

**CREATING MEANINGFUL BLENDED LEARNING EXPERIENCES IN
A SOUTH AFRICAN HIGHER EDUCATION CLASSROOM:
AN ACTION INQUIRY**

by

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DECLARATION

I hereby declare that the work which is submitted here is the result of my own independent investigation and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references. I further declare that the work is submitted for the first time at this university/faculty towards the Philosophiae Doctor degree in Higher Education Studies and that it has never been submitted to any other university/faculty for the purpose of obtaining a degree.



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“Information technology (IT) has little value in the academic world until and unless it brings about change in learning and communication. To justify its expense and the distraction it can cause, IT needs to enable substantial changes in how education happens.” - T. Warger

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1. INTRODUCTION

With the presentation of this thesis in the format of five articles it was regarded necessary to provide the reader with some background which could serve as an orientation to the study. It is, for example, a prerequisite that the five articles form part of a “whole” and altogether serve to achieve a common goal. And even though this shared purpose is clearly implicated in all the articles, further clarification may enhance the presentation in its totality.

This orientation must, however, not be regarded as synonymous in all respects to a typical introduction to a dissertation or thesis, although resemblance will be noticeable. The main purpose is to provide an orientation to the study and as such it provides brief information on the following: the rationale of the study and the choice of research design (which is also provided in adapted format in each article); the aim and the objectives of the study in its entirety; the focus of the research; the outline and main purpose of each of the five articles; and a brief reflection on a few other aspects related to the study.

2. PURPOSE AND NECESSITY OF THE RESEARCH

With the dramatic evolvement of the educational possibilities presented by the technological era, a more open and flexible approach to teaching and learning is advocated in higher education institutions all over the world in which various forms of online/e-learning have taken shape (Pallof & Pratt 2001, Fisher 2003, Boettcher & Conrad 2004). The most general format is the blended learning mode which combines the face-to-face and online delivery modes (Kerres & De Witt 2003, Osguthorpe & Graham 2003, Singh 2003, Thorne 2003, Jackson 2005).

The interest in blended learning has surged since the dawn of the new millennium. Several reasons for this have been put forth. It is firstly a reality that learner-centred models of teaching and learning have replaced the traditional models, with the

emergence of new advanced technologies providing educators an “unprecedented opportunity to create blended learning environments that are highly interactive, meaningful and learner-centred” (Kirkley & Kirkley 2005:42). More and more universities are becoming accustomed to using an online learning management system (LMS) (Badenhorst & De Beer 2004, Hodgkinson & Mostert 2004). The student of this century is knowledgeable about and comfortable with online communication, while the greater flexibility offered by the various forms of online learning is something much sought after in modern times (RIT 2005). The aim of blended learning is basically to join the best of classroom or face-to-face learning with the best of online learning: “When the two are thoughtfully integrated, the educational possibilities are multiplied” (RIT 2005).

As blended learning is only starting to evolve, one is not surprised that little formal research exists on the construction of the most meaningful/effective blended learning practices in a higher education classroom. The same applies to the University of the Free State (UFS), where blended learning is regarded as a relatively new practice with possibilities of addressing many of the teaching and learning problems at the institution. In this regard one can refer to problems such as the diverse student population from different socio-economic backgrounds; large classes; improper preparation of students for higher education; the continuation of some of the inequalities of the past; and some students' lack of technological skills. In addition, the policy of parallel-medium instruction demands creative ways of dealing with the challenges of executing such a policy. It is therefore realistic to look at ways in which the face-to-face mode (that students expect and are used to) can be effectively combined with new technologies.

In light of the above exposition two research questions arise which direct the study:

1. What constitutes or are the ingredients of meaningful blended learning practices in a higher education classroom?
2. How does one create meaningful blended learning experiences when taking into account a typical South African context such as that of the UFS with its diversity of students, large groups of undergraduate students and relatively low student throughput in many courses?

The purpose of this study flows from these questions, namely ***to establish guidelines for creating meaningful blended learning experiences in a South African higher education classroom at undergraduate level, with a focus on the UFS context.***

To achieve the above aim, the following main objectives were pursued:

- To gain perspectives into best practices/principles of creating meaningful blended learning experiences in higher education by means of, in the first place, a comprehensive literature review; and, in the second place, gathering ideas on effective practices from specialists in the field at other South African higher education institutions. (The investigation also focused on issues that are unique to the South African setting.)
- To make use of an action research methodology to apply, test and evaluate various blended learning strategies and pedagogical techniques formulated/applied during the course of the study in the researcher's own educational setting [blended Information Technology (IT) education at the UFS].

3. FOCUS OF RESEARCH

The study took place within the field of Higher Education Studies with a focus on issues related to the blended learning environment. The field of application is Information Technology (IT). However, the study does not have a completely narrow focus when it comes to educational delivery, but has attempted to involve a number of additional issues, as suggested in the literature with special reference to Khan's Octagonal Framework (Khan 2001).

Khan's framework suggests a very useful theoretical point of departure in a pursuit for providing answers to what meaningful blended learning is and thus to the research questions. According to this framework there are eight interrelated and interdependent dimensions that need to be addressed in order to create meaningful online learning experiences which hold strong possibilities for application to blended learning, namely experiences related to the institutional, management, pedagogical,

technological, interface design, evaluation, resource support and ethical dimensions. The following three dimensions directly relate to the scope of this study and provide the focus:

- *Pedagogical* (e.g. collaboration, content, learner needs, and learning objectives).
- *Ethical* (e.g. equal opportunity, diversity, and legal issues).
- *Evaluation* of the student learning experience, in particular in its broader sense.

The research undertaken mainly fell within these dimensions and their sub-dimensions, the premises being that technology should be incorporated in such a way that it will not only enhance traditional face-to-face practices, but also the learner/student experience as a whole. These premises are firstly embedded in a social constructivist view in which learners construct their own knowledge in interaction with others (in this study mainly the lecturer as facilitator and the peers in the same class/group). It is also a pragmatic view in which the improvement in practice is highly rated by the researcher. The underlying values which direct the research focus on aspects such as integrity (in particular the honesty in everything attempted by the researcher as well as the students); respect (which acknowledges the diversified learner population as a group of unique human beings with individual backgrounds, needs and ways of doing); social justice (with the inclination of addressing historical inequalities in the South African context); and love (love for the profession of teaching, as well as love for fellow human beings as uniquely created by God Almighty). The grounding of the research can therefore be found in a phenomenological approach with selected aspects of the blended learning mode of educational delivery as the phenomenon. This approach accepts that there are “multiple realities which are socio-psychological constructions forming an interconnected whole ... it seeks to discover or uncover propositions ... (and provides) only tentative explanations for one time and place”; with an underlying epistemology that recognises the interdependence of the “knower and the known”, as well as the role of values in the mediation and shaping of what is understood (Maykut & Morehouse 1994:12).

In accordance with the above assumptions/premises and in fulfilling the purpose of the study, the researcher has decided to focus on the following aspects related to the blended learning experience (which also relate to several of Khan's dimensions):

- Enhancing online student collaboration and participation (as main focus).
- Incorporating student diversity into the blended learning environment.
- Handling ethical issues in the blended learning experience (e.g. the occurrence of and handling of unethical behaviour such as academic dishonesty by students).
- Taking care of the psycho-pedagogical experience as reflected in student perceptions and attitudes, as well as in the researcher's research diary.

The research design had to provide a suitable means of achieving the range of objectives stated for the study.

4. RESEARCH DESIGN

Action research, as an established *reflection on action* approach, was regarded as most suitable for this study for several reasons. Not only can critically reflective practice be developed (Hubball & Burt 2003) but the approach also offers considerable flexibility and awareness in a multifaceted situation with many variables (Dick 2002a). Action research is also regarded as a natural way of acting, learning and researching at the same time. The actions take the form of change or improvement or implementation in one's workplace, while the research leads to learning and understanding (Dick 2002b). In the view of Hubball and Burt (2003) action research methodologies and the variety of data collection sources provide distinctive opportunities to integrate research into university teaching and learning. In addition, they provide effective strategies to develop learning communities that cross traditional boundaries between educators and students and also enhance professional development and pedagogy in multidisciplinary settings.

The specific action research model decided upon comprises the four stages of *plan*, *act*, *observe* and *reflect* as proposed by Kemmis and McTaggart (1988). This model

is often portrayed diagrammatically as a spiral of cycles and involves "research and development, intellectual inquiry and practical improvement, action and reflection" (Altrichter, Kemmis, McTaggart & Zuber-Skerritt 2002:130). In this study two full cycles of the research was undertaken, with the re-planning of the third cycle a direct outflow of the findings after the first two cycles.

The researcher deliberately chose to classify the research undertaken in this study as an *action inquiry*, following the description of Tripp (2003), who refers to action inquiry as a broad term for the different types of research into action in a field of practice. Common varieties of action inquiry include reflective practice, action learning, action research and researched action. In this study overlapping phases of several kinds of action inquiry can be identified, with action research as the dominant inquiry method. Incidence of reflective practice as a more researcher-centred type of inquiry in particular is acknowledged.

The research design in the study resembles the *practical* approach as described by Zuber-Skerritt and Perry (2002:178) where the aims relate to the improvement in the effectiveness/efficiency of professional practice. In this approach the researcher is not a mere outside expert but encourages participation and self-reflection. The target population in the action inquiry consists of undergraduate students in the Department of Computer Science and Informatics at the UFS. The purposeful yet comprehensive sample consisted of all students enrolled for the module RIS222 (160 and 90 respectively in the two cycles). An element of convenience sampling should also be recognised as the researcher was lecturing the specific module at that time, with certainty that follow-up investigations in different years would be possible.

The data collection methods employed were mainly qualitative in order to fall within the researcher's view of reality and were based on "a constructivist philosophy that assumes reality as multilayer, interactive, and a shared social experience interpreted by individuals... understanding the social phenomena from the participant's perspective... (and showing) context sensitivity" (McMillan & Schumacher 2001:396). In this way a better understanding of students' actions, feelings, thoughts, and emotions could be developed. Most of the information was gathered by means of online feedback by the students, either as part of discussions, as messages received

or as reactions to specific surveys undertaken. Profile questionnaires which were completed at the beginning of each of the modules in the respective cycles helped to provide a basic understanding of the diversity of the students involved. The researcher also kept a detailed research diary/journal during both cycles. In addition to the action inquiry, a web-based questionnaire survey was used to get specialists in the field of blended/online learning to evaluate some of the learning principles for blended learning which were devised by the researcher. A target was set to involve at least 25 facilitators/designers/researchers from various higher education institutions in South Africa. (Ultimately, 26 practitioners from nine institutions took part.)

The research findings are presented in the format of five articles:

Article 1: Design for interaction: An action inquiry into online collaborative learning in undergraduate education

This article presents a reflection on the research design and methodology employed in a search for effective online collaboration in the blended learning mode at the UFS. The article commences with a brief overview of the nature and underlying assumptions of collaborative learning; an indication of the potential benefits of online collaborative work; and a discussion of the research design and methodology employed. In the main part of the article the emphasis is on a discussion of and reflection on the two completed research cycles of the action inquiry methodology employed, including the application of a process-oriented design methodology [as suggested by Strijbos, Martens and Jochems (2004) for computer-supported group-based learning] that was utilised during the second research cycle in an effort to improve the interaction among students.

Article 2: Incorporating student feedback in the enhancement of online collaborative activities

As reflection is regarded as such an important phase of the action inquiry methodology, students were directly involved in the reflective phase by means of a reflective assignment after participating in an online collaborative activity. This assignment took the form of an asynchronous online group discussion

where the students got the opportunity to reflect on the positive and the negative aspects of online collaboration in their groups. They also had to make suggestions on how the collaborative experience could be enhanced. The very large amount of data gathered in these discussions were analysed by means of a SWOT analysis. Through this analysis it has become clear that involving students as “co-researchers” in the reflective process of an action inquiry project holds numerous benefits for the practice of university teaching.

Article 3: In search of meaningful blended learning practices: Reflections based on an action research diary/journal

In the article the theories on online and blended learning are discussed against the background of the researcher’s experience as facilitator and action researcher in a blended learning environment. She provides an overview of some of the most important experiences she has lived through in the process and the consequent learning that has taken place. A review of contemporary literature provides the necessary theoretical views, while the researcher’s comprehensive research journal is regarded as the main source of information for the perspectives from practice. The article illustrates the use and value of the research diary/journal as valid data collection method and shows how the researcher’s growing understanding of the practice has led to the development of important learning principles for blended learning in the specific context. By sharing her experiences the researcher allows the reader a fleeting look at life in a blended learning classroom.

Article 4: Enhancing collaborative learning in a blended learning environment: Applying a process planning model

In an action research/inquiry project the planning phase is considered crucial in devising a strategy for the next phase of the project. After completion of two full cycles of the action inquiry on which this article is based, the researcher decided to structure the planning for the third cycle according to a recognised process. Her choice fell on an existing process planning model which was originally developed for the design and planning of team-based action learning and action research (ALAR) projects (Zuber-Skerritt 2002:144). In the article the illustration of the application of the so-called “figure eight” model

focuses on the aspect of student collaboration in a blended learning environment. The intention is to illustrate how the original model was effectively adapted and applied during the re-planning phase of the action inquiry project. The planning that took place in each of the three major components of the model (vision, context and practice) is discussed in detail. The researcher also provides an exposition of how her experiences and findings in the study relate to each stage of the process. The final deliverable is a set of action plans for future collaborative learning that could help to make the student learning experience in the blended learning environment more effective and meaningful.

Article 5: Establishing a framework for meaningful blended learning practices in the undergraduate classroom: A South African perspective

During the planning phase for the third cycle of the action inquiry project the researcher decided to subject some of the multitude of findings gathered over the first two cycles to scrutiny by fellow online/blended learning facilitators/designers/researchers at other higher education institutions in South Africa. She hoped that the sharing of experiences would not only broaden her own insights, but would also lead to “informed” agreement on at least some practices in which blended learning in either her own or the broader higher education environment could be enhanced. In this article the findings of the inter-institutional opinion survey are presented and analysed. The researcher also makes use of various “agreed upon” learning principles to develop a preliminary framework for meaningful blended learning which could serve as a springboard (and also for providing hypotheses) for further investigation.

5. DETAILS OF PRELIMINARY STUDY

Since 2001 the researcher has been closely involved in the development of online course material and the facilitation of various undergraduate online/blended learning modules at the Central University of Technology, Free State and the UFS.

In order to develop quality online course material, research has been undertaken on various aspects of teaching and learning, instructional design and the development of learning material for online delivery. This research directly led to three papers presented at two national and one international conference, as well as one article published in a scientific journal. Two papers related to this study were presented at the 4th International Conference on Technology in Teaching and Learning in Higher Education which was held from 11-13 July 2005 in Beijing, China.

