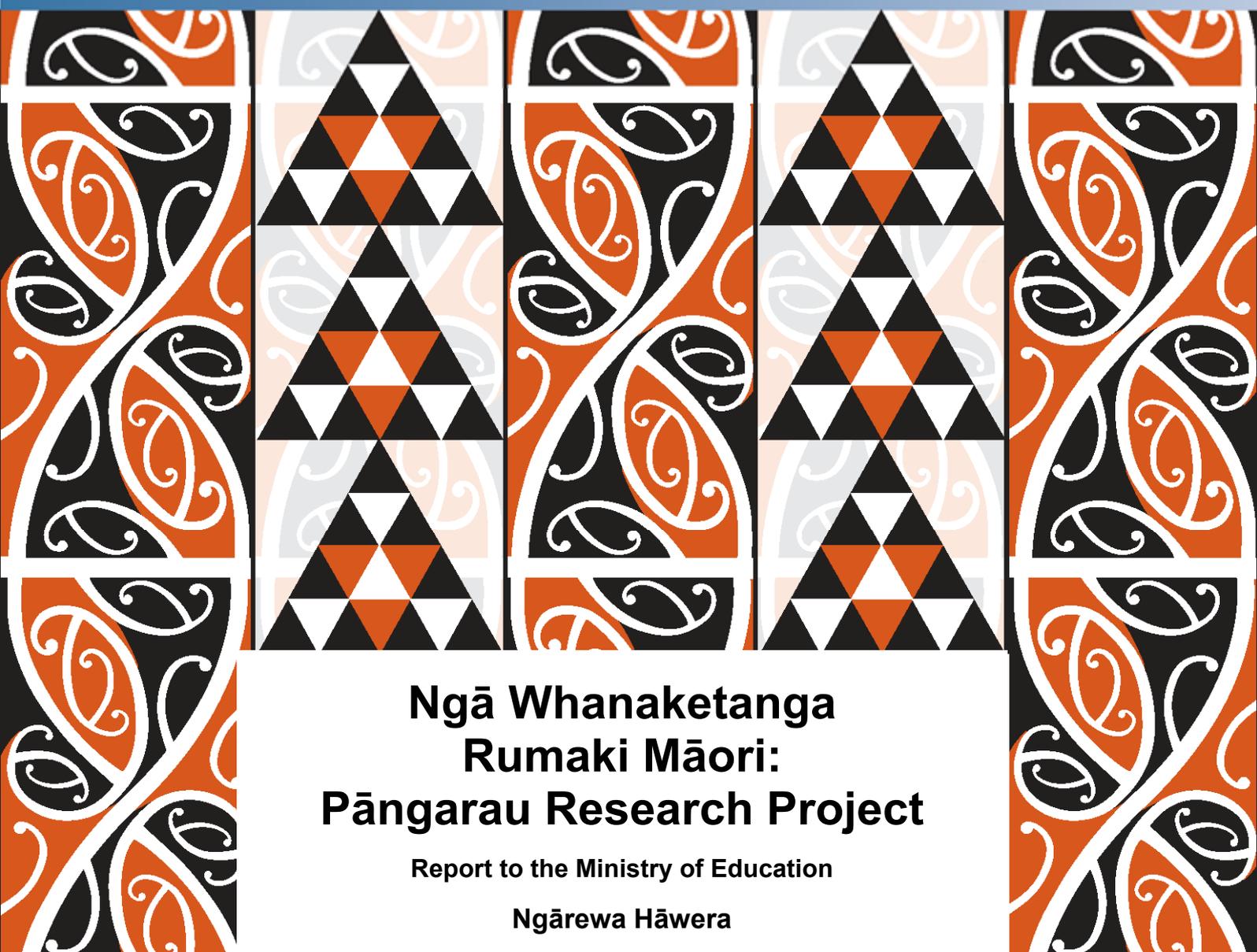




TE TĀHUHU O TE MĀTAURANGA AOTEAROA

Ministry of Education New Zealand



**Ngā Whanaketanga
Rumaki Māori:
Pāngarau Research Project**

Report to the Ministry of Education

Ngārewa Hāwera

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He Whakamārama

The kōwhaiwhai design on the cover is featured in Te Wāhanga, a meeting room in the Ministry of Education's Head Office dedicated to te ao Māori. The kōwhaiwhai symbolises the journey from one generation to the other. The continuous line indicates the passage of time. The pattern in red depicts the generations of today and the black represents those who have passed on. The triangle is a symbol regularly used in tukutuku, raranga and tāniko designs to depict strength and determination. The cover, then, is symbolic of the challenge that education has offered and continues to offer those who have passed on and those of today.

Ngā Whanaketanga Rumaki Māori: Pāngarau Research Project

Final Report

Report Commissioned by:
Ministry of Education

Ngārewa Hāwera

The University of Waikato
Private Bag 3105
Hamilton 3240, New Zealand
www.waikato.ac.nz

**Wilf Malcolm Institute of
Educational Research (WMIER)
School of Education**

Telephone: (07) 858 5171
Fax: (07) 838 4712
Email wmier@waikato.ac.nz



THE UNIVERSITY OF
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Te Whare Wānanga o Waikato

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Ngā Whanaketanga Rumaki Māori: Pāngarau Research Project

“He manga wai koia kia kore e whitikia?”¹

Introduction

Twenty-five Māori medium schools were given the opportunity to work with the Draft Ngā Whanaketanga Rumaki Māori (NWRM) Pāngarau in 2010. Three of these schools were selected in consultation with the National Coordinator of facilitators as case studies to inform the Ministry of Education of the support required for professional development, curriculum and teaching materials needed to implement NWRM Pāngarau in other Māori medium schools in 2011.

Criteria for the selection of these schools were that the schools:

- are working with the draft Ngā Whanaketanga Pāngarau
- have an existing relationship with a NWRM Pāngarau facilitator
- provide a mix of regions, decile rating and geographical settings (urban/rural).

This report provides findings from the tumuaki and three teachers in each of these schools regarding the professional development that has been available to them this year.

¹ Nothing ventured, nothing gained.

