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Dr. Mary Grosser

Dear Dr Grosser

21 Oktober 2008

**ETHICS APPROVAL OF PROJECT**

The North-West University Ethics Committee (NWU-EC) hereby approves your project as indicated below. This implies that the NWU-EC grants its permission that, provided the special conditions specified below are met and pending any other authorisation that may be necessary, the project may be initiated, using the ethics number below.

Project title: Improving the critical thinking abilities of prospective teachers
Ethics number: <b>N W U - 0 0 3 8 - 0 8 - S 2</b>
Approval date: 29 September 2008      Expiry date: 28 September 2013

Special conditions of the approval (if any): None

**General conditions:**

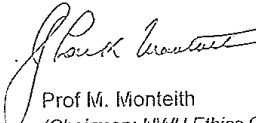
*While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following:*

- The project leader (principle investigator) must report in the prescribed format to the NWU-EC:
  - annually (or as otherwise requested) on the progress of the project,
  - without any delay in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.
- The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the NWU-EC. Would there be deviated from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.
- The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date, a new application must be made to the NWU-EC and new approval received before or on the expiry date.
- In the interest of ethical responsibility the NWU-EC retains the right to:
  - request access to any information or data at any time during the course or after completion of the project;
  - withdraw or postpone approval if:
    - any unethical principles or practices of the project are revealed or suspected,
    - it becomes apparent that any relevant information was withheld from the NWU-EC or that information has been false or misrepresented,
    - the required annual report and reporting of adverse events was not done timely and accurately,
    - new institutional rules, national legislation or international conventions deem it necessary.

The Ethics Committee would like to remain at your service as scientist and researcher, and wishes you well with your project. Please do not hesitate to contact the Ethics Committee for any further enquiries or requests for assistance.

Yours sincerely

  
Prof MMJ Lowes  
(chair NWU Ethics Committee)

  
Prof M. Monteith  
(Chairman: NWU Ethics Committee: Teaching and Learning)

**From:** Marietjie Halgryn  
**To:** Mary Grosser  
**Date:** 2008/10/06 09:21 AM  
**Subject:** Re: Fwd: GrosserM NWU 00042 08 A2.doc - Goedgekeur

Goeiemore Mary

Aansoek NWU - 0039-08-A@  
Improving the critical thinking abilities of prospective teachers.

Die aansoek is ook finaal goedgekeur. Die sertifikaat sal binnekort uitgereik word.

Hoop dit is goeie nuus.

Dankie en mooi week.

Me. H.M. Halgryn (Marietjie)  
Snr Navorsingondersteuningsbeampte /  
Snr Research Support Official  
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>>> Mary Grosser 2008/10/03 07:21 AM >>>

Hallo Marietjie  
Baie dankie hiervoor! Dis goeie nuus! Ek wil net ook graag weet wat die situasie met my ander projek is - "Improving the critical thinking abilities of prospective teachers". Ek het sover ek weet ook aan alles voldoen wat die etiekkomitee aanbeveel het, maar het nog nie finale goedkeuring ontvang nie. Dankie vir die opvolg hiervan!  
Mooi dag en mooi naweek!  
Mary

>>> Marietjie Halgryn 2008/09/30 09:58 AM >>>

Hello Mary

Hierdie projek van jou is ook nou finaal goedgekeur en die sertifikaat sal binnekort uitgereik word.

Die nuwe nommer is soos volg:

**NWU-0042-08-A2** Die "A" status staan vir finaal goedgekeur.

Mooi week vir jou.

Me. H.M. Halgryn (Marietjie)  
Snr Navorsingondersteuningsbeampte /  
Snr Research Support Official  
Institutionele Navorsingondersteuning/ Institutional Research Support  
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**BYLAAG B**

**INGELIGTE TOESTEMMING**

## INFORMED CONSENT (STUDENT)

Dear Student

I, MM Kloppers, am currently doing a research study for my doctorate. I need your assistance in providing me with information to complete the study. This document will provide you with information regarding the study and what your involvement will entail. If you feel comfortable with the contents and explanation I will appreciate it if you could sign the section indicating your consent to take part in the study.

