South African Geographical Journal (2008) 90 (2) 122– 133

Problem-Based, Interdisciplinary Field-Based Courses: Reflections from South African Experiences

TREVOR R. HILL, TORBEN BIRCH-THOMSEN, C H. TRAYNOR, ANDREAS DE NEERGAARD AND URMILLA BOB

ABSTRACT

Student field courses at Universities are increasingly incorporating problem-based interdisciplinary approaches to enhance learning opportunities. This paper reports upon seven field-based, problem-oriented, interdisciplinary courses held within southern Africa concerning natural resource management and sustainable land use. The SLUSE (Sustainable Land Use and Natural Resource Management) project, under which these courses were devised, is introduced and the process of field-course implementation is described. The SLUSE approach is discussed in terms of management issues, levels of responsibility, staff and student development and the benefits to rural host communities. The courses are very intense experiences and students encounter difficulties working across traditional academic disciplines and in cross-cultural groups. Through critical thinking and self-reflection students understand the context of their learning better and have a greater appreciation of their own personal development. The process calls for long-term commitment to the communities with whom one works closely, the recognition of sometimes having to 'think on one's feet', being prepared to make mistakes and use frustration in a positive manner and a strong respectful working relationship from the staff. We advocate this process as worthwhile as classroom theory becomes real in an applied and complex environment.

Introduction

Under- and post-graduate field courses have come under increasing institutional pressure and scrutiny as student fieldwork is under threat (Jenkins, 1994). Past field practices have been criticised (Robson, 2002) for a diversity of reasons from epistemology, level of commitment both from staff and students, the increased level of responsibility placed on staff, time constraints (having to use vacation time, clashes with other courses or staff research time) and financial considerations. In response to such concerns and in an attempt to modernise courses, many universities have sought to broaden their scope and include aspects such as problem-based learning, inter-disciplinarity, group work and cross-cultural exchanges (Jensen and Salling, 1999; Robson 2002; Schmelzkopf, 2002; Dohn *et al.*, 2003; Fincham *et al.*, 2005; McGuiness and Simm, 2005).

Problem-based learning (PBL) is a technique whereby the problem is presented first and then a student-centred enquiry process begins with the aim that knowledge and concepts are best learnt through studying the problem (Spronken-Smith, 2005). The problem scenarios can be tackled by a group of students rather than by the individual under the guise that the performance and output of a group should be greater than the sum of its individuals, and groups can be productive when they function well (Pretty *et al.*, 1995). The group members can be derived from different academic disciplines, where these individuals work collaboratively, across the traditional academic boundaries to share skills and knowledge, and integrate perceptions from different disciplines, thereby installing the notion of an interdisciplinary attitude (Bradbeer 1999; El Alami *et al.*, 1999). Furthermore, the field courses can incorporate cross-cultural exchanges, between students and/or communities from different cultural backgrounds. To this end, university departments, particularly those in developed countries, are increasingly offering 'remote' and 'exotic' fieldwork locations in developing countries. Such courses are useful marketing and recruiting devices and, from a more education enhancing perspective, stimulate critical thinking and offer meaningful learning experiences (Robson 2002; McGuiness and Simm, 2005).

Within the southern African context, there is a pronounced need to train students effectively and efficiently as development practitioners. Society demands (and students clamour for!) university courses of a more applied nature. Such courses must offer the learners 'real-life' experiences where students can develop transferable skills that are of benefit in the labour market. Conditions that are conducive to achieving these aims can be created through courses that are field-based, problem-orientated and interdisciplinary in nature. This paper is based on experiences from the implementation of seven field-based, problem-oriented, interdisciplinary courses within southern Africa where student investigations focused on natural resource management and sustainable land use issues. The programme is introduced and the general process of planning and implementation is described. Reflections and lessons learnt, which could be of benefit to others undertaking or considering such an approach, are presented, based upon student, community and supervisor evaluations and discussions.

The SLUSE Field Course

The SLUSE[1] programme was initiated in 1998 to enhance capacity in education through an inter-disciplinary and inter-institutional approach (Birch-Thomsen *et al*., 2005; Hill and Bob, 2005; Traynor *et al.*, 2007). This has been achieved primarily through joint field-based courses (i.e. educational capacity) and developing research capacity in the area of sustainable land use and natural resource management in rural communities in southern Africa. We believe that the issues involved in sustainable land use can best be understood by studying the bio-physical, socio-economic, institutional and policy considerations in an integrative manner. The collaborative endeavour takes as its point of departure the various rural landscapes of southern Africa as they have developed in relation to their natural resource endowments, social and political influences as well as economic imperatives.

Participating staff and students come from all universities in the consortia and from a variety of disciplinary backgrounds that includes geography, agricultural sciences, biological sciences, political sciences, anthropology, economics and development studies. The courses have accommodated approximately 240 students, the majority of which are Masters level, with close to a 50:50 split between students from the 'south' (southern African consortium of Universities) and 'north' Danish Universities, with a similar gender ratio. In terms of faculties represented, there has been a 70:30 ratio in favour of natural sciences (Traynor *et al.*, 2007).