Literature

There are a number of factors that have been identified by teachers in Māori medium that contribute to effective professional development for teachers in those contexts. These include teachers:

- having professional development at the time it is needed
- having professional development to meet their needs
- having time and space away from the pressures of the classroom
- working school-wide with the relevant material and resources
- having continuity with same facilitator receiving support for in-school situations, eg, observations, workshops on site

(Murphy, Bright, McKinley & Collins, 2009).

Building teacher capacity by using the in-school facilitation model where the facilitator is a member of the school teaching staff or community is central to successful professional development for teachers working with Māori children (Hindle, Marshall, Higgins & McClutcheon-Tait, 2007).

A major factor regarding professional development for teachers in Māori medium involves creating an environment where teachers are able to speak openly about their needs in mathematics without fear of ridicule (Rogers, 2003).

Case study kura

The case study kura for the information gathering process here ranged from Decile 1–5 and have rolls of less than 100. Two schools are urban based located in two of New Zealand’s major cities while the third kura is rural based. They are all Kura Kaupapa Māori providing Level 1 immersion programmes to their children and were involved in Te Poutama Tau. Providers would need to consider the starting point of teachers in other settings.

Table 1: Case Study Kura

Kura	Decile	Roll	Children	Staff interviewed
A	5	85	Years 0-8	4
B	3	76	Years 0-13	4
C	1	51	Years 0-10	4

Tumuaki were initially contacted to establish interest and availability of their school participating in this information gathering process. They were also asked to nominate 2-4 of their teachers for this purpose. Information and consent forms regarding participation of staff at each kura were sent out for formal agreement and dates confirmed for interviews in July and August. One day was designated to be spent in each kura for the data gathering interviews. Teachers were invited to bring any documents they wished to the interview to clarify their points. No children’s work would be needed at the interviews.

A total of three teachers as well as the tumuaki from each kura were interviewed individually. Interviews of approximately 45-60 minutes were conducted in te reo Māori or English (teacher choice) in a quiet place away from the classroom.

Interviews comprised a range of questions in 4 sections:

- Background experience in teaching.
- The implementation process of NWRM Pāngarau and their experiences with it.
- Resources to support NWRM Pāngarau implementation.
- Reporting to whānau and whānau feedback.

For this report emerging themes from the data from the three kura have been identified about the implementation of NWRM Pāngarau, factors that support and hinder the implementation, professional development undertaken and feedback from whānau thus far.

Key research questions for this report

What ‘models’ are being used by Māori medium schools to implement NWRM Pāngarau?

Main findings

The preferred model of implementation of NWRM Pāngarau in these three kura involves having regular hui on site where all teachers in kura are participants. In the case study kura teachers were released from their classroom responsibilities for some professional development hui with their facilitator. On other occasions where facilitator modelling with small groups of children and teacher observation by the facilitator was the focus, other staff members including kaiāwhina, were required to support in classrooms while teachers worked with the facilitator. Where time allowed, tumuaki participated in professional development hui or made themselves available as relievers so that teachers were free to participate. Hui ranged from half-day sessions three times a term in one kura through to weekly hui in the other.

Where teachers from other kura in their region were using the whanaketanga, cluster hui (2–3 times each term) were organised by the facilitator for teachers from all kura. These were facilitated by the local facilitator and sometimes included other experts in pāngarau.

Professional development at case study kura and cluster hui included opportunities for teachers to:

- clarify the meaning and appropriateness of particular whanaketanga
- focus on links between *Te Marautanga o Aotearoa* and NWRM Pāngarau
- clarify the pāngarau ideas involved (especially in folder material produced by He Kupenga Hao i te Reo)
- discuss tasks presented to children for assessment and teaching purposes
- discuss pedagogical approaches
- discuss and use kupu hou
- moderate children’s responses (and possible responses) to task
- discuss teacher concerns such as the impact of the variation in the level of reo Māori between children on their pāngarau learning and how this might affect the assessment level of the child regarding NWRM Pāngarau
- ways of recording information about children’s work.

Teachers from all kura had previously participated in intensive professional development with Te Poutama Tau and were therefore very familiar with key ideas in Tau (Number). They were informed that new material for other strands would soon be available to them. This material would have a focus first on Ine (Measurement). Hence these kura decide to explore initially the whanaketanga for this particular area. One strand became the focus for the term. Teachers’ classroom planning for pāngarau concentrated on ways to help children meet the particular ideas outlined in selected whanaketanga. This planning was integrated within the Long Term plan in each kura. Teacher guidelines in He Kupenga Hao i te Reo material helped teachers to understand how NWRM Pāngarau supported ideas in *Te Marautanga o Aotearoa*.

At two kura the facilitator was from outside the kura while the facilitator in the third kura was a member of the teaching staff there. The teacher- facilitator had been a member of the National Poutama Tau facilitator team for two years and had later been included in all training opportunities with facilitators for implementing NWRM Pāngarau into schools. Case study kura had long established relationships with their NWRM Pāngarau facilitator who had been an integral part of their teachers' professional development programme for Te Poutama Tau. As well as facilitating teacher learning about key points mentioned above regarding NWRM Pāngarau, these facilitators also supported teachers by modelling the use of suggested assessment and teaching tasks in their classrooms. This practice was interspersed with facilitator observation of teachers working with their children.

The model of implementation used in these kura was highly regarded by the teachers in this study and is consistent with ideas expressed by Murphy et al. (2009) and Rogers, (2003). Teachers were less supportive of a model where professional development hui were held where only one or two of them participated and were then expected to return to their kura to share the new ideas with the rest of their staff. This was part of the implementation process for Kura C.

Evaluative comments

It would seem that the perceived complexity by teachers of the ideas within NWRM Pāngarau, and learning to implement such ideas effectively, indicate that much support is required for all teachers involved in this process. Not only did these teachers need support with understanding the kupu and key ideas in the whanaketanga and their progression, they were keen to gain more understanding about the pāngarau ideas involved, analysing children's work, ways of improving their pedagogy and different methods of assessment to improve their teacher judgements.

Implementing NWRM Pāngarau as a whole school also made sense to teachers in these kura because of their size. Like many other kura, or units within mainstream schools, these case study kura are relatively small; that is, they have less than 100 children. Their size and nature mean that whole school planning is common practice and anything that may affect that will impact on all in the kura.

