

ABORIGINAL SITE SPECIFIC MATHS PROJECT

(ASSMP)

Problem solving in a culturally defined context

FINAL REPORT

to the

**Committee for University Teaching
and
Staff Development**

1997-1998

from the

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CONTENTS

Acknowledgements

Dissemination of materials

Introduction

Consultation process

A model for developing community based curriculum materials

- rationale

- methodology

- literature review

- the role of workshops

Materials development

- Design and Production of Materials

Project Assessment

Findings and implications for teaching and learning

Action and Recommendations

References

Appendices

(i) Teacher's Evaluations

(ii) Article from the Arafura Times

(iii) Reports to Batchelor College Academic Committee

(iv) Report from Warren Hastings

Acknowledgements from the Project Leader

The work of this project was possible due to the support and efforts of many people.

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1997 Members of the Batchelor College Academic Committee

Yirrkala Literacy Production Centre

Peter Blundell and staff of Yirrkala CEC

Graphic designer

Donna-Lea Williams

Video Production Officer

Wayne Miller

DISSEMINATION OF MATERIALS

A copy of this report and the resource package consisting of a set of fifteen problem solving activities, video and CD have been sent to:

- each participating community school
- project coordinators
- Batchelor College library (Batchelor and Alice Springs Campuses)
- Committee for University Teaching and Staff Development

ASSMP Website

A regularly maintained web site for the Aboriginal Site Specific Maths Project (ASSMP), <http://www.topend.com.au/~assmp>, has been set up to communicate and encourage further development of Aboriginal site specific maths materials in participating communities and the wider community of indigenous Australians.

Conference Presentations

Maths Teachers' Association of the Northern Territory (MTANT)
Annual Conference June 24-25, 1998

(CONASTA) July , 1998

INTRODUCTION

Curriculum support materials which encourage problem solving provided the genesis for the Aboriginal Site Specific Maths Project. The initiative was undertaken by Batchelor College Teacher Education students and facilitated by Batchelor College lecturers, Warren Hastings and Robyn Hurley.

Background to the Project

The Task Centres developed by the Curriculum Corporation (1994) were inserviced into Territory schools by the Northern Territory Department of Education's maths project officers in 1994 -1996. Although the tasks were problematised and had an emphasis on hands on learning, Aboriginal children could not relate to the content of the problem and needed a lot of support and assistance from their teachers. Aboriginal Teachers however, were intrigued with the idea of the task centres but wanted to contextualise the problems in a culturally relevant way so that the children could solve the problem by themselves.

The positive learning aspects of the Task Centres such as group work, problematising a mathematical task and hands on activities, gave rise to the notion that if problems were from a familiar context, Aboriginal children (like their counterparts) would be able to solve problems in a culturally relevant situation.

The aim of the Project

The aim of the Aboriginal Site Specific Maths Project was two-fold:

- to develop problem solving activities that were context specific and deal with developing the processes in the *Working Mathematically* strand used in the teaching and learning of mathematics.
- to develop Aboriginal teachers own understandings of the teaching and learning of mathematics through the construction of community based curriculum materials.

Project Outcomes

Through their participation in the Project, Teacher Education students from Batchelor College are able to:

- employ problem solving strategies to teach mathematics in their respective learning environments.
- develop community based teaching/learning materials to teach problem solving skills and mathematics.
- develop strategies which enable the teaching of mathematical concepts in both cultures.
- understand the processes involved in developing community based curriculum.
- teach mathematics in own language and English.
- develop a transferable of problem solving activities which model the process of developing community based curriculum material.

The project explored a constructivist approach to problem solving and developed a transferable package of curriculum materials to teach mathematics. The activities are available on CD, but teachers are encouraged to customise the stories and problems to suit their own community contexts. The Project developed a model to assist Aboriginal teachers in the construction of their own curriculum materials.