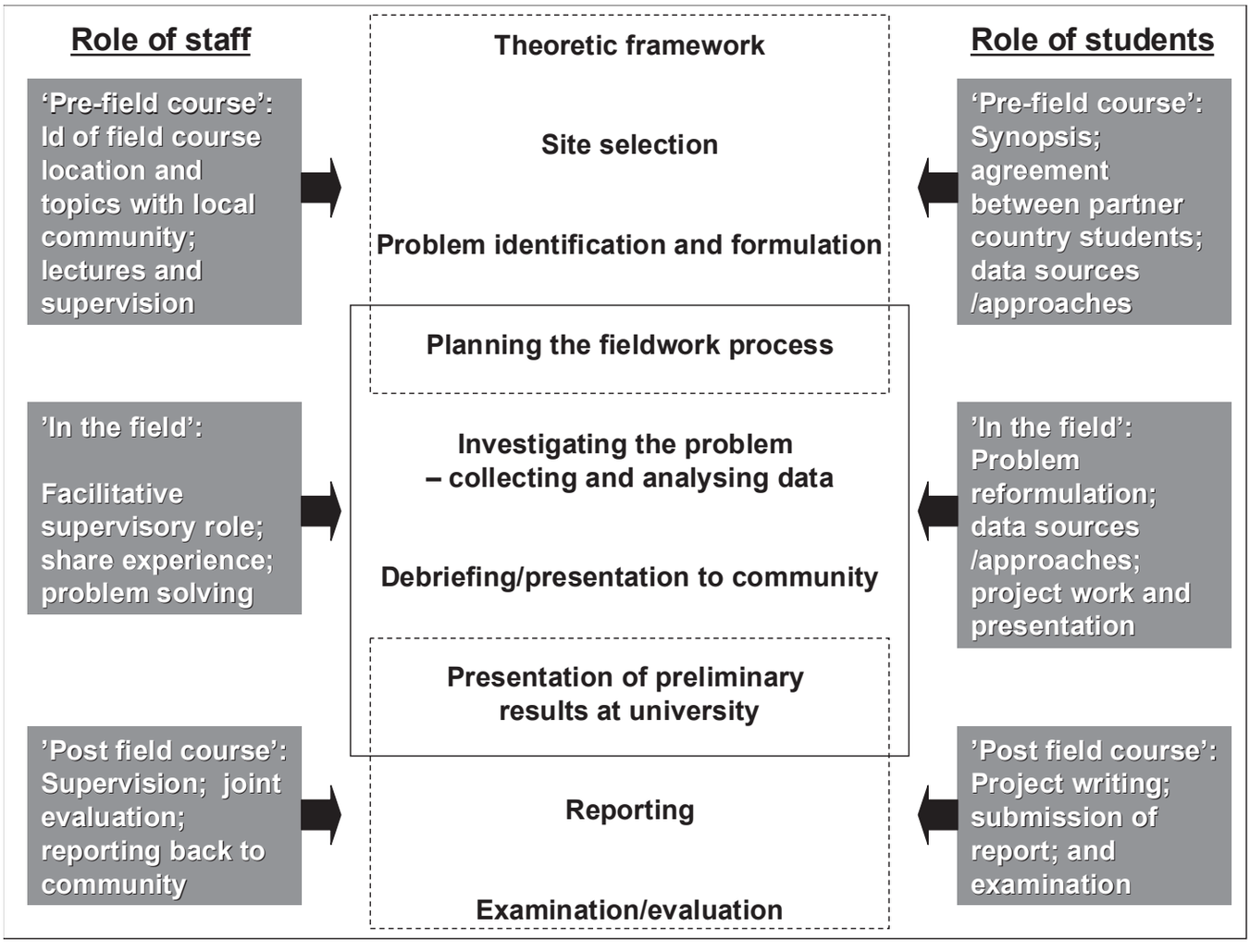
Four of the seven field-based courses have been held at three locations in South Africa; Ingwavuma (2000) and the Okhombe Valley (2001) in the KwaZulu-Natal Drakensberg, and the village agglomeration of Madlangala in the Matatiele District of the Eastern Cape where trips were undertaken on three occasions (2002, 2003 and 2007). Locations were also selected at Zombodze South in Swaziland (2004) and Lerala in the Central District of Botswana (2005). All host communities displayed a desperate legacy of poverty, disempowerment, marginalisation, high unemployment and inequality.

The Process

The field-based courses typically last for three weeks, with approximately ten days based in a rural community where students and supervisors are hosted by local families and institutions. Research topics are identified based on requests from the host community, interested NGOs and Government Departments and what supervisors believe are appropriate to student learning. Prior to entering into the field the students are hosted at one of the consortia universities and have the opportunity to get to know each other and to develop their working groups. There has been prior communication via the Internet, whereby groups produce a synopsis of what research issues they wish to address in the field. Each student group is provided with a broad topical outline to investigate, which is refined by the students to develop appropriate research questions and selection of methods, in line with their skill base and interest to ensure a degree of ownership. This synopsis is directed by introductory lectures and supervision provided by staff who have visited the field site and spent time in consultation with the host community, local NGOs and government organisations and staff members from the host university for that year.

Steps to create and implement the field-based course (see Figure 1) consist of: exploring the theoretical framework; site selection; problem identification and problem formulation; planning the fieldwork process; investigating the problem i.e. collecting and then analysing data; and project presentation, reporting and evaluation. The fieldwork process is built around a theoretical framework with a strong emphasis on development theory within the southern African rural context. The theoretical

Figure 1: The SLUSE Process: Including the different roles of staff and students and acknowledging that there is an overlap between the various phases of the process.



aspects are tackled prior to the fieldwork and are revisited and reinforced once the fieldwork has commenced and again upon completion during de-briefing sessions. This underscores the differences between our objectives as educators and the objectives of practitioners in 'normal' development work and demonstrates that academic aspects should not be divorced from the applied issues of the day.

It is important for participating staff to provide positive reinforcement to the students as to their own expertise and areas of specialisation and to encourage students to share these skills with the group. This demonstrates the importance of both a horizontal (understanding of a diverse range of topics as implied by inter-disciplinarity) and vertical (in-depth knowledge of own field of expertise) approach to problem-based learning.

Each field-based course requires a context, negotiated in advance through site visits and discussions with community members and associated non-governmental organisations (NGOs) and other stakeholders. These visits and discussions are extremely critical since, through this process, problems that can be studied by students are formulated. During problem selection a delicate balance must be achieved: the research must be linked to students' own needs and educational purposes but at the same time applied to the needs of the community – for whom the research is meant to be of benefit. Research problems formulated with such external input can increase the student's motivation (Spronken-Smith, 2003), and a sense of 'making a difference' and being pro-active in placing theory in an applied, realistic and meaningful way. Topics that have been investigated include:

- Agricultural production (cropping or livestock and grassland management, including institutional aspects as land ownership and village power structures);
- Non-agricultural economic activities (tourism, crafts and marketing);
- Community forestry;
- Impact of Working for Water Project and utilisation of alien wattle as a resource;
- Community-based and led projects (such as health care, sewing and animal husbandry);
- Ideals of eco-tourism and nature-based tourism initiatives;
- Wild products utilisation (including medicinal plants);
- Service delivery and health and education issues; and
- Initiation, development and life-cycle of community-led projects.