6. VALUE OF THE RESEARCH

The study addresses an important issue of concern to higher education institutions in South Africa. The envisaged impact and output could be the improvement of undergraduate student learning in the South African higher education sector while preparing the students for a socio-technological life outside the institution. The research is furthermore directed at improving teaching and learning practices with its main focus on the effective use of the new communications technologies in a blended mode of delivery. Publications providing case studies and guidelines/frameworks could support the establishment and improvement of blended learning in the country.

In addition to her personal development, the researcher hopes that this study will contribute to the development of others, in particular the large number of diverse students in her own classes, as well as future students and colleagues who may benefit from her newly acquired experience.

7. PRESENTATION OF THE THESIS

This orientation is followed by a presentation of the five articles, including an abstract in each case. The main criterion for each article is that it must be regarded as “publishable”. As such each article presents a “whole” on its own. Slight adaptations may have to be brought on for future submission to various journals for possible publication; this will depend on the prescribed formats of the specific journals and their guidelines for authors. Some of the articles might be regarded as too lengthy for publication in many journals, but the researcher (in consultation with her promoters)

has decided that for the purposes of a thesis these articles should present the full picture and could rather be shortened at a later stage.

The researcher also decided to include as appendices some of the study material and other documentation she has personally developed during the course of the study and which may provide important background to the study. These appendices are the following:

Appendix A: The pre-course survey questionnaire completed by students at the beginning of each cycle.

Appendix B: Example of a pre-class worksheet (as published on WebCT).

Appendix C: Example of an electronic mark sheet (described in detail in Article 3).

Appendix D: The web-based questionnaire developed for the inter-institutional survey.

8. CONCLUDING THOUGHTS

In reflection on the study, the researcher recognises the special demands of organising and presenting the multitude of findings in her study in a five-article format. She had to accept the overlapping of information which would be unavoidable in a presentation of this nature; and throughout keep in mind that each article must be a full, independent entity on its own. Because of the nature of the study and the research design in particular, it was not difficult to ensure that each article contributes to attainment of the overall aim of the study; the most challenging aspect, however, was to present the articles in such a way that a line of development, in her own mind as well as in her practice, would become visible. Only if she has succeeded as such, she has lived up to the demands and challenges of the action research paradigm.

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DESIGN FOR INTERACTION: AN ACTION INQUIRY INTO ONLINE COLLABORATIVE LEARNING IN UNDERGRADUATE EDUCATION

Abstract

Various studies have shown the benefits of group-based or collaborative learning as pedagogy in either contact or online teaching and learning. The article presents a reflection on the research design and methodology employed in search of effective online collaboration in the blended learning mode at the University of the Free State (UFS). The significance of the research lies with the possible benefits the innovation offers the institution and its community (students and facilitators), as well as the possibilities for improving educational practice in similar contexts. The article commences with a brief overview of the nature and underlying assumptions of collaborative learning; an indication of the potential benefits of online collaborative work; and a discussion of the research design and methodology employed. In the main part of the article the emphasis is on a discussion of and reflection on the two completed research cycles of the action inquiry methodology employed, including the process-oriented design methodology that was utilised during the second research cycle in an effort to improve the interaction among students.

1. INTRODUCTION

The University of the Free State (UFS) in South Africa has joined the global higher education community in its search for more effective teaching and learning in an increasingly diverse but also increasingly technological environment. A more open, flexible approach in teaching and learning is advocated in which various forms of online learning have taken shape. The most general format is the blended learning mode which combines face-to-face and online delivery modes. It is believed that this type of education holds benefits for students and facilitators at a rapidly growing institution with a diverse student population and very large classes in many departments. The policy of parallel medium of instruction at the institution

furthermore demands creative ways of dealing with executing such a policy. In addition, although an outcomes-based education (OBE) approach has been adopted (as stipulated by legislation in the country for all education at all levels), doubts arise as to whether the students attain the necessary knowledge, skills and attitudes to prepare them for the world of work in a very complex society.

Various studies have shown the benefits of group-based or collaborative learning as pedagogy in either contact or online teaching/learning (Fisher 2003; Conrad & Donaldson 2004; Roberts 2005). In an effort to increase the effectiveness of learning at the UFS, various forms of collaborative learning (mostly referred to as *group work*) have been implemented in many undergraduate courses (especially in the traditional face-to-face context/environment). This has, however, not always led to the expected outcomes. The face-to-face collaboration efforts are often characterised by, among other things, some group members who are more active than others, difficulties in arranging group meetings and a constant failure to keep to deadlines which in most cases result in low-quality or incomplete projects.

The problem therefore centres on the finding of an appropriate design of online collaborative activities which would benefit learning in the blended learning environment and, at the same time, counteract the possible negative effects of collaboration in the face-to-face situation.

The purpose of this article is to provide an overview of the unfolding of a project extending over two full research cycles (described as an action inquiry), in which students' (and the facilitator's) experiences with online collaboration were consciously investigated. In this recounting the description of the research design and methodology is followed by a summary of the nature of the assignments on which the investigation was based, as well as a reflection on the outstanding features of the project in each of the two cycles. The latter includes an outline of the process-oriented design methodology which directed adaptations to the project in the second cycle. Although it is not possible to give a detailed account of the findings in one article, the ultimate aim is to demonstrate how the integration of action research/inquiry into university teaching can contribute to improved practice.

The investigation was based on the assumption that online collaboration as pedagogy (in the blended learning environment as well) held potential benefits for students, but that there were various variables, including the design of the activities, which needed to be addressed to maximise the possible gains of the pedagogy for improved practice and therefore for meaningful student learning. Cognisance of the concept of collaborative learning as well as the potential benefits of online collaboration was therefore regarded as necessary, not only as motivation for the study, but also for an eventual evaluation of the possible successes and failures of the pedagogy employed.

2. THE CONCEPT OF COLLABORATIVE LEARNING

In studying the literature it becomes clear that a number of distinct assumptions underlie collaborative learning. These assumptions are indicative of the new paradigm of teaching and learning which has developed during the latter half of the 20th century, with particular reference to the influence of the constructivist theory of learning. There is, in the first place, the assumption that knowledge is constructed, discovered and transformed (and learning enhanced) in an active-interactive situation and not transferred from teacher to student (Ewing & Mulder 2002; Panitz n.d.). Learning is also student-centred with recognition of the student's prior knowledge, experience and understanding; and, most important, the teacher's role is that of "facilitator of learning, developer of structure, creator of the context and provider of the learning space so that students can take control of their own learning" (Alderman 2000). Two further assumptions which hold significance in this study are that collaboration leads to the building of team and social skills; and that it provides opportunities for appreciating or, at least, for acknowledging that diversity is "essential for the survival of a multicultural democracy" (Matthews 1995, in Alderman 2000).

It furthermore seems that, in the field of group learning, terminology shifts from cooperative learning to collaborative approach to other distinctions of group-based investigations. Indicative of this, Alderman (2000) refers to cooperative learning as the "generic term", while Smith and MacGregor (1992:10), in contrast, describe collaborative learning as the "umbrella term" for a variety of educational approaches

involving “joint intellectual effort” and which represents a significant shift away from the teacher-centred approach in higher education. As such it spans the concept of cooperative learning which, according to these authors, represents the most structured end of the collaborative learning continuum with small groups of students working together to maximise their own and each other’s learning. Panitz (n.d.), in his careful consideration of the two main concepts involved, confirms the previous view and states that in the cooperative model the teacher maintains complete control even though the students work in groups, while in the collaborative model the group would assume almost total responsibility for the execution of the assigned task.

The researcher regards variations on the more open-ended model, but in which the facilitator retains some directive powers in the execution of the collaborative tasks, as the more appropriate description of the view adopted on collaborative learning in this study. The extent of open-endedness and the level of pre-structuring regarded as necessary for improved interaction, will become clear in the discussion. The overview of the potential benefits of online collaboration in the next paragraph also adds to the understanding of the nature of collaborative learning.

3. THE POTENTIAL BENEFITS OF ONLINE COLLABORATION

The information technology era provides a new arena for collaborative learning. For students who enrol in online courses the online learning environment can be considered as their “classroom”. This is the place where they interact with the learning material, their fellow students and the facilitator. After analysing various online courses, Kidney and Puckett (2003:203) found that many course designers failed to create rich and engaging learning environments. One of the distinctive requirements of an effective online course is that it relies heavily on effective collaboration to create a meaningful and engaging learning environment (Fisher 2003:227) and to enhance the learning experience (Pallof & Pratt 2001:26). Kearsley (1997, in Kidney & Puckett 2003:204) considers interaction as “the single most important element of successful online instruction”. Effective collaboration can therefore be regarded as one of the determining factors in measuring the success and quality of any online course.

Effective learning and enhanced learning experiences can occur in social groups when individuals share meaningful exchanges about practice and in doing so create social configurations called learning communities. Collaboration is considered one of the key aspects in the development of successful online learning communities (Pallof & Pratt 2001:32; Browne 2003:246). Frequent interactions can help individual students to create an online identity and culture among the community members (Fisher 2003:238). By creating such an identity, students increase their comfort level for participation and also level the so-called “playing field”. Students who are not likely to participate in a face-to-face discussion are more likely to participate online where they might feel less threatened by personality, gender and age differences. The interaction can also help to intensify connectivity among students and between students and the facilitator (Van Eijl & Pilot 2003:54) and help to create a richer and more diverse experience than what would have been possible otherwise (Fisher 2003:232). Asynchronous online collaboration also provides greater convenience than face-to-face collaboration as participants do not necessarily have to gather at the same place at the same time; they can interact according to their own schedules. Although active participation is encouraged, learning does not only occur through participation, but also through the observation of all the interactions (Stenning, McKendree, Lee, Cox, Dineen & Mayes 2000:341).

Collaboration not only enhances the learning experience but it also helps to promote the generation of various skills (Pallof & Pratt 2001:33), increase social interaction (Osguthorpe & Graham 2003:231; Macdonald 2003:389), increase motivation (McLoughlin 2000:142; Kelly 2004:53); and make learning more realistic (Jefferies, Grodzinsky & Griffin 2003:193). Collaborative activities can also help to promote deeper levels of knowledge generation (Guri-Rosenblit 2001:494; Macdonald 2003:389), as well as the development of initiative and critical thinking skills (Pallof & Pratt 2001:33), problem solving and reasoning skills (Jefferies *et al.* 2003:194), and higher order thinking (McLoughlin 2000:142). By means of collaboration students are more likely to reach higher levels of achievement and satisfaction, and develop more confidence in their own learning capabilities (Kelly 2004:55). Students are also more likely to accept responsibility for their own learning (Fisher 2003:234).

From the literature it has become apparent that the potential benefits of online collaboration centre on the following aspects:

- Creating an online identity and culture (in a learning community).
- Developing various skills (critical thinking, problem solving, etc.).
- Encouraging active participation.
- Increasing motivation.
- Increasing the student's comfort level.
- Intensifying connectivity between students.
- Making learning more effective (i.e. attaining the outcomes).
- Promoting deeper levels of knowledge generation.
- Providing greater convenience than the face-to-face equivalent.

Kelly (2004:53) warns, however, that interpersonal interaction can only be effective if it is intentionally designed into and integrated throughout a course. Although it would be very difficult to actualise all the benefits at the same time, it should be possible to design and conduct an online collaborative activity in such a way that the students can have meaningful learning experiences and interaction in which important knowledge is gained, valuable skills attained and essential attitudes developed. In this regard one would like to refer to the potential of online collaborative learning to develop the team skills and cultural sensitivity that are sorely needed in a complex South African society. At the UFS this complexity is intensified by the largely multicultural student population and a language policy which is instrumental in dividing students among cultural lines in the classroom.

In the light of the possible benefits of collaborative learning, the research was directed by the following question: How should a collaborative online project be designed in order to create a rich and rewarding learning experience for students in an undergraduate Information Technology course at the UFS?

In this article the researcher explains the nature of the investigation, which was aimed at answering the above research question, and shares some of the

experiences gained in two full cycles of an action inquiry, which she hopes will pave the way for further inquiry/investigation. The significance of the study lies not only in the personal and professional development it implies, but also in the benefits it presents the university and its community (students and facilitators). The knowledge and understanding gained in the field of teaching and learning in the specific mode can also provide insights to higher education institutions in a similar context.

4. RESEARCH DESIGN AND METHODOLOGY

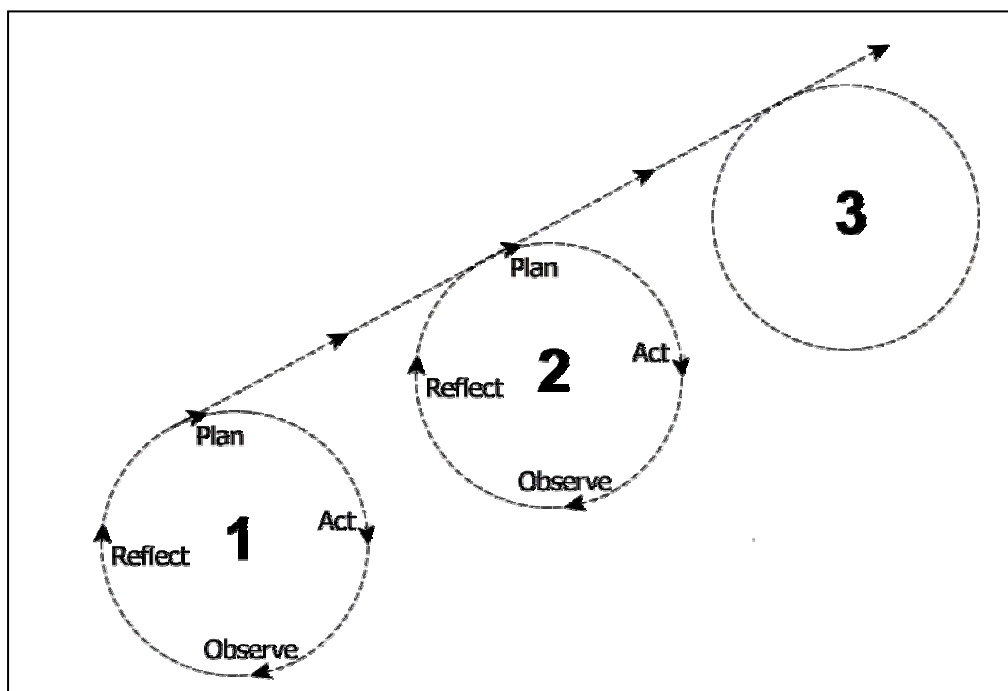
The research undertaken in this study can be classified as an action inquiry. According to the description by Tripp (2003), action inquiry is a blanket term for the deliberate use of any kind of a *plan, act, observe/describe, and review* cycle for inquiry into action in a field of practice. Common varieties of action inquiry include reflective practice, action learning, action research and researched action. It embraces “any form of deliberate inquiry in which action and inquiry proceed together with and through each other”. In this study overlapping phases of several kinds of action inquiry can be identified, with action research as the dominant inquiry method. Incidence of reflective practice as a more researcher-centred type of inquiry in particular is acknowledged. The emphasis is undoubtedly on the reflection after action; and the description of the action inquirer’s experience tends to be more informal. This is reflected in the journal keeping as well. Action research also includes action learning, which is learning from experience and critical reflection on that learning, usually through group discussion (Zuber-Skerritt 2002:114). Action researchers, however, “aim not only to learn from their own and each other’s work, but also to improve it and to change their own situations ... as well as to contribute to public knowledge through publishing their learning” (Bawden & Zuber-Skerritt 2002:136).

