References


## Lesson Study: Lesson Plan

**Date:**

**Educator:**

**Lesson duration:**

### Pre-active stage of the lesson:

**Topic:**

Understanding this topic is important because ..... 

**What are your goals for this lesson?**

**What will learners understand as a result of this Lesson?**

(what do you want learners to know and be able to do?)

**What evidence will show learners understand?**

(what performance tasks, products, projects, etc. will demonstrate understanding?)

**What materials will you need?**

<table>
<thead>
<tr>
<th>Prior knowledge of learners</th>
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<tbody>
<tr>
<td>Future knowledge (following the lesson)</td>
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</tbody>
</table>
### Interactive stage of the lesson:

<table>
<thead>
<tr>
<th>Introduction</th>
<th>(Please provide full details of your expectations)</th>
<th>Reflection (after the lesson)</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>(How will you introduce the lesson? Give full details)</em></td>
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</tbody>
</table>

### Learner Activity

*(provide full details of the activity, as well as your expectations of learners’ responses)*

- class arrangement
- assessment
- teacher activity (role)
- learner activity (role)

### Post-active stage of the lesson

<table>
<thead>
<tr>
<th>Class discussion</th>
<th></th>
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<tbody>
<tr>
<td><em>(how do you plan to wrap up the lesson)</em></td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Your feedback to the learners about the activity and learning that took place</th>
<th></th>
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</thead>
</table>

<table>
<thead>
<tr>
<th>Final reflections on the lesson</th>
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<tbody>
<tr>
<td><em>(complete this part as soon as you have taught the lesson)</em></td>
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</table>
Appendix B: Letter of consent

Mrs AB Posthuma
Groenkloof campus
barbara.posthuma@up.ac.za
Tel: 082 293 5533

13 May 2010

Dear Ms/Mr ……………………………

Letter of consent to the mathematics teacher

I am conducting a research study for my doctoral degree in mathematics education at the University of Pretoria. This letter is written to invite you to be a participant in this study. The Free State Department of Education granted permission to allow you to participate in the study.

The study seeks to investigate the nature of mathematics teachers’ reflective practice. In order to do this, the following techniques will be employed: 1) I will interview you before the onset of the research study. Please bring one of your lesson plans to the interview for discussion. The purpose of this interview is to help me to understand the nature of your reflections in your classroom practice. 2) You will form part of a lesson study group with other mathematics teachers. In this group you will collaboratively plan a mathematics lesson. One teacher in the group will teach the planned lesson to his/her class. This lesson will be video-recorded and this video recording will be shown to the group afterwards so that they can discuss the teaching of the lesson and reflect on ways to improve the lesson plan. The revised lesson will then be taught by another member of the group and the cycle will continue. 3) You will be asked to keep a reflective journal and share experiences related to your teaching. 4) You will be asked to participate in a final group interview with your fellow teachers of the lesson study group in order to reflect upon your teaching practice and the experience of planning and teaching lessons collaboratively. Audiotapes of the interviews will be made so that each teacher’s verbal reflections can be used as data. Participation is entirely voluntary and you may withdraw from the study at any time if you so choose.

Should you declare yourself willing to participate in this study, confidentiality will be guaranteed. You will be asked to read the transcripts of the interviews to ensure the trustworthiness of the data. Your decision to accept/decline involvement in this research will not influence your teaching career in any way, nor will your participation be reflected in your performance appraisal.

If you are willing to participate in this study, please sign this letter as a declaration of your consent.

Yours sincerely

…………………………………………………………. Date: ………………………………
Mrs AB Posthuma
…………………………………………………………. Date: ……………………………
Supervisor: Prof JG Maree
Participant’s signature …………………………………………….. Date: ……………………………

E-mail address ………………………………………………. Contact number ………………..
Appendix C: Letter of permission to department

FACULTY OF EDUCATION
Mrs AB Posthuma
Aldoel Building F235
Groenkloof Campus
barbara.posthuma@up.ac.za
Tel: 082 293 5533

13 May 2010

Free State Department of Education

Dear Sir/ Madam

Request from FDE for permission to do classroom observations and to conduct interviews

I am currently enrolled as a doctoral student at the University of Pretoria, where I am also a lecturer in the Department of Science, Mathematics and Technology Education. The title of my proposed thesis is as follows: The nature of mathematics teachers' reflective practice. The importance of this research rests on its unique connection of reflective practice relating to teaching, specifically in the field of mathematics. The rationale for this study stems from the premise that mathematics teachers need to find a vehicle for growth and improvement. The development of a reflective process can serve as an important technique in increasing self-knowledge and seeking new ways of educating learners in mathematics. The study can add to research findings concerning reflective practice and contribute to the discussion on the usefulness of reflective practice as a reform effort in teacher education.

In order to collect data for this project, I would like to invite mathematics teachers of at least two neighbouring schools in the Thabo Mofutsanyana district to participate in forming a lesson study group. In lesson study the focus is on the concrete examination of practice and the testing of new ideas in actual classrooms. This examination of practice is a collaborative exercise in which a group of teachers design, reflect on, and deliver mathematics lessons to enhance student achievement.

