

Peer Learning:

'Sum' Ideas on Collaboration in Different Mathematical Communities

Katy McLachlan
St Stithians Boys' College
Johannesburg, South Africa



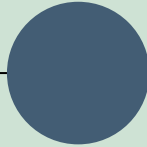
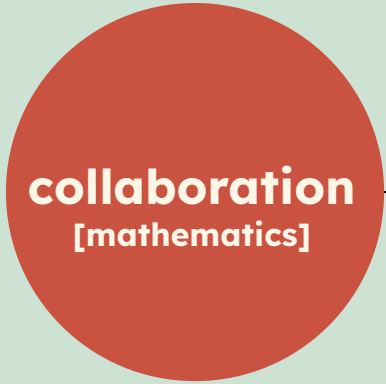


Definition:

the condition of sharing or having certain attitudes and interests in common



from Old French *comunete*: reinforced by its source



Definition:

the action of working with someone to produce something

Communities of Practice

are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.



Vygotsky's Sociocultural Theory

Definition:

the condition of sharing or having certain attitudes and interests in common

Lave and Wenger's Situated Learning Theory

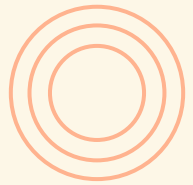
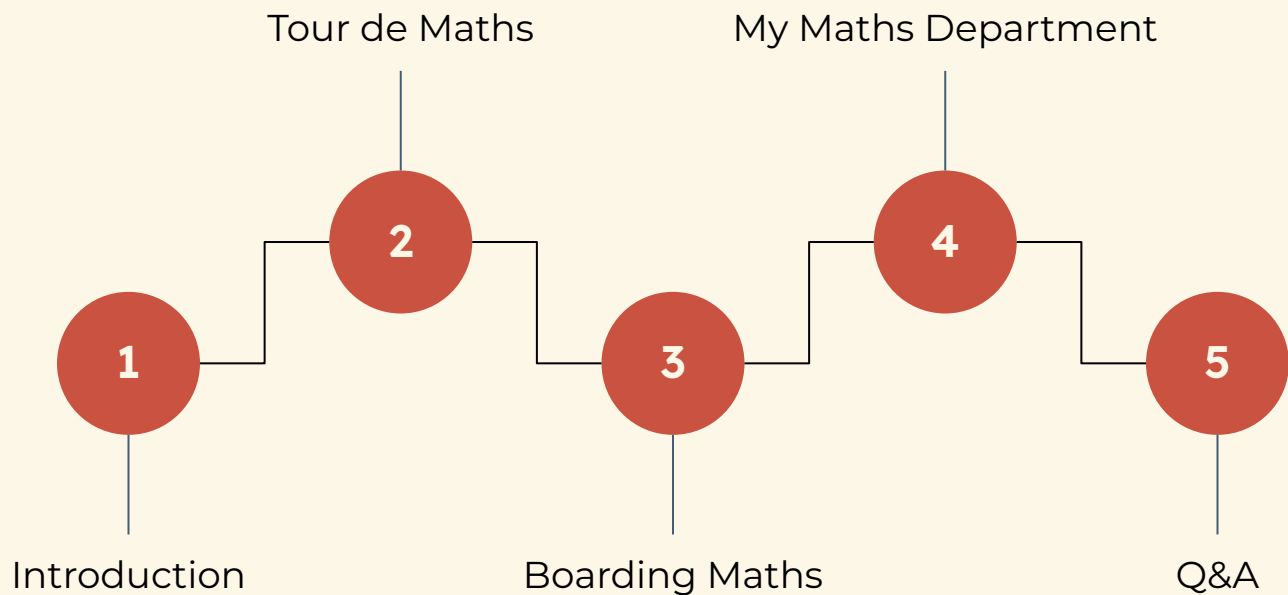
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community
[mathematics]

Communities of Practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.

collaboration
[mathematics]

Definition:
the activity of working with someone to produce something





ST STITHIANS

BOYS' COLLEGE



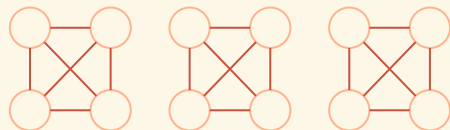
Johannesburg,
South Africa

- **±750 boys**
- **70 years old**
- **Methodist school**
- **Holistic education model**
- **Part of a college of 8 schools**
- **Hosting IBSC Annual Conference 2026**



Tour de Maths

an inter-school mathematics competition



Format

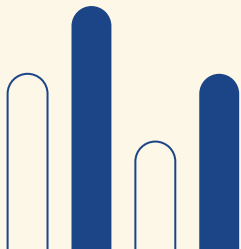
- 7 legs per year on Thursday evenings; each hosted by different schools
- Grades 8 - 10
- Groups of 4: random combination of groups of 2 per school
- 1 hour problem solving paper (answers only)
 - 10 x 5 marks; 5 x 10 marks; 5 x 20 marks
- Answers quickly marked by the teachers there
- Live prize giving: top 3 places and lucky draws (sponsored by Casio)
- End of year individual winner and winning school
- Went fully online during Covid-19
- Started by Graham Kelly; currently run by Eugene Stolk (St Stithians)