Action research is therefore a more formal and deliberate form of reflective practice in which research methods are used to produce a more detailed and schematic description of the situation. It can also be regarded as a further development of reflective practice (Tripp 2003). The actions take the form of change or improvement or implementation in one’s workplace, while the research leads to learning and understanding (Dick 2002). In the view of Hubball and Burt (2003), action research

methodologies and the variety of data collection sources provide distinctive opportunities to integrate research into university teaching and learning. In addition, they provide effective strategies to develop learning communities that cross traditional boundaries between educators and students, and enhance professional development and pedagogy in multidisciplinary settings (such as a university classroom in the 21st century).

The action research model decided upon comprises the typical stages of *plan*, *act*, *observe* and *reflect* which is often portrayed diagrammatically as a spiral of cycles (see Figure 1). The upward direction of the spiral in Figure 1 indicates a continuous improvement of practice and an extension of personal and professional knowledge (Altrichter, Kemmis, McTaggart & Zuber-Skerritt 2002:130). In accordance with the diagram, this article presents an overview of two completed cycles of the action inquiry process with the re-planning for the third cycle as a direct outflow of the findings up to this stage. The exposition of the enrichment/improvement that took place on the knowledge and the practice levels is furthermore illustrative of an "upward" movement.

Figure 1: The spiral of action research cycles



In the development of the study, certain choices had to be made. The first was that the study would be *data-driven* rather than *theory-driven* (Dick 2002) as it was regarded as more important to deal with the research situation and the people (students) as they are. In this way the researcher could be more open to fully experiencing the research situation and, as an important outcome, able to study and improve her own practice. In a search for perspectives on and possible solutions to some of the problems encountered, the literature was consulted on a more focused and rather extensive scale after completion of the first cycle.

A second choice lay with the level of participation. The action research approach in this study cannot be described as classical participatory or even emancipatory action research as the participants (the students) in this study cannot be described as equal partners or as traditional co-researchers. The approach resembles the *practical* approach as described by Zuber-Skerritt and Perry (2002:178) or the *practical/mutual collaborative/deliberate* mode explained by Berg (2004:203). In this approach the aims relate to the improvement in the effectiveness and efficiency of professional practice, while the researcher is not a mere outside expert as in the *technical* approach but encourages participation and self-reflection. The relationship between practitioner and participants can therefore be described as co-operation rather than collaboration. The approach also resembles the so-called *teacher-research* model of action research described by MacLean and Mohr (1999) as an inquiry that is “intentional, systematic, public, voluntary, ethical, and contextual”. This description places a particular importance on the distinctiveness of the context and the consideration thereof in the research (for example the particular multicultural set-up at the UFS).

Thirdly, in accordance with the researcher’s world view, the data collection methods employed would be qualitative and based on “a constructivist philosophy that assumes reality as multilayer, interactive, and a shared social experience interpreted by individuals ... It is concerned with understanding the social phenomena from the participant’s perspective ... (and shows) context sensitivity” (McMillan & Schumacher 2001:396). Within this paradigm most of the qualitative data was gathered by means of extensive online feedback, either as part of online group discussions, as e-mail messages received, or as a component of assignments in which students were given

the opportunity to reflect critically on the online collaboration. Profile questionnaires completed at the beginning of the courses in the respective cycles provided a basic understanding of the diversity of the students involved. The researcher also kept a comprehensive journal in which her observations, experiences and personal reflections were carefully noted.

In the data analysis, qualitative methods of data reduction were employed in a search for patterns and categories of meaning in the feedback received. In the reflection and re-planning phases the application of a process-oriented design methodology proved to be valuable and directive in the research.

For purposes of this study, validity refers to the degree to which the conclusions reached as the result of the action research can be considered trustworthy. In searching for criteria to validate the trustworthiness of this study, a variety of viewpoints were exposed. McNiff (2002) indicates that action research reports still tend to be judged by traditional criteria of which most are technical – for example, whether the research shows a systematic process of data gathering, analysis and interpretation. However, these criteria are at present complemented by qualitative, experiential ones, such as whether others can relate to and learn from the report. Anderson, Herer and Nihlen (1994, in Mills 2001) argue that action research demands different criteria for validity, reliability and research quality than those for conventional research approaches, and that action research has to comply with the following types of validity and relating criteria:

- *Outcome validity*: Did the researcher learn something that can be applied to the subsequent research cycle?
- *Process validity*: Has the study been conducted in a dependable and competent manner?
- *Catalytic validity*: Did the research move the researcher and others involved to action, i.e. did it serve as a catalyst for action?
- *Democratic validity*: Were the multiple perspectives of all the participants accurately presented?

- *Dialogic validity*: Did critical conversations with others/peers about research findings and practices take place?

Although it is in the final instance the reader who has to decide whether he/she can relate to and learn from the research, the researcher feels confident that the research reported here conforms in an acceptable manner to the above criteria. In the case of the “critical conversations with peers”, regular discussions with colleagues in her department have taken place, several presentations on the findings were made on the campus of the UFS, while two papers based on the research findings were accepted and read at an international conference. Feedback received at these occasions has served to enrich her insight and contributed to her professional development.

5. AN OVERVIEW OF THE FIRST CYCLE

The module (RIS222) that was selected for this inquiry is a one-semester Information Technology module (“Introduction to the Internet and web page development”) on second-year level that was presented by using a blended learning approach. The students had one face-to-face contact session per week, while the WebCT learning management system (LMS) was used for the online delivery component.

In the first cycle of the inquiry (in 2003) it was decided to involve the 160 students in the selected module in at least one online collaborative assignment. Groups were randomly allocated by the facilitator and consisted of no more than eight students. In accordance with the language policy of the UFS (parallel medium of instruction), the Afrikaans- and English-speaking students were placed separately, while the 19 international students formed part of the 16 English-speaking groups. Students were therefore provided with an opportunity to function as part of an unfamiliar and more diverse group than what they were used to. The facilitator anticipated that this would aid the students in improving their team skills and developing some level of cultural sensitivity.

5.1 The project

One of the outcomes of the RIS222 module expects students to develop the ability to conduct Internet searches. As the researcher wanted the students to realise the vastness and application possibilities of the information available on the Internet, they had to plan a three-week budget holiday abroad for one person (the "traveller"). In order to make the assignment more enjoyable and to prevent students from copying one another's work (due to plagiarism among students) different destination areas were assigned to each group. In an effort to make the assigning of 23 possible destinations totally random, a live "lotto draw" was conducted during one of the weekly contact sessions. The assignment details were made available on the same day.

The collaborative element required that each group had to decide which towns or cities within their destination area would be visited (one for each group member), the order in which the selected cities would be visited, the actual dates for the visit (three days per city), as well as how the allotted group budget of R60 000 would be allocated. The group also had to select a project leader for the assignment. Other specifications included that the "traveller" had to depart from and arrive back at the same South African international airport and that the trip should be scheduled to take place before the end of the year (December). The groups had one week to complete their initial planning after which the project leader had to submit an outline/summary of the group's decisions to the facilitator. This element was added to prevent groups from leaving the initial planning to the last minute, which is likely to result in the students not having enough time to complete their individual assignments.

After completion of the initial planning, each student had two weeks to complete and submit the three-day travel plan for the allotted city. This travel plan had to include details on how the "traveller" would get to the city (departing from the previous city in the group's itinerary), accommodation arrangements, modes of transportation to be used within the city and a list of planned activities (according to certain specifications). As part of their final individual document, students were also required to provide a detailed budget and references to all Internet sources cited. Group members were encouraged to continue their online communication to share

information sources and to ensure that all group members were aware of any changes to the group's travel plan.

5.2 Execution

The administration of the assignment was handled online (discussion postings) with discussion of common problems during the weekly contact session of 50 minutes. As agreed, the researcher remained a silent observer and made regular visits to each group's discussion forum. She only "participated" when a group contacted her via e-mail for some clarification or when she came across crucial misinterpretations aired by students in their group discussions.

Some of the problems observed in the execution of the project were the following:

- Students failed to study the assignment specifications, although these had been explained to them very thoroughly.
- Despite the instruction that they had to conduct all group communication *online*, some of the groups held face-to-face meetings.
- Some of the students did not know how to budget.
- There were limited Internet resources for certain destinations.
- The selection of group leaders provided unexpected problems of various kinds.
- The use of discussion threads proved to be a disaster, mostly because some of the students started a new thread every time they wanted to post a message. Special (time-consuming) measures had to be taken to alleviate the problem.

While there were many students who were enjoying the assignment and the collaborative aspect thereof it was apparent that some individuals (and even entire groups) were not committed to the successful completion of this collaborative assignment.

5.3 Reflection

Because reflection is such an important part of the action inquiry methodology, a follow-up assignment entitled “Reflection on collaboration” was given to the students. This assignment took the form of an online group discussion in which they had to address several matters relating to the group assignment, including the identification of possible positive and negative aspects regarding the online collaborative project.

5.3.1 Positive aspects

Most of the students seemed to have enjoyed the collaborative assignment and many of them agreed that they had an interesting and good experience. They commented on how the collaboration helped them to meet new people and share ideas, and how it was easier to complete an assignment if the workload was divided amongst group members. Some students also realised the advantages of not having to go through all the trouble of arranging face-to-face meetings were everyone had to be present.

Overall it became apparent that the students had learned valuable lessons from the collaboration and that they felt better prepared for their next group assignment. These positive reflections are a clear indication that an online collaborative assignment holds various benefits for the participants including the potential to be a major enhancement to the students’ learning experiences.

5.3.2 Negative aspects

Although the students in general seemed to have enjoyed the assignment, they also mentioned various negative aspects in their reflections. Even though the negative features of the collaboration can be grouped into different categories, most of the situations mentioned by the students can be directly linked to the lack of participation by certain group members. These inactive members were making it almost impossible to collaborate and make “group” decisions (e.g. the selection of a group leader), and were putting unnecessary pressure on the rest of the group. The

students were sometimes very frustrated with the asynchronous nature of the discussion forums and pointed out that decisions could have been made much faster if the groups were allowed to meet face-to-face.

The students complained about the time-consuming nature of the assignment but also mentioned that their lack of planning was probably the main reason for not successfully completing the assignment on time. On a personal note, some students also mentioned that they did not have a computer or Internet access at home/hostel and had to come to the computer laboratories to work on the assignment (which they were not always able to do). Some students also felt that their initial lack of e-knowledge (e.g. working with discussion threads and search engines) also slowed them down at first. By the time they knew how everything worked the assignment and the collaboration were over.

Just from analysing students' comments it soon became evident that there were some flaws in the pedagogy employed. One of the flaws clearly related to the design of the activity, as a lack of motivation could be sensed, while the levels of interaction in general were very disappointing. Not much had come of the creation of online communities or the potential connectivity among students. These were recognised as the main aspects to be addressed in a second cycle of implementation.

6. PLANNING FOR THE SECOND CYCLE

After further reflection and intensified reading it was decided to apply a specific process-oriented design methodology in the second cycle. This methodology was specifically developed by Strijbos, Martens and Jochems (2004) for computer-supported group-based learning.

6.1 The design methodology

The focus of the process-oriented design methodology is to design for interaction; every learning activity should be based on the level of interaction required among students (Strijbos *et al.* 2004:408). In order to accomplish this, the critical elements

affecting interaction have to be identified. These elements, briefly explained in Table 1, relate to the following aspects:

- Learning objectives.
- Expected interaction.
- Task type.
- Level of pre-structuring.
- Group size.
- Computer support (Strijbos *et al.* 2004:417).

As this methodology requires the expected level of interaction to be specified in advance, the first two steps are performed simultaneously. Following this, the task type (which can vary from well-structured to ill-structured) is selected with respect to the specified learning objective(s) and the expected interaction. The fourth step is to determine the level of pre-structuring (which can vary from high to low). The amount of structure needed is directly related to the decisions/selections made in the first three steps of the methodology. The selected level of pre-structuring is regarded as crucial to the success of the methodology as too much structure may result in “forced” artificial interaction while a lack of structure can easily result in fragmented interaction or a situation where interaction is considered optional rather than essential to the whole process (Strijbos *et al.* 2004:412). Although group size and computer support are not key elements, they are considered to be essential elements in the design of computer-supported group-based learning.

Careful consideration was given to each of the critical elements in the planning of the second cycle (see Table 1 for an indication of the application of each in cycle two). Although some "design" elements of the assignment were only to be changed slightly, the newly adopted methodology suggested major changes to the task type, level of pre-structuring and group size elements. In the first cycle, the groups only had to make some initial decisions before each student would go on to complete and submit his/her individual assignment. The new methodology suggested that a higher level of interaction was likely to be attained if students were to consolidate their

individual contributions in order to create one final “group” product (Strijbos *et al.* 2004:411).

Table 1: Application of a process-oriented design methodology in cycle two

Critical element	Meaning	Application in cycle two
1. Learning objectives	Identify the skills (open and closed) which the students should acquire during the learning activity. Open skills are acquired when students not only react, but build on one another's contribution.	Open skills (argumentation, negotiation) were acquired when students had to build on one another's contributions. Closed skills included basic Internet search skills, citation skills and the ability to identify quality information.
2. Expected interaction	Specify the expected type of interaction according to one of three levels (one, two or three) or a combination thereof.	High level of reciprocal (“networked”) interaction on levels two and three was selected. These interactions would focus on discussion, argumentation of opinions, and exchanging of findings.
3. Task type	Task type can vary from well-structured to ill-structured. Groups tend to be more effective when the task requires a variety of information consisting of several successive steps, and can be solved by adding individual contributions.	Task type is considered to be “medium” structured as the task has no specific solution, but broad guidelines are provided. Students will not necessarily study the same material. Individual contributions were combined to form the final document.
4. Level of pre-structuring	This refers to the level to which interaction is pre-structured in advance to ensure positive interdependence and individual accountability. (Can vary from high-level to low-level.)	“Intermediate” level was selected as facilitator assigned the group topics, but students still had to decide on individual responsibilities.
5. Group size	Group size is determined by the choices made in the previous four elements.	Group interaction was obligatory, but with no specifications on the frequency of student interactions. Interaction focus was on consensus generation and negotiation; small groups (five to six members) were therefore preferred.
6. Computer support	Select type of computer support/tools to support learning and the expected interaction. Decide if collaboration is to take place <i>at</i> , <i>through</i> and/or <i>with</i> computers.	WebCT was used to support basic aspects of communication, collaboration and coordination. Asynchronous interactions were to take place <i>through</i> computers.