The project was completed within the 1997-98 time frame and produced:

- display folders of fifteen site specific problem solving tasks in English and translations in four different Aboriginal languages.
- a CD copy of the tasks
- a video of the process involved in developing community based curriculum materials
- a maintained website <http://www.topend.com.au/~assmp> to support the further development of site specific maths materials in other community contexts
- a final report

RATIONALE

Prepared by participants in the Project from Ngukurr

Aboriginal people have their own learning strategies which are listening, talking, watching and practising. Aboriginal stories and songs were passed down through thousands and thousands of years by singing, listening and practising. Each clan and moiety group has their own songs and dreamings that give us the land ownership.

Dancing is learned by watching, talking and practising. Dancing is the knowledge of the dreamings that went through your traditional land and what happened as at travelled in the dreaming time.

Recordings through paintings are based on the dreamings that are owned by a clan. Each marking or dot has a certain placing. Each person should know this knowledge. One mistake can cause traditional trouble for that particular clan.

Hunting involves listening, watching and practising. Children need to learn these things in their younger years. The knowledge will benefit you when you are married and have children. Hunting and preparing food are two different subjects. Children need this knowledge.

All these strategies are based on the environment and the ruled and laws of the tribes and most of all in their dreamings which are passed on through ceremonies.

A developing Aboriginal maths curriculum needs to be based on these four strategies - listening, talking, practising (doing) and watching. Aboriginal children are familiar with these strategies and can learn more quickly in school. These strategies are the basis for hands on activities.

At the time children are born they don't fully understand much about their Aboriginal culture. When they start to grow up they observe what their father and mother are doing. Later when they are able to speak, their parents start teaching the children what they should learn to survive in this world. By taking them hunting, they also use the environment to satisfy their needs and wants. Children learn quickly and easily because the things that they learn about are concrete things that they can see, hear, touch and smell.

When Aboriginal children come to school with their own knowledge, they do not recognise that it is real and valuable knowledge. *Their knowledge needs to be recognised and valued by the school*, When working with children we should start from the known and work to the unknown, using Aboriginal teaching strategies of listening, touching, watching and doing.

Aboriginal people have their own way of teaching and learning maths. We have our own knowledge and beliefs from keeping our culture strong in ceremonies, totems and dreamings. This is because it is part of our lives and part of our children's lives.

Our ancestors used maths in many ways; for example, they used the moon, the wind and the sun to tell them when to hunt and to collect food and when to have ceremonies. Now we are being taught the way our ancestors were using maths in the environment, by using the same knowledge and skills, so that we will teach our children and their children to come.

We know that Aboriginal maths is very important and we must keep it strong. It is important that we teach our children about Aboriginal knowledge.

METHODOLOGY - LINKING RATIONALE TO PROCESS

In order to change current teaching practices and improve the teaching of mathematics in community classrooms, things that Aboriginal teachers wanted to find out were:

What do the children already know? How do teachers find out?

How do we know what the children are learning?

How do we get the kids talking?

Start with things they know about.

Start with a cultural story.

Where do you get the story?

Outside the classroom, ask the Elders.

Contextualise activities - out of that comes problem solving.

What kind of activities can be made into problems?

How do you get children to talk to find out what they know?

They need a problem they can solve, something that is familiar to them. That will get the children talking.

By talking with teachers in workshops and getting them to articulate their ideas they engaged in the process of action research. They did this by:

- observing maths lessons and reflecting on current teaching practices.
- exploring ways of finding out what the children already know.

- making an activity a problem.
- contextualising the maths activities.

The process of developing problem solving maths activities from cultural knowledge was the next step. This would involve the old people and elders who have knowledge of the environment. This knowledge is bush knowledge. Ideas about maths will come from their stories.

A model was emerging for developing culturally specific maths activities.

