

Addendum 4.1



kzn education

Department:
Education
KWAZULU-NATAL

Enquiries: Sibusiso Alwar

Tel: 033 341 8610

Ref.:2/4/8/204

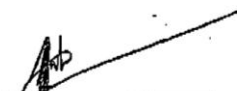
Ms Elfrieda Fleischmann
Cedar College of Education
Geography Department

Dear Ms Fleischmann

PERMISSION TO CONDUCT RESEARCH IN THE KZN DoE INSTITUTIONS

Your application to conduct research entitled: **The Viability of an Interactive Geographic Information System Tutor (I-GIS-T) application within the FET phase**, in the KwaZulu-Natal Department of Education Institutions has been approved. The conditions of the approval are as follows:

1. The researcher will make all the arrangements concerning the research and interviews.
2. The researcher must ensure that Educator and learning programmes are not interrupted.
3. Interviews are not conducted during the time of writing examinations in schools.
4. Learners, Educators, Schools and Institutions are not identifiable in any way from the results of the research.
5. A copy of this letter is submitted to District Managers, Principals and Heads of Institutions where the intended research and interviews are to be conducted.
6. The period of investigation is limited to the period from 01 May 2012 to 31 December 2013.
7. Your research and interviews will be limited to the schools you have proposed and approved by the Head of Department. Please note that Principals, Educators, Departmental Officials and Learners are under no obligation to participate or assist you in your investigation.
8. Should you wish to extend the period of your survey at the school(s), please contact Mr. Alwar at the contact numbers below.
9. Upon completion of the research, a brief summary of the findings, recommendations or a full report / dissertation / thesis must be submitted to the research office of the Department. Please address it to The Director-Resources Planning, Private Bag X9137, Pietermaritzburg, 3200.
10. Please note that your research and interviews will be limited to the following schools and Institutions:
 - 10.1 Vukile High School (Maphumulo)
 - 10.2 Maphomeni High School (Nkala Road)
 - 10.3 Howick Secondary School
 - 10.4 Stanger Secondary School
 - 10.5 Greytown High School
 - 10.6 Voortrekker Hoër Skool
 - 10.7 Wartburg School
 - 10.8 DSS


Nkomo S.P. Sishi, PhD
Head of Department: Education

2012/06/11
Date

...dedicated to service and performance
beyond the call of duty.



**The viability of an Interactive Geographic Information System Tutor (I-GIS-T)
application within the FET phase**

Letter to the School Governing Body

E Fleischmann
Cedar College of Education
June 2012

Dear School Governing Body of _____

Recently Geospatial Information Systems (GIS) has been introduced into the Geography curriculum for the FET phase (NCS & CAPS documents) and many teachers in SA experience problems trying to align their teaching to requirements set in these documents. This coincides with problems teachers face globally when teaching GIS. In order to alleviate the main barriers while trying to implement GIS teaching in SA, North-West University (NWU) has developed Interactive-GIS-Tutor software (multimedia). Results from this study may provide valuable insight and support regarding NCS/CAPS curriculum orientated GIS learning within the FET phase.

The purpose of this investigation therefore, is to test the workability of an Interactive-GIS-Tutor software program for grade 11.

This activity will not take up any additional teaching time, but will actually lessen the teacher's preparation time to implement GIS. (It has globally been found that teachers do not have the time to prepare lessons and study complex GIS software, prior to the lesson)

Your school has been identified as providing an appropriate context in which data may be collected. I am writing, therefore, to request permission to conduct this study involving grade 11 Geography learners at your school. The study will involve the following aspects:

- 1. **Site visit**, which would involve familiarising myself with the educational context in which GIS is used at your school. 10 min*
- 2. **Conducting an I-GIS-T activity** in the school's computer lab with the learners while monitoring the viability of this software in a school lab context, together with pre and post tests on the learner's attitude towards GIS (Pre and post-tests 60 min). Activity will be approximately 3 x 20 min = 60 min. (Total approximately 2 hrs)*
- 3. **Teacher and learner surveys and interviews** to determine the success of the I-GIS-T application within the educational context. Approximately 3 x 10 min for 3 learners or focus group questions as well as 20 min interviews with the teacher.*

I anticipated that this study will take approximately 4 periods during 2012.

