Extending learning enhancement opportunities to learners from a rural area using a digital learning platform

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EDUCATION IN SOUTH AFRICA

Access to basic education has been addressed to a large extent in South Africa

Yet SA face an ongoing educational crisis:

Of 100 pupils that start school,

• only 50 will make it to Grade 12,
• Only 40 will pass, and
• only 12 will qualify for university. (Spaull, 2013)

• TIMMS scores indicate that SA learners are the second poorest in Mathematics and the poorest in the Sciences worldwide (TIMMS, 2015)

• The poor standards have also been exacerbated by a large number of underqualified or unqualified teachers
G.G. CILLIE BUILDING
FACULTY OF EDUCATION, STELLENBOSCH UNIVERSITY
SUNCEP is addressing the immediate challenge of supporting learners in Mathematics and Sciences by providing supplementary tuition programmes, whilst teachers are involved in capacity building programmes.

LEARNING ENHANCEMENT COMPONENT

Aims to serve as a vehicle for positive change by preparing underserved high school learners for tertiary education.

Tuition in ‘gateway subjects’
Mathematics and Physical Sciences
Provinces in SA
Highlighting the Western and Northern Cape in which the LE component current run programmes

Population distribution in SA. Northern Cape having the lowest population density. This rural area therefore struggle to attract qualified Mathematics and Science teachers.
Northern Cape in South Africa, HOME to SALT and SKA
The Hantam region in the Northern Cape falls under the Namaqua district and has 8 state high schools.
Only four of the high schools offer Mathematics as a subject in the FET Phase, Grades 10, 11, 12.
The four schools are on average 180km from each other with Sutherland the furthest.
School learner numbers in the Hantam

<table>
<thead>
<tr>
<th>School</th>
<th>Total number of learners in school</th>
<th>Total number of learners in Gr 10</th>
<th>Mathematics learners Gr 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calvinia HS</td>
<td>212</td>
<td>35</td>
<td>8</td>
</tr>
<tr>
<td>Loeriesfontein HS</td>
<td>165</td>
<td>37</td>
<td>6</td>
</tr>
<tr>
<td>Brandvlei HS</td>
<td>175</td>
<td>42</td>
<td>6</td>
</tr>
<tr>
<td>Sutherland HS</td>
<td>112</td>
<td>17</td>
<td>5</td>
</tr>
<tr>
<td>Hantam HS</td>
<td>603</td>
<td>134</td>
<td>0</td>
</tr>
<tr>
<td>Fraseburg HS</td>
<td>177</td>
<td>42</td>
<td>0</td>
</tr>
<tr>
<td>Protea HS</td>
<td>176</td>
<td>51</td>
<td>0</td>
</tr>
<tr>
<td><strong>HANTAM</strong></td>
<td><strong>1620</strong></td>
<td><strong>358</strong></td>
<td><strong>25</strong></td>
</tr>
</tbody>
</table>

Two of these schools have qualified Mathematics teachers
Besides the low numbers the other big concern is the progress of these learners in Mathematics and Science which remain very low.

SUNCEP started a holiday school programme with learners from Grades 10, 11 & 12 to support learners with Mathematics.

It consisted of…..
Three F2F holiday programmes per year. Four full days of tuition in Mathematics
NO CHANGE AFTER A YEAR WITH HOLIDAY CLASSES

2018 Mathematics Gr 10
School Marks

First term | Fourth term
THE VIRTUAL CLASSROOM

• Hiltz (1988) defines a virtual classroom as a teaching and learning environment situated within a computer-mediated communication system.

• A virtual classroom creates opportunities for learning to take place remotely and create remote learning communities via personal computers at home or on campus or at work and at schools.


• Synchronous virtual classrooms can also be used to reach a large distance-student population. This might be beneficial for smaller programs that are challenged with recruiting local students and want to reach out to remote areas.
THE VIRTUAL CLASSROOM

• Synchronous online learning such as virtual classrooms allow for shy learners to express their opinions clearly and in a non-threatening environment. Some students felt less peer pressure as being in a face-to-face (F2F) classroom.

  McBrien et al. (2009)

• Due to the rapid nature of on-line technologies, teachers/facilitators/lecturers are always seeking new ways of delivering content for the purpose of teaching and learning.

• Distance learning via virtual classrooms could be viewed as increasing the offerings of the institutions

• Institutions must be careful of not compromising the quality and integrity of courses by viewing virtual classes as cost cutting options
REQUIREMENTS FOR DIGITAL LEARNING

The transition to e-learning with synchronous communication involves not only the adoption of new tools, but also

• new beliefs, roles, practices, and
• new ways of behaving, communicating, collaborating, and of
• managing time.