It was decided to start with a day in the bush to collect the stories. This meant:

- involving Aboriginal elders and old people to tell the stories.
- getting permission from traditional land owners.
- using Aboriginal languages to get the cultural knowledge through stories and the correct names for traditional food, plants etc.
- collecting real life materials.
- working in small groups
- recording the stories and information.
- checking the names of plants and animals so the information is correct to use in the classroom
- checking that the story has a real life problem
- some things are sacred and can not to be used in stories

THE ROLE OF WORKSHOPS

All along, the project developed through continuous negotiation and a series of workshops held in the participating communities. Preliminary workshops were held in the various communities to talk about teaching and learning practices in community schools and the goals of the project. Shared understandings in terms of the Project's rationale were made explicit to all involved and a process for proceeding with the development of curriculum materials was agreed upon.

The criteria negotiated for developing the activities were that they must :

- be drawn from real life community contexts that children are familiar with.
- involve an authentic culturally based problem built around a short story .
- enable children in small groups to solve problems using concrete materials.
- be oversighted by a Project Steering Committee of Aboriginal teachers.
- must be in both English and the children's community language.

A major weekend workshop was held on Groote Eylandt in May. The purpose of this workshop was to collect information and stories from the surrounding environment. It was decided to form two groups - freshwater and saltwater. One group went to Emerald River near Angurugu (a freshwater environment) and the other group went to Garden Point near Umbakumba (a salt water environment). Elders, storytellers, Aboriginal teachers and teachers in training from five communities, Angurugu Bickerton Island, Ngukurr, Numbulwar and Umbakumba contributed to the telling and recording of stories. Bush materials (eg foods and medicines) were collected to support the stories with concrete, real life models. It was imperative to the success of the Project that Elders and

teachers looked at cultural knowledge in these two environments, what was there, what it was called, how it was talked about in language, how it was used and most importantly what the children should know about these things.

Follow-up workshops in the various communities facilitated the process of problematising the stories framed in an Aboriginal learning context. The result was a series of problem solving tasks based on kinship, country and clans, bush foods and bush medicine. It was an intended outcome of the project that problem solving skills were developed in a familiar cultural context to foreground the learning of new mathematics.

The Community workshops were held on the following dates:

Groote Eylandt 10-14 March

Batchelor 17-21 March

Groote Eylandt 17-18 May

Ngukurr 23-27 June

Yirrkala 8-12 September

Yirrkala 26-28 October

Groot Eylandt 28-31 October

Yirrkala 8-12 September

Ngukkurr 18-21 November

Yirrkala 28-30 November

CONSULTATION PROCESS

Community based (Groote Eylandt and later Ngukurr) Lecturer and project coordinator, Warren Hastings, did the initial consultation with Batchelor College Teacher Education students, community schools and community members to gather support, approval and commitment to the project. The following key groups were informed about the project as part of the consultation process.

- Batchelor College Academic Committee and Ethics Committee
- NT Department of Education
- Regional superintendants and school Principals from the following schools Angurugu CEC, Umbakumba School, Ngukurr CEC, Milyakburra, and Numbulwar were notified in writing of the project and that Batchelor College graduates and students in their respective schools would be participating in the development and trialling of community based curriculum resources.
- Community Councils and Action Groups.
- Yirrkala CEC
- Project Reference Group

Representatives from the participating communities, Batchelor College and the NT Department of Education were invited to be part of the Project Reference Group. This group consisted of stakeholders in the Project and held a majority of Aboriginal representation. A two day Conference (23-24 August) was organised for the Project Reference Group to look at the materials developed to date, provide feedback and guide further development to the completion of the Project. The Project Reference Group was

adamant that the activities not be classified into particular mathematical strands but allow for skills development through the processes of *Working Mathematically*. The Project Reference group provided direction for materials development and reiterated the wishes of the Aboriginal teachers involved in developing the materials.

- As tasks be designed to develop children's problem solving skills. They (the problem solving activities) are therefore support materials for the 'Working Mathematically' strand in the NT Curriculum. The project group was very strong that tasks not be assigned to a content strand eg Number, Measurement, Space etc as this was seen as imposing a western construct.
- Instructions be in English and the Language of the community using the materials.
- Instructions be audio taped in Language for younger children and non readers.
- Regular meetings with the steering committee once trialing begins.
- Rationale revisited at every stage of development.
- Illustrations A3 size and computer generated graphics, a number of options were put forward.
- Tasks be easily modified to suit particular cultural contexts and be easily reproduced (photocopied).
- Real life, familiar moveable pieces to be used where possible, eg local preserved leaves.
- The video be short, eg 8-10 minutes, and modelled on the video 'Learning our way'.