Although often having a disciplinary focus (agriculture, forestry etc.) the research topics attempt to be all-inclusive and integrate socio-economic, cultural, gender and institutional dimensions. Within each topic the students (ranging in numbers from 6 – 8 per group) come from a multitude of disciplines thus providing a multi-disciplinary perspective.

Planning the fieldwork process involves pre-field student training, forming of student groups, communication among and between these groups, supervision and preparation of field personnel. A SWOT analysis is run early on in the pre-field trip preparation by each student group, which not only allows the students an opportunity to get to know each other and inform their group about themselves, but also creates a group identity and strengthens the relationship which is vital for successful group work once under the pressure of field conditions and data collection.

Investigating the problem is the main field-based component of the course with the groups using a diverse suite of techniques from both the natural and social sciences. An important aspect of the interdisciplinary learning and teaching approaches adopted in the joint field-based course, is the attempt to integrate quantitative and qualitative research methods including questionnaire surveys, Participatory Rural Appraisal (PRA) techniques, Geographic Information Systems (GIS) and natural scientific methods, such as water, soil and vegetation sampling and mapping. Students are encouraged to explore methodologies outside their 'comfort zones' as well as areas of expertise.

Use of different sampling methods advocates collection of data, information, perspectives and voices from multiple sources (see plate 1) and often results in information being challenged or reinforced. Reflection on the methods applied, and quality and nature of the collected data, forms an integral part of the evaluation of student performance and demonstrates a student's ability to critically engage and adapt to the conditions.

The requirements for students are indicated in the following daily to-do lists that are given to the students in an attempt to assist them in prioritising and organising their work under new and stressful conditions, at the steepest part of the learning curve:

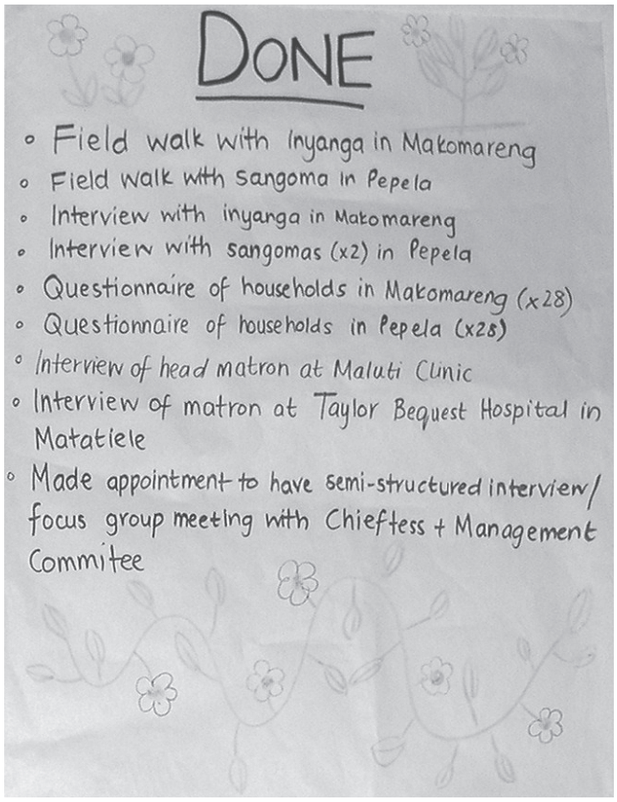
Table 1: Daily to-do lists that are given to the students in an attempt to assist them in prioritising and organising their work under new and stressful conditions.

To do – every day
Collect new data Learn something new about a group member Learn something new from a group member Debrief your interpreter Go somewhere you haven't been before Share information in the group Talk to someone you haven't spoken to yet Make plans for tomorrow

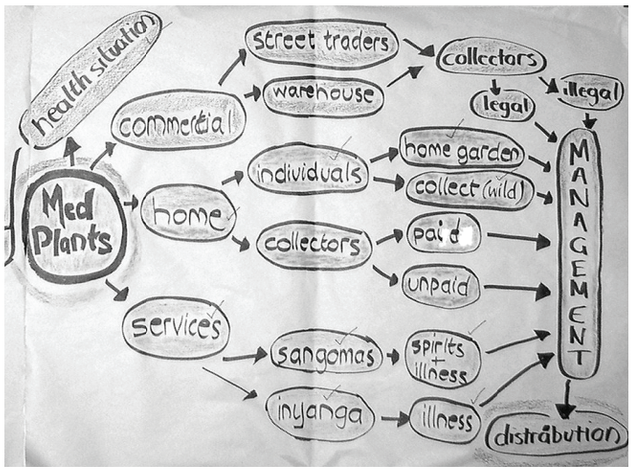
Remember – all the time
You are leaving in less than 10 days, use your time You are a guest, behave accordingly Listen, don't talk, then you learn more The reality is outside – go explore it Be flexible Have fun Make room Take responsibility Don't raise expectations

Plate 1: An example, taken from the student's daily wall diary, illustrating the multi-disciplinary approach and diversity of methods attempted (a), in order to conceptualize the complexity of medicinal plant utilization (b).

(a)



(b)



During and after the field-based activities there are student presentations, de-briefing sessions and course evaluations. Students present their preliminary findings at a community meeting on the final day of the field work at which they report back to the community and the whole community has an opportunity to ask questions or provide additional insight. Perspectives from the host-community and any participating organisations are aired after the course through a de-briefing session with the organising University staff. Finally, the supervisors evaluate their own and each others performance, contribution, impact and success of the course. Course evaluations are held once in the field component of the course and again after course completion. In both cases all students, followed by a group discussion facilitated by staff, complete a questionnaire. A University Quality and Promotions Unit evaluates the questionnaires and a report is returned to participating staff.