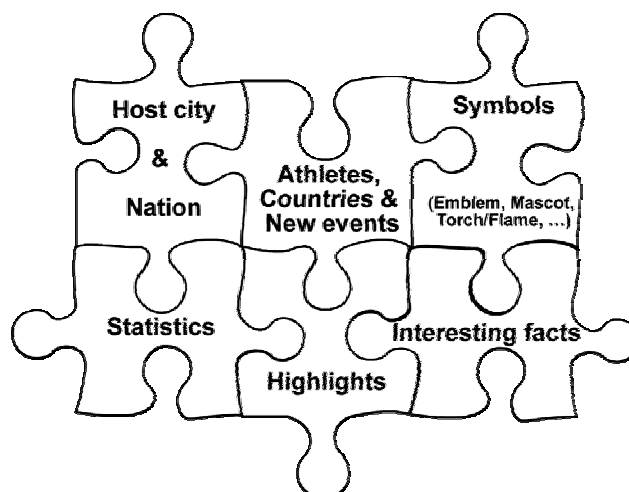
Because the selected learning objectives (see Table 1) implied that various open skills would be taught and that a high level of reciprocal interaction was expected, a medium-structured task was selected. Therefore, some level of pre-structuring by the facilitator was required.

It also became evident that, based on the desired level of interaction and the type of task, the group sizes had to be reduced [from 7 or 8 (large group) in the first cycle to 5 or 6 (small group) in the second cycle]. Fortunately the number of students in the second cycle was significantly lower ($n = 90$) than in the first cycle. A reduction in the size of the groups would therefore not result in more groups or a heavier workload for the facilitator. Although it is very difficult to determine/predict what influence the group size will have on the group's level of interaction, the interaction in small groups is more likely to promote collegiality and camaraderie (Betz 2005:4) and also to help the group to form a learning community. In order to satisfy the computer support element of the methodology, groups would also be given access to the file sharing feature of WebCT.

6.2 The new project

The project that evolved centred on the compilation of a “brochure” on one of the previous Summer Olympic Games (1936-2000). Figure 2 indicates the six topics per event which had to be covered, one per group member.

Figure 2: Group topics to be covered for selected event



The chosen learning objectives and task type required both communication and co-ordination between the students. They had to communicate to ensure that each member undertook research on a different area related to the topic. As some of the topics were closely related, co-ordination would also be required to ensure that no

duplication of information occurred in the final document. Each group also had to choose a project leader and decide on the formatting of the final document.

Each student was required to search the Internet for information on his/her selected topic and compile a summary (200 to 250 words) to be included in the group's brochure. They were not allowed to simply "cut-and-paste" information from the Internet and they also had to compile a complete list of references for all their Internet sources (according to the APA citation style). After the students completed their part of the brochure they were required to add their text (and references) to a blank web page which resided in the group's file sharing area on WebCT – the result being one collaborative group document published on WebCT. Students were to be graded using a combination of group performance and individual participation and contribution.

7. REFLECTION ON THE SECOND CYCLE

The outcomes of the second project showed major improvements with regard to student feedback and performance. The timing of the assignment was perfect. Everybody was anticipating the start of the Olympic Games in Athens and with the assignment due date on the same day as the opening of the 2004 games, everybody seemed to be eager to gain knowledge on the history of the Olympic Games.

As in the first cycle, students were given the opportunity to reflect on the collaboration. The comprehensive feedback analysis procedures were repeated. Overall, the students were more excited about the positive outflows of online collaboration than before. The fun and enjoyment of the interaction and communication, together with the new knowledge acquired, were highlighted in comments. There was furthermore evidence of the stimulation of motivation and activity, with acknowledgement of the opportunity to develop team skills. The negative aspects and weak points again centred on the lack of participation from and collaboration among certain group members. Once again, some students experienced problems with the fact that they were not allowed to meet face to face. (Some apparently experienced various levels of anxiety because they did not know what their group members looked like!) The asynchronous nature of discussions, a

lack of e-knowledge, and the time-consuming nature of group work could again be regarded as having a possible negative impact on the success of online collaboration.

It is interesting to note that only two students complained that they had difficulty visiting the computer labs on a regular basis while no one mentioned a lack of interest in the assignment. This time there was also no student that regarded the assignment as time-consuming.

The following are some of the characteristics of the student projects in the second cycle:

- While most of the groups did not make any changes to the default text formatting (Black Times New Roman text in size 12pt), some groups did apply a different font to their documents or added some colour or underlining to the headings. Group One (which had only five group members) decided to format its five sections using the five colours of the Olympic rings (red, green, yellow, black and blue).
- Very few groups had “duplication” violations which can be seen as an indication that there was at least some level of cooperation amongst the group members.
- The length of the student contributions varied from 21 to 1401 words! (Required length was 200-250 words.) This is a clear indication that the students still failed to follow the assignment specifications.
- Many of the students were found guilty of the “cut-and-paste” violation.
- The lists of references were in most cases total chaos with very few students following the specifications. Most of them invented their own citation style or just pasted the actual URLs into the final document.
- The “Statistics” topic proved to be the least interesting one to read/grade with most of the students just listing very long and “boring” medal tables (which they copied from their Internet sources).

In comparing the projects from the two cycles it is apparent that although the second project was less time-consuming, it also contained a lot less specifications (without being too straightforward). The nature of the assignment resulted in a great deal of collaboration and cooperation among the students while the task also demanded a high level of individual accountability from the group members. However, despite the increased levels of collaboration, most of the assignments were still of an average standard with very few exceptional projects.

If the outcomes/findings of the second cycle are compared to the possible benefits of online collaboration (as listed in section 3), it is apparent that these benefits were “realised” with various degrees of success. The successes achieved by the majority of the students included increased motivation, increased levels of comfort, intensified connectivity and more effective learning as all module outcomes were attained. Due to the limited extent of the assignment it was unlikely that the students had enough time to develop all the various skills that could be acquired by means of online collaboration. Although there were clear indications that certain groups had truly established their own group identity and culture, those groups were unfortunately in the minority. It is possible that involvement in a second collaborative activity (in the same cycle) could have provided more groups with the opportunity to further the development of their learning community and improve the levels of knowledge generation. From analysing the students’ reflections, it became clear that the nature of the collaborative assignment did in fact encourage active participation. Unfortunately, the groups who had to deal with in-active group members did not realise this benefit. Thus, although online collaboration when compared to face-to-face collaboration should provide various “convenience” benefits it became apparent that these benefits are unlikely to be realised if the participating students are not committed to active and regular participation.

8. CONCLUSION

The investigation on which this article is based formed part of a larger project in which effective blended learning practices were explored. Although it was mainly directed to experiences with online collaboration assignments, valuable insights were gained which contributed to the development of the project as a whole.

The employment of action inquiry methodologies with features such as continuous action on reflection and cooperation from the side of the students proved to be most valuable in researching and ultimately enhancing computer-supported collaboration. Noticeable degrees of improvement in the effectiveness and efficiency of the collaborative activity were experienced. As an insider-observer and kind of silent co-worker the facilitator could encourage participation and self-reflection among students. The cooperation of the students in reflecting on various aspects of their experiences was commendable. The researcher experienced the suggested improved practice and personal professional growth characteristic of an action inquiry approach (see section 3). The deliberate researching brought a new dimension to her professional practice, in which the search for new knowledge and understanding is continuing. There is also an element of empowerment in reflecting on successes and failures, as she has realised that lived-through knowledge and experience put a researcher-facilitator in a better position to plan and design for a next cycle. In addition, the intensified literature review which informed the application of the process-oriented design methodology in the planning of the second cycle also added to the enhancement of the collaborative activity. Methodologies like these can be considered as very valuable tools in raising the interaction level amongst students in an online collaboration and realising the potential benefits of the pedagogy.

In reflecting on the lessons learned in the two completed cycles of online collaborative group work, the main challenges to be addressed in a third cycle can be divided into two broad categories. The first category directly relates to universal challenges of online collaboration as identified in contemporary literature and includes aspects such as design, motivation, and increased participation. The other category includes the more context-specific challenges that require further local and regional investigation. Examples are the language policy that can lead to an undesirable segregation of cultural groups; unequal access to technology resulting from historical socio-economic disadvantages; as well as the specific blended learning model adopted at the UFS.

The blending of the best features of the face-to-face mode on the one hand, and those of the online mode of educational delivery on the other, seems to be a most realistic way in which the context-specific problems can be dealt with. More research

is needed, in particular with regard to the influence the students' prior knowledge, attitudes and their own experiences with collaboration has on the collaborative learning experience as a whole. The promotion of reflection among students, and the intentional evaluation/analysis of such reflections, can ultimately prove to be one of the key factors contributing to the successful development of online learning communities within a blended learning environment.

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INCORPORATING STUDENT FEEDBACK IN THE ENHANCEMENT OF ONLINE COLLABORATIVE ACTIVITIES

Abstract

The article is based on the findings of an investigation into effective online collaboration in the blended learning mode at the University of the Free State (UFS). It forms part of a larger action inquiry project which has already stretched over two full cycles. At the beginning of each research cycle students were required to complete a profile questionnaire. Based on the results of this questionnaire, students were divided into groups where they had to work on an online collaborative group assignment. As reflection is regarded as such an important phase of the action inquiry methodology, students were directly involved in the reflective phase by means of an additional assignment. This took the form of an asynchronous online group discussion where the students had the opportunity to reflect on the positive and the negative aspects of online collaboration in their groups. They also had to make suggestions on how the collaborative experience could be enhanced. The large amount of data gathered in these discussions were analysed by means of a SWOT analysis. Through this analysis it has become clear that involving students as “co-researchers” in the reflective process of an action inquiry project holds numerous benefits for the practice of university teaching.

1. INTRODUCTION

For students who enrol in online courses, the online learning environment is the place where they interact with the learning material, their fellow students and the facilitator. It becomes their “classroom”. One of the distinctive requirements of an effective online programme is that it relies heavily on effective collaboration to create a meaningful and engaging learning environment (Fisher 2003:227) and to enhance the learning experience (Pallof & Pratt 2001:26). Kearsley (1997, in Kidney & Puckett 2003:204) considers interaction as “the single most important element of successful

online instruction". Similarly, effective collaboration is described as one of the determining factors in measuring the success and quality of any online course (Pallof & Pratt 2001:32; Browne 2003:246).

The reflective process is regarded as one of the most exciting features of online collaboration. While evaluating the quality of research in Internet-based higher education in the USA, Merisotis (2001:591) found that many studies do not adequately take the feelings and attitudes of students and instructors into consideration – an approach which can have a negative effect on the findings of such studies. Pallof and Pratt (2001:33) also regard "promoting reflection" as one of the key factors contributing to the development of an online community. Promoting reflection can encourage students to reflect on their own learning process, on how learning with the use of technology has affected their learning, either positively or negatively, and what they might have learned about the technology itself by using it to learn. The facilitator can in turn use these reflections to enhance the online experience for the students.

Understanding end-user behaviour is therefore an important step toward effective online or e-learning. Nichols (2003) identified ten hypotheses for e-learning in an attempt to focus attention on the underlying principles that apply to e-learning in all situations. One of his hypotheses states: "Effective e-learning practice considers the way in which end-users will engage with the learning opportunities provided to them." Consideration of the experiences of students using online discussion applications can help facilitators to improve planning for online discussion activities and exercises. It furthermore seems that valuable lessons can be learned from the students themselves, in particular by means of their involvement in reflective activities.

The discussion in this article focuses on the experiences of a group of undergraduate Information Technology (IT) students at the University of the Free State (UFS) while participating in an online collaborative activity. This activity formed part of an action inquiry research project which was conducted over two full cycles. The module (RIS222) that was selected for this inquiry is a one-semester Information Technology module ("Introduction to the Internet and web page development") on

second-year level that was presented by using a blended learning approach. The students had one face-to-face contact session per week while the WebCT learning management system (LMS) was used for the online delivery component. The investigation was based on the assumption that analysing a student's personal experiences within a collaborative assignment might make it possible to identify student-specific problems which could be considered when designing (and redesigning) such activities. It might also be possible to obtain a clear indication of the strengths and weaknesses inherent in computer-supported collaboration in the specific environment. Such knowledge could ultimately contribute to the enhancement of the total learning experience in the blended learning environment.

Against the above exposition of the background to the study, the purpose of the article can be seen as twofold, as it intends to:

- describe the research design and methodology employed in the investigation, including the process of analysing the large amount of qualitative data by means of an analysis of the strengths, weaknesses, opportunities and threats (SWOT); and
- present an overview of the major positive aspects and issues/problems related to the online collaborative activity as identified by the students in their reflections.

The discussion commences with the discussion on the research design and methodology employed.

2. RESEARCH DESIGN AND METHODOLOGY

The research reported in this article is part of a larger project which can be classified as an action inquiry. Tripp (2003) describes action inquiry as an umbrella term for the deliberate use of any kind of a *plan, act, observe/describe, and review* cycle for inquiry into action in a field of practice. Common varieties of action inquiry include reflective practice, action learning, action research and researched action. In this study overlapping phases of several kinds of an action inquiry can be identified, with reflective practice the dominant inquiry method in this specific section of the

research. Tripp (2003) regards action research as a more formal and deliberate form of reflective practice in which research methods are used to produce a more detailed and schematic description of the situation. Hubball and Burt (2003) view action research as a critical component of a scholarly approach to university teaching which engages teachers, students and peers in developing a critically reflective practice, as well as providing valuable information to enhance the quality of curriculum and pedagogy. Action research can also be considered as a further development of reflective practice. In reflective practice the emphasis is clearly on the reflection after action, and the description of the action inquirer's experience tends to be more informal, also in journal keeping (Tripp 2003).

Hall (1997) also depicts action research and reflective teaching practice as closely associated, but not synonymous concepts. In reflective practice the reflection is a continuous attempt by the actor/researcher to evaluate a process and the outcomes of the action (Tripp 2003). It is learning by reflecting on one's actions as a professional; it requires consideration of both the task and of the learning around the task (Robin & Hughes 1999). It also enables the practitioner to take care of unique and multifaceted situations encountered in practice (Smith 1995).