MODEL FOR DEVELOPING COMMUNITY BASED CURRICULUM MATERIALS

A day in the bush with old people and storytellers

Recording knowledge and stories and collecting real life materials which support the stories.

Problematising the story - is it real life?

Use illustrations and concrete materials the children are familiar with to support the problem.

Translate the story into language make audiotapes for younger children who haven't learnt to read

The materials must be able to be used by the children independantly

Materials are transferable to suit different sites. For example bush foods must be from the local environment so children can draw on their own cultural knowledge to solve the problem.

TRIALING AND EVALUATION OF THE ASSMP MATERIALS

Once the graphics for the activities and story had been approved by the Aboriginal developers of the activity, the activities were then trialled in the classroom. As the activities were designed to be problems, teachers were encouraged to select activities appropriate to the level of their class and then let the children work independantly in small groups to solve the problem. Observations were recorded and modifications to the activities made where appropriate. For example the cross sectional ground proved confusing to the children, so too did the billabong scene when it was observed children

were putting the fish upside down. The illustrations were modified in consultation with the activity designers.

The activities were trialled at Yirrkala CEC, Angurugu CEC, Umbakumba School and Ngukurr CEC.

The above schools supported Classroom trialling and video footage was recorded of the some of the trials. At Yirrkala, teachers were invited to do the activities themselves first as they were not directly involved in the development of the activities. It was found adults engaged in the activities with enthusiasm and this has implications for Adult learners to develop problem solving skills in a context familiar to them.

Teachers trialling the activities were asked to fill in an evaluation sheet on how the activities worked in their classrooms, Appendix (i). Overall, the activities worked well with the children who were interested.

LITERATURE REVIEW

The intention of the Literature review was to find out what work in Aboriginal communities had been done on the use of problem solving to teach mathematics. The project intended to examine a constructivist approach to problem solving as a means of learning new mathematical concepts. A constructivist view to learning supports the integral component problem solving plays in developing mathematical ideas.

Workshop reports on the teaching of mathematics which acknowledges the threshold of Aboriginal cultural knowledge to explore different systems of using mathematical ideas to order and make sense of their world.

From this perspective projects where Communities were developing their own mathematics curricula were the Garma maths Program at Yirrkala (1992), Walpiri Triangle Mathematics Workshops (1985 and 1986) and Mathematics Curriculum - Lajamanu Community School (1986).

The Walpiri Triangle Mathematics Workshops and the Mathematics Curriculum - Lajamanu Community School were essentially using a bilingual approach to talk about the mathematical processes involved in the teaching and learning about number, decimals and application to decimal currency and measurement. The workshops used own language as well as English to talk about western mathematical concepts in a school context. The curriculum was of western content. Concrete materials (but of western origin, eg money, columns and markers) were used to model concepts.

The Garma maths project makes use of metaphors derived from Yolngu life to drive the Garma maths curriculum and recognises the

mathematical elements that exist in Aboriginal culture to teach concepts in western numeration and quantification.

Developing numerate behaviour through problem solving in a familiar context was one of the desired outcomes of the project. From that basis then more complex problems can be introduced that require the use of mathematics to solve the problem and enable the child to learn new mathematics.

PROJECT ASSESSMENT

The Project remained focused on outcomes due to the dedication of the Teacher Education students involved in developing the materials and committed members of the Project team who worked collaboratively to produce the final package within the given timeframe.

The materials demonstrate a constructivist approach to developing children's problem solving skills. The activities are site specific and draw upon children's cultural knowledge to solve problems and explore mathematical concepts within the context of the story. In order to develop problem solving curriculum materials the Teacher Education students explored their own practices in the teaching of mathematics.

