



Talk Maths in Tororo

AIM OF THE PROJECT

Our aim was to improve the quality of mathematics education for pupils in 4 rural schools in Tororo Uganda, and thus develop pupil's mathematical understanding and skills to improve their lives and the lives of their families.

TO ACHIEVE THESE AIMS:

We provided a 5 week programme for schools which included:

1. Weekly capacity building workshops which covered an introduction to the research and methodology behind the Talk Maths philosophy, teaching ideas that provide pupils with opportunities to use talk to further their learning and ideas on how to create a classroom environment that improves pupil confidence and participation.
2. In class support from a British mathematics specialist once a week. The focus of these visits will be to support teachers in planning, team-teaching and evaluating lessons.

HOW WE EVALUATED THE PROJECT

We consulted with pupils, teachers, PTAs and School Management Committees to gage the opinion of all stakeholders in the schools. We used the following methods to evaluate the success of the project:

- Pupil questionnaires (see section on pupil attitudes)
- Interviews with school council members.
- PLE test results.
- Evidence from lesson observations.
- Teacher end of project surveys (see appendix 1 for an example)
- Interviews with teachers.
- School Coordinator End of Term 3 reports (see appendix 2)
- Beginning and end of project interviews with Head Teachers.
- Beginning and end of project interviews with chair of School Management Committees and PTAs.

SUMMARY OF OUTCOMES

1. Talk Maths strategies worked effectively in Ugandan Classrooms.
2. Teachers are successfully adopting Talk Maths strategies into their everyday practice.
3. Pupils are more confident in mathematics lessons.
4. Pupils actively participate in lessons.
5. SEN pupils are motivated through Talk Maths strategies and more involved in the lesson.
6. Pupil attitude to mathematics is more positive.
7. In particular, girls' attitudes to mathematics improved significantly in Talk Maths classrooms.
8. Pupil attitude towards Talk Maths ideas is very positive.
9. Pupil understanding of mathematics improved.
10. Teachers are more confident teaching mathematics.
11. Teachers, Head Teachers, PTAs and SMCs are extremely enthusiastic to continue the project.

PROJECT EVALUATION

1. TALK MATHS STRATEGIES AND HOW THEY WORKED IN THE CLASSROOM

Weekly lesson observations showed that teachers understood the Talk Maths strategy and were keen to try it in their classrooms. By week 2 all teachers were successfully using talk partners and by the end of the project all classrooms had an established Talk Maths classroom poster and were building positive learning environments. Some teachers were effectively using open questioning to encourage talk as well as teaching ideas like odd one out and sometimes always never. This demonstrated that these **ideas work in rural Ugandan classrooms** and that they can have a big impact.

End of Project teacher questionnaires suggest all **teachers will continue to use ideas** they gained during the project:

Will you continue to use the ideas from this project? If yes, which ones and why?

-“learning with partner as it helps them to widen and share their ideas”

-“pairing and grouping because it helps every child”

-“talk to your partner helps a lot develop pupil understanding”

-“pairing learners: it allows everyone to participate”

-talk partners “makes learning real and meaningful”

There was also much mention on the Talk Maths classroom poster and positive environment philosophy such as taking risks, mistakes help us learn, sharing ideas and pupils taking responsibility for their learning.

Key outcome:

Teachers are successfully adopting Talk Maths strategies into their everyday practice.

2. IMPACT ON PUPILS IN CLASS

It was evident from lesson observations that Talk Maths had a big impact on pupils and their education as they transformed the learning environment. Two areas which had been highlighted by pre-project interviews with head teachers was the lack participation of pupils in lessons and poor test scores. Talk Maths strategies effectively addressed these problems and saw huge improvements:

- Lesson observations showed teachers who effectively used Talk Maths ideas had high numbers of pupils participating. For example, many times a teacher asked a question – perhaps 5% hands up. Then the teacher asked pupils to discuss the answer and then asked the question again – approximately 80-90% of pupils in the class then raised their hand. One teacher took this further by addressing those who did not have their hand up, saying “your friend has the answer, why have you not discussed it?” This was fantastic as it showed this group of P6 pupils that the teacher expected all pupils to take responsibility for their learning. Evidence from teacher interviews and end of project surveys also reveal that all teachers have seen **more pupils actively participating** in lessons.
- Lesson observations, teacher interviews, end of project surveys, PLE results and school coordinator reports show that Talk Maths methods have **improved pupil understanding** in maths. Lesson observations showed that, when methods were used effectively, that pupils were much more likely to be successful when answering questions independently. All other indicators also mirror this result and even PLE results for that year have improved, compared to the year before. This claim clearly needs to be evaluated long term, but, as the project grows and schools adopt whole school approaches to Talk Maths, we can confidently predict an increase in pupil understanding in the long term.