The study design has been scrutinised by NWU ethics committee and complies with the following requirements:

There are no perceived benefits or disadvantages to the learners being involved in this study. Participation of learners in this study is voluntary. The learner may also discontinue participation at any time without comment or penalty.

Confidentiality of participants and the school is assured. Pseudo names will be used during collection of data. No student will be identifiable from the written records of the research. The collected data (audio recordings, transcripts, field notes, questionnaires, pre & post tests and video recordings) from this study will be available only for access by my principle supervisor, two co-supervisors and myself. This data may be accessed for the purpose of undertaking work in related areas, namely workshops, presentations and publications in educational and research journals. If video material should be use in future presentations, the identity of the school and learner will be masked.

Following completion of the research project, the data will be used solely for presenting work in educational and research forums. Initial findings from this research are expected to be available by the end of the year. Results will be supplied to you.

For the information/consent forms that will be provided to learners refer addendum A.

In answer to this request I would appreciate a written consent as required by my study supervisor. Once this has been received, I will provide the form for learners and their parents/guardians which will outline the proposed research and which will seek their written consent. I will also provide a brief outline of the proposed research for inclusion in your communication with parents. It is anticipated that interviews will be undertaken during 2012.

Should you wish to discuss this proposal, or raise any concerns, I may be contacted directly on telephone 082 312 5794, or via elfie.f@gmail.com.

Alternatively, you may contact my supervisor, Dr CP van der Westhuizen on 018 299 4734 or via christo.vanderwesthuizen@nwu.ac.za.

I would be grateful if you would consider this application favourably.

Yours sincerely,

Elfrieda Fleischmann

Enclosed:

Parent/learner information/consent form

**The viability of an Interactive Geographic Information System Tutor (I-GIS-T)
application within the FET phase**

Letter to the Education Principal

E Fleischmann
Cedar College of Education
June 2012

Dear Principal

I am presently conducting master studies through North-West University in conjunction with Cedar College of Education. The title of this research is: The viability of an Interactive Geographic Information System Tutor (I-GIS-T) application within the FET phase.

The purpose of this investigation is to test the workability of an Interactive-GIS-Tutor software program (newly developed by North West University) for FET phase Geography learners. This GIS-software application has been developed in order to ease GIS learning and to enhance learner centred learning.

Your school has been identified as providing an appropriate context in which data may be collected. I am writing, therefore, to request permission to conduct this study involving students enrolled in FET phase Geography at your school. The study will involve the following aspects:

1. **Site visit**, which would involve me familiarising myself with the educational context in which GIS is used at your school.
2. **Conducting an I-GIS-T activity** in the schools computer lab with the learners while monitoring the viability of this software in a school lab context, together with pre and post tests on the learner's attitude regarding GIS.
3. **Teacher and learner surveys and interviews** to determine the success of the I-GIS-T application within the educational context.

I anticipate that this study will be undertaken for about 4 periods during 2012.

There are no perceived benefits or disadvantages to the learners being involved in this study. Participation of learners in this study is voluntary. The learner may also discontinue participation at any time without comment or penalty.

Confidentiality of participants and your school is assured. Pseudo names will be used during collection of data. No student will be identifiable from the written records of the research. The collected data (audio recordings, transcripts, field notes, questioners, pre & post tests and video recordings) from this study will be available only for access by my principle supervisor, two co-supervisors and myself. This data may be accessed for the purpose of undertaking work in related areas, namely workshops, presentations and publications in educational and research journals. If video material should be use in future presentations, the identity of the school and learner will be masked. Following completion of the research

project, the data will be used solely for presenting work in educational and research forums. Initial findings from this research are expected to be available by the end of the year. Results will be supplied to you.

Application to Conduct Research in Education KwaZulu-Natal has been lodged with the Department of Education. A copy of the approval notice is appended. Also appended are the information/consent forms that will be provided to students.

Should you wish to be included in this research; in the first instance I will require your written consent. Once this has been received, I will provide the form for learners and their parents/guardians that outline the proposed research and seeks their written consent. I will also provide a brief outline of the proposed research for inclusion in your communications with parents. It is anticipated that interviews will be undertaken during 2012.