Trialling and improving activities also contributed to the Teacher Education students' own professional development in the teaching and learning of mathematics. This included developing their own mathematical understandings and using teaching strategies such as familiar contexts, real life problems, group work, concrete materials and the child's preferred language.

The Aboriginal Site specific Maths Project has engaged Aboriginal teachers in the process of developing community based curriculum materials. The materials are being used in Aboriginal classrooms as contextually rich, problem solving, support materials (Appendix (ii) - New maths materials, 12 Nov 1997, Arafura Times)

FINDINGS AND IMPLICATIONS FOR TEACHING AND LEARNING

Children engaged with the activities (Appendix (i) - Evaluations). They adopted the following strategies to solve the problem:

- drawing on previous knowledge because the context was familiar to them
- moving the concrete materials around on the picture
- talk, discussing
- listening to each other
- draw a picture
- use clues in the picture
- looking at the picture
- asking questions

Many children could not read the problem themselves. This would support the use of audio tapes in own language or English with the activity

The view that mathematics is socially constructed is borne out in the way children engaged with the activities
Teachers identified a variety of maths concepts in the activities

REPORTS TO BATCHELOR COLLEGE ACADEMIC COMMITTEE

REPORT No 1 TO ACADEMIC COMMITTEE 1997 NATIONAL TEACHING GRANT ABORIGINAL SITE SPECIFIC MATHEMATICS PROJECT 26 February 1997

The Committee for University Teaching and Staff Development (CUTSD) have awarded a grant of \$33 000 to Batchelor College to proceed with the Aboriginal Site Specific Mathematics Materials Development Project in 1997. Lecturers Robyn Hurley, Curriculum and Research Unit and Warren Hastings, Teacher Education and additional team members are part of the project team.

Background

Last year *maths task centres* were used to assist Batchelor College Teacher Education students in designing tasks for teaching mathematical concepts cross culturally. Students from Umbakumba, Angurugu, Ngukurr and Numbulwar were involved in developing maths tasks appropriate to their own communities. As a result, Batchelor College Lecturers, Warren Hastings and Robyn Hurley submitted a proposal to CUTSD in 1996 for funding to assist participating students continue to develop their own cross cultural mathematical tasks.

Summary of the Project

The project aims to enable Aboriginal Teacher Education students from Batchelor College to develop site (community based) specific problem solving, task centred activities based on the *Working Mathematically* strand in Mathematics - a curriculum profile for Australian schools (Curriculum Corporation, 1994). These curriculum materials will be supported in their development, delivery and evaluation through electronic classroom networking.

The following communities have been selected as possible sites to be engaged in the project - Angurugu, Ngukurr, Numbulwar and Umbakumba because Batchelor College Teacher Education students are already based there and their studies are supported by the electronic classroom network.

It is expected the project will assist these students in developing their own mathematical understandings and problem solving skills through the development of site specific materials and produce a model for community based curriculum development and improve the quality of student's teaching and learning.

This project will produce four teaching/learning packages as each participating community develops their own site specific materials and a transportable package which will serve as a model for community based curriculum development in mathematics.

Getting Started

- A preliminary meeting was held with Ron Stanton, Warren Hastings and Robyn Hurley to review the Description of the Project and in particular, project outcomes and assessment. The project is consistent with students' studies in the Curriculum studies and Professional studies strands of the Teacher Ed Curriculum document.
- CUTSD stipulates that a Project Reference Group is initiated by the applicants. The role of the Project Reference Group is to provide advice and evaluative feedback during the development and implementation of the project. A letter has been drafted to invite participants on the Project Reference Group. The Project Reference Group represents a cross section of communities involved in the Project.
- In keeping with Batchelor College's Research Policy Ethics Statement 'a designated Aboriginal body/organisation needs to be formalised through the identification of an existing Aboriginal and Torres Strait Islander organisation as the Aboriginal and Torres Strait Islander community's designated consultative Aboriginal and Torres Strait Islander organisation to the research project. These designated organisations will function as advisory and mentor groups to College research teams involved in Aboriginal and Torres Strait Islander research'
Yirrkala School Council was suggested and will be approached.
- Also, in accordance with a decision made by the Academic Committee last year an internal steering committee needs to be established.