Hall (1997) furthermore refers to *pedagogical reflective practice* which is described as teaching practice in which the teacher embarks on deliberate and continued reflection and action with the improvement in the teaching situation as goal. In this regard it is interesting to refer to the report of Faulkner and Nicholl (2000) on an Australian-Indonesian case study of action research in an education project in which they strived to attain the three criteria for improvement as set by Kemmis (1983, in Faulkner & Nicholl 2000), namely the improvement of practice, the improvement of the practitioner's understanding of the practice, and improvement in the social situation in which the practice has taken place.

In the "search for improvement" in this investigation, data collection was mainly qualitative in nature as qualitative research is first concerned with understanding phenomena from the participant's perspective, where participants' meanings include their feelings, beliefs, ideas, thoughts and actions as related to a specific context (McMillan & Schumacher 2001:396). Within this paradigm most of the qualitative

data was gathered by means of interactive strategies which included online feedback, either as part of discussion forums, as e-mail messages received, or as part of specific assignments in which students were given the opportunity to reflect critically on the online collaboration. Participant observation played an important role, while profile questionnaires completed at the beginning of the courses in the respective cycles provided a basic understanding of the diversity of the students involved (and thus of the uniqueness of the specific context). The researcher also kept a comprehensive research diary in which her observations and experiences were carefully noted. She found this diary an invaluable tool for exploring her practices, gaining practice and confidence in recording research and writing, and becoming empowered as researcher (Hughes 2000).

Based on the results of the profile questionnaire, students in both cycles of the inquiry were divided into groups where they were required to work on an online collaborative group assignment. The nature of the projects was as follows:

- In the first cycle each group had to use the Internet to plan a holiday abroad; a specific budget amount was made available and each group member had to plan part of the holiday in the country allocated to the group.
- In the second cycle certain adaptations to the design of the assignment were made, including a reduction in the size of each group and an effort to increase interest in the project. The project centred around the compilation of a six-part brochure on one of the summer Olympic Games since 1936 in which each group member was responsible for a different section of the brochure.

All communication in both assignments had to take place online. As reflection is such an important phase of the action inquiry methodology, students were directly involved in the reflective phase by means of an additional assignment. This took the form of an asynchronous online group discussion where the students could reflect on the positive and negative aspects of online collaboration in their groups. As both research cycles involved a relatively large number of students (160 and 90 respectively), a huge amount of feedback was received. For the purpose of this discussion no distinction is made between the feedback from the two cycles (apart

from a few exceptions) as the feedback as a whole was to be used in the re-planning for the third cycle.

Although the facilitator found the feedback most informative, she became aware of the difficulties in converting the mass of feedback into meaningful information. The problems which were identified in this regard centred on the questions of

- how to make sense of the large amount of feedback;
- how to analyse the qualitative feedback in a meaningful way; and
- how to identify and address student-specific problems that could potentially have a negative impact on the success of an online collaborative assignment.

It was eventually decided that a possible solution lay in the use of a SWOT analysis. This analytical and strategic planning tool was originally developed for strategic planning for marketing purposes in businesses but is now commonly used in the planning phase of various types of projects, including action research (Zuber-Skerritt 2002:145).

A SWOT analysis is regarded as a powerful tool for determining a project's capabilities (strengths) and deficiencies (weaknesses), its unexplored opportunities and the external threats to its long-term/future success (Schwalbe 2000:77; Thompson, Strickland & Gamble 2005:91). Argos Press (2005) indicates that a SWOT analysis allows one to take maximum advantage of opportunities, while being aware of potential threats and understanding the strengths and weaknesses of one's current position. Startups.co.uk (n.d.) emphasises that a SWOT would not help to find a definite answer to all questions "but it will help you get your thoughts in order so you can concentrate on the main problem rather than a sea of problems".

Literature provides many examples of the use of a SWOT in educational projects. Sabbaghi and Vaidyanathan (2003) describe the use of a SWOT to analyse the effectiveness and efficiency of an Information Technology project. The West Sussex Adult Education Service (2004) used a SWOT analysis to give an overview of project findings gathered from questionnaires. They concluded that the SWOT raised general awareness and suggested solutions to important problems. They also

identified key areas of learning resulting from the analysis and construed that it was necessary to reflect on current practice regularly in order to develop success criteria in a project.

The SWOT analysis as applied in the project at the UFS and described in the next section, served as a framework to categorise the student reflections in order to obtain a basic understanding of reality (the current situation) and to use this understanding in the strategic planning for an enhanced online collaborative approach.

3. SWOT ANALYSIS OF STUDENT REFLECTIONS

The first step was to analyse the positive and the negative aspects of online collaboration as identified by the students in their reflections. By means of qualitative analysis techniques encompassing coding and pattern seeking, the views of the students were categorised into the four broad categories of strengths, weaknesses, opportunities and threats. Within these categories further data reduction led to the identification of the key issues constituting the “ingredients” of the specific category. The key issues in each of the four categories of the analysis are summarised in the SWOT grid in Figure 1. A more detailed overview (including excerpts/quotes from the students’ comments) follows in the next paragraphs.

3.1 Strengths

It is apparent that the online collaborative approach presented an attractive set of strengths as identified by the students themselves. From analysing the positive aspects mentioned by the students, the following strengths were identified:

Less anxiety for shy students

The asynchronous nature of the discussions meant that students had time to reflect on conversations before they joined/participated in these conversations/discussions, which led to less anxiety for students with less dominant personalities. One student commented that she was normally anxious when talking to strangers but that not having to face the people she

communicated with made her more relaxed (an indication of an increased comfort level).

Figure 1: Summarised SWOT grid regarding online collaborative activity

Strengths	Weaknesses
<ul style="list-style-type: none"> • Less anxiety for shy students. • No need for students to feel isolated. • No time wasted in organising face-to-face meetings. • Workload divided among students. • Learning outcomes attained by majority of students. 	<ul style="list-style-type: none"> • Difficult to get information on certain topics. • Insufficient incentives to increase participation. • Limited time for formation of learning communities. • No synchronous or face-to-face contact between group members. • Time-consuming nature of assignment.
Opportunities (to)	Threats
<ul style="list-style-type: none"> • Develop collaborative skills needed for future assignments. • Practise use of e-learning tools. • Stimulate activity and motivation. • Strengthen personal relationships and social interaction. 	<ul style="list-style-type: none"> • Actions (no action) of individuals can demotivate the rest of the group. • Carelessness in following assignment specifications. • Lack of access to technology at home. • Lack of e-knowledge. • Lack of planning on students' side. • Lack of the required "group skills". • Attitudes of individual students.

No need for individual students to feel isolated

The students' reflections provided evidence that although it was a collaborative assignment, each individual could interact according to his/her own schedule to fulfil individual responsibilities. Being part of a group meant that the students never had to feel isolated (Fisher 2003); there was also no need for them to struggle on their own to figure out assignment specifications. They appreciated the communication channel through which they could ask for/provide assistance and encouragement when needed.

No time wasted on organising face-to-face meetings

The students also realised the advantages of not having to go through all the trouble of arranging regular face-to-face meetings where everyone had to be

present. If they had to clarify some uncertainty about the assignment they did not have to search for a fellow group member on campus; all they had to do was to post a message in the group's discussion area. The time saved could be directed towards completing the assignment.

Workload divided among students

It became clear from the reflections that where the groups did proper planning and divided the workload equally, each student had more than enough time to work on his/her individual contribution.

“What I found pleasing was the allocation of topics to the different group members as this allowed me to do my own research at my own pace.”

As a result completing the assignment became obviously less stressful to these students and the group's end-product was of a better quality (facilitator's observation).

Learning outcomes attained by majority of students

The facilitator became aware that although the individual work load was reduced, most students still managed to attain all the learning outcomes. It became apparent that the nature of the assignment helped the students to quickly become familiar with the working of an Internet search engine. Some students realised for the first time how much information there really is available on the Internet. They also realised that by searching for information on their assignment topics they actually learned techniques which could be used in future Internet research projects (thus deeper levels of knowledge generation). As one student remarked:

“The facilitator didn't just give us the assignment to keep us busy – it was valuable to me.”

However, the students also exposed the main weaknesses of the collaborative assignments in their reflections.

3.2 Weaknesses

From analysing the negative aspects mentioned by the students, five major weaknesses were identified. Although some of these weaknesses (e.g. lack of face-to-face contact) are not very serious and can be addressed, some of the other weaknesses can have a negative impact if not remedied in future assignments.

Difficult to get information on certain topics

In both cycles there were students who aired their frustrations with finding suitable/relevant information regarding their assigned topic on the Internet. During the first cycle the biggest problem was that information for some travel destinations were only available in a foreign language which the students were unable to understand. In the second cycle the problem shifted to the availability of information. Much less information was available for some of the earlier Olympic Games (e.g. 1936) compared to the more recent games (1992, 1996 and 2000).

"I didn't find it easy to get enough information concerning the topic I chose."

Insufficient incentives to increase participation

According to the students, not enough was done by the facilitator to increase participation amongst the inactive group members. The fact that the facilitator acted as a "silent observer" in all the group discussions had no direct influence on the students' level of participation. There were also students who felt that the grading criteria (made available to the students at the beginning of the assignment) contributed to low levels of participation as the group/collaborative part of the assignment only constituted a relatively small percentage (10%) of a student's final mark. While some students complained that the facilitator did not take sufficient action against inactive students, others were complaining that there were no additional incentives (e.g. reward or presentation opportunities for best groups) to encourage students to become more actively involved in the assignment.

Limited time for formation of learning communities

As the collaborative assignment only related to a small portion of the content to be covered in the RIS222 module, the students had a maximum of three weeks to complete the assignment. The groups therefore had to keep to a tight time schedule to ensure that they would complete the assignment on time. Various students were of the opinion that they had very little time/opportunities to get to know their group members on a “non-work” level.

"There was no time to really chit chat. It was all just work related!"

The duration of the assignment also made it almost impossible for the groups to form meaningful learning communities. One of the groups mentioned that they had organised additional in-person meetings to strengthen the personal relationships among the group members. (It was clearly indicated in the assignment specifications that all communication regarding the assignment was to be conducted online.) A very important observation (by the facilitator) was that this particular group was one of the few groups who had really formed an online community. They got to know each other quite well and continued encouraging each other (until the end of the semester). There was thus an indication that more/additional contact (formal and informal) had the potential to enhance the formation of learning communities.

No synchronous or face-to-face contact between group members

The students identified various difficulties with online communication and pointed out that some discussions required face-to-face communication. One of the "active" students commented as follows:

"This type of communication does not work. Some students don't visit the online area enough and then the others have to wait till the lazy ones decide to make an effort."

While one student mentioned that she had never physically met the people with whom she was working in a group, another student apparently

experienced some anxiety because he did not know what his group members looked like.

The students were also very frustrated with the asynchronous nature of the discussion forums, as indicated in the following comment:

“Not everybody is sitting in front of their computers at the time when someone posts his message. This complicates things when someone needs help.”

In situations where the students needed an immediate response from their group members they had to go through a "tedious waiting period" before they got any response to their questions. Some students concluded that face-to-face meetings would definitely work better when assignment specifics needed to be clarified and problems solved. One student made the following suggestion:

“Maybe the group participation should be 50% online and 50% offline. ... be given a chance to discuss assignments offline as well. I really don't think we (were) able to discuss everything, especially problems, as well as we would have offline.”

Time-consuming nature of assignment

The magnitude of the assignment in the first cycle and the time needed to complete it seemed to be a major concern. Some students mentioned that they initially did not allocate enough time for the assignment because it "looked easy at first, but demanded a lot of time". Students requested more time to complete the assignment and also asked that group projects should take up less time in future. In the first cycle one student asked the facilitator to *"in future, select a less stressful, but fascinating project that would really interest students"*. Another student, however, requested the facilitator to keep on giving them the opportunity to do some research. Although no students considered the assignment in the second cycle to be time-consuming, it remains important to consider the time aspect in future projects.

Within the numerous student reflections several opportunities for improving the online collaborative activity could also be identified.

3.3 Opportunities

During the grading of the group projects it became apparent that only a few groups were truly successful in their collaborative attempt. Some of the positive aspects mentioned by the students who were members of these "successful" groups can serve as a clear indication of the opportunities that online collaboration can bring to active and committed participants. The challenge will certainly be to devise ways to help the "unsuccessful" groups to take advantage of opportunities such as those outlined below.

Develop collaborative skills needed for future assignments

The opportunities presented by the collaborative activities identified in this project closely resembled those identified in literature. Effective collaboration has the potential to help active participants improve their critical thinking (Pallof & Pratt 2001:33) as well as their skills in problem-solving, team working, negotiation, group decision-making and task management (Macdonald 2003:378). Collaborative activities can also help to promote deeper levels of knowledge generation (Pallof & Pratt 2001:32; Macdonald 2003:389), and develop initiative and higher order thinking (McLoughlin 2000:142). Another major advantage of active participation is that participants get the opportunity to develop skills that they will need in future collaborative assignments (Macdonald 2003:383).

It was clear that many of the students had learned valuable lessons from the collaboration and that they felt better prepared for the next group assignment. Their good performance in the activity was proof of the skills they had attained and the learning which had taken place. They also learned that they should not be afraid to ask for help and that they could still complete the assignment, even if they had been out of town for a week or more. One student commented:

"Thanks for making life so much easier! WebCT is a lifesaver!"

Provide practice in use of e-learning tools

Many of the students had no prior experience in using the various e-learning tools (e.g. discussion forums and file sharing) they were required to use during the collaborative assignment. They expressed their gratitude to the facilitator for providing them with opportunities to practice the use of these e-learning tools before they had to engage in the actual collaborative assignment. Although many of the students felt that the initial demonstrations and practice were inadequate, most of them felt that the additional "practice" (provided by their active participation in the collaborative assignment) allowed them to become more confident in using these tools.

Stimulate activity and motivation

Through their asynchronous interactions the students were not only communicating and having fun, but they also (unknowingly) became active participants in their own learning experiences (Browne 2003). Through the encouragement of active participation students were given the opportunity to interact with their fellow students and to experience online interaction. Active participation not only helps to increase social interaction and strengthen personal interaction (Van Eijl & Pilot 2003:54), but it can also help to stimulate activity and motivation among the group members.

In most cases the students felt that the whole idea of blended learning and collaboration made the assignment "more fun to do" and "a greater challenge". Some groups were very eager, started immediately and were very cooperative. The relevance of the topics and the active discussions of their group members seemed to have played a significant role in motivating the students. One student commented that he initially did not think the assignment was going to be interesting, but reading his fellow group members' discussion postings and seeing how they shared web site URLs and information with each other motivated him to participate more actively. Another student commented on how the determination of the other group members inspired her to join the discussions.