Implementation focused on a particular strand at first, eg., te Ine me te Āhuahanga. After a major focus on Tau (Number) in recent years with Te Poutama Tau, these teachers were keen to develop more of their teaching and learning in other strands in pāngarau. NWRM Pāngarau encouraged and supported this, which appears to be a positive outcome of teacher involvement with the whanaketanga.

NWRM Pāngarau has had a major effect on teacher planning and hence, the pāngarau ideas being taught in these classrooms. Many of these teachers appreciate that the support material from He Kupenga Hao i te Reo has endeavoured to make explicit to them the links between *Te Marautanga o Aotearoa* and NWRM Pāngarau. Some teachers may need to be reminded of these links so that *Te Marautanga o Aotearoa* remains at the forefront of all planning.

The focus on a key part of one strand each term may also be supporting teachers to consolidate the complexity of ideas related to the pāngarau, their pedagogy, assessment and the whanaketanga.

The inclusion of cluster hui in their professional development programme for NWRM Pāngarau provided opportunities for teachers to participate in discussions with other professionals in similar contexts. This appeared to suggest a greater richness in discussion for some teachers.

A major feature of this model of implementation appears to be the relationship between the kura teachers and their facilitator. The mutual and professional trust and respect developed between the two parties over a length of time cannot be underestimated if NWRM Pāngarau is going to be effective in these settings.

What factors support the implementation of NWRM Pāngarau in the selected schools; and why?

Main findings

There were a number of factors that teachers and tumuaki at each kura expressed as supporting their implementation of NWRM Pāngarau. These include:

- **making pāngarau a priority in the kura**
 Each school had undergone intensive professional development with Te Poutama Tau and perceived themselves and their children having some success there. They considered that involvement with NWRM Pāngarau might further enhance their teaching and therefore children's learning in pāngarau. This aligns with the high expectations they have of their children's achievement in pāngarau.
- **tumuaki support**
 Tumuaki in each kura promoted the school's participation in this information gathering exercise with their Board of Trustees and whānau. They then allocated financial reserves for relievers, professional development hui, resources, catering and travel. When possible each tumuaki participated in the professional development opportunities with their staff or acted as relievers so that staff were able to participate in those learning opportunities.
- **whole staff participation in professional development with NWRM Pāngarau**
 This aligned with the case study kura philosophy and practice of whole school planning and encouraged opportunities generally for much informal discussion amongst teachers.
- **having time to focus on the whanaketanga material**
 Having time away from the responsibilities of the classroom meant that teachers were able to focus attention on the content of the whanaketanga and the support material.
- **relationships with the kura facilitator**
 This was an important factor for the teachers in the case study kura. Each teacher and tumuaki in the three kura expressed the importance to them of working with a facilitator with whom they had already established a long-standing high quality professional and personal relationship. They had worked with this person in their Poutama Tau development programme and knew them in a personal context as well.
- **He Kupenga Hao i te Reo support material**
 Every teacher in the three schools expressed how helpful the material produced by He Kupenga Hao i te Reo had been in not only helping them to understand the content of the whanaketanga but also for suggesting ways in which those pāngarau and associated ideas might be taught:

Gives eg, of how to teach as well. Have to adapt it. It's enhanced my teaching especially in the strands. I've enjoyed teaching Hanga. It's given me lots of ideas for my teaching plus contexts for teaching ideas, reasons for kupu ...
- **teacher experience**
 Teacher experience ranging from 8-20 years appears to be a factor when considering the professional development with these case study kura. Teachers had spent most of their time in Māori medium contexts and were therefore quite experienced there. There was however a notable degree of difference between Kura A and the others in the length of experience of those teachers, which seemed to be an advantage for them.

Table 2: Accumulated teaching experience in case study kura of classroom teachers

Kura	Accumulated years of teachers' teaching	Accumulated years of teachers' teaching in Māori medium	Classroom teachers interviewed
A	54	52	3
B	35	31	3
C	32	29	3

- **other supportive personnel**

Two case study kura made specific mention of other teaching personnel who provided support for their work with NWRM Pāngarau. These were their local Resource Teachers of Māori, advisers and kaiāwhina in their classrooms.

Evaluative comments

These case study kura clearly hold important the learning of pāngarau for their staff and their children. They are keen to participate in any development that may improve learning for themselves and their children. To this end Boards of Trustees and whānau are keen to support them.

For teachers in Māori medium it is important for them to have opportunities away from the responsibilities of their classroom for professional development (Murphy et al., 2009). This appears to be the case for these teachers learning about and implementing the whanaketanga. With the focus of their professional development on Tau (Number) in recent years, teachers in these case study kura appear to need support in clarifying the other pāngarau content and kupu hou so that they are able to make links to those in the whanaketanga and then consider implications for their classroom practice. Material produced by He Kupenga Hao i te Reo seems especially crucial for this to happen.

When working with Māori in education, relationships are important (MacFarlane, 2004). “Knowing” each other and the relevant backgrounds in and out of the classroom context is part of the establishment of such a relationship. Past experiences with their facilitator meant that these teachers began their whanaketanga professional development with a positive view. Ways of communicating and working together had already been established which was conducive to beginning effective implementation of the NWRM Pāngarau. A high expectation of facilitators was also common amongst the case study kura.

We knew X was going to do the whanaketanga so we knew it would be good.

It did appear that where kura had a high accumulation of teaching experience in Māori medium classrooms (Kura A=52 years) they required less contact time with their facilitator regarding NWRM Pāngarau than those kura with teachers of less experience. This may be due to teacher confidence with their own mathematics content knowledge and their pedagogical practice in Māori medium. It should be noted too that Teacher H at Kura A had been a Poutama Tau facilitator for two years before returning to the classroom in 2009. The length of teaching experience in Māori medium may well be an important factor when considering the professional development of teachers in those settings.

The support from other personnel in education eg, Resource Teachers of Māori, advisers and kaiāwhina, may be another factor for consideration in the professional development for NWRM Pāngarau. Future professional development may be inclusive of such services for Māori medium.

What factors hinder the implementation of NWRM Pāngarau in the selected schools; and why?