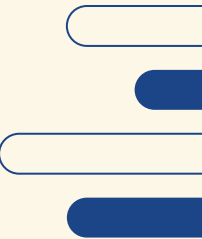


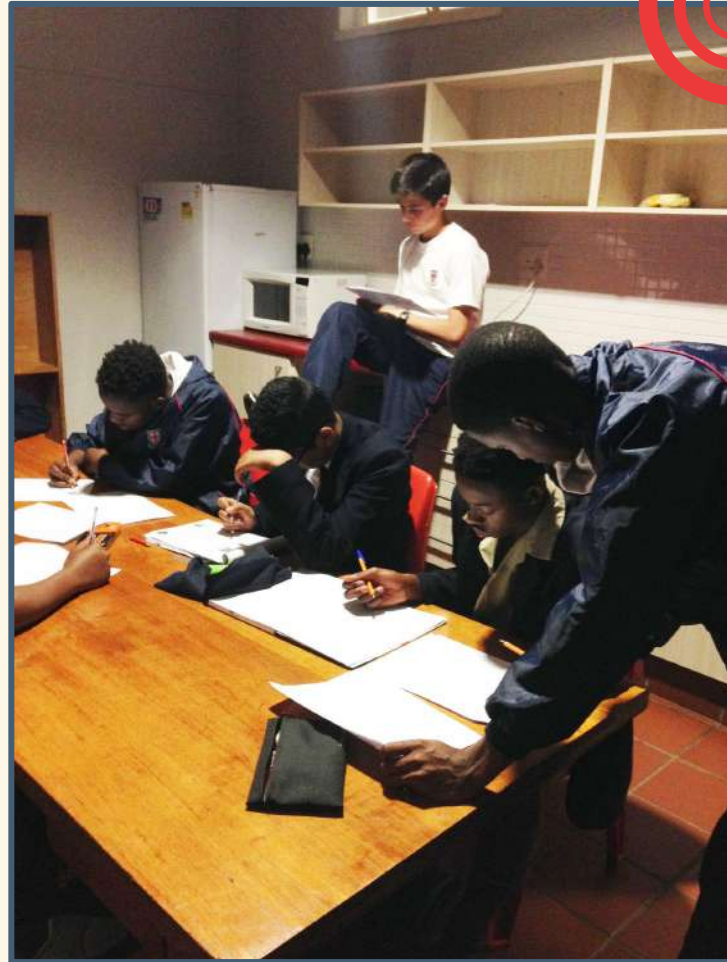


Boarding Maths

**a senior-junior
peer-tutoring programme**

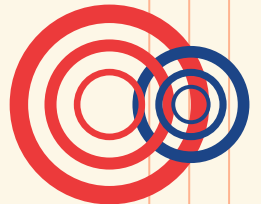






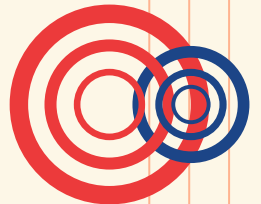
Our Peer Tutoring Programme

- Mathematics
- Boarding house
- One evening a week during a prep session
- Senior boarders (Grade 9 - 12) tutor Grade 8s
- Compulsory for Grade 8s; voluntary for tutors
- Worksheets provided for Grade 8s
- Memos provided for tutors
- Mathematics teacher present during sessions
- One of the seniors leads the tutors



Feedback from the Tutors

- over 80% believed that by tutoring they had improved their own mathematical understanding
- all believed they had learnt how to be a better tutor
- 75% believed they had learnt about being a role model
- all believed tutoring had taught them leadership skills
- over 80% felt like valuable members of the boarding house
- all tutors wanted to continue tutoring the next year



What is the most important thing you have learnt by being a maths tutor?

That people learn at different paces.

To be patient with other people.

Patience

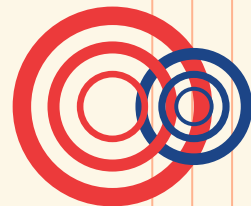
That tutoring/teaching is about patience and tolerance.

I don't understand something well enough if you can't explain it to a grade 8.

(no response)

To always to stick with basics.

Leadership and Mentorship qualities.



Feedback from the Grade 8s

- all believed attending the sessions had been helpful
- all believed the sessions had improved their maths mark
- 60% looked forward to the Maths tutor sessions
- 65% now felt comfortable to ask tutors for help outside of the sessions
- over 80% felt that the sessions had helped them integrate into the boarding house
- all felt the sessions had improved their motivation to work hard at maths
- 80% felt the sessions had helped them to structure their own Mathematics studying
- over 80% were keen to become tutors the next year



CERTIFICATE OF ACADEMIC LEADERSHIP

THIS CERTIFICATE IS PROUDLY PRESENTED TO

**SABELO
NTSHINGILA**

WHO HAS DEMONSTRATED SERVANT LEADERSHIP
TO MOUNTSTEPHENS HOUSE
BY REGULARLY BEING A MATHEMATICS
TUTOR TO THE GRADE 8S IN THE
MONDAY MATHS PROGRAMME.