Upon final submission of a course report, the students are evaluated based on the following criteria:

- Clear description of **context** and background, leading to:
- Clear **research priorities**/questions, leading to:
- Relevant **choice** and **application** of **methods** for data collection (correct use of familiar methods as well as willingness to (successfully) explore new avenues is rewarded)
- Thorough **analysis** of data using **disciplinary expertise**
- **Integration** of all elements included in report
- **Reflection** and discussion on obtained data, leading to:
- **Unbiased** and "objective" **analysis** of situation/ research questions, including
- **Reflection on methods** and field approach and discussion of **reliability of data** (strongly emphasized).
- **Conclusions** and outlook
- **Internal logic** in report

Reflections on the SLUSE Approach

Management issues

After seven SLUSE field-based courses, we tend to be somewhat blasé about the tremendous amount of work involved in organising the logistics of such undertakings. Much effort involves dealing with people over vast distances, which takes time and can result in miscommunication. Managing the training process effectively means managing the human resources engaged in the training processes effectively. In addition, as stated earlier, SLUSE provides for students and supervisors from an array of different cultural, social and economic backgrounds to come together. An orientation and management of these diverse participants is essential and integral to the research project. Interestingly, the particular way the research process unfolds generally depends on the nature and quality of this management. This enables active participants in the process to air their views, prejudices, fears, opinions, strengths and weaknesses. In this sense, effective orientation and management provides a space for disclosure and thus helps to create student research teams that function cohesively, coherently, effectively and efficiently. The programme recognises the crucial role of management to ensure that group learning activities are valuable experiences, as has been previously identified (Livingstone and Lynch, 2002).

Levels of responsibility

An important aspect of the SLUSE approach has been the forming of partnerships. This involves not only partnering the local community which hosts the field-based course, but also broader partnerships with academic disciplines, universities, government departments, NGOs and interested individuals. The process attempts to create common understandings and perceptions and to improve links with key role players in rural development, thereby supporting and helping to raise the profile of local communities. Environmental educators and researchers have been shown to play an important facilitative role in building frameworks between different organisations in urban areas in South Africa (Ngotho *et al*., 2004). Our own experiences show this to be the case in rural areas,

where the SLUSE approach has been able to facilitate links between Government institutions (for example Department of Agriculture and Environmental Affairs), NGOs (for example Environment and Development Agency (EDA) and Wildlife and Environment Society of South Africa (WESSA) and communities (Zombodze South Youth Organisation and Madlangala Community Tourism Organisation), links that enhance knowledge sharing and establishment of local networks through community projects.

The responsibility SLUSE has towards the community needs to be determined prior to the field-based course, and students are briefed as to etiquette and approaches to be adopted. If awareness of these issues is not raised, some students give 'false promises', offering to do much for the community without realising the enormity of the task. Individuals with limited field experience and with genuine empathy for local communities often fall into this scenario with the best intentions. SLUSE needs to provide sensible recommendations and determine the level of responsibility that we as a group have to the community after completing the field-based course. The question is essentially how to disengage afterwards and delineate our future role in the region. To this end we attempt to establish research activities both by staff and Masters and Doctoral students following the field course, often implementing research objectives identified during the field course. For example, Masters students have returned to the Madlangala region and helped design and produce a detailed route map for the tourism initiative, detailing paths, places of interest and accommodation. Another returned to Okhombe Valley to document land use change through time, in particular the impact of policies such as the Betterment scheme,. SLUSE staff have also undertaken a joint inter-disciplinary study within the Zombodze South, Swaziland region, investigated issues such as land degradation, resource utilisation, impact of invasive and alien plant species and socio-economic conditions of the marginalised communities.

Development of students and staff

The SLUSE field-based courses are very intense experiences for staff and students alike. The combination of academic challenges, unfamiliar environments, physically demanding living and working conditions, new cultures and group dynamic issues can, at times, be overwhelming. However, if all are encouraged to take time to reflect on their situation and how they respond to the various demands of the course, this can create unexpected opportunities for personal development. We have discovered that maintaining a sense of self-reflectivity and open-mindedness allows individuals to learn from their mistakes. Personal development can be as rewarding (and sometimes more rewarding) than the academic course aspects.

Linked to personal development has been the capacity development of SLUSE staff and students. The staff consortium members have been able to come together, extend collaboration and grow and mature as a group sharing triumphs and tribulations. The exposure to new training methodologies and the space to adapt existing knowledge and techniques and create new ones has enhanced staff abilities and confidence as individuals and as a group. Furthermore, staff who have not had the opportunity to participate in field–based courses or are emerging academics have been invited to join the courses thereby 'spreading the word' and exposing new staff to the process. For example, when the programme first started we had a number of post-doctoral students and junior lecturers involved who have subsequently become full-time staff members and have developed as the programme has progressed. What is exciting to see is the re-emergence of the importance of field-based problem-based learning techniques within natural resource management courses as the 'newer' staff have begun to design and implement their own courses.

Areas of concern experienced by staff utilising problem-based learning (PBL) approaches elsewhere have included the unforeseeable nature of courses, trying group dynamics and knowing when interventions are appropriate (Spronken-Smith, 2005). Similarly, SLUSE experienced these issues, and they have been tackled by flexibility, embracing diversity and understanding group conflict and having clear facilitative supervisory roles that are understood by staff and students alike. By way of example, in the field component the staff have brief evening meetings to share experiences from that day, to discuss what happened within the groups and raise any issues of concern; group dynamics, students feeling dis-heartened or success stories and approaches that worked well. A roster is then created for the following day in terms of transport or equipment required by certain groups. Staff rotates and spend the next day with a different group thus ensuring that students have an opportunity to interact, with all staff and thereby receive different disciplinary input, perspectives and approaches.