Main findings

There were a number of factors that teachers and tumuaki at these kura expressed as hindering their implementation of NWRM Pāngarau. These include:

- **late notice of participation**

There was a concern amongst all kura about the late notice and approval given to them from the Ministry of Education regarding their participation in the information gathering process. Despite hui in late 2009 about this process, it was not until after the school year had started in 2010 that kura were notified that they would be involved.

- **costs**

The costs ranged from \$3,200 to \$8,000 depending on how the implementation of NWRM Pāngarau was structured.

- **the arrival of support material**

Support material for professional development took some weeks to arrive at kura after notification of participation.

- **the lack of suitable relievers**

This proved to be an issue for kura based in rural areas especially and was prohibitive in all teachers from that school attending all professional development hui.

- **level of complexity required to meet a whanaketanga**

At times the degree of complexity needing to be demonstrated by a child with regard to a standard, was an issue. For example,

... for hangarite hurihanga, it appears that a child needs to understand not only the concept of rotational symmetry and the centre of rotation, but also the amount of the rotation in degrees and the direction of the rotation.

What level of complexity does a child need to demonstrate to indicate that he/she has met the whanaketanga?

- **time**

Many tasks in the NWRM require one-on-one work with the teacher, especially in the Junior area. There is a concern as to how this might occur with 30 children in a classroom and how this might impact on teaching time. Some teachers have constructed their own task or worksheet for children to do or use and kept these as “evidence”.

Evaluative comments

Tumuaki in these kura are anxious to organise their school budget for the following year, well before their school year ends. Any professional development for staff will have an impact on their budget. Kura therefore would appreciate early any information not only of the nature of the professional development that their teachers will be undertaking, but also the impact of that professional development on the budget that is being allocated to their staff for that year.

It would appear that the prompt arrival of support material is crucial for beginning effective professional development for teachers in these kura. It would be helpful for teachers to receive this well before it was needed because of the complex nature of the whanaketanga and its implementation.

Time to consider not only the content of the whanaketanga but also the pragmatics of actually assessing against them with a class of 30 children is an issue for some teachers. The time taken for such assessment needs careful consideration so that teachers are not compromising valuable teaching and learning time with their children. Teachers may need support to alter the tasks for assessment or construct others to use.

What professional development and resources are needed to support the implementation of NWRM Pāngarau?

Main findings

Information from teachers in these case study kura is suggesting a number of points regarding the professional development and resources required for teachers learning about NWRM Pāngarau. These include:

- **regular hui with highly skilled facilitators with whom they already have a professional and personal relationship**

These hui need to focus on helping teachers to think critically about:

- a. the meaning and appropriateness of particular whanaketanga
- b. the pāngarau content ideas involved (especially in folder material produced by He Kupenga Hao i te Reo)
- c. tasks presented to children for assessment and teaching purposes
- d. their pedagogical approaches
- e. the meaning and use of kupu hou
- f. their judgements regarding the analysis of children's responses (and possible responses) to tasks and how this might impact on children's future learning experiences
- g. ways of recording information about children's work
- h. how kura might report to parents about their children's achievement with regard to NWRM Pāngarau.

- **regular hui involving opportunities to work with teachers in their own kura as well as those at other kura**

- **hui involving modelling and observation by the facilitator similar to that, which occurred with the Poutama Tau professional development model**

These teachers consider these practices essential. Professional development for kaiāwhina who are regularly supporting children learning in classrooms was also mooted by one kura.

- **ways of helping teachers to learn, use and understand kupu hou as well as effective pedagogical approaches to help children to adopt and use them**
- **a variety of other material being available as support for implementing NWRM Pāngarau**

These should include:

- a. folder material produced by He Kupenga Hao i te Reo
- b. the Beginning School Mathematics programme (BSM)
- c. He Pūtahi
- d. He Tau Anō te Tau
- e. Nzmaths website
- f. Te Matihiko
- g. No Nonsense books

- h. physical material such as attribute blocks.
- **other suggestions for possible resources such as:**
 - a. a DVD made to support the learning of NWRM Pāngarau
 - b. engaging the support of advisers and Resource Teachers of Māori
 - c. extending professional development opportunities to other personnel in the kura who have regular contact with children in classrooms eg, Kaiāwhina, relievers
 - d. software for putting data onto graphs. Like cumulative records
 - e. developing maths coaches in kura
 - f. blackline masters for tasks
 - g. more material for independent use
 - h. the development of ways to record assessments.

Evaluative comments

On the whole teachers consider the quality of the professional development they are involved in to be high. They expressed the need for time to study, learn about and analyse the whanaketanga. They understand that with their previous focus on tau (number) they need to have a greater focus now on other pāngarau ideas in the curriculum and are keen to do so.

They are concerned about the amount of kupu hou that they are being exposed to all at once and are working hard to learn and use them appropriately so that children will too.

They see that a whole school approach and regular contact with their facilitator are important factors in implementing NWRM Pāngarau effectively.

How would whānau like NWRM Pāngarau information provided to or shared with them? ²

Main findings

These kura already report at least 2–3 times a year to parents through parent interviews and written reports. All consider that there is a need to report to whānau according to NWRM Pāngarau. These case study kura are still considering ways of adapting their present report forms or constructing new forms to do so.

Feedback from one kura indicates that most whānau members are positive about the change in format that Kura B has made to their written report form regarding the incorporation of NWRM Pāngarau information. This came after reports had been received by whānau who then attended parent teacher interviews to discuss their child's progress. After some explanation whānau members liked:

- that each strand was clearly identified on the form
- that they could see where their child was located in terms of their pāngarau learning
- the fact that the information about their child was clearly linked to national progressions
- having as much information about their child as possible.

Another kura has had feedback from some parents indicating more of an interest in other areas associated with learning mathematics rather than the whanaketanga. Although these whānau members have attended workshops about the whanaketanga, they are more concerned with their children's learning of mathematics being linked to values and occurring within a range of contexts such as noho marae.

Evaluative comments

It seems that these case study kura consider it important for them to report clearly to whānau their children's progress according to the whanaketanga and are taking steps to review and change the format of their written reports to do so before the end of this year. One of these kura has used their parent interview time to explain and clarify with parents key ideas in adapted written reports so that parents are able to understand where their child is located in terms of the national progressions. Adapting reports to clarify children's learning in pāngarau against the whanaketanga and gaining feedback from parents will take time.

