


APPENDIX A

1. FFAM\textsuperscript{3} GRADE 12 LEARNERS QUESTIONNAIRE SURVEY INSTRUMENT

2. FFAM TEACHERS QUESTIONNAIRE SURVEY INSTRUMENT

\textsuperscript{3} FFAM: Factors facilitating achievement in mathematics.
FFAM GRADE 12 LEARNERS QUESTIONNAIRE

The purpose of this questionnaire is to trace some factors that facilitate achievement in mathematics in traditionally disadvantaged secondary schools. Most of the statements instruct you to mark one option with a cross (X) from a list of options. Use a pencil or black or blue pen to complete this questionnaire. Please be completely honest. Your answers will be regarded as strictly confidential. There are no wrong answers.

THANK YOU IN ADVANCE FOR YOUR CO-OPERATION.
Respondent number: 1-3  
Name:  

Please mark with a cross (X):

(1) What is your father/male guardian’s highest educational level? (Only one option)

| Option                      |  
|------------------------------|---
| Lower than Grade 8           |  
| Grade 8                     |  
| Grade 10                    |  
| Grade 12                    |  
| Technical Qualification     |  
| Bachelors degree            |  
| Honours degree              |  
| Masters degree              |  
| Doctorate                   |  
| Other (specify)             |  
| V2                          | 5  

(2) What is your mother/female guardian’s highest educational level? (Only one option)

| Option                      |  
|------------------------------|---
| Lower than Grade 8           |  
| Grade 8                     |  
| Grade 10                    |  
| Grade 12                    |  
| Technical Qualification     |  
| Bachelors degree            |  
| Honours degree              |  
| Masters degree              |  
| Doctorate                   |  
| Other (specify)             |  
| V3                          | 7  

(3) Have you engaged in any of the following activities during the past 3 years? (For each question, mark only one option with a cross (X))
(4) To what extent do you agree with each of the following statements? **For each question, mark only one option with a cross (X)**

<table>
<thead>
<tr>
<th>Question</th>
<th>REGULARLY</th>
<th>OCCASIONALLY</th>
<th>NEVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 Participated in a mathematics or science tour/excursion?</td>
<td></td>
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<tr>
<td>3.2 Watched mathematics or science TV shows</td>
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<tr>
<td>3.3 Read mathematics or science magazines or news articles on mathematics</td>
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<tr>
<td>3.4 Attended any mathematics Saturdays or Winter schools</td>
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<tr>
<td>4.1 I am afraid of my maths teacher</td>
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<tr>
<td>4.2 My teacher expects me to do well</td>
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<tr>
<td>4.3 I look forward to mathematics classes</td>
<td></td>
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<tr>
<td>4.4 Mathematics is difficult for me</td>
<td></td>
<td></td>
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<tr>
<td>4.5 I have self-discipline in doing mathematics</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4.6 Mathematics is useful in my future career</td>
<td></td>
<td></td>
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<tr>
<td>4.7 Doing mathematics makes me nervous or upset</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

V4 8  
V5 9  
V6 10 
V7 11 
V8 12 
V9 13 
V10 14 
V11 15 
V12 16 
V13 17 
V14 18 
V19 19
<table>
<thead>
<tr>
<th>Me</th>
<th>4.8 I will continue with mathematics after Grade 12</th>
<th>V15</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4.9 I enjoy mathematics</td>
<td>V16</td>
</tr>
<tr>
<td></td>
<td>4.10 Studying hard in maths is not important</td>
<td>V17</td>
</tr>
<tr>
<td></td>
<td>4.11 My teacher always encourages us to work hard</td>
<td>V18</td>
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<tr>
<td></td>
<td>4.12 My friends are interested in mathematics</td>
<td>V19</td>
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<tr>
<td></td>
<td>4.13 My best friend does well in mathematics</td>
<td>V20</td>
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<td></td>
<td>4.14 I believe mathematics is difficult to do unless you have the brains for it</td>
<td>V21</td>
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<tr>
<td></td>
<td>4.15 My friends encourage me to work hard</td>
<td>V22</td>
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<tr>
<td></td>
<td>4.16 My teacher treats learners with respect</td>
<td>V23</td>
</tr>
<tr>
<td></td>
<td>4.17 Learners in my class want to do well</td>
<td>V24</td>
</tr>
<tr>
<td></td>
<td>4.18 Learners in my class respect their maths teacher</td>
<td>V25</td>
</tr>
<tr>
<td></td>
<td>4.19 Learners’ achievement is recognized by the Teacher</td>
<td>V26</td>
</tr>
</tbody>
</table>

