

**UNIVERSITY OF KWAZULU-NATAL
PIETERMARITZBURG CAMPUS
EXAMINATION: June 2014**

SCHOOL: AGRICULTURAL, EARTH AND ENVIRONMENTAL SCIENCES
LEVEL: HONOURS
MODULE: RESEARCH METHODS IN ENVIRONMENTAL SCIENCE
CODE : ENV5700

DURATION: 3 HOURS

TOTAL MARKS: 300

**INTERNAL EXAMINERS : Prof T R Hill, Dr M Dent, Mr T Foggin
EXTERNAL EXAMINER: Prof S Grab**

This paper consists of THREE pages

INSTRUCTIONS:

1. Answer Three questions in total
 2. Answer **ONE** question from Question One
 3. Answer **ONE** question from Question Two
 4. Answer **ONE** question from Question Three
 5. Each question is worth 100 marks
 3. Answer each section in a separate answer book
 4. On the cover of each answer book indicate the number of the question answered
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Answer each question in a separate book

QUESTION ONE

- a. Critically assess this statement, with reference to Khun's notion of paradigm shifts, that: *"Even if you do not subscribe to the very strong socially determined view of change in scientific ideas, the development of science within a social vacuum cannot be sustained any longer. Science, and by implication physical geography, develops within a range of social networks which, even if that do not impact upon the logic of selecting theories or paradigms, certainly do contribute to what and how reality is studied"* (Inkpen, 2005: 35).

OR

- b. Scientific discourse is based on a positivist philosophy that is well established, but often not overt or critiqued. Some would argue that conventional scientific

method is so well established that it is not recognized as a dominant discourse (O’Riordan, 1995). Science is also extremely powerful as Pigluicci (2008: 5) states: “*science is without doubt the most successful approach to the study of the natural world that humanity has devised so far*”. Critically assess the statement that: “*science is value laden, as are the scientists who practice their trade*” (O’Riordan, 1995: 1).

OR

- c. “*...geography has meant different things to different people in different places and thus the ‘nature of geography’ is always negotiated.*” (Livingston, 1992: 28) The boundaries of our discipline are porous, ever-changing and respond to society. Occasionally these boundaries are changed, usually through the establishment of a new sub-discipline that occupies an enclave within the pre-existing division of academic space. Critically assess one such sub-discipline within Geography, providing examples and placing the sub-discipline within a southern African regional context.

QUESTION TWO

- a. “*In South Africa there is an especially urgent need for geographers to engage in field-based PRA research, particularly in marginal and impoverished black rural areas. Such research must be undertaken with a view to identifying appropriate development options and strategies in partnership with communities*” (Binns, T. et al, 1995: 32)

Critically discuss the merits of this quote, given that the research challenges humankind faces in the environmental realm are complex, dynamic, value laden, multi-faceted and involve multiple actors and their subject views.

OR

- b. The research proposal presented as Appendix One contains a number of errors and possible errors. These have been highlighted with the comment facility in Word. You are required to **comment** on each of these. Number your **comments** in the same order as they appear in the text below. If you are not

sure if you have exhausted your **comments** on a particular one leave some space to allow you to return to that **comment** and add more.

QUESTION THREE

- a. Respond with reference to Shackleton et al, (2011: 6) notion that *“In building on the landmarks of the previous decade, a number of environmental challenges facing South Africa and the well-being of its environmental systems and human population can be identified. In prioritising the environmental challenges facing the nation for the next decade, universities can consider their curricula and research programmes to produce the necessary knowledge and skills to address these challenges.”* How are South African Universities responding to the pedagogic challenges faced and what role could the discipline of environmental science or Geography play?

OR

- b. *“The appropriate design of an experiment is the key to successful analysis of a problem, for without the correct design you will never have the right sort of data”* (Dytham, 2005: 26).

Outline the necessary steps within experimental design and discuss the limitations experienced at each step in producing ‘the right sort of data’.

OR

- c. Respond to the statement that *“an appropriate sampling method is a fundamental part of data collection for scientifically based decision-making and sound decision-making is critically dependent on accurate information”* (Marshall, 1996: page unknown)

Investigating non-regulatory barriers and incentives to stakeholder participation in reducing water pollution

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HONOURS RESEARCH PROPOSAL by Student No 202345765

Research Title

Investigating non-regulatory barriers and incentives to stakeholder participation in reducing water pollution.