² **Note:** to the extent possible this information will be based on information provided by Tumuaki and teachers.

In what ways is/has the implementation of NWRM Pāngarau influenced teacher practice including teacher assessment practices, teacher judgments and teacher use and confidence?

Teachers are developing their use of a variety of assessment tasks to consider whether or not children are meeting the whanaketanga. There appears to be an emphasis initially on using and modifying tasks from the material provided by He Kupenga Hao i te Reo. In one kura,

Some of us have broken down tasks to be more specific in terms of learning outcomes as there can be several in one task.

From there teachers are developing their own tasks with support from facilitators and reflecting on these after trialling them. A range of assessment tools are being ‘tweaked’ and used eg, asTTle, Te Poutama Tau Uiui, while tasks from resources such as nzmaths.co.nz, He Tau Anō te Tau, NEMP and IKAN are also being adapted for assessment purposes.

The impact on pāngarau learning that the level of reo Māori a child might have is an issue that these teachers are continuing to grapple with in their practice and in the judgements that teachers are making about children’s learning in pāngarau.

There is much discussion between teachers at professional development hui and informally at school, to develop their overall teacher judgements. There is concern for some teachers about the consistency of these judgements and the impact of such decisions on future pāngarau experiences for children who may not meet the standard.

The professional development experiences this year and their attempt to implement the whanaketanga are helping teachers to feel more confident in their use of *Te Marautanga o Aotearoa*, the whanaketanga and teaching pāngarau. The whanaketanga support material offers teachers’ ideas and tasks that they are finding useful for their planning and teaching of key pāngarau ideas in *Te Marautanga o Aotearoa* and NWRM Pāngarau. Teachers in all schools indicated that they found the teacher guidelines useful:

... everything has the marau pāngarau running right through it and how it is connected to the whanaketanga, Kaupae Poutama Tau etc ... (He Kupenga Hao i te Reo) has also put the mātauranga tau bit into the other whenu so we know what knowledge the kids may want to know when doing the other whenu.

In terms of professional development: What professional support has been provided to teachers in this collecting information phase?

- **How well has it been implemented and to what extent has it been effective?**

Overall, these kura consider that the professional development offered to them this year has been valuable and extremely helpful for their implementation of NWRM Pāngarau. The professional development has appeared to support their:

- learning about the whanaketanga
- discussions about assessing children's learning against the whanaketanga
- planning for children's learning to meet the whanaketanga
- review and clarification of key mathematics ideas
- review of their pedagogical practice.

Teachers are gaining in confidence about their increased content knowledge for teaching pāngarau and using the support material to assess against the whanaketanga.

- **What professional development or further learning opportunities have schools organised themselves?**

Working with their facilitator has been the key feature of the professional development of teachers in these case study kura as these personnel appear to be the leaders in this field.

Discussions in staff and syndicate hui have provided other opportunities within kura for further development. Kura A has had a professional development session with another mathematics adviser in English medium (organised by their facilitator) to clarify and review some key mathematical ideas to support their teaching.

- **What materials do teachers require to assist them with NWRM pāngarau (including use of existing resources and or new resources)?**

As above.

Conclusion

Overall the teachers in the case study kura have displayed from the beginning a positive attitude towards being involved with the whanaketanga. This is largely based on the acceptance that their participation like other Māori medium schools, will be compulsory from 2011. However, they have been keen to ascertain for themselves whether or not there are any 'hua' (benefits) for their children in the whanaketanga. Teacher voice at this stage indicates an enthusiasm (renewed in some cases) for teaching pāngarau amongst the teachers in this study. Anecdotal evidence from teachers points to a general enthusiasm amongst most of the children too regarding the learning of pāngarau in Ine and Hanga. At the time of the interviews, it was too early to confirm how this impacted on children's achievement levels.

These teachers are determined to work hard to improve children's learning and consider that for many of them, this means revisiting and building their content and pedagogical knowledge as well. They consider that the professional development they have been exposed to so far has contributed immensely to their understanding and confidence with the whanaketanga. The relationship they all have with their facilitator is perceived by them to be important for their development and the support material from He Kupenga Hao i te Reo appears to have been a crucial part of this professional development.

Teacher interaction within their kura as well as at cluster hui seems to have played a major role. Future professional development opportunities need to consider teacher 'voice' such as that illustrated here, for effective implementation of NWRM Pāngarau in Māori medium kura.

Hei Mihi

Hei whakamutu ake tēnei wāhanga, ka mihi ake ki ngā tumuaki me ngā kaiako i whakaae kia uru mai ki tēnei rangahau. Ka nui te mihi ki a koutou e kaha poipoi ana i ā tātou tamariki i roto i ngā kura. Ko te tumanako ka whai hua ēnei kōrero hei tautoko i ā koutou katoa.

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APPENDIX

Case Study Kura A:

Kura A is an urban-based Decile 5 kura located in the Waikato. It is a Year 0–8 kura with a roll of 85 children and a teaching staff of 5 with a tumuaki. Teachers have on average 18 years of experience in the teaching profession.

Teacher interviewed	Presently teaching	Years teaching	Years teaching in MM
Teacher W	Year 0-1	20	20
Teacher P	Year 5-6	19	19
Teacher H	Year 7-8	15	13

The tumuaki at this kura has a background of more than 20 years in the teaching profession and has been the tumuaki here for 10 years.

Model of implementation

Initially, the tumuaki thought it a good idea for the kura to be involved in the information gathering phase after attending a hui where the idea was shared. Subsequently an approach was also made by a local facilitator from School Support Services offering to work with the kura for the information gathering process. Senior management in the kura discussed this and agreed with the kura participating. The idea was then shared with other teachers at the kura and the Board of Trustees, all of whom supported the suggestion. Major reasons put forward for their participation were that NWRM Pāngarau was going to be implemented anyway in 2011 and so they may as well participate in the professional development available to them this year.