Should you wish to discuss this proposal, or raise concerns about its conduct, I may be contacted directly on telephone 082 3125 794, or via elfie.f@gmail.com. Alternatively you may contact my supervisor, Dr CP van der Westhuizen on 018 299 4734 or via christo.vanderwesthuizen@nwu.ac.za.

I would be grateful if you would consider this application favourable.

Yours sincerely

Elfrieda Fleischmann

Enl.

Note of approval from DoE (KZN) to conduct research

Parent/learner information/consent form

The viability of an Interactive Geographic Information System Tutor (I-GIS-T) application within the FET phase

Information letter to teacher

Dear (insert teachers name)

I am presently conducting master studies through North West University. The title of this research is: The viability of an Interactive Geographic Information System Tutor (I-GIS-T) application within the FET phase. The purpose of this investigation is to test the viability of an Interactive-GIS-Tutor software program (newly developed by North West University) for FET phase Geography learners. This GIS-software application has been developed in order to ease GIS learning and to enhance learner centred learning.

Your Principal, (name of principal) has given approval for your school to participate, and has indicated that I should liaise directly with you to coordinate the project. I am writing, therefore, to advise you of the study's requirements.

This study will involve learners enrolled in the FET phase Geography at your school. The study will involve the following aspects, which will ideally occur during two visits:

- **Site visit**, which would involve me familiarizing myself with the educational context in which GIS is used at your school.
- **I-GIS-T application activity** as well as **pre and post-test on GIS attitudes and a questionnaire**.
- **Interviews**, which will involve also, focus groups of approximately 6-8 learners. Each interview will be audio taped and preceded by an introductory monologue to ensure common understanding between myself and interviewees. Each focus group interview is expected to take between 30-45 minutes. The number of interviews undertaken in any one school will depend on the number of learners wishing to participate.

It is anticipated that this study would be undertaken during 2012. The precise time will be negotiated with yourself.

There are a number of tasks that I need to complete. These are:

1. Provide information and consent forms to FET phase geography students.
2. Collect consent forms from students and advise me of the number of students.
3. Organize participants into interview groups.
4. Identify an appropriate venue in which the interviews may be conducted.
5. Identify interview times that are suitable for your school and its participants.
6. Meet with you for approximately 30 minutes to discuss the nature and extent of GIS' use as part of your school's Geography curriculum.

I would be happy to discuss with you the most efficient way of undertaking these tasks.

There are no perceived benefits or disadvantages to the learners being involved in this study. Participation of learners in this study is voluntary. The learner may also discontinue participation at any time without comment or penalty.

Confidentiality of participants and your school is assured. Pseudo names will be used during collection of data. No student will be identifiable from the written records of the research. The collected data (audio recordings, transcripts, field notes, questioners, tests and video recordings) from this study will be available only for access by my principle supervisor, two co-supervisors and myself. This data may be accessed for the purpose of undertaking work in related areas, namely workshops, presentations and publications in educational and research journals. If video material should be used in future presentations, the identity of the school and learner will be masked. Following completion of the research project, the data will be used solely for presenting work in educational and research forums. Initial findings from this research are expected to be available by the end of the year. Results will be supplied to you.

I have appended a copy of the Introductory Monologue, Interview Guidelines and Parent/Student Information/Consent Form. I will contact you by telephone prior to the date of the study to discuss this proposal and to arrange your school's further involvement.

In the meantime, should you wish to discuss this proposal, or raise concerns about its conduct, I may be contacted directly on telephone 082 3125 794, or via elfie.f@gmail.com. Alternatively, you may contact my supervisor, Dr CP van der Westhuizen on 018 299 4734 or via christo.vanderwesthuizen@nwu.ac.za

I look forward to working with you further

Kind regards

Elfrieda Flesichmann

The viability of an Interactive Geographic Information System Tutor (I-GIS-T) application within the FET phase

Letter to the Parents/Guardian

Dear Parent / Guardian

Your child has been selected and invited to take part in a research study of North West University (NWU). Before you decide to let your child participate in this study, it is important that you understand why the research is being done and what it will involve. *Please take the time to read the following information carefully.*

NWU is currently developing and testing I-GIS-T software in order to support GIS teaching in class. The purpose of this study is to test the workability for an I-GIS-T software application within the FET phase Geography. GIS can be shortly described as doing “map work” on a computer.