These changes can be individual as well as systemic and involve

• students, instructors or teachers, managers, support personnel, and administrative staff.
SUNCEP LE PROGRAMME TO THE HANTAM 2019

• Three F2F holiday programmes per year.

• Four full days of tuition in Mathematics

• Grade 10 learners only (Due to lack of funding SUNCEP decided to focus on the entry level of FET in the hope to build foundation first)

• NEW!!
  • Weekly virtual broadcasts from the SUNCEP office by a well qualified and experienced teacher.
  • These lessons would consolidate the previous week’s Mathematics content
SETTING UP: AVAILABLE PLATFORMS

Adobe Connect, Blackboard Collaborate, WebEx, and Saba Centra are synchronous virtual classrooms prevalent in higher education.

FEATURES WE LOOKED FOR

• Easy to operate

• Minimal overall cost

• One way communication or two way – It is difficult to understand what is being enacted with learners if there are no visual clues
Platform: Adobe connect

Most schools and teachers have the devices required for reception of the broadcasts

Laptop/computer; data projector; speakers; SUNCEP only need to provide internet connectivity

It has the option for two way communication in more than one form.

Presenter: The same tutor who facilitated the F2F sessions

Sustained contact

Continuity
The Process

Tutor sets up worksheet for the broadcast

SUNCEP shares worksheet with schools which distribute it to learners

Lessons are structured to allow learners to also actively work through problems during the time.

The teacher at each school MUST stay present in the class and facilitate the process

The memorandum is shared with the learners thereafter.
LEARNERS ACTIVELY ENGAGED DURING BROADCASTS
LEARNERS ACTIVELY ENGAGED DURING BROADCASTS
HOLIDAY CLASSES ONLY IN 2018 vs HOLIDAY CLASSES + DIGITAL PLATFORM IN 2019

2018 Mathematics Gr 10 School Marks

<table>
<thead>
<tr>
<th>Term</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>First term</td>
<td>35</td>
</tr>
<tr>
<td>Fourth term</td>
<td>37</td>
</tr>
</tbody>
</table>

2019 Mathematics Gr 10 School Marks

<table>
<thead>
<tr>
<th>Term</th>
<th>Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>First term</td>
<td>45</td>
</tr>
<tr>
<td>Third term</td>
<td>50</td>
</tr>
</tbody>
</table>
SUMMATIVE PROGRAMME RESULTS 2019

Mathematics Test Marks (Grade 10)

Percentage of Learners

Mark Achieved (%)

Level test 7%
June test 36%
September pre test 28%
September post test 49%
POINTS FROM 2019 PROGRAMME TEST RESULTS

Start of the year
• 100% learners scored below 30% (Pass mark)
• 0% learners scored above 30%
• 65% learners scored below 10%

September results
35% learners scored above 60% (Entry requirement to HE)
20% learners scored below 30%
0% learners scored below 10%
4 of the learners improved with more than 40%
The highest mark in September was 92%
SUMMATIVE PROGRAMME RESULTS 2019

Mathematics Test Marks (Grade 10)

- Level test 7%
- June test 36%
- September pre test 28%
- September post test 49%
THE CHALLENGES

• Internet connectivity
• Electricity outages
• Synchronising lessons
• Teachers can play a more active role with facilitation
Conclusion

Using the digital platform is having a positive impact as it gives opportunity for:

- More contact
- Continuity
- Improved holiday F2F sessions

Points to address

More regular communication between learners and tutor, and amongst learners

Use two way communication during broadcasts more effectively

Teachers facilitating the sessions more actively – provide TPL and guidance

Synchronise the entire learning programme around the virtual lesson
Virtual classrooms are at an emerging stage and thus **need time** to adapt to the contexts in which they are used.

**Students** should be given **time** to adapt to the tool.

The **onus on course conveners and tutors** is to make sure that the virtual classroom has a sense of purpose.

What goes into the creation of a virtual classroom must be **organized, valuable and efficiently managed**.

The objectives, goals and evaluation criteria should be made **explicit and clearly communicated**.

Murphy & Laferriere, 2007; Falloon, 2011
THEY ARE REGULAR TEENAGERS WITH HOPES DREAMS & POTENTIAL
The Northern Cape, generally a dry and barren looking place.
Yet, the slightest hint of rain in spring will transform the landscape. Unleashing the potential hidden from the eye.
They deserve every effort we can make, every tool we can use to unleash their potential within.
THANK YOU FOR LISTENING

Danelda van Graan

LE Manager 2018 & 2019