The model of implementation here is one where the whole school is involved from the beginning. All teachers have participated in the implementation of and professional development opportunities available for NWRM Pāngarau. The professional development programme here included:

- an introductory session by the facilitator;
- 3 half day sessions for kura teina teachers
- 3 half day sessions for kura tuakana teachers
- a 1 day session for all teachers (cluster group) with pāngarau expert (demonstrated with children in morning; afternoon session was feedback by teachers regarding whanaketanga they have used themselves with children, as well as other material in folders)
- 1 hui each term and 1 in school break
- some discussion in staff meetings as well as syndicate hui
- the provision of written material from He Kupenga Hao i te Reo to support learning about NWRM
- modelling by facilitator
- a strand based approach.

Teacher views on professional development for NWRM Pāngarau

Teachers at this kura had a very positive view of their professional development experiences. Features that contributed to this view included:

- support from the tumuaki and the Board of Trustees
- tumuaki participation in professional development hui at times
- links to our Long Term plan
- release from classroom to read and interpret whanaketanga ideas
- having an approachable facilitator who makes herself available to be contacted at any time
- having an effective facilitator with skills to “manage” a variety of teachers with varied pāngarau content and pedagogical understandings
- the provision and quality of written material by He Kupenga Hao i te Reo;
- cluster hui with teachers from other kura who are involved with NWRM Pāngarau
- the increased kōrero between teachers in their own kura, especially between those working at similar levels
- time to consider implications of whanaketanga for their practice
- having support with the reo or kupu hou
- the rekindled and increased interest in the teaching of pāngarau that occurred for some teachers.

Factors supporting the implementation of NWRM Pāngarau in this kura

These included:

- knowing that this is just a “trial” and are able to give feedback
- the longstanding working relationship they have with their NWRM Pāngarau facilitator
- the continuous and ready access to their facilitator for queries
- a professional development session with an English medium adviser for mathematics
- positive teacher views towards the professional development offered to them
- the provision of written material eg, folders by He Kupenga Hao i te Reo to support teacher learning of NWRM and related ideas for teaching;
- the opportunity to meet, discuss and share ideas with teachers from other schools involved in familiarising themselves with the NWRM Pāngarau
- the opportunity to meet with, discuss and clarify ideas with a key writer of NWRM Pāngarau and folder material
- understanding that implementation of NWRM Pāngarau is going to happen anyway
- having experienced teachers
- having teachers confident with Te Poutama Tau
- the kura making children’s pāngarau learning and achievement a priority
- Kura and teachers having high expectations of their children’s achievements in pāngarau
- having targets as a kura

- confident teachers who are “*at a place where we can handle this*”
- teachers wanting to enhance ways of reporting children’s achievement to whānau
- teachers understanding that they could use a range of ways to assess children’s learning
- having children with similar proficiency in te reo Māori.

Factors hindering the development of NWRM Pāngarau in this kura

These included:

- costs
- late information regarding the professional development plan so that kura unable to budget before the year of implementation
- the delay in arrival of written support material
- difficulties with some of the tasks which seemed unrealistic
- not being sure in places about the level of complexity a child needs to show with a task
- considering how to determine which children really are ready for a level of the whanaketanga
- the amount of time needed for assessing- many whanaketanga tasks are mainly one on one; how to do these with large numbers in class, especially in the Junior area?
- having to organise own worksheet for assessment so as to produce a hard copy that captures student thinking
- lack of time to work with teachers to construct similar tasks to use
- perceived “hysteria” in media around National Standards.

Costs for Kura A

5 days x 2 relievers each day (\$320 per reliever)	\$640 x 5 = \$3200
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Influence on teacher practice (including assessments, judgements, use and confidence)

Teacher comments here included:

- looks like it’s driving what is being taught
- Ngā Whanaketanga support material is amazing ... everything is included – overview, tasks, lessons, extension activities, papa kupu
- teacher guidelines are crucial, especially good for teacher dialogue and questioning, maths knowledge and kupu Māori
- am resource rather than curriculum lead. The whanaketanga come from *Te Marautanga o Aotearoa* so has helped to align my teaching with the marautanga more
- don’t worry if children haven’t got to a certain level. We know we will get it covered again and we have to move on
- this is not just overall teacher judgements about what the child is saying to me but now I have to collect a hard copy of the child’s thinking
- once children are at the whanaketanga level we can do further or other work or play around with the unit of work. (Children are then free to broaden their learning)

- looking to see what other tasks work with the whanaketanga.

Resources needed

- Folder material.
- Figure it out–index needs to say what maths tasks are aligned with.
- He Putahi.
- Attribute blocks.
- How to record assessments? Blackline masters for tasks so that hard copy of recordings can be put into Profile book.
- Maths coaches.
- More material for independent use.

Whānau and NWRM Pāngarau

This kura is still considering ways of reporting to whānau against the whanaketanga this year and had no whānau comments to consider.

Case Study Kura B:

Kura B is an urban-based Decile 3 kura located in the South Island. It is a Year 0-13 kura with a roll of 76 children. It has a teaching staff of 8 and a tumuaki. Teachers have on average almost 12 years experience in the teaching profession.

Teacher interviewed	Presently teaching	Years teaching	Years teaching in MM
Teacher R1	Year 7–8	18	14
Teacher R2	Year 4–6	8	8
Teacher R3	Year 2–3	9	9

The tumuaki at this kura has a background of almost ten years in the teaching profession and has been a tumuaki here for five years.

Model of implementation

Initially, the tumuaki was approached to consider supporting her kura to become involved in the information gathering process of NWRM Pāngarau by the Lead Teacher for the Te Poutama Tau professional development programme who is based at her kura. After consultation with other staff and the Board of Trustees, it was agreed that the kura would participate.

Major reasons put forward for their participation were:

- wanting to continue building the pāngarau programme in the kura after a very positive experience with Te Poutama Tau
- the belief that there may well be benefits for children's learning with NWRM Pāngarau
- that professional development in te reo Māori would be good
- that this information gathering process was a good opportunity to learn about and use the whanaketanga before it became compulsory in 2011.