**Kindly note the following before you give consent to participate in the project.**

With the teaching of Mathematics I identified that students lack positive critical thinking dispositions. I am approaching you personally to ask you to take part in the study. Participation is not compulsory and you may withdraw at any time should you feel uncomfortable. I would like you to complete an inventory as well as write a narrative. The inventory will be scheduled for a Mathematics period, after the work has been done. The time needed to complete the inventory will be more or less 15-20 minutes. With the inventory I want to determine your disposition towards critical thinking. At a later stage, after the completion of the inventory, I would request a few of you to write a narrative regarding your thinking dispositions, based on questions that I will set.

There are no direct benefits for taking part in the study.

**CONFIDENTIALITY:** The information that you disclose during the completion of the inventory and the writing of the narrative will be kept confidential by the researcher. No names will be revealed when reporting on the information. Each participant will be identified by a code.

The research is done under the supervision of Professor MM Grosser from North-West University (Vaal Triangle Campus). If you have queries or questions you may contact her on 016 910 3063 (work).

**CONSENT:**

I, ..... (full name), have read and understood the nature of my participation in the project and agree to participate.

Signature: ..... Date: .....

I do not agree to participate.

Signature: ..... Date : .....

## INGELIGTE TOESTEMMING (STUDENT)

Geagte student

Ek, MM Kloppers, is tans besig met navorsing vir my doktoraal. Ek benodig u hulp om my van inligting te voorsien om die studie te voltooi. Hierdie dokument sal aan u inligting oor die studie verskaf en oor wat u betrokkeheid by die studie behels. Indien u gemaklik voel met die inhoud en verduideliking, sal ek dit op prys stel indien u die afdeling wat aandui dat u toestemming verleen om aan die studie deel te neem, sal onderteken.

**Neem kennis van die volgende voordat u toestemming verleen om aan die projek deel te neem.**

Gedurende die onderrig van Wiskunde het ek besef dat positiewe kritiese denkingesteldhede en houdings by studente ontbreek. Ek nader u persoonlik om aan die studie deel te neem. Deelname is nie verpligtend nie en u mag te eniger tyd onttrek indien u ongemaklik voel. Ek versoek u om 'n vraelys in te vul sowel as 'n narratief te skryf. Die vraelys sal in 'n Wiskundeperiode voltooi word sodra die werk afgehandel is. Dit sal ongeveer 15-20 minute neem om die vraelys in te vul. Met behulp van die vraelys wil ek u kritiese denkingesteldheid en houding bepaal. Later, na voltooiing van die vraelys, sal ek van die respondente versoek om 'n narratief te skryf oor hul kritiese denkingesteldhede en houdings, gebaseer op vrae wat ek sal opstel .

Daar is geen direkte voordeel vir deelname aan die studie nie.

**VERTROULIKHEID:** Die inligting wat u tydens die invul van die vraelys en die skryf van die narratief verskaf, sal deur die navorser as vertroulik hanteer word. Geen name sal bekend gemaak word wanneer verslag gedoen word oor die navorsing nie. Elke respondent sal met 'n kode geïdentifiseer word.

Die navorsing geskied onder die toesig van Professor MM Grosser van die Noordwes-Universiteit (Vaaldrivehoekkampus). Indien u enige navrae of vrae het, kan u haar kontak by 016 910 3063 (kantoor).

### TOESTEMMING:

Ek, .....(volle name) het die dokument gelees, verstaan die aard van my deelname aan die projek en stem in om deel te neem.

Handtekening: ..... Datum: .....

Ek stem nie in om deel te neem nie.

Handtekening: ..... Datum: .....