Through inter-disciplinarity the SLUSE approach has introduced students to the full scientific breadth that the field situation permits, an approach that has been utilised in universities elsewhere (Askeland, 1999). Considering student reaction to the field-based course, one of the most striking realities has been that social issues have tended to dominate physical environmental issues. This has meant that students focusing on physical environmental issues have often had to reformulate their ideas. This trend fits well with the doctrine of integration and holism in which social and physical environmental issues need to be considered in tandem. Thus, this process has not assumed that information gathering should take place within separate disciplinary categories and should use methodologies specific to each discipline. Rather it has encouraged the use of methodologies (sometimes combining multiple methods) that explore the dynamics and relationships between social and physical environmental issues. Social science students have been exposed to natural science approaches that they might never have used otherwise. In so doing, they have learned to appreciate the contribution natural science can make and to understand some of the approaches and limitations of different methodologies. This transfer would be more difficult to implement and demonstrate while on a mono-disciplinary field course. Similarly, although natural science students working on issues of natural resources management in a rural setting would (through the need to communicate) generally tend to include social aspects in their work, they certainly benefit from exposure to a greater variety of social methodologies and a systematic rigorous use of qualitative methods. The differences in characteristics of disciplinary knowledge and traditions of teaching and learning can be barriers to achieving inter-disciplinarity, however, supervisors that promote reflecting on learning can encourage students to become self-aware learners and help overcome these barriers (Bradbeer, 1999).

The PBL approach utilised during the field-based courses is a type of pro-active learning and has been shown to be effective in encouraging students to take a deep approach (Brew and Boud, 1995) and in enhancing intellectual development (Baxter Magolda, cited in Healey, 2005). Furthermore, as learning is not through direct transmission such as lectures, but through activities where students create their own meaning they use higher cognitive level processes (Biggs, 2003) so learning may be of a better quality. Students learning through the PBL approach can have gaps in their knowledge, however, they should be capable of recognising their own learning needs and so able to overcome any shortfalls (Davis and Harden, 1999 cited in Spronken-Smith, 2005). Table 2 provides details, gathered for an on-going tracer study of former SLUSE students, as to the importance of certain identified skills that the course has attempted to impart to students.

Ability to work interdisciplinary is one of the skills gained from SLUSE that former students ranked as most important (Table 1). This is comforting, as these are the exact skills that

Table 2: Students' perception of skills gained from SLUSE (n=150)

Which of the following skills do you feel you gained from SLUSE:	**Ranking**	**Percent**
The ability to work in an interdisciplinary context	To a great extent	62
	To some extent	34
	A little bit	4
	Not at all	0
The ability to continually acquire new knowledge	To a great extent	27
	To some extent	59
	A little bit	12
	Not at all	2
The ability to work project-oriented	To a great extent	34
	To some extent	54
	A little bit	9
	Not at all	3
The ability to work problem-oriented	To a great extent	31
	To some extent	54
	A little bit	12
	Not at all	3
The ability to work in an international setting	To a great extent	63
	To some extent	32
	A little bit	4
	Not at all	1
The ability to communicate to a broader group	To a great extent	31
	To some extent	51
	A little bit	13
	Not at all	5

the programme aims to strengthen. The various components of the SLUSE curriculum are, in general, perceived very positively by former students. A large majority consider the skills acquired as valuable and state that they could not have been achieved by means other than the programme, illustrating the uniqueness and potential of the programme. In discussion with potential employers of 'northern' students completing this programme, all respondents stated that core SLUSE qualifications are highly desirable within their organisation, qualifications mentioned were: the ability to work across disciplines, the ability to work project and problem oriented, and adaptability to new cultural settings. Respondents with knowledge of the SLUSE programme generally found it difficult to identify any comparative advantage of SLUSE. However, there was recognition that qualifications desired by employers are built up through the graduates' education as well as additional employment and extra-curricular experience; SLUSE can be one way to add to and build on these experiences (Traynor *et al.*, 2007).

Learning to work with frustration

An interesting aspect of the SLUSE experience is what we have come to refer to as 'learning to work with frustration'. Despite warnings that field methodologies developed in the classroom will need to be refined upon arrival in the field, many students find it difficult to adapt their initial research ideas and methodologies to the realities they discover. People tend to be wedded to established ways and 'comfort zones'; they often 'fall-back' to these comfort zones when under stress - be it the living conditions, group dynamics, recognition that things are not going according to the preordained plan mapped out in the classroom or just general fatigue and frustration (one student described it as 'emotional overload'). Even for well functioning groups, the exposure to reality and wealth of diverse (and diverging) data they collect, can easily lead to 'information overload'.

It can be frustrating to discover that one needs to re-work a research agenda once in the field. Frustrations may arise as time has been lost, relevant information was not forthcoming prior to the field visit or research ideas have proved inappropriate. Further frustration can arise from having to work in a group situation, this is particularly true for individuals who are not used to team situations or who like to dominate or lead rather than negotiate group approaches and workloads. Student perspectives concerning group dynamic issues taken from the Botswana field course in 2005, illustrates the often contentious nature of group work (Box 1).

Frustration is a very real and important part of the SLUSE experience. Students need to understand it as a positive challenge rather than perceiving it as a hindrance. Furthermore, in addition to being able to practice and apply their academic skills, within the field-based situation working with the

Box 1: Students' perspectives concerning group dynamic issues, Botswana field course, 2005.

There seems to be a problem with some students thinking that they know more than others. ('south' student)

I feel confused. The working group issues discourage me and take my spirit away from the research. ('north' student)

Some people behave like bosses. They don't give us a chance to finish points we want to raise. ('south' student)

I feel no-one takes the initiative. So I do - and then I become 'the boss' without wanting to be so. ('north' student)

That we got totally lost in the mountains helped us to work better as a group. ('north' student)

To aspiring students: be accommodative, an attentive listener, less aggressive though an innovative thinker. ('south' student)

community, students have the opportunity to contextualise these skills. Thus, learning is at a deeper level, there is greater skills transference, and students develop skills that are useful in the labour market (Waddington, 2001).