Study Procedure:

The expected time commitment for this study with your child is approximately 2 hours. Your child will complete I-GIS-T activities with pre and post questionnaires and may take part in an interview. Your child will test and evaluate the I-GIS-T application. This study will not assess your child, but your child is chosen to assess this software.

There is nothing included in this study that may upset your child and your child may withdraw from this study at any moment without any penalty. There will be no direct benefit to you or your child for your participation in this study. However, we hope that the information obtained from this study may break ground for future GIS teaching learning methods.

If your child does not want to be in this study, he/she may choose to withdraw and receive traditional GIS teaching. If your child does not want to be in the study, he/she may choose not to participate and may leave answers blank, or may read quietly at her/his desk.

Pseudo names will be used with the pre and post test. Your responses will be anonymous. The interviews will be recorded and transcribed. Pseudo names of learners will be used at all times to insure anonymity. Confidentiality will also be maintained during video recordings, and should video recordings be used in future presentations or articles, the identity of your child will be masked. Notes, interview transcriptions, transcribed notes and any other identifying participant information will be kept in the personal possession of the researcher. The questioners, transcripts and audio and video recordings will be stored at North West University after the study. When no longer necessary for research, all materials will be destroyed.

The participation in this study is voluntary. It is up to you and your child to decide whether or not to take part in this study. If you do decide to take part in this study, you will be asked to sign below. If you decide to take part in this study, you are still free to withdraw at any time and without giving a reason. Your child is free to not answering any question or questions if he/she choose. This will not affect the relationship you have with the researcher.

There are not any foreseen risks anticipated. There are no costs to you for your child's participation in this study. There is no monetary compensation to you or your child for participation in this study.

Should you have any questions about the research or any related matters, please contact me, Elfrieda Fleischmann at 082 312 5794 or e-mail me at elfie.f@gmail.com. Your child will also have the opportunity to ask any question before participating in this study.

We are looking forward to this research.

Kind regards

Elfrieda Fleischmann

Researcher

Consent form:

By signing this consent form, I confirm that I have read and understood the information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without cost. I consent voluntarily for my child to participate as a participant in this study.

Learner's Signature _____

Print Name of Parent or Guardian _____

Signature of Parent of Guardian _____

Date _____ Day/month/year

Principal Investigator: Dr CP van der Westhuizen
Department: Geography Department North-West University
Phone: 018 299 4734
E-mail: christo.vanderwesthuizen@nwu.ac.za

The viability of an Interactive Geographic Information System Tutor (I-GIS-T) application within the FET phase

Teacher Semi Structured Interview (Pre- I-GIS-T)

Pre-interview Information

Interviewee:

Date and time of interview:

Place of interview and comments:

Gender of Interviewee:

Monologue:

Thank you very much for your time in taking part in this study. We are currently investigating different methods in which teachers can teach GIS in future. There will therefore be no right or wrong answer. This study is not to evaluate you or your school, your learners or any department. This interview is to gain insight on how teachers in practice currently experience GIS teaching. All answers will be treated and stored as confidential. This interview is also voluntary and you may withdraw anytime from any question, without providing a reason or being penalised. This interview will be recorded in order that I may transcribe the interview later. The duration of this interview is about 20-30 minutes. Any questions that you first would like to ask before we start?

Are you ready to start?

1. How long have you been teaching Geography to FET phase learners?
2. What is your opinion of GIS in the curriculum?
3. Do you make use of software as method to teach GIS? (If not why not?)
 - a. What software do you use?
 - b. To what extent are you satisfied with the application you are currently using?
 - c. Is this application workable in class?
4. What pedagogical strategy are you currently using when teaching GIS?
5. What barriers do you experience regarding GIS teaching?
6. What benefit do you think does GIS learning have for the learners?
7. What advice would you give to further GIS learning?
8. What type of features do you think is important when looking for GIS teaching learning support material?