Key outcomes:

Pupil understanding of mathematics improved.

Pupils actively participate in lessons.

SEN pupils are motivated through Talk Maths strategies and more involved in the lesson.

3. PUPIL ATTITUDE TO MATHEMATICS

Teachers reported that pupils involved in the project had a renewed “love” for mathematics; they were more confident, enjoyed working together and had more positive attitudes towards mathematics. The results from the pupil survey mirror these conclusions.

Information regarding pupil survey

The pupil survey was conducted at the end of the project and compares the attitudes of pupils to mathematics. It asks them to rank the 4 main subjects in order of preference and in order of easiest-hardest. Teachers conducted the survey and were asked to choose a random sample of pupils and an equal mix of boys and girls. The results of completed surveys are analysed below.

Name: OTAWA PETER		School: OKWIRA P/S	
Class: P5		Please circle: Male <input checked="" type="checkbox"/> Female <input type="checkbox"/>	
Favourite Subject:		Easiest Subject:	
English	<input type="text" value="2"/>	English	<input type="text" value="2"/>
Maths	<input type="text" value="1"/>	Maths	<input type="text" value="1"/>
Social Science	<input type="text" value="4"/>	Social Science	<input type="text" value="3"/>
Science	<input type="text" value="3"/>	Science	<input type="text" value="4"/>
1=favourite 4=least favourite		1=easiest 4=hardest	

Example of completed pupil survey.

Results from 7 classes, 4 not involved in the project and 3 involved.

Classes NOT involved in Talk Maths				
	Favourite		Easiest	
	F	M	F	M
Pomede P5	3.00	1.55	2.58	1.82
Rugot P5	1.25	1.00	1.75	1.40
Rugot P6	2.11	1.00	1.89	1.75
Okwira P7	3.14	1.89	3.21	1.89
Average	2.38	1.36	2.36	1.71

Classes involved in Talk Maths				
	Favourite		Easiest	
	F	M	F	M
Rugot P4	1.13	1.00	1.00	1.00
Rugot P7	1.00	1.20	1.20	1.00
Okwira P5	1.00	1.50	1.25	1.25
Average	1.04	1.23	1.15	1.08

These results show:

- Pupils involved in Talk Maths are more positive toward maths. They are more likely not to think as mathematics as a difficult subject and to enjoy learning mathematics.
- Boys, regardless of whether they were involved or not, are quite positive towards mathematics, with many who say mathematics is their favourite subject.
- Girls who were not involved in the project have negative attitudes towards mathematics. Many believe mathematics is the most difficult subject and do not enjoy mathematics.
- The biggest difference between classes involved and not involved in the project is for girls. Girls involved in the project were much more positive towards mathematics than girls who had not been involved.

Key outcomes:

Pupils are more confident in mathematics lessons.

Pupil Attitude to mathematics is more positive.

In particular, girls’ attitudes to mathematics improved significantly in Talk Maths classrooms.

Pupil attitude towards Talk Maths ideas is very positive.

4. TEACHERS ARE MORE CONFIDENT TEACHING MATHEMATICS.

An area of real success during the project was the enthusiasm that came from Ugandan teachers. They could see Talk Maths strategies having a real impact on pupil learning, but also on their own attitude to mathematics and teaching mathematics. Comments below are from 7 different teachers involved in the project.

“It has made me pick interest in teaching maths as a subject”

“The project has improved my own understanding of teaching maths.”

“It has improved my ability to grasp facts in maths”

“The project has increased my appetite for mathematics”

“Formerly I had negative attitudes towards teaching maths but this project has given me the interest”

“Talk Maths project has improved my own understanding of maths. I used to get bored when teaching maths because pupils were not understanding. Now pupils are getting well with maths.”

“It has made me love to teach maths”

5. TEACHERS, HEAD TEACHERS, PTAs AND SMCs ARE EXTREMELY ENTHUSIASTIC TO CONTINUE THE PROJECT.

Interviews with all stakeholders at the end of project meeting showed that all were extremely keen to see the Talk Maths project continue and networks were put in place to enable this.

PTAs, SMCs and Virginia Ochwoh (former teacher trainer in Kampala) were extremely pleased to see the positive impact the project had had and were keen to see this continue and develop. All pledged to support schools in this goal.

All Head Teachers had seen huge changes in the teaching and learning mathematics in their school and were looking to the future and planning how they could organise a whole school approach to Talk Maths. They were extremely keen for the project to continue and develop.

In the end of project survey, teachers commented that:

“Talk Maths should cover all classes”

“Talk Maths should be put in termly work plan”

I would like to see “facilitating and funding for Talk Maths project.”