(5) How often do you do the following in mathematics? **For each question, mark only one option with a cross (X) \)**
<table>
<thead>
<tr>
<th></th>
<th>REGULARLY</th>
<th>OCCASIONALLY</th>
<th>NEVER</th>
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</thead>
<tbody>
<tr>
<td>V27</td>
<td>31</td>
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<tr>
<td>V28</td>
<td>32</td>
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<td>V29</td>
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<td>V30</td>
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<td>V31</td>
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<td>V32</td>
<td>36</td>
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<tr>
<td>V33</td>
<td>37</td>
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<tr>
<td>V34</td>
<td>38</td>
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<tr>
<td>V35</td>
<td>39</td>
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<tr>
<td>V36</td>
<td>40</td>
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</tbody>
</table>

5.1 Skip maths classes
5.2 Come to class without a pen or pencil
5.3 Try to solve math problems before seeking help
5.4 Attend extra classes
5.5 Work with classmates in mathematics
5.6 Remain after school doing maths
5.7 Lose concentration when solving maths problems
5.8 Participate in class discussion
5.9 Come to class without having done my homework
5.10 Get assistance from family (brother, sister etc)

(6) What marks do you usually get in mathematics tests or exams? 
*Mark only one option with a cross (X)*

- Mostly As (around 80-100)
- Mostly Bs (around 70-79)
- Mostly Cs (around 60-69)
- Mostly Ds (around 50-59)
- Mostly Es (around 35-49)
- Mostly Fs (below 35)
(7) How much effort do you usually put into your mathematics work? (Mark only one option with a cross (X))

<table>
<thead>
<tr>
<th>Option</th>
<th>V38</th>
<th>V39</th>
</tr>
</thead>
<tbody>
<tr>
<td>I do not try at all</td>
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<td>I do just enough to get by</td>
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<td>I give an average amount of effort</td>
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<td>I try very hard, but not as hard as I could</td>
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<tr>
<td>I work as hard as I can</td>
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</tbody>
</table>

(8) Which grade HG or SG?  

(9) In your own experience, learners perform poorly in mathematics because: (For each question, mark only one option with a cross (X))

<table>
<thead>
<tr>
<th>Reason</th>
<th>V40</th>
<th>V41</th>
<th>V42</th>
<th>V43</th>
<th>V44</th>
<th>V45</th>
<th>V46</th>
<th>V47</th>
<th>V48</th>
<th>V49</th>
<th>V50</th>
<th>V51</th>
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</thead>
<tbody>
<tr>
<td>01. They are too many in the class</td>
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<td>02. They are not mathematically talented</td>
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<td>03. They do not know the career they will follow after Grade 12</td>
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<td>04. They have uneducated parents</td>
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<td>05. They do not respect their teachers</td>
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<td>06. They do not attend extra classes</td>
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<td>07. They have underqualified teachers</td>
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<td>08. They are not expected to perform highly</td>
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<td>09. They do not feel respected and connected with their teacher</td>
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<td>10. They are not provided with extra support when needed</td>
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<tr>
<td>11. They do not practice maths with their classmates</td>
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</tr>
</tbody>
</table>
12. They do not have a strong background in mathematics

(10) Which of the above reasons do you regard as the most important one?

Give only the number

(11) S.N

(12) C.N

STOP HERE: MAKE SURE THAT YOU HAVE ANSWERED ALL THE QUESTIONS.
FFAM TEACHERS QUESTIONNAIRE

The purpose of this questionnaire is to trace some factors that facilitate achievement in mathematics in traditionally disadvantaged secondary schools. Most of the statements instruct you to mark one option with a cross (X) from a list of options. Use a pencil or black or blue pen to complete this questionnaire. Please be completely honest. Your answers will be regarded as strictly confidential. There are no wrong answers.