Your contribution is very much appreciated

**The viability of an Interactive Geographic Information System Tutor (I-GIS-T)
application within the FET phase**

Post I-GIS-T Semi-structured Teacher interview

Reading of monologue

Good morning/afternoon. I'd like firstly to thank you for being involved today.

Before we get to the topic, I would like to ensure you that this study is not to assess you or our school. This study is purely to test the workability of the I-GIS-T application within the FET phase.

There are no right or wrong answers. You will not be panelised in any way regarding the answers that you give. Your absolutely honest answer is therefore crucial. I will not judge you for the things that you say. Your confidentiality is certain. Standard courtesy, however, is required.

I am recording this session so that I can transcribe it later. I will also take notes. I will then combine your conversations and the notes with those from other groups who are involved in my study. At no time will you be identified, either while I analyse the data, or publish the results. This is voluntary. If at any time you wish to stop participating, you may do so freely.

So, what is this about?

GIS has lately been included in the curriculum. As you (your class) have done the GIS activity using the I-GIS-T, I would like you to talk on how you experienced this application. Can we start?

1. Do you think the I-GIS-T is workable in your class in the future? (On scale 1-5)
2. What problems, if any did you have with the I-GIS-T?
3. What positive side is there to the I-GIS-T?
4. In what way did you teach GIS before? (Application?)
5. How does the I-GIS-T compare to the previous applications?
6. Did the I-GIS-T application surmount barriers you as teacher experience in GIS teaching? Explain.
7. Would you promote this application to other geography teachers as well?
8. Do you have any future recommendations regarding GIS teaching learning support materials

**The viability of an Interactive Geographic Information System Tutor (I-GIS-T)
application within the FET phase**

Post I-GIS-T Semi-structured learner interview

Reading of monologue...

1. Complete the following phrase: I think the I-GIS-T is....
2. Have you used GIS software before?
3. What GIS technologies did you use?
4. How do the I-GIS-T compare with other GIS learning methods?
5. Complete the following: My biggest challenge when doing the I-GIS-T activities was...
6. Complete the following: When working with the I-GIS-T, I liked
7. Did you feel in charge of your own GIS learning experience while doing the I-GIS-T activity?
8. Do you feel you have learned more about GIS through the I-GIS-T activity?
9. To what degree do you think the I-GIS-T activity was worthwhile?
10. How did you feel while working with the I-GIS-T?
11. What future recommendations do you have regarding GIS activities in class?
12. To what degree would you like to use the I-GIS-T at home as well?

**The viability of an Interactive Geographic Information System Tutor (I-GIS-T)
application within the FET phase**

Post I-GIS-T Semi-structured learner interview (Focus group)

Reading of monologue...

1. Complete the following phrase: I think the I-GIS-T is....
2. Have you used GIS software before?
3. What GIS technologies did you use?
4. How do the I-GIS-T compare with other GIS learning methods?
5. Complete the following: My biggest challenge when doing the I-GIS-T activities was...
6. Complete the following: When working with the I-GIS-T, I liked
7. Did you feel in charge of your own GIS learning experience while doing the I-GIS-T activity?
8. Do you feel you have learned more about GIS through the I-GIS-T activity?
9. To what degree do you think the I-GIS-T activity was worthwhile?
10. How did you feel while working with the I-GIS-T?
11. What future recommendations do you have regarding GIS activities in class?
12. To what degree would you like to use the I-GIS-T at home as well?

**The viability of an Interactive Geographic Information System Tutor (I-GIS-T)
application within the FET phase**

I-GIS-T evaluation questionnaire

Dear learner,

Pseudo Name:

This is not a test. This is an evaluation of the I-GIS-T. There are therefore no right or wrong answers. By completing this questionnaire, you give your voluntary consent to participate in this evaluation and are informed that you can withdraw at any time from this study without any penalty. (Please use a pseudo name and indicate it above.)

*Please complete the corresponding evaluation **after** each corresponding I-GIS-T activity by **encircling** the corresponding number in the shaded are*

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
A - Introduction: (1:30)					
The introduction was clear.	1	2	3	4	5
The graphics supported my gaining of understanding of GIS.	1	2	3	4	5
Any comment/thought?					
B - Tutorial 1: (12 min)					
This tutorial explained GIS in a clear way.	1	2	3	4	5
The graphics supported my gaining of understanding of GIS.	1	2	3	4	5
Any comment/thought?					