Introduction

Streams are often blighted by chronic, severe solid and liquid waste pollution, and banks are clogged with invasive alien plants. According to the results of weekly monitoring by the authorities most streams are polluted in catchments.

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Pollution has been a serious problem in the streams for at least two decades, and over the years a number of efforts have been made to address the problems.

The national Department of Water Affairs (DWA) is the main policy coordination and regulatory body, charged with implementing and administering the National Water Act of 1998; DWA thus has responsibility for both water quantity and quality, including effluent discharges. Locally, the main stakeholders are hopefully willing to answer questions on the catchment.

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This research will attempt to uncover the reasons why these various stakeholders, despite past opportunities, have been unwilling or unable to address the pollution problems, and what factors may allow them to effect real change in the future.

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Statement of the Problem

This research stems from the practical problems outlined in the preceding sections. The current socio-ecological system in which both industry and residents contribute to pollution whose effects are felt both by residents and downstream users must somehow be altered in order to effect change. One possible way to work toward reducing the problem is to involve all stakeholders in meaningful participation; a key element will therefore be the use of force to break down barriers to said participation. Widmer (1989) classifies barriers and incentives to participation in four categories. This categorisation may prove useful in looking at the motivating and hindering factors involved in this case study.

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Research Question:

Can non-regulatory barriers and incentives influence stakeholder participation in reducing water pollution?

Research Objective

The overall objective of this research is to identify barriers to and rewards for to stakeholder participation in reducing water pollution in the Baynespruit. The following specific objectives support this overall objective:

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- 1) Analyse past initiatives that have tried to address the pollution in the Baynespruit
 - identify lead stakeholder(s) and goals
 - identify difficulties encountered and reasons for lack of success

2) Understand stakeholders' views of the problem

- identify stakeholders (industry, local residents, NGOs)
- determine what they see as the major issues and their effects
- identify the perceived importance of the problems

3) Identify barriers to, and motivating factors for, participation

- identify socio-economic, political and/or technical barriers to participation
- identify motivating factors for participation

Research Design

A semi-quantitative research methodology will be followed, collecting data through postal questionnaire research. This case study will take the form of an in-depth investigation of the stakeholders directly affecting, and affected by, pollution in the Baynespruit water course. It will be undertaken in order to facilitate effective stakeholder participation and positive outcomes for the newly-established Baynespruit Conservancy.

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Data Collection

This case study will be thorough and will question 225 stakeholders directly affected by pollution. This includes those who live, work (in industry or small-scale agriculture) and play (undertake recreational activities such as canoeing) along the Baynespruit or immediately downstream of its confluence with the Msunduzi River. The objectives of the study will be explained to potential interview subjects, and if permission to conduct the interview is granted, anonymity will be ensured.

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Random sampling will be used to select the interview subjects from among industry representatives, residents of Sobantu and the informal settlement near the Willowton Industrial Area, farmers in the Community Co-op and NGO representatives. Selection to achieve a representative sample will make use of the knowledge and experience of the government, para-statal, private sector and particularly NGO members of the Baynespruit Conservancy. Should non-responses be encountered, alternative interview subjects will be identified.

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Measuring Instrument

A set of questions will be the measuring instrument used to conduct the research. The intention is to elicit information about both apparent and more implicit barriers and incentives to participation by asking both direct and more open-ended questions. If respondents are more comfortable completing the questionnaire in isiZulu, an interpreter will be used.

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The interview questions will be pre-tested on a small group of respondents. These preliminary results will be used to adapt the research design. It is hoped that using a pilot study will increase the research validity.

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Data Interpretation and Analysis

The raw data obtained from the interviews will be summarised to identify common elements within and among stakeholder groups. Significant barriers and incentives may be categorised as specific to this case study or more generally applicable in an urban South African context. The goal is an understanding of the system as a whole,

and the potential for various stakeholders to become fully involved in meaningful participation; it is hoped that this research might generate new insight in this regard.

Work Plan

In order to complete the research work, a number of tasks must be undertaken over a defined period of time eg.

- develop the interview questionnaire,
- post the above questionnaires to 225 potential respondents;
- receive questionnaire back in post;
- conducting follow up interviews;
- processing the results with the SPSS statistic package
-
- refining of the questions & post revised questions to the 225 potential respondents;
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- receive data back from questionnaire respondents and analyse it;
-
- discussion the results

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