THANK YOU IN ADVANCE FOR YOUR CO-OPERATION.
<table>
<thead>
<tr>
<th>Respondent number</th>
<th>V1</th>
<th>1-4</th>
</tr>
</thead>
</table>

**SECTION A**

Please mark with a cross (X)

1. Indicate your gender
   - Male
   - Female

2. Years of experience in teaching Grade 12 mathematics
   - Fill in the number

3. What is the total number of standard grade (SG) learners in your mathematics class (es)?
   - Fill in the number

4. What is the total number of higher grade (HG) learners in your mathematics class (es)?
   - Fill in the number

5. What is your highest qualification in mathematics?
   - Grade 12
   - JSTC
   - STD
   - Bachelors degree
   - Honours degree
   - Masters degree

For office use only
**SECTION B**

In the past 5 years, have you participated in any of the following activities related to mathematics or teaching of mathematics?

1. Attended any college/university mathematics course.
   - **Yes** ☐ ☐ 15
   - **No** ☐
   If **Yes** give details:

2. Attended any college/university course on the teaching of mathematics.
   - **Yes** ☐ ☐ 16-17
   - **No** ☐
   If **Yes** give details:

3. Observed other teachers teaching mathematics
   - **Yes** ☐ ☐ 19-20
   - **No** ☐

4. Met with a local group of teachers to study/discuss mathematics teaching issues.
   - **Yes** ☐ ☐ 21-22
   - **No** ☐

5. Attended a workshop on mathematics teaching?
   - **Yes** ☐ ☐ 23-24
   - **No** ☐

6. Served as a mentor and/or peer coach in mathematics teaching for other teachers.
(12) Attended any mathematics teacher association meeting.

(13) Invited guest speakers or organised field trips relevant to the mathematics taught in class.

SECTION C

(14) Please indicate to what extent you agree or disagree with the following statements:

<table>
<thead>
<tr>
<th>Statement</th>
<th>AGREE</th>
<th>NEUTRAL</th>
<th>DISAGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.1 I am able to make connections between mathematics and other disciplines</td>
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<tr>
<td>14.2 Additional mathematics textbooks as instructional tools are necessary</td>
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</tr>
<tr>
<td>14.3 I can deal with learners who are not doing well in my class</td>
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<tr>
<td>14.4 Learners learn mathematics best in classes with learners of similar abilities</td>
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<tr>
<td>14.5 I enjoy teaching mathematics</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>14.6 I am able to connect the mathematics I teach with the tertiary mathematics that I studied</td>
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<tr>
<td>14.7 Letting learners criticise/evaluate their own or other learners’ homework is advisable</td>
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<tr>
<td>14.8 I feel confident to teach Grade 12 learners</td>
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</tr>
</tbody>
</table>
(15) How often do you do the following: (Mark with a cross (X))

<table>
<thead>
<tr>
<th>REGULARLY</th>
<th>OCCASIONALLY</th>
<th>NEVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>15.1 Take learners’ prior understanding into account when planning a lesson</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.2 Cover all mathematical concepts in the syllabus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.3 Involve parents in the mathematics education of their children</td>
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<td></td>
</tr>
<tr>
<td>15.4 Advise learners about job opportunities in mathematics, science and technology</td>
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<td></td>
</tr>
</tbody>
</table>

V25 ☐ 35
V26 ☐ 36
V27 ☐ 37
V28 ☐ 38

(16) In which of the following topics would you like in-service training? (Think about content mastery and instructional strategies).

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>16.1 Linear programming</td>
<td>V29 ☐ 39</td>
</tr>
<tr>
<td>16.2 Exponents and logarithms</td>
<td>V30 ☐ 40</td>
</tr>
<tr>
<td>16.3 Euclidean geometry</td>
<td>V31 ☐ 41</td>
</tr>
<tr>
<td>16.4 Trigonometry</td>
<td>V32 ☐ 42</td>
</tr>
<tr>
<td>16.5 Inequalities</td>
<td>V33 ☐ 43</td>
</tr>
<tr>
<td>16.6 Remainder and factor theorem</td>
<td>V34 ☐ 44</td>
</tr>
<tr>
<td>16.7 Analytic geometry</td>
<td>V35 ☐ 45</td>
</tr>
<tr>
<td>16.8 Differential calculus</td>
<td>V36 ☐ 46</td>
</tr>
<tr>
<td>16.9 Arithmetic and geometric progression</td>
<td>V37 ☐ 47</td>
</tr>
</tbody>
</table>
16.10 Graphs of functions
16.11 Other (specify)

(17) Which of the above do you regard as the most important one?
Give only the number

| | V38 | 48 |
| | V39 | 49 |
| | V40 | 50- 51 |

**SECTION D**

(18) How often do you do the following in your mathematics instruction?