C- Exercise 1: (03:00)						
I gained GIS skills from this exercise.		1	2	3	4	5
The graphics supported my gaining of understanding of GIS.		1	2	3	4	5
What was your test score?						
How many attempts did you use?						
Any comment/thought?						
D- Tutorial 2: (5:30)						
This tutorial explained GIS in a clear way.		1	2	3	4	5
The graphics supported my gaining of understanding of GIS.		1	2	3	4	5
I gained new insight in GIS		1	2	3	4	5
Any comment/thought?						
E – Exercise 2: (2:30)						
I gained GIS skills from this exercise.		1	2	3	4	5
The graphics supported my gaining of understanding of GIS.		1	2	3	4	5
I gained new insight in GIS.		1	2	3	4	5
What was your test score?						
How many attempts did you use?						
Any comment/thought?						
F- Tutorial 3: (6:00)						
This tutorial explained GIS in a clear way.		1	2	3	4	5
The graphics supported my gaining of understanding of GIS.		1	2	3	4	5
I have gained new GIS insight during this tutorial.		1	2	3	4	5
Any comment/thought?						

G- Exercise 3: (2:15)						
I gained GIS skills from this exercise.		1	2	3	4	5
The graphics supported my gaining of understanding of GIS.		1	2	3	4	5
What was your test score?						
How many attempts did you use?						
Any comment/thought?						
H- Exercise 4 (2:00)						
I gained GIS skills from this exercise.		1	2	3	4	5
The graphics supported my gaining of understanding of GIS.		1	2	3	4	5
I have gained new GIS insight during this tutorial.		1	2	3	4	5
Any comment/thought?						

Any overall comment on the I-GIS-T?

**The viability of an Interactive Geographic Information System Tutor (I-GIS-T)
application within the FET phase**

Learner GIS attitudinal pre and post questionnaire

Pseudo name:

Grade:

Age:

Gender:

Date:

This is not a test. There is no right or wrong answers. Please read carefully the questions below. Encircle the number at each question that best describes your opinion. Only **ONE** number per box may be **encircled**. Your answers will only be seen by the researchers.

For example:

Item	Statement on attitude to reading	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
0	I love reading	1	2	3	4	5

Now answer the following questions in the same manner. It is important that you are honest in answering all the questions. There is no right or wrong answers. What is important is your honest opinion.

Thank you so much for your time spending answering this survey!

Item	Statement on attitude to GIS	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1	I feel GIS is an important part of the school curriculum	1	2	3	4	5
2	GIS thrills me and I like it	1	2	3	4	5
3	GIS work is fun	1	2	3	4	5
4	I can apply the GIS we learn at school	1	2	3	4	5
5	The wide application of GIS gives me a feeling of accomplishment	1	2	3	4	5
6	I like GIS because it helps me understand the world around me	1	2	3	4	5
7	Looking at GIS data in different ways helps me to learn	1	2	3	4	5
8	Using a GIS map to study data helps me to learn	1	2	3	4	5
9	GIS is an interesting topic	1	2	3	4	5
10	Explaining patterns in GIS data helps me to learn	1	2	3	4	5
11	In GIS, explaining why phenomena occur, helps me to learn	1	2	3	4	5
12	I like working on all types of GIS problems	1	2	3	4	5
13	I can analyze GIS data in many different ways	1	2	3	4	5
14	I am capable of using GIS to display geographic data	1	2	3	4	5
15	I am capable of asking questions to help focus my GIS investigation skills	1	2	3	4	5
16	I can draw conclusions from GIS data	1	2	3	4	5
17	I am capable of using a map to analyze GIS data	1	2	3	4	5
18	I am capable of asking new geographic questions from data that I have drawn from GIS	1	2	3	4	5
19	I can study data with the help of GIS maps	1	2	3	4	5
20	I like GIS because it presents me with a challenge	1	2	3	4	5
21	I have a growing appreciation of GIS through understanding its values, applications and processes.	1	2	3	4	5

(Adapted from Huynh, 2009)