Assessments of similar group work endeavours to those of SLUSE have reported that students may become dissatisfied as group work tends to draw upon individual strengths and nominate tasks to the most competent individuals, thus less competent students feel they are not given the opportunity to increase their skills (Spronken-Smith, 2005). Within SLUSE, such criticisms were limited, possibly due to the inclusion of regular feedback and evaluation sessions and the fact that experienced supervisors were able to recognize and respond to internal group pressures. However, as the comments above illustrate, there are two sides to the understanding of student engagement in the project work, and what one may perceive as lack of involvement by fellow students, can also be understood as lack of ownership to a project being dominated by other students. Still more possible sources of frustration within SLUSE include: the lack of available information and facilities locally; different ways of doing things and the time taken to achieve them; or the fact that in the real world fields are rarely rectangular, institution boundaries are not clear, and power structures are disputed. Nightly feedback sessions of the supervisors and a rotation system of each supervisor spending time with different groups tended to identify potential problems at an early stage and provide possible solutions or put in place mechanisms to reduce or remove these pressures. This included having a 'free day' when students had the opportunity to get away from the field site and visit the surrounding region.

Developing adaptability, creativity and flexibility

An important skill is the ability to 'think on ones feet' and adapt while in the field. An environment needs to be created in which the student does not feel totally overwhelmed but is supported and provided an opportunity to question their current approach and seek new directions, including methods previously not considered. For example, staff often 'sit-in' on different data collect situations, such as formal and semi-structured interviews, participatory workshops etc as passive observers and provide feedback to students whilst in the field and often while walking to the next interview. Staff have found this to be a very good way of providing feedback as to how the situation went, the students appreciate comments and like to know if they did a good job and how to improve the approach before the next interview, thus we have a continual learning process and there is no better way of 'learning whilst doing'. Constructive criticism is the crucial word, and while comments from supervisors after the interview session or other activity is most often welcomed, interference during the session and direct instructions usually create a sense of insecurity among both students and respondents, and often irritation of not being allowed to learn from own mistakes. In many cases, interviews will end with the students asking the supervisor if he or she has any additional questions in order to ensure that crucial information is not lost if the group has failed to cover that in their questions. For other methods, such as with biophysical data collection, but also sometimes interview techniques, more direct instruction is used by the supervisors to get the group started.

Flexibility and creativity should be sought, encouraged and supported from both the students and staff. Opportunities to diversify and respond to changing field conditions should also be created where necessary. However, this does require a high degree of confidence in the ability of the supervisors, confidence with each other and a strong relationship and acceptance of the supervisors by the students. This, we feel, is the crux of the process and only comes about through familiarity, a long-term relationship and the experience of having worked closely together often under trying conditions in the field! The process does not subscribe to the adage of 'through adversity we create unity', however having spent considerable time together in the field the staff have built up a strong repertoire and this is certainly one of the reasons for its on-going success. New staff joining each year and adopt a similar attitude.

Students are continuously encouraged to think about what they are doing, both in terms of their specific disciplines and the broader theoretical context, as thinking and reflecting on their actions leads to critical thinking (Gibbs, 1988). Field locations and cultures that are largely unknown to students can confound their expectations (McGuinness and Simm, 2005). On the SLUSE field-based courses this is particularly true for students from the northern hemisphere. Furthermore, Southern perspectives can have a major influence on shaping Northern students worldview, through exposure to Southern students and professionals, Northern students can question their 'received wisdom' prior to the field course (Ite, 2002). Thus, SLUSE encourages and allows for the dynamic exchange of different North-South perspectives. The approach strives to establish space, both during and after the field-based courses, where positive criticism and feedback can be aired and where these concerns can be addressed and thus a common understanding on issues of concern can be reached. This process of review needs to be continual and transparent, and the programme has to be flexible enough to accommodate suggested improvements (Kent *et al*., 1997). For example, in response to student's comments in 2006, in 2007 for the first time we introduced a 'free evening' whilst in the field, during which time the students had supper and spent the evening socialising with their host family as opposed to working in their groups.

During the field courses, SLUSE staff aim to create an environment conducive to the implementation of group projects however, of equal importance, is the opportunity for critical thinking, reflection and an assessment of the individual's response and reaction to the field course. Box 2 contains anonymous comments from students taken at the end of the 2004 (Swaziland) and 2005 (Botswana) courses. As the quotes demonstrate, individuals appreciated the academic as well as the personal development opportunities.

Benefits for rural communities

Benefits to rural communities hosting the joint field course should not be downplayed and is an issue that is raised by many. The host community are paid for accommodation and food and the financial benefits from these, as well as the purchase of goods and commodities in the communities, has improved the livelihoods of many members. Organisations responsible for coordinating hosting in the communities have gained skills and confidence in planning and executing activities relevant to this function, through training and advice provided by the organizers of the field-based course. The income obtained through hosting

Box 2: Students' comments on the SLUSE field courses

After always learning of theories and concepts in the classroom – I've got into contact with some of them. ('south' student)

As a natural scientist it's been good to work on social aspects, always better to learn through experience. ('north' student)

The group work and fieldwork is hard, exciting, difficult, interesting and frustrating and you learn a lot about the culture, methods, each other and most importantly about yourself. ('south' student)

I feel a new way of life has been opened up to me, which makes me feel helpless, excited and overwhelmed at the same time.('north' student)

Improvise, improvise and improvise! Be open to changes and new ideas. ('north' student)

Remember to have fun and laugh – it's the most important part of the course. ('south' student)

I miss my wife…I miss dark bread…I love this work!

has become a source of capital for other projects within the host communities. However, through the very nature of the ethos of the course this is much more than a business venture, the course also enhances networking capacity and provided exposure to the culture and practices of other societies. In one location, Madlangala, the accommodation and catering of the SLUSE team was explicitly understood as training for tourism, as the community was establishing an ecotourism hiking route. A comparison of villagers' views on tourism potential in two neighbouring villages, one of which had hosted the field courses, clearly showed a better understanding of the economic and social potential of tourism in the village that had hosted the field courses. Besides the direct economic benefits, and visualisation of new income generating activities as tourism, the student and researcher presence has another important impact: several respondents mentioned increased self esteem and faith in village development as a direct consequence of the attention given by the universities – an understandable reaction in a marginalised rural community, where the presence of 'outsiders' is still regarded with surprise and scepticism. University excursions to rural areas can produce positive results for the local communities; in Kenya a sensitive eco-tourist development and field studies centre arose from such an undertaking (Robson, 2002). Facilitators and interpreters also gain valuable experience through meeting the demands of foreign professionals. In several cases, returning students and researchers have used the same interpreters (and hosts) recurrently, thereby providing additional income, as well as further experience. According to the interpreters, this experience is an asset when applying for jobs.