I will interview the teachers individually and observe them in the lesson study group while they are planning lessons and reflecting on their classroom practice. The teacher who teaches the lesson will also be observed and video-recorded. My observations will be unobtrusive and confidentiality of both participants and the institutions will be ensured.

I hereby formally request your permission to observe and interview mathematics teachers at schools in the Thabo Mofutsanyana district in the second term of this year. I trust that my request will meet with a favourable response.

Yours faithfully

…………………………………..
Mrs AB Posthuma
Appendix D: Interview and group reflection schedules

INTERVIEW SCHEDULE 1
Individual semi-structured interview

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<thead>
<tr>
<th>Name of school</th>
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<tbody>
<tr>
<td>Name of researcher</td>
<td>Barbara Posthuma</td>
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<tr>
<td>Name of teacher</td>
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<tr>
<td>Male/ female</td>
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<tr>
<td>Date of interview</td>
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<tr>
<td>Teacher’s qualification</td>
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<tr>
<td>Level of Mathematics education</td>
<td></td>
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<tr>
<td>No of years teaching Mathematics</td>
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<tr>
<td>Home language</td>
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Thank you for taking part in my study. As you are aware I am working on my thesis. The topic is the nature of mathematics teachers’ reflective practice. I want to get your perspective of reflection and have some questions that I want to ask you. Please feel free to elaborate on your answers, the more you can tell me, the more I will be able to represent your views in the thesis.

1. What do you understand by the term reflection?

2. Do you reflect on your classroom practice in mathematics?

3. Can you give me an example of when you reflected on your classroom practice?
   i. **How** do you reflect on your practice?
   ii. **When** do you reflect on your practice?
   iii. **What** do you reflect on after teaching a lesson?
   iv. Do any particular **factors influence** your reflections?
   v. Have you **gained** anything by reflecting on your practice? If the answer is “yes”, how? If the answer is “no”, why not?
Discussion of the lesson in lesson plan provided during initial interview:

- What did you like best about this lesson?
- What, in your opinion, were essential strengths of the lesson?
- What, in your opinion, were essential challenges experienced during the lesson?
- Suppose you had to teach the lesson again, what aspects, if anything, would you change about the lesson?
- Did your learners achieve the lesson outcomes? Why do you say so?
- What, if any, unanticipated learning outcomes resulted from the lesson?
- Can you think of another way you might have taught this lesson?
- Can you think of alternative approaches to teaching this lesson that might improve the learning process?
- Do you think the content covered was meaningful to the learners? Why?
- Is there anything else that you would like to add to what has already been said in this regard?

INTERVIEW SCHEDULE 2

Post-observation interview

- What, in your opinion, were essential strengths of the lesson?
- What, in your opinion, were essential challenges experienced during the lesson?
- What, if anything, would you change about the lesson?
- Do you think the lesson was successful? Why?
- Should you feel that the lesson was not successful, please elaborate?
- What conditions were important to achieving the outcomes?
- What, if any, unanticipated learning outcomes resulted from the lesson?
- Can you think of other ways in which you might have taught this lesson?
- Can you think of alternative approaches to teaching this lesson that might improve the learning process?
- Do you think the content covered was meaningful to learners? Why?
- What, if any, moral or ethical concerns occurred as a result of the lesson?
- Is there anything else that you would like to add to what has already been said in this regard?
Final group Interview

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<td>Name of researcher</td>
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<tr>
<td>Name of teacher</td>
<td></td>
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<tr>
<td>Gender</td>
<td></td>
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<tr>
<td>Date of interview</td>
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</table>

- In which ways, if at all, did participation in the lesson study group alter your teaching practice?
- What are your thoughts about the lesson study group?
- What are your feelings about the lesson study group?
- How did you experience working collaboratively with colleagues in the lesson study group?
- Did you gain anything from this experience? If the answer is “yes”, in which ways and what did you gain?
- Were there any negative experiences in the lesson study group? If the answer is “yes”, please elaborate?
- As a result of your lesson study group experience, describe a specific instance(s) in which you have been reflective or specific instance(s) in which your teacher thinking was changed in some way
Appendix E: Ethical clearance certificate

UNIVERSITY OF PRETORIA
FACULTY OF EDUCATION
RESEARCH ETHICS COMMITTEE

CLEARANCE CERTIFICATE

DEGREE AND PROJECT
PhD
The nature of mathematics teachers’ reflective practice.

INVESTIGATOR(S)
Anna Barbara Posthuma

DEPARTMENT
Department of Science, Mathematics and Technology Education

DATE CONSIDERED
15 June 2011

DECISION OF THE COMMITTEE
APPROVED

CLEARANCE NUMBER: SM 10/05/01

Please note:
For Masters applications, ethical clearance is valid for 2 years
For PhD applications, ethical clearance is valid for 3 years.

CHAIRPERSON OF ETHICS COMMITTEE
Prof L Ebersohn

DATE
15 June 2011

CC
Joannie Boukos
Ms A.B Posthuma
Prof J.G Maree

This ethical clearance certificate is issued subject to the following conditions:

1. A signed personal declaration of responsibility.
2. If the research question changes significantly so as to alter the nature of the study, a new application for ethical clearance must be submitted.
3. It remains the students’ responsibility to ensure that all the necessary forms for informed consent are kept for future queries.

Please quote the clearance number in all enquiries.