Teachers and tumuaki at this kura believe that a whole school approach (Years 0–8) to the implementation of NWRM Pāngarau would be ideal. However, because the new entrant teacher went on leave after Term 1 it was decided that the reliever in that classroom would not be asked to continue with this work as well. The year 9–10 teacher participated in the professional development with the kura tuatahi teachers so as develop her understanding about the whanaketanga, children's experiences with them and how some tasks might be incorporated into her practice.

Trying to keep connected across the school.

The model of implementation here is one where the kura teachers from Years 0–10 were all involved in the professional development opportunities that were organised for them from the beginning (except for the teacher in the new entrants after Term 1). These opportunities included:

- hui each week (Mondays 1.30–3pm) with Lead Teacher (facilitator) to look at particular whanaketanga and “*what we need to do to meet it*”
- using regular hui to consider which pāngarau ideas to focus on and which tasks to use
 - Like hui each Monday. Is a shorter block. Not so much to take in. Can think and reflect on bits at a time. Bite size means we look at it then use straight away. We may not do that with clumps of hui

- modelling or observing by the facilitator at least once a week in classrooms to support the teaching of pāngarau ideas that link to NWRM Pāngarau
- some discussion in staff meetings
- a focus on a particular area of pāngarau first eg, Ine, because of imminent arrival of support resources for this area (from He Kupenga Hao i te Reo).

Teacher views on professional development for NWRM Pāngarau

Teachers at this kura had a very positive view of their professional development experiences. Features that contributed to this view included:

- having an effective Lead Teacher for NWRM Pāngarau as a teacher at the kura for easy access regarding queries or concerns
- strong support from the Board of Trustees and the tumuaki
- being released during school time each week to work with the Lead Teacher to discuss and clarify the whanaketanga, learn the kupu hou, consider the relevant pāngarau ideas and how they might be taught and assessed
- having support material that offers helpful and interesting ways for teaching pāngarau
- the provision and quality of written material by He Kupenga Hao i te Reo
- increased kōrero between teachers in the kura about what children may be learning
- time to consider implications for practice and children's learning
- having support with the reo/kupu hou
- an improvement in teacher knowledge
- a decision by teachers to learn 10 new words each week
- regular modelling and observation by the Lead Teacher.

Factors supporting the implementation of NWRM Pāngarau in this kura:

These included:

- whole staff involvement in the implementation
- having a strand based approach
- having the time to look through and analyse the folder material
- the longstanding working relationship with their NWRM Pāngarau facilitator
- the continuous and ready access to their facilitator on site
- having a Lead Teacher
who can interpret and help us to use the folder ... If no people to do this, the resource will stay on the shelf and collect dust.
- positive teacher views towards the professional development with a view to possible benefits for children's learning
- the provision of written material eg, folders by He Kupenga Hao i te Reo to support their learning of NWRM and ideas for teaching pāngarau

- the use of Māori contexts eg, marae, in support material
- understanding that implementing NWRM Pāngarau will be compulsory from 2011
- having teachers with at least 8 years teaching in Māori medium
- having teachers with Te Poutama Tau experience of more than two years
- Kura and teachers having high expectations of their children achieving in pāngarau
- support from local Resource Teacher of Māori.

Factors hindering the development of NWRM Pāngarau in this kura

These included:

- late notice for the kura participation in this data gathering process, thereby having to divert funding to cover reliever costs so that teachers can be available for in-school time professional development sessions each week
- late information regarding the professional development plan so that kura is able to budget before the year of implementation
- the delay in arrival of resources or written material.

Estimated costs for Kura B

Relievers costs so that teachers available to attend workshops and hui with facilitator	\$8000
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Influence on teacher practice (including assessments, judgements, use and confidence)

Teacher comments here revolved around:

- learning that there can be a range of ways of teaching particular pāngarau ideas linked to the whanaketanga and that these can be assessed in a variety of ways.
Is a range of things we can do to meet that criteria.
- using the whanaketanga and support material has helped teachers to allocate more time for teaching pāngarau ideas in strands other than number:
[NWRM] Gives examples of how to teach as well. Have to adapt it. It has enhanced my teaching especially in the strands. I've enjoyed teaching Hanga. It's given me lots of ideas for my teaching plus contexts for teaching ideas, reasons for kupu
- incorporating support material into teaching has made planning for learning easier for some teachers:
It's a crucial part of my planning... Easy to follow, like Poutama Tau
The whanaketanga examples are not meant to be whakamātautau. We need to look at ideas there and think about what it is that kids need to know and then how do we teach these ideas.
- some teachers are planning with *Te Marautanga o Aotearoa* and thinking about NWRM Pāngarau criteria when it comes to assessment; others closely align their planning to material in the folder
- teachers becoming more confident about asking children to make links between assessment ideas in NWRM Pāngarau (eg, angles/koki) and what they see in their environment
- two teachers expressed that they felt that they had increased their teacher knowledge for teaching through involvement with NWRM Pāngarau

- feeling more confident about helping children develop their ideas to meet those outlined in the *Te Marautanga o Aotearoa* and NWRM Framework:

Work in the folders helps make it easy. There are examples there ... Great! ... The children and I enjoy doing the work

I know what kids need to know as they move up. Folders have simplified ideas to move up the (NWRM) poutama.

Resources needed

- Folder material produced by He Kupenga Hao i te Reo
- Sometimes use digistore but not always “user friendly.
- No Nonsense books

Whānau and NWRM Pāngarau

There has been some change in the reporting of children’s pāngarau learning to parents. The present written report form has been altered to illustrate the NWRM Pāngarau progression bands at each level. Children’s achievements are located at the relevant whanaketanga levels in relation to the band. Whānau feedback at this stage indicates that some explanation is needed regarding the format of the written report and the whanaketanga. When this is done, it seems that parents generally find the form acceptable and understand the message. How to report to parents clearly is an ongoing process.

Case Study Kura C

Kura C is a rural-based Decile 1 kura located in the Hawkes Bay. It is a Year 0–10 kura with a roll of 51 children and a teaching staff of 4 with a tumuaki. Teachers have on average almost 11 years experience in the teaching profession.

Teacher interviewed	Presently teaching	Years teaching	Years teaching in MM
Teacher R	Year 0–2	11	11
Teacher M	Year 6–8	8	8
Teacher A	Year 3–5	13	10

The tumuaki at this kura has a background of about 15 years in the teaching profession and has been a tumuaki here for 3 years.