There can be large socio-economic differences between students and communities (Robson, 2002), these and other ethical and cultural issues are discussed with students prior to field visits. The large groups of students could easily become 'development tourists' if they do not significantly contribute towards reducing poverty or development (Chambers, 1983). However, field courses can be justified if they provide students with meaningful learning experiences and development education (Robson, 2002) within a positive context of working with ones' host community – a very strong responsibility of the staff. Positive impacts can be generated by the selection of appropriate communities and relevant topics, and from these successful field courses and longer-term university-community commitment can ensue. This is well illustrated from a field course in the Madlangala region of Matatiele, Eastern Cape where a student group worked with a community and NGO initiated project to design and development a hiking trail in the region. This project has now come to a successful conclusion and is providing much needed revenue to the region. See Figure 2 as a summary of the process.

Figure 2: From problem-based field course to practical development initiatives: Eco-tourism in Madlangala, Eastern Cape, South Africa (adapted from Traynor, 2005).

From problem-based field course to practical development intiatives: Eco-tourism in Madlangala, Eastern Cape, SA

Step 1: **Identification of student research topic for the October 2001 field course**

A broad research question, 'eco-tourism', was developed jointly between university staff and the local stakeholders (the community and a local NGO) during a pre-field visit by university staff

Step 2: **Student research as part of the SLUSE field course**

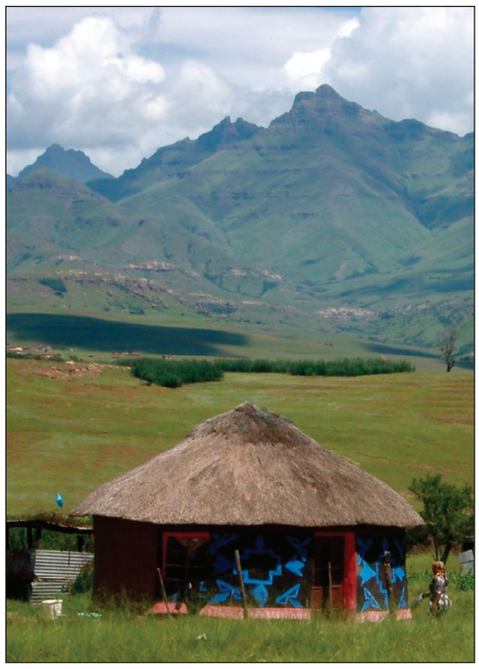
'Is community based eco-tourism a viable alternative and/or supplement to other sources of income, and is it likely to improve the livelihood situation of the residents in Madlangala?'

Step 3: **Assisting in the empowerment of communities**

Based on the information presented at the debriefing at UKZN, the community and the NGO managed to apply successfully to the Regional Government for further funding to strengthen their eco-tourism project

Step 4: **Longer term commitments with the community**

Longer term research projects by MSc students and university staff both from North and South



Conclusions

The reflections discussed within this paper demonstrate that many lessons have been learnt devising and implementing the SLUSE field-based courses within southern Africa. The first lesson is the crucial role of management in terms of the logistics of organising effective communication channels between four universities in three countries. SLUSE has also learnt the importance of forming partnerships with the host communities in which the courses are based, this contributes towards formulating relevant problems for students to investigate, assists the communities to raise their profile with development stakeholders and can generate longer-term benefits for the host communities. Through the various courses, the supervisors have recognised that management of students has a crucial impact upon proceedings. Supervisors aim to encourage students to be self-aware of their own learning processes, thus they are better able to question their perceptions, reflect on their experiences and critically assess their reactions during the course. In addition to the 'personal development' opportunities, students have also gained first hand experience of applying their knowledge to 'real' problems and experienced the difficulties of working in cross-cultural teams and across disciplinary boundaries. The field situation forces students to realise that text-book style research methods may need to be adjusted in the field and that creativity and openness to adjust to unforeseen circumstances can produce positive results.

Through these experiences the participating staff have discovered how to take theory and turn it into practice in a meaningful and applied manner. Furthermore, we believe our students gain a meaningful, and enjoyable, learning experience. What better way to learn – by doing and feeling good about our achievements, creating knowledge, watching our theory come to reality within a pleasant learning environment and, above all, doing something of real consequence for the region, its people and the environment.

Acknowledgements

The authors wish to thank SACUDE-SLUSE (DANIDA) for funding of the project entitled 'Human Capacity in Natural Resource Management' under which the field-based courses were conducted. The communities in which the field courses were based, associated stakeholders and the valuable project leadership of Chris Albertyn are thanked for their participation, encouragement and generosity. We would like to thank are respective Universities for allowing us the opportunity and supporting us in this initiative and the comments of two anonymous reviewers which afforded us the opportunity for greater in-depth discussion and to improve the final paper.

ENDNOTES

[1] SLUSE consists of a consortium of southern African Universities, namely the University of KwaZulu-Natal (Pietermaritzburg and Westville Campuses), the University of Swaziland and the University of Botswana ('south' Universities). This consortium works in partnership with a similar consortium of Danish Universities ('north') that includes the University of Copenhagen (Faculty of Science / Life Sciences and Social Sciences) and Roskilde University. Similar consortia have been established in Thailand and Malaysia (Dohn *et al*., 2003).