**BYLAAG C**

**VRAELYS**

Dui op die skaal van 1 tot 7 (waar 1 BELANGRIK en 7 ONBELANGRIK is) aan hoe belangrik die volgende stellings vir jou is:	
1	om die redes vir my stappe in probleemoplossing te identifiseer
2	om 'n Wiskunde-probleem ten volle te verstaan voordat ek 'n besluit neem
3	om 'n Wiskunde-opdrag volledig te verstaan voordat ek daarmee begin
4	om op te let na detail in Wiskunde-probleme
5	om nie toe te laat dat my vooroordeel my besluite beïnvloed nie
6	om goed ingelig te wees voordat ek 'n besluit neem
7	om altyd presies te weet waarom 'n sekere wiskundige stap gevolg is, al irriteer dit mense om my
8	om alles in my vermoë te doen om die korrekte antwoord vir 'n Wiskunde-probleem te kry
Dui op die skaal van 1 tot 7 (waar 1 BELANGRIK en 7 ONBELANGRIK is) aan hoe belangrik die volgende stellings vir jou is:	
9	om geduldig te luister na die idees van ander
10	om tolerant te wees teenoor die idees van ander
11	om begrip te hê vir die wêreldbeskouings van ander mense
12	om respek te toon teenoor iemand wie se idees van myne verskil
Dui op die skaal van 1 tot 7 (waar 1 BELANGRIK en 7 ONBELANGRIK is) aan hoe belangrik die volgende stellings vir jou is:	
13	om vooruit te dink aan die gevolge van my besluite
14	my besluite moet betekenis tot my eie lewe toevoeg
15	om bedag te wees op kort-termyn uitkomste vir besluite
16	om bedag te wees op lang-termyn uitkomste vir besluite
Dui op die skaal van 1 tot 7 (waar 1 BELANGRIK en 7 ONBELANGRIK is) aan hoe belangrik die volgende stellings vir jou is:	
17	om my Wiskunde-opdragte op 'n logiese wyse te benader
18	om my Wiskunde-opdragte noukeurig te benader
19	om 'n Wiskunde-probleem tot in die fynste detail te ontleed voordat ek dit aanpak
20	om altyd inligting sistematies in te samel
21	om deeglik te beplan voordat ek 'n Wiskunde-opdrag aanpak



22	om tussen toepaslike en ontoepaslike inligting vir die oplos van 'n probleem te onderskei
23	om vir myself doelwitte te stel waarvolgens ek my studies aanpak
Dui op die skaal van 1 tot 7 (waar 1 BELANGRIK en 7 ONBELANGRIK is) aan hoe belangrik die volgende stellings vir jou is:	
24	om na te dink oor die antwoorde van my Wiskundeprobleme
25	Om na te dink oor besluite wat my toekoms raak
26	Om seker te maak dat ek genoegsame inligting het waarop ek my besluite kan baseer
27	Om baie vrae te vra voordat ek 'n Wiskunde-probleem oplos
28	om, nadat ek 'n probleem opgelos het, seker te maak dat ek die vraag beantwoord het
29	om te reflekteer (hou retrospeksie, ek dink na oor) op my dag se werk
30	om te reflekteer (hou retrospeksie, ek dink na oor) op my besluite
31	om, nadat ek 'n opdrag voltooi het, die resultaat te ontleed
32	om 'n gevoel van bevoegdheid te ervaar wanneer ek 'n Wiskundeprobleem suksesvol kon oplos
Dui op die skaal van 1 tot 7 (waar 1 BELANGRIK en 7 ONBELANGRIK is) aan hoe belangrik die volgende stellings vir jou is:	
33	om gedurig na nuwe inligting te soek sodat ek meer oor 'n onderwerp te wete kan kom
34	om uit my pad te gaan om vas te stel hoe om 'n moeilike probleem te benader
35	om na geleenthede te soek waarin ek probleme kan oplos
36	om in verskillende onderwerpe geïnteresseerd te wees
37	om nuwe onderwerpe te ondersoek
38	om baie vrae oor 'n nuwe leergedeelte te vra
39	om antwoorde op uitdagende vrae te vind
40	om nuwe inligting wat niks met my studies te doen het nie, te bestudeer
41	om wyd te lees om my begrip van onderwerpe te verbreed
42	om toetse te skryf wat meer as net memorisering vereis
43	om vooruit te werk en voorbereid na die Wiskundeklas te kom
44	om my kennis op die werklikheid toe te pas