<table>
<thead>
<tr>
<th>ACTION</th>
<th>ALWAYS</th>
<th>SOMETIMES</th>
<th>NEVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.1 Pose open-ended questions</td>
<td></td>
<td></td>
<td>V41 52</td>
</tr>
<tr>
<td>18.2 Engage the whole class in discussion</td>
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<td></td>
<td>V42 53</td>
</tr>
<tr>
<td>18.3 Require learners to explain their reasoning</td>
<td></td>
<td></td>
<td>V43 54</td>
</tr>
<tr>
<td>18.4 Allow learners to work at their own pace</td>
<td></td>
<td></td>
<td>V44 55</td>
</tr>
<tr>
<td>18.5 Ask learners to explain concepts to one another</td>
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<td></td>
<td>V45 56</td>
</tr>
<tr>
<td>18.6 Ask learners to seek alternative methods for solutions</td>
<td></td>
<td></td>
<td>V46 57</td>
</tr>
<tr>
<td>18.7 Assign mathematics homework</td>
<td></td>
<td></td>
<td>V47 58</td>
</tr>
<tr>
<td>18.8 Encourage learners to work in groups</td>
<td></td>
<td></td>
<td>V48 59</td>
</tr>
<tr>
<td>18.9 Review homework assignments</td>
<td></td>
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<td>V49 60</td>
</tr>
<tr>
<td>18.10 Make separate presentations to HG and SG learners</td>
<td></td>
<td></td>
<td>V50 61</td>
</tr>
<tr>
<td>18.11 Make special provision for learners who are not doing well in your class</td>
<td></td>
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<td>V51 62</td>
</tr>
</tbody>
</table>
### SECTION E

(19) Give the three most important factors that contribute to learners’ good performance in mathematics in your opinion.

(a) __________________________________________________________

(b) __________________________________________________________

(c) __________________________________________________________

(20) Give the three most important factors that contribute to learners’ poor performance in mathematics in your opinion.

(a) __________________________________________________________

(b) __________________________________________________________

(c) __________________________________________________________

(21) How do you motivate your learners in mathematics?

(a) __________________________________________________________

(b) __________________________________________________________

(c) __________________________________________________________

(22) Does the principal support you in your mathematics teaching? Describe briefly.

(a) __________________________________________________________

(b) __________________________________________________________

(c) __________________________________________________________
(23). In your own experience, learners perform poorly in mathematics because: (For each question, only mark one option with a cross (X))

<table>
<thead>
<tr>
<th></th>
<th>ALWAYS</th>
<th>SOMETIMES</th>
<th>NEVER</th>
</tr>
</thead>
<tbody>
<tr>
<td>01. They are too many in the class</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>02. They are not mathematically talented</td>
<td></td>
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<tr>
<td>03. They do not know the career they will follow after Grade 12</td>
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<tr>
<td>04. They have uneducated parents</td>
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<tr>
<td>05. They do not respect their teachers</td>
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<tr>
<td>06. They do not attend extra classes</td>
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<td>07. They have underqualified teachers</td>
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<tr>
<td>09. They do not feel respected and connected with their teacher</td>
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<tr>
<td>10. They are not provided with extra support when needed</td>
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<tr>
<td>11. They do not practise maths with their classmates</td>
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<tr>
<td>12. They do not have a strong background in mathematics</td>
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<tr>
<td>13. The principal is not supportive</td>
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</table>

V65   85
V66   86
V67   87
V68   88
V69   89
V70   90
V71   91
V72   92
V73   93
V74   94
V75   95
V76   96
V77   97
(24) Which of the above reasons do you regard as the most important one?