Reporting Back on the Project

CUTSD expects a full report on the project by 30 June 1998 and a showcase presentation of completed projects the following month at their national workshop.

Robyn Hurley

REPORT No 2 TO ACADEMIC COMMITTEE
1997 NATIONAL TEACHING GRANT
ABORIGINAL SITE SPECIFIC MATHEMATICS PROJECT
8 April 1997

Since the last report to Academic Committee 26 February, a letter of invitation has been sent inviting participants from the four communities involved in the project, Yirrkala , CASU officers and the Batchelor College representatives (Appendix 1). Copies of the letter with a covering note have been sent to Regional Superintendents and participating school principals.

Letters have also been sent to Umbakumba and Angurugu Councils informing them about the project.

Meeting Project Outcomes

The project outcomes relating to development of cross-cultural mathematical tasks are consistent with Stage 3 & 4 Teacher Education curriculum studies and professional practice strands outcomes.

In keeping with this focus, Robyn Hurley assisted Warren Hastings in the first maths workshop, 10-14 March, at Groote Eylandt, with students from Umbakumba and Angurugu. A visit was also made to Bickerton Island to assist another student Stage 4 willing to participate in the project.

A model was developed whereby students were given the opportunity to begin developing their own tasks and decide where the task would fit in terms of the profiles' levels and strands. The idea is that the problem solving tasks developed by the students will be incorporated as support materials to teach mathematical concepts into the existing curriculum.

Students are encouraged to develop and trial their tasks in the classroom. This fits with the assessment requirements for the curriculum studies and professional practice strands in the BC Teacher Education course.

A second workshop held in Batchelor 17-21 March consolidated this practice and further engaged students in developing their own tasks.

As a result of talking to the students about implementing the profiles, workshop guest speaker, Shanta Jacobs (NTDE), has expressed interest that the tasks be included as indicators of achievement from a cross-cultural perspective to be added to the present examples in the Northern Territory Outcomes Profiles.

Task Development 2 day Workshop

It is anticipated that an intensive information collecting and writing workshop will take place over a weekend, mid May, with students and community consultants from the participating communities. This workshop will be held on Groote Eylandt.

Acquittal of funds

Regular meetings are being maintained with Martin Heskins with regard to acquittal of funds as set out in the project's budget.

Conclusion

The project is starting to take form in terms of student and community involvement. Students involved in the project are already developing tasks informed by their own cultural knowledge and trailing their tasks in workshops and in the classroom. Students are engaging in the process of developing tasks but a more focused approach needs to be developed. This is the intended outcome of the intensive 2 day workshop to be held on Groote Eylandt. The challenge is to identify the maths concepts within their own cultural contexts and develop rich mathematical experiences at multiple levels.

Robyn Hurley

REPORT No 3 TO ACADEMIC COMMITTEE
1997 NATIONAL TEACHING GRANT
ABORIGINAL SITE SPECIFIC MATHEMATICS PROJECT
2 June 1997

Introduction

A weekend workshop was held on Groote Eylandt, 17-18 May, to begin developing problem solving maths tasks. Developing culturally relevant maths tasks which in which real life activities were problematised was the intended purpose of the 2 day workshop. The tasks to be developed are to be used as culturally appropriate support problem solving materials which can be incorporated into the existing school curriculum. Participants included Elders, Storytellers, Linguists, Batchelor College Teacher Education graduates and students. The workshop was organised by the Project co ordinators, Warren Hastings and Robyn Hurley.

Preliminary workshops prepared and informed participants of the purpose of the workshop which was crucial to intended outcomes of the Project.

Discussion with participants on earlier occasions had developed the structure of the workshop. The first day was to be spent listening to stories about the environment, recording of information and gathering of real-life concrete materials to be used the tasks and assist in problem solving.

