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Project background

5 after care centres involved with Grahamstown Primary Project run after school clubs based on the SANC project's after-school maths club model. The five centres involved are: *The Lebone Centre*, *St Mary's Development and Care Centre*, *Child Welfare Grahamstown*, *Sun City* and *The Assumption Nutrition Centre*. These centres cater for the children of the poorer and vulnerable communities in Grahamstown. Each centre has either employed part time staff or identified existing staff to become club leaders. These five centres are now running maths clubs on a weekly basis for the children in their care and each centre has additionally organised and hosted at least one Family Maths Event. It must be understood that none of the club leaders are qualified teachers themselves and all have taken on the role of running weekly clubs for the learners in their care. In their daily work with mathematics clubs, the club leaders and other staff from the centres have begun to operate as a community of practice in that they share a passion for inspiring young learners to see sense in mathematics. They want to learn how to do this better as they interact regularly, they support each other and have shared experiences and ways of running maths clubs and Family Maths events.

Camp rationale and aims

The initial proposal requested funding for a "Math-tivity" camp for up to 100 Grade 4 and 5 learners from these 5 after care centres and their club leaders (18 from all the centres). The camp was to have a dual focus on taking maths out of the classroom and into the real world and connecting mathematics to home, science and environmental awareness / issues. The activities were to be interactive, hands-on and focused on joint problem solving with the intention of encouraging the participating learners and leaders to view mathematics a way of thinking and being creative in everyday life and seeing possible future career opportunities in the STEM field.

We hoped that by bringing the Grade 4 and 5 learners and their club leaders together in this camp, that we could encourage a strengthening of the Community of Practice for the leaders and an introduction to a COP for the learners. Thus the intended camp outcomes were to enable learners to:

- Identify themselves as confident and resilient 'maths club learners' in our local community
- Develop confidence and self-efficacy in themselves as mathematicians and problem solvers
- Develop an awareness of how mathematics connects to the real world

Develop the community of club leaders with respect to:

- Development of leadership skills
- Strengthening the after-care centres community of practice in terms of their belonging, knowledge and identity
- Giving them experience of new activities for their clubs

An emerging camp model

Three distinct roles emerged during the planning phase. These and other aspects of an emerging model for a camp such as this are detailed below.

Project management role

The project manager had responsibility for all financial aspects of the camp as well as organising catering, accommodation and travel. On the weekend of the camp, the project manager was present at the venue to ensure room allocations took place, to carry out registration with camp participants, to ensure transport and catering took place as planned and to help with set up.

Camp co-ordinator role

The camp co-ordinator was responsible for the focus of the camp and achieving the aims. In addition, the co-ordinator:

- Consulted with facilitators regarding the aims of the camp, activities, dates and times
- Put together the programme
- Planned room layout at the venue
- Organised learner and club leader certificates and name badges
- Organised prizes and gifts for prize giving
- Liaised with the project manager, all facilitators and after care liaison person
- Put together a roster for the weekend
- Organised photographs and press coverage
- Set and promote the camp ethos

After care centre liaison role

With 5 after care centres involved and potentially up to 50 learners, it was important to have a single point of contact who represented the after care centres as a whole. The person who took on this role had the responsibility of:

- Liaising with all the centres facilitators (email etc)
- Gathering learner and club leader names, ages and grades
- Compiling a list of club leader contact numbers
- Learner and club leader room allocations
- Providing parents and learners with a list of items required for the weekend (i.e. warm clothes, etc.)
- Putting together the following documents² and arranging for them to be distributed and signed:
 - Club leader commitment and indemnity
 - Learner parental consent and indemnity
 - Club leader duties (over the weekend)

Accommodation and catering

As the camp was a 2-night residential camp, accommodation for learners, leaders and facilitators was provided along with 3 meals a day, drinks and snacks. Each participant was provided with a branded plastic drinking bottle which they used for the weekend and took home with them, in accordance with environmental awareness and reducing our carbon footprint by not using disposable drinking materials.

² Copies available on the SANCP website at <http://www.ru.ac.za/sanc/numeracybuzz/steamcamps/>

Club leaders stayed on site and were allocated responsibility for co-ordinating activities and the general well-being of groups of learners. SANC project team members also stayed on site to deal with any issues that may have arisen.

Camp Resources

As part of the SANC project culture of sharing, all activities, resources and documents created for this camp are available on the SANC project website³. These are freely downloadable and fully adaptable for local needs across a range of contexts.