Give only the number

<p>| | | |</p>
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STOP HERE: MAKE SURE THAT YOU HAVE ANSWERED ALL THE QUESTIONS.
APPENDIX B

1. THE LETTER REQUESTING PERMISSION TO CONDUCT RESEARCH IN LIMPOPO PROVINCE SCHOOLS

2. LETTER OF APPROVAL TO CARRY OUT RESEARCH

3. LETTER REQUESTING PARTICIPANTS TO COMPLETE THE RESEARCH SURVEY FROM LEARNERS OR PARENTS OF LEARNERS

4. THE LETTER REQUESTING PERMISSION TO CONDUCT RESEARCH FROM TEACHERS AND PRINCIPAL OF SCHOOLS
The Superintendent-General  
Department of Education, Arts, Culture and Sports  
POLOKWANE 0700

Dear Sir/Madam

RE: REQUEST FOR CONDUCTING RESEARCH IN THE NORTHERN PROVINCE SCHOOLS

The matter above refers.

I am a lecturer at the University of Venda and a degree-seeking student at the University of Pretoria. I intend to find relevant information regarding factors that facilitate achievement in mathematics in traditionally disadvantaged secondary schools.

The information obtained would constitute part of my research and is essential. May I therefore seek written permission for use when I visit schools that I would choose.

Thanking you sincerely.

Respectfully

A.R. Tsanwani  
[RESEARCHER]
Northern Province
DEPARTMENT OF EDUCATION
NORTHERN REGION

Ref: No. 8/3/1
Enq: Makgahala S.M.

Mr. A.R. Tsanwani
P.O.Bag x 8050
THOHYANDOU
0950

REQUEST FOR CONDUCTING RESEARCH IN OUR SCHOOLS: YOURSELF

1. We acknowledge the receipt of your letter dated 1.8.2001 regarding the matter supra.

2. The region grants you permission to conduct the research in the schools under its jurisdiction of Soutpansberg and Vuwani Districts.

3. You are required to report at these two districts so that they arrange with the schools you are targeting.

Good luck in your research.

[Signature]
REGIONAL DIRECTOR FOR EDUCATION
Dear Educator

Your learners have been selected to take part in a PhD research project. The purpose of this research is to trace some factors that facilitate achievement in mathematics in traditionally disadvantaged secondary schools. I have been granted permission to conduct research in your school by the Regional Education Department (Limpopo).

One questionnaire will be administered and it will take approximately 30 minutes to complete (FFAM Grade 12 learners questionnaire). Please note:

1. When a learner cannot answer a question or respond to a statement because he has not actually experienced the situation, or if s/he does not understand a certain statement or term, he should ask the researcher to explain it to him or her.
2. Most of the statements instruct the learner to mark one option with a cross (X) from a list of options.
3. Your learner’s answers will be regarded as strictly confidential and I intend to use the data obtained for research only.
4. There is no known risk involved in the research. Possible benefits include the fact that participation will probably help your learner to improve in the study of mathematics.
5. There are no costs involved.
6. The learner should remember that there are no right or wrong answers.

Should you have any queries or comments, you are welcome to contact me.

A.R. Tsanwani

CONSENT

In terms of the ethical requirements of the University of Pretoria, you are requested to complete the following section:

I ____________________________________________, have read this letter and understand the terms involved.

On condition that the information provided by my learners is treated as confidential at all times, I hereby (MARK the appropriate section)

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Signature: ____________________
Date: ____________________
Dear Parent/Guardian

Your child has been selected to take part in a PhD research project. The purpose of this research is to trace some factors that facilitate achievement in mathematics in traditionally disadvantaged secondary schools. I have been granted permission to conduct research in the school that your child is currently attending by the Regional Education Department (Limpopo).

One questionnaire will be administered and it will take approximately 30 minutes to complete (FFAM Grade 12 learners questionnaire). Please note:

1. When a learner cannot answer a question or respond to a statement because he has not actually experienced the situation, or if s/he does not understand a certain statement or term, he should ask the researcher to explain it to him or her.
2. Most of the statements instruct the learner to mark one option with a cross (X) from a list of options.
3. Your child’s answers will be regarded as strictly confidential and I intend to use the data obtained for research only.
4. There is no known risk involved in the research. Possible benefits include the fact that participation will probably help your child to improve in the study of mathematics.
5. There are no costs involved.
6. The learner should remember that there are no right or wrong answers

Should you have any queries or comments, you are welcome to contact me.

A.R. Tsanwani

CONSENT

In terms of the ethical requirements of the University of Pretoria, you are requested to complete the following section:

I ________________________________________________________________, have read this letter and understand the terms involved.

On condition that the information provided by my child is treated as confidential at all times, I hereby (MARK the appropriate section)

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Signature: ____________________
Date: ____________________