The second day was to be spent developing problems out of the stories and information gathered the previous day.

It was important to keep focused on what we want the children to do given a reallife situation. Identifying the problem proved to be difficult to go beyond just giving the kids an activity to do.

Why Problem Solve as a means to learning new mathematics?

The ideas driving the development of tasks is that problems be generated from real life situations which reflect familiar surroundings and knowledge

Writing Workshop

Following a meeting with participants on Friday night it was decided to work in two groups: Saltwater and Freshwater

Meeting Project Outcomes

The project outcomes relating to development of cross-cultural mathematical tasks are consistent with Stage 3 & 4 Teacher Education curriculum studies and professional practice strands outcomes.

In keeping with this focus, Robyn Hurley assisted Warren Hastings in the first maths workshop, 10-14 March, at Groote Eylandt, with students from Umbakumba and Angurugu. A visit was also made to Bickerton Island to assist another student Stage 4 willing to participate in the project.

A model was developed whereby students were given the opportunity to begin developing their own tasks and decide where the task would fit in terms of the profiles' levels and strands. The idea is that the problem solving tasks developed by the students will be

incorporated as support materials to teach mathematical concepts into the existing curriculum.

Students are encouraged to develop and trial their tasks in the classroom. This fits with the assessment requirements for the curriculum studies and professional practice strands in the BC Teacher Education course.

A second workshop held in Batchelor 17-21 March consolidated this practice and further engaged students in developing their own tasks.

As a result of talking to the students about implementing the profiles, workshop guest speaker, Shanta Jacobs (NTDE), has expressed interest that the tasks be included as indicators of achievement from a cross-cultural perspective to be added to the present examples in the Northern Territory Outcomes Profiles.

Task Development 2 day Workshop

It is anticipated that an intensive information collecting and writing workshop will take place over a weekend, mid May, with students and community consultants from the participating communities. This workshop will be held on Groote Eylandt.

Acquittal of funds

Regular meetings are being maintained with Martin Heskins with regard to acquittal of funds as set out in the project's budget.

Conclusion

The project is starting to take form in terms of student and community involvement. Students involved in the project are already developing tasks informed by their own cultural knowledge and trailing their tasks in workshops and in the classroom. Students are engaging in the process of developing tasks but a more focused approach needs to be developed. This is the intended outcome of the intensive 2 day workshop to be held on Groote Eylandt. The challenge is to identify the maths concepts within their own cultural contexts and develop rich mathematical experiences at multiple levels.

Robyn Hurley

REPORT No 4 TO ACADEMIC COMMITTEE
1997 NATIONAL TEACHING GRANT
ABORIGINAL SITE SPECIFIC MATHEMATICS PROJECT
15 August 1997

Introduction

A follow up workshop to the major Groote Eylandt workshop was held at Ngukurr in week 11, Term 2. The workshop was facilitated by Warren Hastings, Robyn Hurley and community based Lecturer Carmel O'Shannessy. The purpose of this workshop was to consolidate ideas about writing the problem solving tasks and examine the rationale behind the project. Participants in the project continued to work on their drafts to a stage where the layout and design process could begin. Donna Williams in CARU is working on appropriate layouts for the tasks. Concrete materials are being preserved in perspex to support the tasks.

Project Reference Group Meeting

The Project Reference Group is meeting on 23 August and represent a cross section of the communities involved in the project, including students, community representatives, educators and experts. The purpose of the meeting is to discuss the progress of the project, invite feedback and showcase some of the materials that have been developed by participants in the project. Video clips of the major workshop will be available for viewing.

Members attending the meeting in Darwin are listed below:

Gurruwuy Yunupingu
Kathy McMahon
Stella Yantarnga
Colleen Mamarika
John Joshua
Robin Rodgers
Godfrey Blitner
Paul Bubb
Lyn Devow
Gai Wright
Pat Cummins
Robyn Hurley
Warren Hastings

Acquittal of funds

Regular communication is maintained with Martin Heskins in finance to ensure acquittals adhere with the proposed budget.