During the reflection stage, students who were not actively participating in the assignment started realising the negative effect their actions (no action) had on the group. Many apologies were posted in this regard. Students were of the opinion that a collaborative assignment of this nature encouraged students to work together and to get to know other students. The moral support provided by a group was also mentioned:

"Every one of us makes sure that we all finally successfully complete the course."

Some students felt that they had the support from their group members and that "the weaker members could rely on the stronger ones". One student also mentioned that the group work forced her to be more organised.

Strengthen personal relationships and social interaction

Prior to this project many students believed that it was impossible to collaborate with people they had never met face-to-face. Despite this apparent "disadvantage", they had good, constructive, "fun" interactions and got to know their group members better. The students commented on how the collaboration helped them to meet new people and share ideas. Some were also amazed at their accomplishments:

"According to me the most positive thing about the assignment was pulling it off – considering the fact that we have never even met each other."

Some students commented that they normally did not like group work, but that they would definitely like to work with their current group members again. There were thus signs of the development of some kind of online identity or at least an intensifying of the connectivity among students in several cases.

One also has to take note of suggestions that although a SWOT analysis allows one to take maximum advantage of opportunities, one must also be aware of potential threats (Argos Press 2005). Therefore, the major threats which could jeopardise

meaningful online collaboration in the specific environment also had to be pinpointed.

3.4 Threats

From analysing the negative aspects reflected upon by the students, the following threats were identified:

Actions (no action) of individuals can demotivate the rest of the group

It was indicated in the introduction to this article that the active participation of all persons concerned is regarded as one of the key ingredients for the success of any online activity. Most of the strengths and opportunities mentioned above are therefore unlikely to transpire if the participants are unwilling to commit themselves to the collaborative experience. An online activity is usually designed for a group of a specific size. As soon as one group member fails to participate it means more work for the remaining group members. The decision-making process is furthermore complicated/delayed by participants who are not active and up to date with the group's progress.

In both cycles in this investigation there were instances where "inactive" students never read the group discussions and as a result researched topics which were already allocated to other individuals. It is therefore understandable that the students' biggest frustration was with "inactive" and "non-participating" group members. These students' absence from the online discussions undoubtedly had a direct negative effect on the performance of the group. Students were frustrated with group members who did not check the postings regularly and who did not respond to discussions and e-mails. They mentioned that some members did not make regular visits to WebCT and that those individuals put a burden and additional pressure on the group which in most instances delayed the group's work. One seemingly frustrated student remarked as follows:

"A chain is only as strong as its weakest link!"

It has become apparent that the actions (or lack thereof) of individual participants can lead to much frustration which can in turn easily demotivate the rest of the group.

Carelessness in following assignment specifications

In various groups there were students who did not adhere to the assignment specifications. One of the major problems was with students who did not keep to the suggested time schedule and, as a result, delayed the whole group's progress. One student commented as follows:

"It is difficult to get everybody to have their work done in time, which slows down the whole procedure."

Some students' misinterpretation of the specifications also resulted in groups wasting precious time on resolving "irrelevant" issues. In some groups carelessness in following the assignment specifications resulted in an unnecessary loss of marks:

"We lost some valuable marks due to duplication of efforts which resulted in some topics not being covered! We can only learn from this."

"Some of us didn't notice that the number of required words were between 200 and 250". (In this particular assignment the actual length of the student contributions varied from 21 to 1401 words!)

"I noticed that in some group members' contributions the actual data didn't correspond with the references given. Some sections had data, but no references, and vice-versa."

As soon as individuals delay the project by not keeping to deadlines and specifications, the rest of the group is likely to become frustrated and lose interest in the assignment. This can lead to the group being unable to

successfully complete the assignment, which will result in an unsuccessful collaborative attempt.

Lack of access to technology at home (PCs and Internet)

The students who did not have a computer or Internet access at home/hostel had to come to the computer laboratories on the UFS campus to work on the assignment. One of them commented as follows:

"We do not have computers at home and if the assignment is due over a weekend and you go home, it will be impossible to participate in the assignments."

During the first research cycle, the university's computer network was down for more than a week in order to stop the spreading of a malicious computer virus. At that stage, only students who had Internet access at home could get access to the course web site/the Internet. (As a compromise, the due date for the submission of the assignment was extended by one week.) During the second research cycle only two students mentioned that they had difficulty visiting the computer laboratories on a regular basis – both stated their “busy schedules” as the reason. Although the access problem seemed to be declining, the facilitator still needs to consider the reality (threat) that many students will not be able to participate "any place and any time" due to their lack of access to the necessary technology at their places of residence.

Lack of e-knowledge

It is part of human nature to be afraid of the “unknown”. When students are "afraid" of or unfamiliar with the online environment it is likely that it will take them longer to become comfortable in interacting and collaborating with their fellow students. In the interim these students’ “inability” to effectively use the various e-learning tools has the potential to slow down a group’s progress. This has also become clear in the students’ reflections:

"We did manage to complete the assignment but there are some students who still don't know how to use WebCT."

Many of the students indicated that they did not know how to use the discussion forum while various group members complained about individuals who were not familiar with the working of a discussion thread. A range of misunderstandings occurred in the discussions when students posted messages (replies and/or questions) in the wrong threads. In several groups this led to misunderstandings or resulted in messages which were totally ignored during the decision-making process. (The measures taken by the facilitator in the second cycle apparently paid off as a significantly lower number of students made complaints in this regard during the second cycle.)

Lack of planning on students' side

In both cycles there were students who put the blame for their “failed”/“unfinished” project on the group’s inability to do proper planning. These students were of the opinion that they definitely would have been able to complete the assignment on time if the group had done adequate planning at the beginning of the project. They also complained that some aspects of the assignment were rushed (or even completely ignored) just for the sake of submitting “something” on time.

“We did not finish all the tasks we were given.”

There were also complaints about students waiting till the last minute to do/change their contributions, as one student remarked:

“Some members asked for help when it was just too late to do anything about it.”

The students agreed that their lack of planning (in many cases) resulted in low-quality end products, which meant low marks for the whole group. It is therefore clear that the lack of proper group planning/strategy on the students’ side can be regarded as a major threat to any collaborative activity.

Lack of the required "group skills"

From the students' reflections it became apparent that the lack of the required "group"/"collaborative" skills played a major part in their inability to collaborate successfully. It seems that the students experienced various problems due to their lack of problem solving, leadership, reasoning, organising, and conflict resolution skills:

"We always agreed with what one person said. We never discussed anything. When working as a group all the group members are supposed to come with ideas."

"I really don't understand why someone would just want to declare himself a group leader and then autocratically demand that everyone do their work."

"We were asked to choose a leader and we did not do that."

"Since I cannot go to class, I did not know about us meeting in person. Our lecturer specifically told us to communicate on the web."

"One thing I did not like about the group was that decisions were not made with everyone's consent."

The students clearly realised the importance of knowing how to operate/function as part of a group. If they knew how to handle group "issues" that might evolve or knew how to deal with inactive students or students who fail to stick to deadlines/specifications their collaborative attempt might have been more enjoyable and probably more successful. Unfortunately these collaborative skills cannot be taught easily, but are mostly gained through experience in collaborative situations.

Attitudes of individual students

There seemed to be numerous reasons why students were reluctant to participate:

- They had no interest in the learning material:
"Unpleasant, irritating and boring project."
- They were already familiar with the concepts covered by the module:
"It was a waste of time – learning how to use a search engine."
- They were dissatisfied with the group allocation:
"The facilitator was limiting our freedom by choosing the groups."
- They felt hampered by the fact that they did not have Internet access at home (also see a previous paragraph in this regard):
"It was difficult for me to visit the labs on a regular basis as I don't have much time."
- They were not willing to collaborate with people they did not know (including persons from diverse cultural groups):
"It is impossible for me to meet the group for several reasons; I have a busy schedule because I am playing rugby for the University as well as my hostel. I also take the Afrikaans class. If it is possible I would like to change groups."
- They preferred to work on their own because they felt that the group was holding them back:
"To work in a group gets the work done at a slower pace than if you work on your own. In a group you have to wait for everyone else to finish their part."
- They were unfamiliar with the online environment and were therefore afraid or hesitant to become part of it:
"I apologise again for my tardiness. I must say I had difficulty ... communicating through the discussion forum, as I am still learning how to use it."

Students like these can be expected to have a negative attitude towards the assignment and the module itself. All the efforts of the facilitator to motivate the students and interest them in the learning material can easily be made undone by the actions of “negative” students – who are also likely to be inactive group members. As soon as a student group has to deal with a negative/inactive group member it is likely that the others will also develop a negative attitude towards not only the assignment but the whole idea of online collaboration. There is also the possibility that individuals might start off feeling very positive about the collaboration, but as soon as they realise that it is not what they anticipated, they start to lose interest. It is evident that the attitudes of individual participants can pose a serious threat to a group's morale and likelihood of success.

3.5 Reflection on the use of the SWOT analysis

Overall, the strengths and opportunities of this online collaborative approach have the potential to be a major enhancement to the students' learning experience. But it will be of limited use if the students are not made aware of these strengths and opportunities before they engage in an online collaborative activity. It is also clear that ignorance of the identified weaknesses and threats can lead to failure and disappointment. Despite the seriousness of the mentioned threats it should be noted that many of the students indicated that they had learned a great deal from their first online collaborative experience and that they would not make the same mistakes in future collaborative activities.

In order to create an effective and efficient online collaborative environment, it is crucial to devise ways to eliminate or minimise the impact of the “negative” factors (weaknesses and threats). When students are made aware of the potential influence that threats such as lack of planning and lack of participation can have on their performance/success, they are more likely to be prepared for what to expect. As all the students are part of a blended learning environment the impact of some of the relevant weaknesses and threats can possibly be counteracted by giving group members the opportunity to meet face-to-face before the beginning of the activity.

This possibility should form part of the search for the ideal blend between the online and face-to-face modes and needs further investigation.

4. CONCLUSION

It has become clear that involving students as co-researchers in the reflective process of an action inquiry project holds numerous benefits for the practice of university teaching. Students become aware of their own shortcomings as well as those of the group. They become more sensitive to the potential threats individual behaviour holds for the group's success and tend to take more responsibility for their own contribution to group assignments.

Although a very demanding exercise in inductive reasoning, a SWOT analysis as instrument in an action inquiry can provide a valuable opportunity for understanding the practice of an aspect of university teaching and for planning for improvement. The clarification of a project's inherent strengths and weaknesses, as opposed to external threats and opportunities, opens up a map of possibilities for finding the best route to such improved practice. For example, the investigation showed that when working with a diverse group of undergraduate students in relatively large classes, a blended approach to collaborative activities holds possibilities for increased levels of interaction. Students can be given the opportunity to interact with their fellow students on a regular face-to-face basis, while they continue to participate actively in their own technologically enhanced learning environments.

The outcomes of this investigation provided ample evidence that incorporating student feedback can contribute to identifying the key issues – out of a “sea of problems” - that should be considered in the design of online collaborative activities. Taking greater consideration of the feelings and attitudes of students proved to have a positive influence on the outcomes of the project in the second cycle, indicating some improvement in the social situation as well. Although further investigation is needed, the SWOT analysis of students' reflections has provided a sound basis for further exploration of ways in which the online environment can enhance meaningful blended learning practices.

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**IN SEARCH OF MEANINGFUL BLENDED LEARNING PRACTICES:
REFLECTIONS BASED ON AN ACTION RESEARCH DIARY/JOURNAL**

Abstract

The theories on online and blended learning are discussed against the background of the researcher's experience as facilitator and action researcher in a blended learning environment. The study has already stretched over two full cycles bringing the researcher into the planning phase of a third cycle of inquiry. She provides an overview of some of the most important experiences she has lived through in the process and the consequent learning that has taken place. A review of contemporary literature provides the relevant theoretical views, while the researcher's comprehensive research journal is regarded as the main source of information for the perspectives from practice. The article illustrates the use and value of the research diary/journal as a valid data collection method and shows how the researcher's growing understanding of practice has led to the development of important learning principles for blended learning in the specific context. By sharing her experiences the researcher allows the reader a fleeting look at life in a blended learning classroom.

1. INTRODUCTION

Researchers from all over the world (Thorne 2003, Boettcher & Conrad 2004, Khan 2005) are investigating more effective ways of teaching and learning in an increasingly diverse but also technologically advanced environment. In the past research studies have concentrated on either the contact mode or the online mode (Broad 1999, Brockbank & McGill 1998, Pallof & Pratt 2001, Knight 2002), not taking into account the blending of delivery modes which has the potential to offer the better of two worlds. Today the most general combination is the mixed-mode or blended learning mode (Osguthorpe & Graham 2003:228; Kerres & De Witt 2003:101), which, in its simplest form, is a combination of face-to-face and computer-supported

or online education in order to encompass a much richer set of learning strategies. Alonso, Lopez, Manrique and Vines (2005:234) point out that several authors have found that a blended approach is the “most efficient teaching model”. Various institutions in the United States, such as Stanford University and the University of Tennessee, have reported a significant increase in student throughput after the introduction of blended learning into some of their courses (Singh 2003:53). However, there has been little research focused on the pedagogical problems of these new educational environments. Alonso *et al.* (2005:218), for example, refers to the “shortage or non-existence of teaching principles for e-learning”. As blended learning is only starting to evolve, one can expect even less formal research to exist on the construction of the most meaningful/effective blended learning experiences in a higher education classroom.

At the University of the Free State (UFS), blended learning is regarded as a relatively new practice with possibilities of addressing many of the teaching and learning problems at this rapidly growing institution. In this regard a major impacting factor is the diverse student population from different socio-economic backgrounds and very different educational needs. Many departments struggle to cope with large class groups of up to a thousand and more students. In addition, the policy of parallel-medium instruction demands creative ways of dealing with the challenges of executing such a policy. It is therefore realistic to look at ways in which the face-to-face mode (that students expect and are used to) can be effectively combined with new technologies. The question thus arises: *How does one create meaningful/effective blended learning practices in undergraduate education taking into account a context such as that of the UFS?*

Khan's Octagonal Framework (Khan 2001) provides a very useful theoretical point of departure in pursuit of providing answers to the research question. According to the framework, there are eight interrelated and interdependent dimensions that need to be addressed in order to create meaningful online learning experiences, which can also be applied to blended learning. These dimensions embrace aspects such as institutional, management, pedagogical, technological, interface design, evaluation, resource support and ethical. The premises are that technology should be incorporated in such a way that it will not only enhance traditional face-to-face

practices, but also the learner/student-experience as a whole. In fulfilling the purpose of the study, the researcher has therefore decided to focus on the following aspects/issues (which relate to several of Khan's dimensions):

- Student collaboration as pedagogy in the blended learning environment.
- The incorporation of student diversity into the blended learning environment.
- Ethical issues in the blended learning experience (e.g. the occurrence of and handling of unethical behaviour such as academic dishonesty by students).
- The psychological (or rather psycho-pedagogical) experience as exposed in student perceptions and attitudes on the one hand, and in the researcher's reflections on the other hand.