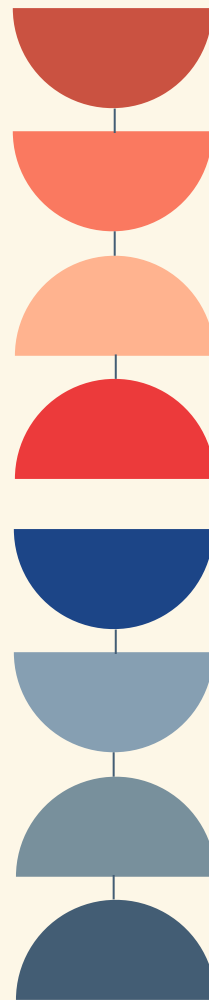
W. ARMSTRONG
HOUSE DIRECTOR

K. MELLOR
PROGRAMME COORDINATOR



Our Maths Department

**Reflections on similarities and differences
between teaching in different teachers' classes**



Research Question

What opportunities for learning are made available through the choice and use of examples in the introduction of Grade 10 functions by three teachers in one mathematics department, and how are these similar or different?



Observe Lessons

3 teachers;
2 introductory lessons
on grade 10 functions

1

Opportunities for Learning

intended;
enacted;
lived

2

3

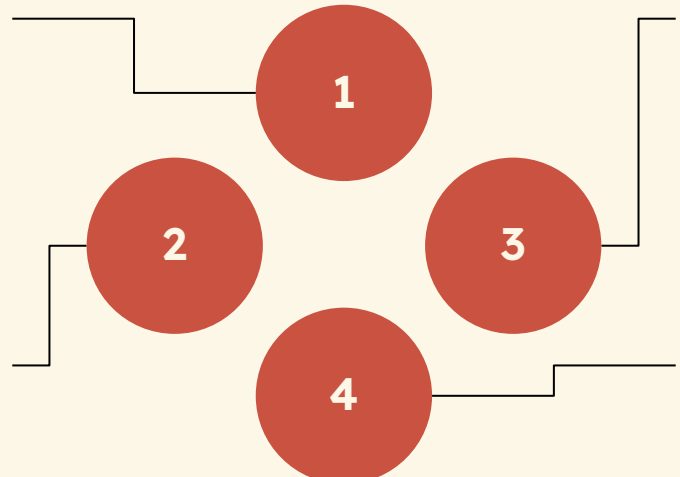
Analyse Examples

Variation Theory;
examples alone;
mediated examples

4

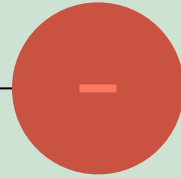
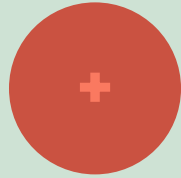
Findings

implications;
further questions;
reflections



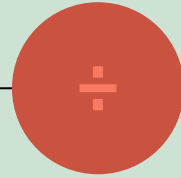
Teacher X	Teacher Y	Teacher Z
Finding the equation of straight line graphs	Rules and sequences	Functions and rules
Rules and relationships between x and y	Key concepts / terminology to do with relations and functions	Inputs and outputs
Different rules in different representations	Functions and relations (Lesson 1)	Function notation
Definition of key terms to do with functions	Functions and relations (Lesson 2)	Sketching linear functions using a table
Function notation (Lesson 1)	Domain and Range	Parabola functions
Function notation (Lesson 2)	Function notation	Parabola Sketch Graphs
Domain and range		
Different types of functions		
Sketching using a table		

How much
teacher agency?

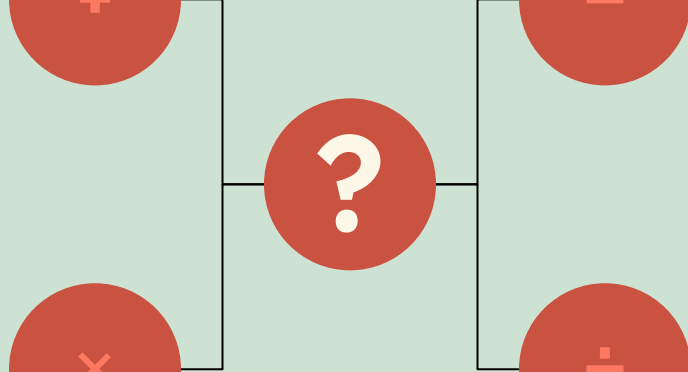


Teacher
responsiveness
to students?

Students'
mathematical
learning
journeys?



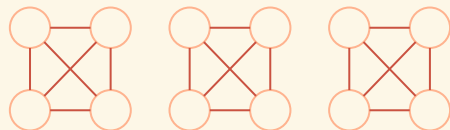
Department
structure?

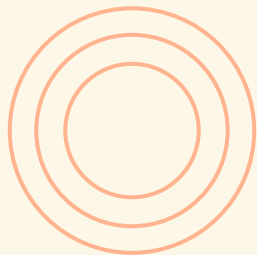




Tour de Maths

The Results





ubuntu

I am because we are



Q & A



Katy McLachlan
kmclachlan@stithian.com



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BOYS' COLLEGE