Dui op die skaal van 1 tot 7 (waar 1 BELANGRIK en 7 ONBELANGRIK is) aan hoe belangrik die volgende stellings vir jou is:

45	Indien ek twyfel, gebruik ek ander bronne om van my feite seker te maak
46	om te erken wanneer ek verkeerd is
47	dat mense goeie argumente moet gebruik om idees te verdedig
48	om regverdige besluite te neem
49	nie alles te aanvaar wat ander vir my sê nie
50	om my siening oor 'n saak te verander

Indicate on the scale from 1 to 7 (where 1 is IMPORTANT and 7 is UNIMPORTANT) how important the following statements are to you:	
1	to identify the reasons for my steps in problem-solving
2	to understand a Maths problem completely before making a decision
3	to understand a Maths assignment completely before starting with it
4	to pay attention to detail in Maths problems
5	to not allow my prejudice to influence my decisions
6	to be well informed before making a decision
7	to know exactly why a certain mathematics step was followed – even when it irritates those around me
8	to do everything in my power to find the correct answer for a Maths problem
Indicate on the scale from 1 to 7 (where 1 is IMPORTANT and 7 is UNIMPORTANT) how important the following statements are to you:	
9	to listen patiently to the ideas of others
10	to be tolerant towards the ideas of others
11	to show understanding for the worldviews of others
12	To show respect towards people whose ideas differ from mine
Indicate on the scale from 1 to 7 (where 1 is IMPORTANT and 7 is UNIMPORTANT) how important the following statements are to you:	
13	to think ahead about the consequences of my decisions
14	my decisions should add meaning to my life
15	to foresee short-term outcomes for decisions
16	to foresee long-term outcomes for decisions
Indicate on the scale from 1 to 7 (where 1 is IMPORTANT and 7 is UNIMPORTANT) how important the following statements are to you:	
17	to approach my Maths assignments in a logical manner
18	to approach my Maths assignments accurately
19	to analyse a Maths problem in the finest detail before tackling it
20	to always gather information systematically
21	to plan thoroughly before tackling a Maths assignment
22	to distinguish between relevant and irrelevant information for solving a problem

23	to set goals for myself according to which I tackle my studies
Indicate on the scale from 1 to 7 (where 1 is IMPORTANT and 7 is UNIMPORTANT) how important the following statements are to you:	
24	to reflect on the answers of my Maths problems
25	to reflect on decisions that impact on my future
26	to ensure that I have sufficient information to base my decisions on
27	to ask lots of questions before solving a Maths problem
28	to ensure that I have answered the question, after solving a problem
29	to reflect on (think about) my day's work
30	to reflect on (think about) my decisions
31	to analyse the result after completing an assignment
32	to experience a feeling of competence when I could successfully solve a Maths problem
Indicate on the scale from 1 to 7 (where 1 is IMPORTANT and 7 is UNIMPORTANT) how important the following statements are to you:	
33	to constantly look for new information so that I can learn more about a topic
34	to go out of my way to determine how to approach a difficult problem
35	to look for opportunities in which I can solve problems
36	to be interested in many topics
37	to investigate new topics
38	to ask lots of questions on a new learning section
39	to find answers on challenging questions
40	to study new information that have no relevance to my studies
41	to read a lot to broaden my understanding of topics
42	to write tests that require more than just memorization
43	to work in advance and come to the Maths class prepared
44	to apply my knowledge to reality
Indicate on the scale from 1 to 7 (where 1 is IMPORTANT and 7 is UNIMPORTANT) how important the following statements are to you:	
45	When I am in doubt, I use other sources to verify my facts
46	to acknowledge that I am wrong

47	that people must use good arguments to defend ideas
48	to make just decisions
49	not to accept everything that other people tell me
50	to change my mind about an issue