REFERENCES

Askeland, K., 1999: Project organised learning – what is it 'really'? In: Jensen J.H. and Salling, H. (eds.), *Project Studies – A Late Modern University Reform?* 235-252. Roskilde University Press, Frederiksberg.

Birch-Thomsen, T., Buch-Hansen, M., Hill, T., Oksen, P. & Magid, J., 2005: Integrating knowledge systems for developing sustainable natural resource management. In: Fincham, R., Georg, S. and Nielsen, E.H. (eds.), *Sustainable Development and the University: New Strategies for Research and Teaching Practice.* Brevitas, Howick.

Biggs, J., 2003: *Teaching for Quality Learning at University: What the Student Does* (2nd edn). Open University Press, Buckingham.

Bradbeer, J., 1999: Barriers to inter-disciplinarity: Disciplinary discourses and student learning. *Journal of Geography in Higher Education*, 23, 381-396.

Brew, A. & Boud, D., 1995: Teaching and research: Establishing the vital link with learning. *Higher Education*, 29, 261-273.

Dohn, H., Gausset, Q., Mertz, O., Müller, T., Oksen, P. & Triantafillou, P., 2003: Strengthening learning processes in natural resource management in developing countries through interdisciplinary and problem-oriented learning. *International Journal of Sustainability in Higher Education*, 4, 106-125.

El Alami, M., de Arriaga, F., Ugena, A. and García, 1999: SIMUL: A simulation environment for interdisciplinary project work. In: Jensen J.H. and Salling, H. (eds.), *Project studies – A late modern university reform?* 208-219. Roskilde University Press, Frederiksberg.

Fincham, R., Georg, S. and Nielsen, E.H., 2005: *Sustainable Development and the University. New Strategies for Research and Teaching Practice*. Brevitas, Howick.

Gibbs, G., 1988: *Learning by Doing: A Guide to Teaching and Learning Methods*. Further Education Unit, London (http://www2.glos.ac.uk/gdn/gibbs/index.htm Accessed: 9 March 2006).

Healey, M., 2005: Linking research and teaching to benefit student learning. *Journal of Geography in Higher Education*, 29, 183-201.

Hill, T. and Bob, U., 2005: The SACUDE-SLUSE experience. In: Fincham, R., Georg, S. & Nielsen, E.H. (eds), *Sustainable Development and the University: New Strategies for Research and Teaching Practice*. Brevitas, Howick.

Ite, U.E., 2002: Towards accommodating southern perspectives in environment and development teaching. *Journal of Geography in Higher Education*, 26, 393-404.

Jenkins, A., 1994: Thirteen ways of doing fieldwork with large classes / more students. *Journal of Geography in Higher Education*, 18, 143-154.

Jensen J.H. and Salling, H., 1999: *Project studies – A late modern university reform?* Roskilde University Press, Frederiksberg, Denmark.

Kent, M., Gilbertson, D.D. and Hunt, C.O., 1997: Fieldwork in geography teaching: A critical review of literature and approaches. *Journal of Geography in Higher Education*, 21, 313-332.

Livingstone, D. and Lynch, K., 2002: Group project work and student-centred active learning: Two different experiences. *Journal of Geography in Higher Education*, 26, 217-237.

McGuinness, M. and Simm, D., 2005: Going global? Long-haul fieldwork in undergraduate geography. *Journal of Geography in Higher Education*, 29, 241-253.

Ngotho, M., Fincham, R. and Quinn, N., 2004: Government, business and the public: The role of environmental education in creating sustainable urban places. *Environmental Education Research*, 10, 313-329.

Pretty, J.N., Guijt, I., Scoones, I. and Thompson, J., 1995: *A Trainer's Guide for Participatory Learning and Action*. The International Institute for Environment and Development, London.

Robson, E., 2002: 'An unbelievable academic and personal experience': Issues around teaching undergraduate field courses in Africa. *Journal of Geography in Higher Education*, 26, 327-344.

Schmelzkopf, K., 2002: Inter-disciplinarity, participatory learning and geography of tourism. *Journal of Geography in Higher Education*, 26, 181-195.

Spronken-Smith, R., 2005: Implementing a problem-based learning approach for teaching research methods in geography. *Journal of Geography in Higher Education*, 29, 203-221.

Traynor, C.H. (ed.), 2005: *The SLUSE model of Natural Resource Management: From Theory to Practice Through Field-based Training – Experiences from Southern Africa*. University of KwaZulu-Natal, Pietermaritzburg.

Traynor, C.H., de Neergaard, A. and Magid, J., 2007: *SLUSE: An Evaluation. University Collaboration on Outreach Across Cultures and Interdisciplinary Capacity Building for Sustainable Land Use and Natural Resource Management*. Fishwicks, Durban.

Waddington, S.B., 2001: Working with the community: Improving the learning experience for large classes. *Journal of Geography in Higher Education*, 25, 67-82.

TREVOR R. HILL[1]*,
TORBEN BIRCH-THOMSEN[2],
C H. TRAYNOR[1],
ANDREAS DE NEERGAARD[3] AND
URMILLA BOB[4]

[1] Discipline of Geography, University of KwaZulu-Natal
(PMB Campus), P/Bag X01,
Scottsville, 3209,
South Africa.
hillt@ukzn.ac.za* and cathtraynor@gmail.com
* Corresponding author

[2] Department of Geography and Geology,
University of Copenhagen,
OesterVoldgade 10, 1350 K, Copenhagen, Denmark.
tbt@geogr.ku.dk

[3] Department of Agricultural Sciences,
Faculty of Life Sciences,
University of Copenhagen,
Thorvaldsensvej 40, DK-1871 Frederiksberg C, Denmark.
adn@life.ku.dk

[4] Discipline of Geography,
University of KwaZulu-Natal
(Howard College Campus), Durban, South Africa.
bobu@ukzn.ac.za