The study has already stretched over two full cycles bringing the researcher into the planning phase of a third cycle of inquiry. In this article she provides an overview of some of the most important experiences she has lived through in the process and the consequent learning that has taken place. The emphasis on the finding of solutions to psycho-pedagogical problems (Alonso *et al.* 2005:217) in the specific setting of the UFS will be noticeable in this part of the study. As such the purpose of the article is threefold:

- To provide an overview of the action inquiry methodology employed with emphasis on the role of the reflective process in the inquiry.
- To illustrate the use and value of the research diary/journal as valid data collection method in such an inquiry.
- To show how the researcher's growing understanding of practice has led to the development of important learning principles for blended learning in the specific context.

By sharing her experiences the researcher allows the reader a fleeting look at life in a blended learning classroom. It is hoped that this account will also bring awareness and some understanding of the challenges currently faced in a South African higher education classroom.

The exposition of the research design and methodology is preceded by a description of the background to the project and the specific setting in which the project has taken place.

2. BACKGROUND TO THE PROJECT

The learning module selected for the inquiry ("Introduction to the Internet and web page development" – RIS222) is a one-semester Information Technology (IT) course/module on second year level which was presented using a blended learning approach (combining face-to-face and online delivery modes). In both research cycles the face-to-face component consisted of one 50-minute contact session. For the online component, the facilitator developed a course website on the WebCT learning management system (LMS). In addition to the course content material that was placed on the website, various e-learning tools (e.g. discussion forums and file sharing) were activated.

At the beginning of each cycle, students had to complete a profile questionnaire. Based on the results the students were divided into groups (seven to eight members per group in the first cycle and five to six in the second cycle). In order to fulfil the (bilingual) language policy of the institution, Afrikaans-speaking students were given a choice as to whether they wanted to be part of an Afrikaans or an English group. In order to keep the groups as diverse and unfamiliar to each other as possible, male, female and international students were equally distributed among the groups. In both cycles there were, however, also some "mixed language" groups owing to Afrikaans-speaking students attending the English classes. In an attempt to stimulate online discussions, the group members were never required to meet face-to-face.

While the course content was presented in five units, one additional unit was added to introduce the students to blended learning and the online environment. Each study unit of the module specified at least one topic for online group discussion (asynchronous) and included at least one individual assignment. During the introductory unit (Unit 1) the students had to complete various small assignments in which they were given the opportunity to practise the use of the various e-learning tools they would need at a later stage. They were also provided with opportunities to

meet their group members online. As part of the introduction to the WebCT e-mail tool, students were required to send an e-mail message to the facilitator. In these messages each student was to share his/her initial thoughts of blended learning, comment on the online environment and state their expectations for the course.

In Unit 2 of the module the students were required to work on an online collaborative group assignment. Each group had to select a group leader and all the communication for this assignment had to take place online. Due to the limited amount of face-to-face contact, students were required to check the WebCT site at least once every two days to check for additional course materials and messages from the lecturer and their fellow students. (There are various computer laboratories on campus that the students could use to get access to the WebCT site. All second-year IT students also had scheduled laboratory time of three hours per week in a computer laboratory that is reserved for use by all undergraduate IT students.)

As reflection is such an important phase of the action inquiry methodology, it was decided to directly involve the students in the reflective process. A follow-up assignment titled "Reflection on collaboration" was given to the students in Unit 3. This assignment took the form of an asynchronous online group discussion where the students could reflect and comment on the positive and negative aspects of online collaboration in their groups. They also had to make suggestions on how the collaborative experience could be enhanced. (Unfortunately, time constraints did not allow for the inclusion of a second collaborative activity in either of the cycles). The discussion topic in the final unit (Unit 6) was titled "Reflections on blended learning". In this online group discussion students were to share their experiences of blended learning and make suggestions on how the course and the blended learning environment could be improved in future.

It is important to note, however, that this article does not focus on the reflections of the students in the first place, but on those of the facilitator based on numerous entries in her research journal kept over two completed cycles of the project. Her observations and experiences, complemented by the students' reflections, form the key ingredients of this article.

3. RESEARCH DESIGN AND METHODOLOGY

The research reported in this article is part of a larger project which can be classified as an action inquiry. According to Tripp (2003), action inquiry is an all-inclusive term for the deliberate use of any kind of a *plan, act, observe/describe, and review* cycle for inquiry into action in a field of practice. Common varieties of action inquiry include reflective practice, action learning, action research and researched action. In this study overlapping phases of several kinds of an action inquiry can be identified, with reflective practice the dominant inquiry method reported in this specific section of the research. In reflective practice the emphasis is clearly on the reflection after action. The description of the action inquirer's experience tends to be more informal, also in journal keeping (Tripp 2003).

Hall (1997) also describes action research and reflective teaching practice as closely connected but not synonymous concepts. In reflective practice the reflection is a continuous attempt to evaluate a process and outcomes of the action by the actor/researcher (Tripp 2003). It is learning by reflecting on actions as professionals and "it requires consideration of both the task and to the learning around the task" (Robin & Hughes 1999). Hall (1997) also refers to *pedagogical reflective practice* which is described as teaching practice in which the teacher undertakes intentional and sustained reflection and action for the purpose of improvement (and which should be distinguished from everyday or non-pedagogical explanations). According to this author, the term pedagogical serves two purposes: it implies that the reflection is based on teaching, but it also indicates that it takes place within a learning programme. The learning programme in this sense can be regarded as a self-directed programme towards the improvement of one's own teaching and at the same time, better understanding of the practice of university teaching. It also leads to the professional development of the researcher (Altrichter, Kemmis, McTaggart & Zuber-Skerritt 2002:130). Hall (1997) furthermore points out that pedagogical reflective practice in higher education has also been valued for its affective qualities as it provides "a sense of soul" to the practitioner's work – "it brings it all together".

In an action inquiry, and particularly in the reflective practice mode of inquiry, the keeping of an action research journal is regarded as of the utmost importance.

According to Zuber-Skerritt (2005) such journals – also referred to as “reflection diaries”, or “log books” – are strong heuristic tools for reflection. Zuber-Skerritt also emphasises that the action research journal or diary “is a legitimate source of data and a qualitative research method. It constitutes the action researcher’s subjective perspective that needs to be triangulated with other perspectives... The purpose of a systematic diary writing process is... to facilitate the construction or creation of new knowledge and to enable action researchers to make their tacit knowledge more explicit” (Zuber-Skerritt 2005:40). Similarly, Hughes (2000) explains that the diary contains information about the researcher, what the researcher does and the process of research, and as such complements the data yielded by the research methodology.

In this project, the researcher kept a comprehensive research diary in which her observations and experiences were carefully noted. She found this diary an invaluable tool to explore her practices, get practice and gain confidence in recording research and writing, and be empowered as researcher – clearly “a mirror in which you find yourself reflected” (Hughes 2000).

The way in which the different aspects in this article are presented corresponds with the very useful stage model for the reflective process formulated by Atkins and Murphy (1995, in Teaching and Research 2000). Without forcing the discussion into a specific structure, the following stages will be noticeable:

- Stage 1: Awareness of uncomfortable feelings (usually due to new, unfamiliar, or negative situations).
- Stage 2: Examination of components of the situation and exploration of alternative actions.
- Stage 3: Summary of outcomes of reflection or learning.
- Stage 4: Action resulting from reflection.

In a similar way, the researcher can also fully identify with the outcomes of keeping an action research journal and the resulting reflection, as stated by Zuber-Skerritt (2005:41), namely

- learning from experience;
- taking appropriate action;
- developing learning principles; and
- becoming a more effective and reflective practitioner.

The learning principles derived from the reflections, as presented at the end of the discussion that follows, may serve as an indication of the extent to which the above set of outcomes have been achieved in the course of the project.

4. FACILITATOR PERSPECTIVES (BASED ON RESEARCH DIARY ENTRIES)

On completion of two cycles in the action inquiry, the researcher/facilitator reviewed her research diary entries and identified a number of key issues for discussion. In this section she shares some of her experiences with regard to these issues and in doing so identifies various learning principles which need consideration in the design of the third phase of her blended learning course. The most important aspects covered fall under the following main categories:

- Group issues.
- Individual issues.
- Student's lack of e-knowledge.
- Interaction with the facilitator (online and offline).
- Handling feedback and grading in large groups.
- Student dishonesty.
- Sharing with and learning from others.

The reflections are complemented by blocked excerpts from the researcher's diary.

4.1 Group issues

As mentioned before (see section 2) each group was required to participate in various activities, including one more extensive online collaborative assignment and various online group discussions. As the facilitator monitored each group's progress

on a daily basis it did not take very long for her to realise that some groups were less effective in their online collaboration than others.

From the student reflections it became apparent that some groups committed themselves to the collaborative assignment and worked very hard to successfully complete the assignment on time. The less effective groups had to deal with various factors which altogether made the collaboration and the assignment less successful. Although it is very difficult to pinpoint the main “causes”, the *group allocation* method, the *asynchronous nature of discussions* and the *lack of participation* are considered to have had the biggest effect on these groups’ failure to successfully complete the online collaborative assignment on time and according to the specifications.

4.1.1 Group allocation

In their reflections, about 50% of the students who referred to group allocation were not satisfied with the facilitator being in charge of the group allocations. These students were of the opinion that they were likely to perform better if they could select their own group members.

After last night's group allocations I was approached by various students (in person and via e-mail) who wanted to switch groups. I again explained to them why I wanted them to be part of randomly allocated groups and not just be with familiar people. In most instances my explanation was accepted without any further opposition.

When the facilitator decided to take charge of the group allocation some of her main objectives were to help the students develop team skills and cultural sensitivity. As Information Technology students are very likely to pursue a career in which they will be required to work as part of a project team, it is crucial that these students learn to collaborate with different (unknown) people. Normally the students tend to stick to the same, familiar groups for each group assignment (sometimes even for the entire duration of their studies). They are therefore depriving themselves of opportunities to meet students from different backgrounds and to develop a sense of cultural awareness which is so vital in the South African society.

Although it is important to consider the students' comments it is crucial not to make any hasty decisions based just on what the students want. The facilitator has to weigh up the positive and negative aspects of both approaches against each other in order to determine which approach will yield the best results for the particular project. It is also very important that the facilitator conveys the reasons for any decision in this regard to the students. Such an explanation can help the students to realise that the decisions made are in their best interest and that the facilitator is not trying to "punish" them.

Another huge problem was dealing with group attrition or "erosion" in groups.

I've noticed a while back that Group 8 only has three active group members. As it turns out all three inactive members are no longer taking the course. The problem is that they did not inform anyone of their decision nor did they terminate their module registration. They therefore still appear on my class list and I can consequently not remove them from the group.

The major problem with such groups is that the group members wasted precious time waiting for these students to show up online. By the time the problem was identified there was not enough time left for the completion of the assignment to reallocate the active members to a different group. Consequently the "eroded" groups remained unchanged for the rest of the semester.

Although such a situation can cause numerous problems for the remaining group members, the facilitator again has to weigh the positive and negative aspects of all possibilities. On the one side the facilitator might not want to disrupt any of the other groups by introducing new members halfway through the semester. On the other side additional pressure is placed on the remaining group members as they might end up with a heavier workload and their likeliness for successful completion of any collaborative activity is significantly reduced. A possible solution lies in the introduction of a time limit for initial group participation. All students who have not made contact with their group members within the first two weeks of the course (duration of Unit 1) will be removed from their allocated groups. This might be early

enough to reallocate some group members or combine “eroded” groups where necessary.

4.1.2 Asynchronous nature of discussions

In order to encourage online collaboration and realise the possible advantages of communication by this means (see Pallof & Pratt 2001:26; Fisher 2003:227) the assignment specifications of the collaborative assignments clearly spelled out that groups were not allowed to meet face-to-face to discuss the assignment. All communications regarding the assignment were to take place online in the group’s discussion forum. From very early on it became apparent that the asynchronous nature of the online discussions made it very difficult for the students to resolve conflicts and other critical issues.

The first week of the collaborative assignment has passed and I feel very anxious about the progress of some groups. There are still numerous groups who have not selected a project leader. It seems as if they are waiting for all the group members to “show up” online before they make a decision.

As the members of this group clearly don’t visit the WebCT course site very often, it has taken them a whole week to each post one message stating that none of them want to be the project leader! They’ve wasted a whole week – 50% of the time they have to complete this assignment!!

The major problem with the asynchronous discussions seems to be that it takes very long to make any decisions – especially if the group members are not very active. In a face-to-face discussion the group concerned would probably have needed no more than five minutes to select a group leader; in practice, the online discussion lasted a whole week and they had still not made a decision.

Allowing the students some face-to-face contact would have presented opportunities for the synchronous discussion of group issues which might have helped to strengthen the group’s identity and accelerate decision making and planning in

general. This could, in turn, have helped to improve the group's level of cooperation and likelihood of success. The “random” strategy that was followed for the group allocation during the first two cycles can also be improved by ensuring that all group members at least attend the same face-to-face contact session. This might make it easier for group members to organise face-to-face meetings. The major problem with this approach still remains the resulting unnatural segregation of cultural groups. Although the English-speaking classes have some level of diversity the Afrikaans-speaking class almost always consists of white students only. Using the student's choice of language as criterion in the group allocation process further limits the opportunities for contact/interaction between the various cultural groups. A possible solution lies in the creation of opportunities for groups from the different contact classes to interact with each other – online and/or face-to-face. Further investigation in this regard is needed.

4.1.3 Lack of participation

With a “normal” face-to-face collaborative assignment the facilitator usually has no idea of the progress of the various groups. There might be one or two groups who would clarify certain aspects of the assignment with the facilitator but in most cases the facilitator has to wait until after the due date to see what the groups have achieved. In many cases there is a lack of evidence of who did what or how actively each individual participated. In the online environment, however, the facilitator only needs to visit each group's discussion forum to see evidence of individual participation and group progress. The facilitator is therefore fully aware of which individuals are actively participating and which are not. By following each group's discussion the facilitator also has to share in the active participants' frustration with the non-participating and inactive group members.

Tomorrow is the due date for the RIS222 collaborative assignment. I can't believe that there are still group members who haven't made ANY postings in their group's discussion forums. Are they no longer taking the course or are they just “lurking” and getting all the necessary information from reading their fellow group members' postings?