Project Outcomes

The following outcomes are being achieved through workshops and curriculum and professional studies strands in

Conclusion

The project is progressing steadily and consistent with project outcomes as detailed in the original proposal. Donna Williams (CARU) is working on the layout of selected written tasks. Doris Hastings is preserving and naming plants used with the problem solving tasks. Tasks will be trailed in workshops and in the classroom term 3 and 4. Video footage showing trailing of the materials is needed before editing can commence.

Robyn Hurley
11 August '97

1997 NATIONAL TEACHING GRANT
ABORIGINAL SITE SPECIFIC MATHEMATICS PROJECT
REPORT No 5 TO ACADEMIC COMMITTEE
6 November 1997

Introduction

Trialing of tasks has begun. Recommendations made by the Project Reference Group at the meeting on 23 August included:

- As tasks are being designed to develop children's problem solving skills they are therefore support materials for the 'Working Mathematically' strand in the NT Curriculum. The project group was very strong that tasks not be assigned to a content strand eg Number, Measurement etc as this was seen as imposing a western construct.
- Instructions be in English and the Language of the community using the materials.
- Instructions be audio taped in Language for younger children and non readers.
- Regular meetings with the steering committee once trialing begins.
- Rationale revisited at every stage of development.
- Illustrations A3 size and computer generated graphics, a number of options were put forward.
- Tasks be easily modified to suit particular cultural contexts and be easily reproduced (photocopied).
- Real life, familiar moveable pieces to be used where possible, eg local preserved leaves.
- Video be short, eg 8-10 minutes and modelled on the video 'Learning our way'.

Trialing at Ngukurr - Week 10, Term 2

Warren Hastings worked with Donna Williams (graphic designer) on translating the stories and improving the illustrations so they were representative of the story. This was achieved by working with writers of the problem. Robyn Hurley worked with participating teachers trailing activities in the classroom. Four tasks were trailed and an evaluation sheet was completed by trialing teachers. This further informed development/improvement of the tasks.

Trialing at Yirkala and Groote Eylandt - Week 4, Term 3

Warren Hastings and Robyn Hurley met with members of the steering committee at Yirkala and trialed 9 different activities with the teachers. A presentation of the development and rationale of the project preceded the trialing session. As a result of further discussions with Technology literate staff at the Yirkala Literacy Production Centre and how best we distribute the materials it was decided to:

- establish a web site for the project. Peter Blundell NTDE will be at Yirrkala in Week 8 and is willing to set up a web site for the project. Warren and Donna will work with Peter at Yirrkala Literacy Production Centre.
- produce a CD of the materials which can be distributed to schools. This overcomes the problem and expense of reproduction of hard copies of the materials. A major advantage of distributing CD's to schools is that teachers can download selected tasks and make immediate changes to them in terms of making the tasks more relevant.

CD distribution and establishing a web site are in keeping with the outcomes of the project in terms of dissemination of information, through electronic media.

Immediately following the trialing of the materials at Yirrkala, 3 days were spent on Groote Eylandt trialing the materials with teachers at Anurugu and Umbakumba. These trials were recorded on video to facilitate the final video production.

Conclusion

The project coordinators are working closely with Donna to complete the illustrations, translations and defining the problem for about 15 tasks. The tasks selected for final production clearly articulate a problem imbedded in the cultural story. The remaining contributions by participants will be presented in a Big Book.

The model for developing the tasks and recommendations and models of best practice when using the tasks in the classroom will be distributed to teachers from participating schools in the final package. Participating communities will also receive a CD and a complete hard copy set of materials. Other communities interested in the tasks will have the option of downloading materials from the Web site or accessing/purchasing the CD for the complete set of tasks.

The web site will enable teachers to continue communicating their ideas about the tasks developed through this Project and initiate their own culturally appropriate tasks based on the model established by the Project.

Robyn Hurley
6 November '97