Building a programme drawing on local expertise and knowledge

Early in the planning process, we decided to call the event a STEAM camp, encompassing science, technology, engineering, art and mathematics, rather than a camp with just a maths focus. This enabled us to draw on a wider range of local human resources to facilitate aspects of the programme, without depending on external (and thus costly) facilitators and also to emphasise integration of subjects within the STEM field.

Once facilitators had been invited to participate, the programme began to take shape. External facilitators (i.e. those outside of the SANC project team) were encouraged to make suggestions about activities and to ask other people to facilitate on the understanding that they would be giving their time freely. Facilitators of future camps can therefore be drawn from various communities:

- Local and regional University faculties, departments and projects
- Local and national NGOs such as Living Maths
- Local schools, both private and government
- Local students (both school and university), particularly those who are engaging in President Award type community engagement
- Local Scout / Girl Guide groups, Soul Buddies, nature nerds, Hip2b2 etc.
- Local photographers

Ideas for engineering, minute-to-win-it and origami activities were sourced from the internet. Here are some of the websites used:

- www.origami-fun.com
- frugalfun4boys.com
- <http://www.wikihow.com/Make-an-Origami-Jumping-Frog-from-an-Index-Card>
- <http://www.funpaperairplanes.com>

A sample programme follows. Figure 1 and Figure 2 below show the programme for the 3 days. The Saturday daytime programme was facilitated by 2 Science education lecturers from the Rhodes Education department and their 2nd year B.Ed Foundation Phase students (11 students), free of charge. The evening programme was facilitated by an invited guest from Living Maths in Cape Town, Bradley Lawrence. Club leaders and learners participated in all these activities.

The entire SANC project team was involved over the course of the weekend, as was a local student from a private school who participated in the camp as part of his President's Award Community Service.

On Sunday morning, whilst the children were doing engineering activities with Debbie Stott and other SANC team members, Mellony Graven did a problem solving activity with the club leaders.

³ See <http://www.ru.ac.za/sanc/numeracybuzz/steamcamps/>

STEAM-ING AHEAD CAMP MAY 2016

41 Grade 4 & 5 learners, 18 club leaders from 5 local after-care centres plus SANC project staff



SCORING ACTIVITIES

Over the weekend, keep a track of every activity: who wins, who is creative etc. Learners and club leaders earn points for every challenge and task. The Minute-to-win-it challenge will earn team points as below and these points will be transferred to a larger sheet for the whole weekend.

- 1st place: 6 points per person
- 2nd place: 5 points per person
- 3rd place: 4 points per person
- 4th place: 3 points per person
- 5th place: 2 point per person
- 6th place: 1 point per person

Additionally, observe children who:

- Keep trying when going gets tough
- Learn from mistakes
- Find creative ways to solve a challenge
- Work well with others

Day One: Friday 13th May

Start	Tea	Dinner
2:30ish start	15:00 to 15:30	18:30 – 19:15

WELCOME

14:30 to 15:00

Registration, room allocation and settle in
Individual and centre photographs (Thomas)
Water bottles

FRIDAY AFTERNOON ACTIVITIES

15:30 to 16:15 ICE BREAKERS

16:15 to 17:15 OUTDOOR CHALK MATHS TEAM CHALLENGES (NO SCORING)

17:15 to 18:30 MINUTE-TO-WIN-IT TEAM CHALLENGES (SCORING)

SANC TEAM: Debbie, Thomas, Carolyn, Mel, Rox, Samu

RESOURCES: FLIPCHART/WHITEBOARD, WHITEBOARD MARKERS

25 X 50c COINS, POPCORN, BEANS, PACK OF STRAWS, PACK OF PAPER
PLATES, TIC-TACS, 1 X TWEEZERS, BOWLS, 21 X PLASTIC CUPS, 2 X BALLOONS,
SIDEWALK CHALK, ACTIVITIES AND CARDS FOR TEAM, MINUTE-TO-WIN-IT SCORE
CARDS

FRIDAY EVENING ACTIVITIES

19:15 to 20:30 Origami frog challenge

RESOURCES: INDEX CARDS, SCORE BOARD, MEASURING TAPE

Figure 1: Programme page 1

Day Two: Saturday 14th May

Start & Finish	Tea	Lunch	Tea	Dinner
9:00 am 4:30 pm	10:30 – 11:00	13:00 – 14:00	15:00-15:30	18:00 – 18:45

SATURDAY ACTIVITIES

9:00 to 16:00 Science, maths activities with RU Education

Ken Ncgoza, Zuki Kuhlane, Joyce Sewry and their 2nd year BED Foundation Phase students.