Model of implementation

The tumuaki at this kura expressed at a hui in late 2010 to their Poutama Tau facilitator that she thought her kura would be interested in participating in the information gathering phase for NWRM Pāngarau. The kura had just completed two years of professional development with Te Poutama Tau and felt ready to continue their development in pāngarau. After discussions with teachers and whānau it was decided that the kura would participate.

We wanted to see if there was anything there for us. We wanted to make an informed decision.

The model of implementation here is one where the whole school participated in the implementation and professional development opportunities available for NWRM Pāngarau.

Because we are a small school everyone had to do it. Who knows what you will end up doing in such a small school. Everyone has to learn to multitask.

Two teachers were also sent to cluster hui and returned to the kura to share new ideas.

The professional development programme here included

- weekly sessions with the facilitator becoming familiar with NWRM, exploring tasks, clarifying pāngarau ideas, analysing children's work and facilitator; supporting teachers in the classrooms;
- attendance for 2 teachers at cluster hui (4) with pāngarau expert in Gisborne
- some discussion in hui after school
- local cluster hui with other local rumaki teachers 2-3 times each term focusing on implementing NWRM Pāngarau
- deciding with facilitator to focus on Ine with imminent arrival of support material by He Kupenga Hao i te Reo
- tumuaki involvement in professional development when duties allowed.

Teacher views on professional development for NWRM Pāngarau

Teachers at this kura had a very positive view of their professional development experiences. Features that contributed to this view included:

- having support from the tumuaki and whānau
- tumuaki involvement in professional development opportunities where possible

- NWRM work linked to kura Long Term plan
- release from classroom to read and discuss NWRM ideas and consider implications for practice
- having an effective facilitator who makes herself available to be contacted at any time (approachable)
- the provision and quality of written material from He Kupenga Hao i te Reo to support implementation and learning of NWRM
- cluster hui with teachers from other kura who were involved with NWRM Pāngarau
- increased kōrero between teachers in the kura regarding children's learning and the whanaketanga
- having support with the reo/kupu hou
- working in strands other than Tau
- increase in teacher content knowledge:
Got to learn about Ine, good for us and then the kids. We were used to Tau now we're looking at Ine. We learned new things about Ine. Was good for our learning as kaiako.
- becoming more confident with teaching pāngarau because of professional development.
Kua whānui kē atu. Have become stronger and more confident. We're having a Pāngarau week soon and we're excited.

Factors supporting the implementation of NWRM Pāngarau in this kura

These included:

- having a Tumuaki with a keen interest in teaching Pāngarau herself at Primary and wharekura level
- teacher respect for the professionalism of the NWRM Pāngarau facilitator
We knew X was going to do the whanaketanga so we knew it would be good.
- teachers feeling that they had continuous and ready access to their facilitator
- positive professional development learning and experiences with Te Poutama Tau
- the provision of written material eg, folders by He Kupenga Hao i te Reo to support teacher learning of NWRM Pāngarau and related ideas for teaching. Material in book reorganised to suit teachers
Pāngarau expert's mahi has made the planning easier ... is linked to Te Marautanga o Aotearoa.
- the opportunity to meet, discuss and share ideas with teachers from other schools involved in using the NWRM Pāngarau
- having a strand based approach
- the opportunity to meet with, discuss and clarify ideas with a key writer of NWRM Pāngarau and folder material
- having experienced teachers (minimum of 8 years)
- having support from local Resource Teacher of Māori regarding help with resources.

Factors hindering the implementation of NWRM Pāngarau in this kura

These included

- late notification of kura participation in this data gathering process, which meant a reappraisal of the school's budget to accommodate professional development costs

- delay in arrival of resources/ written material
- speed with which teachers were having to deal with the whole National Standards/ NWRM Pāngarau issue
- lack of suitable relievers
- “hysteria” around National Standards in the media.

Costs for Kura C:

Pāngarau workshops with expert in pāngarau	\$1618
Travel for workshops (4 x \$70)	\$280
Relievers for 2 teachers to attend 4 workshops (\$550 x 4)	\$2200
Catering for cluster workshops	\$500
Class Resources to support Whanaketanga	\$898
Total costs	\$5496

Influence on teacher practice (including assessments, judgements, use and confidence)

Teacher comments here revolved around:

- assessing against the NWRM after 4 weeks using examples from the whanaketanga. If child is “successful”, future assessments may move to once a term against a higher level
- teachers know that they can construct their own assessment tasks as well using NWRM Pāngarau tasks as a guide:
We now know that what’s in the whanaketanga is an example, not like Poutama Tau which you had to follow. We can look for other examples to do the work that aligns with the whanaketanga example. Rawe! That’s better to me. Can make it to suit our tamariki and their environment.
- having no interview sheets as in Te Poutama Tau so teachers constructing their own
- teachers becoming more confident with kupu hou in the whanaketanga
- having many discussions at kura and in cluster hui to clarify teacher judgements about children’s work
- increase in teacher pedagogical knowledge
Learning more about the delivery of maths too
- He Kupenga Hao i te Reo material of significant help for planning lessons and supporting ideas in *Te Marautanga o Aotearoa*
- using ideas from other programmes eg, Assessments for Learning, which promotes teachers focusing on “feeding” kupu hou to children first to help them then go on to learn curriculum content
- children who arrive with limited reo Māori are a concern regarding assessment and require careful consideration.

Resources needed

- folder material (available online as well);
- nzmaths website;
- BSM material;

- Te Matihiko;
- a DVD to show examples of how to work with the whanaketanga;
- having advisers and Resource Teachers of Māori to help;
- support for kaiāwhina with NWRM because they work with children too; and
- support from MOE regarding

... software for putting data onto graphs. Like cumulative records.

Whānau and NWRM Pāngarau

This kura has attempted to adapt its reporting practice to parents to include information about NWRM Pāngarau. Feedback from some parents indicates more interest in other areas associated with learning mathematics rather than the whanaketanga. Although whānau members have attended workshops about the whanaketanga, they are more concerned with their children's learning of mathematics being linked to values and occurring within a range of contexts such as noho marae.