must be developed. If Aboriginal children are to move from those things they know to those things they need to learn, then Aboriginal and non-Aboriginal teachers must dialogue together so that the learning experiences provided (both content and process) will assist Aboriginal children acquire the skills and understandings inherent in the Western system of mathematics. The acquisition of this knowledge should not ignore what the children bring with them to school. Rather, the process should be additive, for it should deepen their understanding of their Aboriginal heritage while it provides them with those mathematical skills and understandings they will need to survive as Aboriginals in tomorrow's world.

APPENDIX 1 - COMPARISON OF UNDERSTANDINGS ABOUT MONEY AND THE CASH ECONOMY

Aboriginal traditions,
attitudes and values

Anglo-Australian traditions,
attitudes and values

TRADITIONS

No tradition of having money.

Share the Western cultural tradition which has had coins for over two thousand years.

Subsistence economy based on hunting and gathering.

Cash economy in an industrial and agricultural society.

Food and provisions *collected* direct from the environment through hunting and gathering activities.

Food and provisions mainly *bought* with money that has been earned through paid employment.

Conservation practices and the proper performance of ceremonies ensured the continuation of food supplies.

Money is *saved* so that food and other necessities can also be bought in the future.

'Blackfella business' is mainly concerned with *ceremonies and traditions*.

'Whitefella business' is mainly concerned with *making money*.

'Work' is mostly that which must be done to *perform corroborees and maintain traditions*.

Work is mostly that which is done to *earn money*.

Trade involves exchanging some goods for other goods.

Trade involves exchanging *money* for goods, either by handing over cash, or by means of a bank transaction.

THE CASH ECONOMY

Many tribal Aborigines have only come into the cash economy in the last 50 years: it is not a part of their traditional heritage.

Anglo Australians and their ancestors have had a cash economy for *many generations*: it is an essential part of their heritage.

Traditional rules for behaviour and social relationships are based on *mutual sharing*, kinship obligations and ceremonial exchanges.

The laws of the land regard money as *personal property* which is protected under the law. There are fewer kin obligations.

Aboriginal traditions,
attitudes and values

Anglo-Australian traditions,
attitudes and values

KNOWLEDGE AND USE OF MONEY

Coins and notes are usually called by names that describe their *appearance*.

Coins and notes are usually called by names that describe their *value*.

Knowledge of the combined value of several coins or notes together seems often to be based on *perception - seeing a pattern*.

Knowledge of the combined value of several coins or notes together is the result of *calculations using mathematical processes* such as addition or multiplication.

The relative values of coins and notes are *not well known* by most people.

The relative values of coins and notes are *known and understood* by most people.

Some coins and notes are *not* used in some local stores and so are not well known in those communities.

All coins and notes are *used* in business.

Prices are *often rounded off* at a multiple of 5 or 10.

Prices are *not rounded off* at 5 or 10, but often end in 99¢.

Money is usually *spent* or otherwise disposed of *immediately*.

Money is often *put away immediately* so that it will be available for planned future use.

Future security is achieved through debts and obligations - *'banking on people'*.

Future security is achieved by *saving money in a bank*.

Gambling is often the main way of getting large sums of money for special purposes.

Saving through a bank or investments is the main way of getting large sums of money for special purposes.

Very few people have a personal cheque account.

Most money-earning adults have a cheque account or similar arrangement for holding money and making payments without handling cash.

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