RESOURCES: 7 TABLES AND 6 CHAIRS; NEWSPRINTS AND KOKIS; 3 PRESTICKS; 14 SCISSORS AND DIFFERENT COLOURED PAPERS; 7 STAPLERS; 1 WEIGHING BALANCE; DATA PROJECTOR FOR THE POLLUTANT'S TALE.

During Pollutant's Tale:
Club leaders session.

SATURDAY EVENING ACTIVITIES:

Bradly Lawrence from Living Maths in Cape Town

SANC TEAM: Debbie, Thomas, Carolyn

RESOURCES: DATA PROJECTOR, FLIPCHART/WHITEBOARD, WHITEBOARD MARKERS

Day Three: Sunday 15th May

Start & Finish	Tea	Lunch
9:00 am 1:00 pm	11:00 – 13:00	12:30

SUNDAY MORNING ACTIVITIES

9:00 to 10:30 ENGINEERING ACTIVITIES

SANC TEAM: Debbie, Carolyn, Mel, Rox, Samu

RESOURCES: FLIPCHART/WHITEBOARD, WHITEBOARD MARKERS, SHOT GLASSES, POPSICLE STICKS, 3D BLOCKS

11:30 to 12:30 PRIZE GIVING

RESOURCES: CERTIFICATES, PRIZES, STATIONERY KITS FOR EACH CHILD

Figure 2: Programme page 2

Prize giving

A prize giving was held at the end of the Sunday session, with an invited guest to hand out prizes. Every learner and club leader received a certificate of participation (see Figure 3 below). In addition, each child received a stationery kit to take home with them and club leaders received a special pencil case. Finally, students awarded "Thank You" gifts to caterers, cleaners and security guards who assisted in the smooth running of the camp.

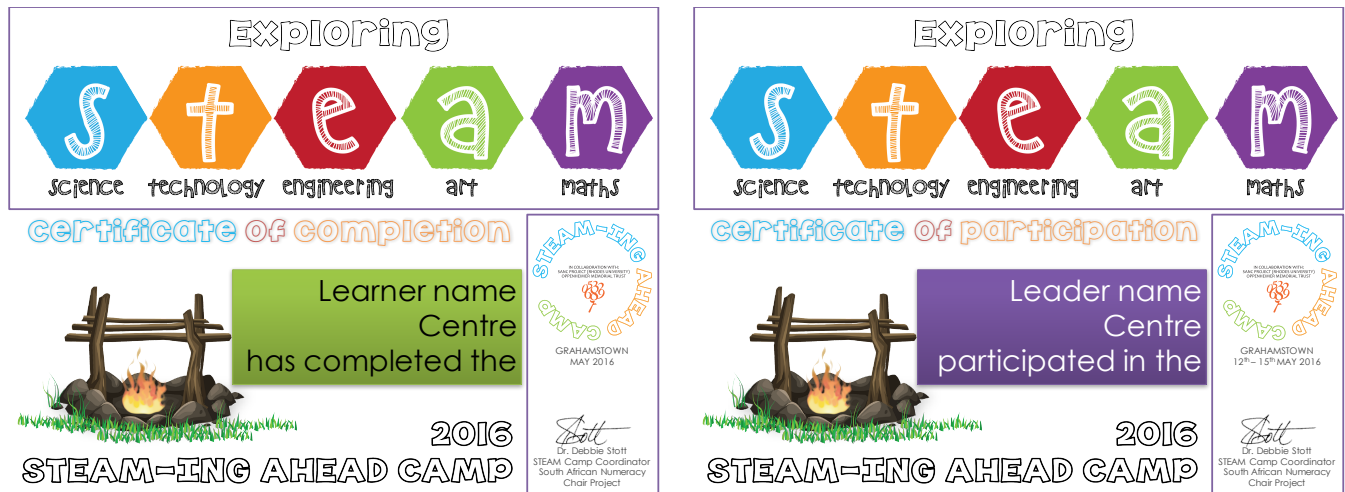


Figure 3: Learner and club leader participation certificates

Special prizes were awarded for:

- 2 learners with overall largest number of points
- 1 Club leader with overall largest number of points
- Learner productive disposition: team work
- Learner productive disposition: Persistence
- Learner productive disposition: Creativity
- Club leader: encouragement and support of others
- Club leader: persistence in activities
- Minute-to-win-it winning team

Prizes included:

- Wind up radio & black SANCP backpack bag
- IQ metal puzzle & SANCP backpack bag
- IQ puzzle and tangram
- GeoGenius geometric shape building set
- 24 crayons and tangram puzzle
- SANCP backpack bag with chocolate
- SANCP highlighter/pen set