We should have “regular capacity building workshops”

“Talk Maths should be done in the whole country”

“All nearby schools to be involved”

“Talk Maths project should continue to many other schools and should also be included in the Ugandan curriculum”

APPENDIX 1: EXAMPLE OF ANONYMOUS END OF PROJECT TEACHER SURVEY

What changes have you seen in your classroom since the beginning of the project?

- The pupils have picked great interest in maths.
- They like to talk to each other, their partner before they answer ~~many~~ questions.
- Many children from other classes come to learn from my class. They have a look at the wall charts.

How has the project impacted on pupil attitude to maths?

The pupils attitude have changed greatly. They have developed great interest in maths lesson. They don't want to miss maths lesson. They have learned to share ideas among themselves.

How has the project changed/improved your own understanding of teaching maths?

The Talk maths project has improved my own understanding in maths. I used to get bored when teaching maths because pupils were not understanding. But now pupils are getting well with maths.

Will you continue to use the ideas from this project? If yes, which ones and why?

Yes, talk to your partner helps alot develop pupils understanding because they share ideas.

How would you like to see the Talk Maths project develop in the future?

The school managements and teacher should put this in work plan of the school

If we were to do this project again, are there any changes you would make to improve the project?

All classes and teachers in every school should get involved in project.

APPENDIX 2: TERM 3 SCHOOL COORDINATOR REPORT

Here find the report for 3rd term from different school coordinators.

1. What impact has the Talk Maths Pilot project had on teachers in your school?
 - Teachers are more confident to try the new ideas in the classrooms.
 - It has helped teachers to improve on consultative nodes.
 - It has prompted some teachers to change their methods of teaching mathematics.
 - It has helped them to concentrate more on slow learners and first learners go by themselves.
 - They are realizing that maths is not a hectic subject but everyone can handle it especially in P.1 – P.4
 - It has raised teachers' awareness on research and teaching ideas that have become a foundation of Talk Maths.

2. What impact has the Talk Maths pilot project had on pupils in your school?
 - Pupils actively participate in the lesson.
 - It has helped pupils to know that they can also guide others in class.
 - It has improved on classroom control
 - It has improved on class leadership especially on champions.
 - It has created academic competition.
 - The pupils' understanding in maths has been raised.

3. Are you using Talk Maths Champions? If so, what class and what effect are they having on pupils?
 - Yes, talk maths champions are used from P.1 – P4 classes effectively. – Effects: It has made the champions to be fully loved.
 - They have maintained participating in challenging maths problems.
 - They are helping others even when their teachers are not in the class.
 - It has motivated even slow learners to pick up the courage.
 - Confidence in children is built.
 - It has simplified teachers' workload in terms of helping slow learners.
 - It has developed positive attitudes and the spirit of concentration in children.
 - It has promoted classroom control.
 - Classroom environment has been improved.

4. What are the attitudes of teachers in your school towards trying talk maths ideas?

Attitudes of teachers involved:

 - The project should be much strengthened.
 - The project arouses child centered approach.
 - Children like expressing their own views before others.
 - Helps learners and teachers to get relieved from burdens of talking for a long period.
 - Grouping of children has led to participatory method of teaching maths.
 - There is positive attitude towards Talk Maths project.

Attitudes of teachers not involved:

 - The teachers need to be taken outside to exchange education tours so that ideas can be shared.
 - More materials to be purchased to aid talk maths project.
 - One of the pilot schools should be made a resource center.
 - There is need for training of every teacher on talk maths project on termly basis.

5. In your school, how will you work towards a whole school talk maths approach next term?
- By organizing talk maths champion campaigns.
 - By organizing talk maths workshops at individual school level.
 - By creating classrooms which are talk maths friendly.
 - By talking individually and as a group to both School Management Committee and PTA to understand the goals, vision and objectives of talk maths.
 - By giving weekly and monthly tests.
 - By organizing maths talk shows.
 - By organizing talk maths class days.
 - By awarding them certificates or prizes.
6. What support might you need from talk maths to create a whole school approach to talk maths?
- Creating resource center (talk maths library).
 - Provision of media coverage for example, cameras, to each school to help us evaluate our performance in the schools.
 - Provision of more teaching aids and other maths resources, for example, charts, geometrical apparatus.
 - Training Ugandan teachers outside other countries to acquire modern methodology of handling mathematics.
 - Motivation of teachers and pupils.
 - Provision of good sitting facilities.
 - Provision of communication gadgets e.g. laptops, computers for communication simplicity.
 - Training teachers on capacity building.
 - Exchange visits for teachers and pupils.

Wishing you the best and a prosperous New Year.

Compiled by:

Francis Olowo
Lead Teacher