Through monitoring the discussions it has become clear that a collaborative assignment cannot be effective and meaningful if some group members are completely absent from the group discussions and therefore not committed to regular participation. From the student reflections it also became apparent that in the most successful groups all the group members were active. These groups were therefore not slowed down by attempts to contact “missing” members or by members who did not stick to the group deadlines. They used their group discussions to focus on issues related to the assignment and put in much effort to make sure that they adhered to all the assignment specifications.

I've finished marking the assignments. ... There actually was one student who posted his first message in the group's discussion forum two hours before the assignment was due. In this message he indicated which topic of the assignment he will be responsible for. He clearly did not read any of the previous postings in the discussion thread as he would then have noticed that another student already selected that topic two weeks ago. ... To make matters even worse this student, when adding his contribution to the final group document on WebCT (10 minutes before the deadline!), deleted the contribution of the student who originally selected that topic! It just shows how vital active and “informed” participation is.

As many students seemingly prefer to work on their own, more emphasis should be placed on the fact that they will not be able to work on their own for ever. They will have to see the collaborative activity as an opportunity to practice the group/collaboration skills that they will need in their careers where they will most likely be required to function/work as part of a project team. The students should also realise that each of them has a vital role to play in the group and that no group can be truly successful if all its members are not committed to active participation.

4.2 Individual issues

Although the students were involved in a collaborative activity, their individual feelings, attitudes and uniqueness played a major part, not only in their own performance, but also in the functioning of their groups.

4.2.1 Attitudes/Actions of individuals

In any group the attitudes and actions of individuals are likely to have a profound impact on the group dynamics. The following is an excerpt from an e-mail message the facilitator received from a student after the first contact session:

“I’m very excited about the course and what really struck me at our first lecture this week, was your passion for the subject. That really got me interested to. I suppose it just rubbed off.”

If only all the students felt this way!!

Although eager students with positive attitudes can have a positive influence on their fellow group members it is more likely that negative (inactive) students will demotivate the rest of the group.

I sometimes wonder why there are students who “refuse” to participate in their group’s online discussions. They just never show up! Or are they just “listening in” on the conversations without ever participating?

It is really sad to visit some of the groups’ discussion areas and read the negative messages posted by some students. There are students who don’t make a secret of the fact that they dislike the assignment. There was even one student who openly informed his fellow group members that he doesn’t like group work and that he doesn’t really want to take part in any collaborative effort.

The student reflections after the first research cycle indicated that many of the students did not like the assignment topic. (Each group had to plan a visit abroad to a specified country/area). These students indicated that the assignment was “time-consuming”, “boring” and “not very interesting”. After improvements were made to the design of the assignment in the second cycle (to increase the level of interaction among the students) it seemed that the motivational factor was also improved as no students aired similar complaints in the second cycle of reflections. (Each group had

to prepare a brochure about one of the Summer Olympic Games that had taken place between 1936 and 2000.) During this collaborative assignment students were also very eager to share their newfound knowledge.

Almost everybody seems to be very excited about the Olympic Games assignment. Yesterday four students came by my office just to share some interesting and fascinating facts they have found about the Olympics.... Another student came to clarify some of the assignment specifications and we ended up having a 15 minute discussion about the terrorist attack at the 1972 games in Munich.

Although it is impossible to please everyone, it is important to design/select assignments and discussion topics that appeal to the majority of the students – especially when dealing with a very diverse student population. When students are not interested in an assignment topic it will be so much more difficult to motivate them and to get them to become active participants in the collaboration. The facilitator will also have to devise ways in which to address individual students' negative attitudes and make the students aware of the consequences of their inactive behaviour.

4.2.2 Diversity

One of the original reasons for the removal of the “face-to-face” element from the collaboration effort was an effort to minimise the effect that student diversity would have on the project. In an attempt to have a better understanding of the students' actions and reactions it was regarded as vital to consider the demographics of the students involved.

The statistics given here are averages for the two cycles. The average age of the students in the RIS222 classes was 21, with 47% of the students being younger than 21. Sixty-six percent of the students were male and 34% female. The first language (mother tongue) of the students also provided some interesting statistics with 30% being Afrikaans-speaking, 13% English-speaking and 45% African language speakers. The remaining 12% were made up of international students (non-residents

of South Africa). As the University presents all undergraduate classes in both Afrikaans and English (parallel medium), this means that only 43% of the students had the opportunity to attend lectures in their mother tongue. Although the students in most cases were not bothered by age and gender diversity, the language issue posed major problems.

During the first contact session (of the first cycle) the students in the Afrikaans class were asked to indicate whether they wanted to be part of an Afrikaans group or whether the language of the group didn't really matter to them. The same question was not asked of the students in the English class.

During the group allocations I incorrectly assumed that all of the students in the English class wanted to be in an English group. At that time I was not aware of the fact that various Afrikaans students were attending the English class (mostly due to timetable clashes).

This incorrect assumption led to various problems during the first cycle of the project. One of the assignments for the first unit of the module required students to each create a very basic web page on WebCT using the WebCT Homepage tool. As this WebCT feature only allowed for the addition of very basic web page elements, the students were restricted to one title, two paragraphs of text and a background picture/colour. On this web page they had to write two short paragraphs to introduce themselves to the rest of the class. The original idea was that once the students were allocated to their groups they could go and visit these web pages to learn more about their fellow group members. Almost all of the students from the Afrikaans class developed their web pages in Afrikaans. There were a few complaints (posted on the public discussion forum) from the African students (attending the English class) that they were unable to understand the Afrikaans web pages. There were in fact one of the "mixed" groups (made up of both Afrikaans- and English-speaking students) where one of the group members developed an Afrikaans home page. Although this particular student indicated (during the first contact session) that the language of the group did not bother him, he assumed (for some unknown reason) that he was allocated to an Afrikaans group.

As the result of some sarcastic remarks made by one of the Afrikaans-speaking students on his web page, the Afrikaans students started a very heated discussion in the public discussion area.

There were various students who posted complaints airing their frustration with not being able to understand the “Afrikaans” postings. In a counter-attack a few students started a “Sesotho” (one of the African languages) discussion. Now even I can’t understand the postings!

This excerpt clearly illustrates once again how emotional the language issue has become. Although it would be wonderful if all the students (and the facilitator) could understand each other’s mother tongue, no undergraduate student (according to the University’s language policy) can be forced to use a specific language (either Afrikaans or English). Currently the best (and only) approach is to sensitively make all the students aware of the fact that there are some of their fellow classmates who will not be able to read/understand their discussion postings (and web pages) if they are not written in English.

The language issue also had an effect on the development of the course web site. According to the University’s language policy all undergraduate module material should be available in both Afrikaans and English.

I’m not sure how to address this issue as it might clutter the web pages and confuse students if there are too many “things” on one web page. It would also take too long to develop completely different sets of web pages for each language.

As a compromise the facilitator decided to develop the web site in English but to duplicate all the documentation that related to the assignments in Afrikaans. On the Assignment page of each unit the students could select between downloading an English or an Afrikaans version of the assignment specifications.

The language issue also became apparent in the students’ online communication with the facilitator. Whenever the need arose, the facilitator used the WebCT e-mail

tool to communicate general course information to the students. Due to time constraints these messages were always written in English. But in replying to student e-mail messages, the facilitator always used the same language the student had used in his/her message.

Today I received an e-mail message from one of the Afrikaans students. In this message he tried to ask me some questions regarding the specifications of Assignment 1.2. After reading the first sentence of the message it became obvious that he is not very fluent in English and that he finds it very difficult to express himself in English. Why didn't he write the message in Afrikaans?

The situation described above just highlights the fact that students, in parallel medium situations, might not always be certain about which language they are allowed to use. The facilitator therefore has to put enough emphasis on the fact that students can use any of the official lecturing languages in communication with the facilitator.

Although there will inevitably be some level of duplication, the online mode is considered to provide an ideal situation/platform for the parallel medium of instruction – and for the two main language groups to flourish academically in their preferred language.

4.3 Students' lack of e-knowledge

Analyses of the profile questionnaires indicated that about 75% of the students had worked with WebCT before. Most lecturers at the UFS only use the basic features of WebCT to make notes, PowerPoint presentations and other learning material available to the students. The assumption can therefore be made that the RIS222 students had limited (or no) experience in the use of WebCT's interactive features (including discussion forums and assignment submission). In short, the students did not possess the technology skills needed to participate in the online environment – which has been found a problem in other contexts as well (Wojciechowski & Palmer 2005). It was therefore decided that the first unit of the module would focus on

teaching the students to interact and learn online, as recommended by Pallof and Pratt (2001:30).

During the first contact session the facilitator demonstrated and explained the working of all the selected e-learning tools (discussions, e-mail, assignment submission, file sharing, etc.). Students were then given two weeks to establish an online connection with their group members and to become familiar with the online environment (by means of short group and individual assignments). Unfortunately this “practice” opportunity proved to be totally inadequate to assist the students in developing the necessary e-knowledge and skills. From the student reflections it became apparent that more hands-on demonstrations and more time to practice these skills might help to improve their e-knowledge.

4.3.1 Use of discussion threads

One of the key ingredients of any online collaborative effort is the establishment of an effective communication channel that supports ongoing student interaction. According to Pallof and Pratt (2001:115) students should be “encouraged to use creative means to communicate with one another” while they are participating in a collaborative assignment. In order to accomplish a level of interaction that is contributing to the creation of an active and progressive learning community, the incorporation of threaded discussions as a means of generating or promoting interaction is recommended (Edelstein & Edwards 2002).

For the RIS222 module, each group was assigned its own private discussion area on WebCT at the beginning of the semester. Only the group members and the facilitator had access to the messages posted in this area. In addition, two public areas were also created – one “student lounge” where students could discuss anything not related to the course and one where they could post messages related to general course issues. All students registered for the course had access to the messages posted in these public areas. But from the first week of the course it became apparent that most of the students did not understand the working of a discussion thread.

The discussion threads continue to be a bit of a headache. Despite my demonstration and thorough explanation on the working of discussion threads (during the first contact session) the students clearly don't have a clue on how to "operate" this e-learning tool. Every time they want to "say" something they start a new thread. They don't reply to messages that have already been posted. As a result there are now groups who have 10 or 12 different threads for one discussion topic! Imagine what it will look like by the end of the semester – TOTAL CHAOS!!!

In an attempt to alleviate the situation the facilitator (after another in-class demonstration) created a new thread in each group's discussion area and indicated that all messages related to the online collaborative assignment were to be placed inside this new thread. For the next week she checked each group's discussion thread on a daily basis and notified students that had incorrectly posted messages (via a reply to the incorrectly posted message) to re-post their messages in the correct thread or risk having their postings deleted. Although this was a very drastic and time-consuming measure the results were fairly positive.

When I checked the WebCT discussion area this morning I was very surprised to see that some students have started to follow my example by posting "correcting" messages to fellow group members who have posted messages in the wrong threads.

Although there were one or two students who only got the postings right after two or three attempts most of them did not make the same mistake again. This is a clear indication that some skills are difficult to teach. As many of the students had never before had the opportunity to participate in an online discussion, the initial demonstrations were probably of little help to them. Only once the students started to practice the "skill" of online discussions and had the opportunity to learn from their mistakes did they start to develop/improve their e-knowledge on the use of discussion forums/threads.

4.3.2 The WebCT environment

When students are unfamiliar with the online environment they can very easily get confused. Moreover, it is no use making e-learning tools available to the students if they are not required to use them as part of a particular course. The course web site on the chosen LMS should therefore be simple and intentionally structured with no unnecessary tools “lying around”. By starting with the absolute minimum number of links/tools, the students are less overwhelmed and will master the environment more quickly. A simple and structured web site also allows for the easy (and unconfusing) addition of additional links/tools during the semester.

After the first two weeks of Cycle one the facilitator made a number of changes to the WebCT course site.

I decided to:

- 1. Remove the “QUIZ” page from the Study Unit resources as students might be confused because there is already a “Quiz” link on the Assessment page.*
- 2. Change the “Assignment” link on the Assessment page to “Assignment Submission” – not to be confused with the “Assignment” page in the Study Unit resources.*

Although these changes were made with good intentions many of the students were confused by these changes – especially the name change of the “Assignment” link. The facilitator therefore decided not to move or change any existing links/tools for the remainder of the semester. She decided that this WebCT course site would rather serve as a trial for future sites.

The best approach is without a doubt to decide beforehand where everything should go and not to make any changes for the duration of the semester, with new links/tools/content to be made available as needed. Unfortunately many such course site aspects are only perfected through trial and error and it is therefore unlikely that everyone will be satisfied with the first attempt.

4.4 Interaction with the facilitator

Being part of a blended learning environment meant that the students could (in most cases) choose how they were to interact with the facilitator. As all classes were presented face-to-face the students had no online alternative for the lectures. However, if the students had questions regarding the subject/assignment, they could approach the facilitator after the contact session, visit her during the scheduled consultation hours or contact her online via WebCT e-mail.

4.4.1 Online communication

At the beginning of each cycle the facilitator asked the students to use the WebCT e-mail facility when they had questions regarding course and assignment issues. They were also informed that the facilitator would visit the WebCT course site at least once a day and that she would try to answer all their queries within 24 hours (except over weekends). This was done in an attempt to minimise the number of students who would visit the facilitator's office outside the scheduled consultation/office hours.

The type of messages I received ranged from students “wrongly” submitting assignments via e-mail, general questions about course administration to students asking for extension of deadlines. There were also numerous messages from students who did not attend the week’s contact session and wanted to know what I’ve said in class.

Whenever two or more students asked the same question (of a general nature) the facilitator would immediately formulate an answer and send the reply to the whole class. This helped to ensure that no more students would ask the same question.

It quickly became apparent that the students were very impatient with the asynchronous nature of the e-mail communication. They thought that just because the course web site was available 24/7 the facilitator should also be available at all times.

One student e-mailed me at 18:12 last night (I left work at 16:45). When I haven't replied by 07:45 this morning he sent another message to check why I haven't answered him yet.

When I logged on to WebCT on Monday morning I had an e-mail message from one of my students. She e-mailed me over the weekend and expected an immediate answer her question. Don't they realise that I don't come to the office over weekends?

Although the e-mail communications beyond any doubt helped to reduce the number of students who came to see the facilitator at her office she suddenly had an enormous amount of reading to do. And even though the number of messages received was manageable at first the numbers gradually increased as the students became more at ease with the idea of online communication.

When I logged in on WebCT this morning I had 94 new messages!! I still haven't had time to read them all... I find it very difficult to keep track of such a large group of students. But that's why I'm conducting this research – to get answers/solutions to all these problems.

On average the facilitator spent one to two hours each day answering all the student questions and reading all the new discussion postings. It soon became apparent that there were various things the facilitator could do to minimise the number of student messages (especially messages dealing with procedural issues). The number of messages can be reduced significantly by ensuring that

- all assignment specifications are clearly stated/explained;
- there are no inconsistencies between the online and paper versions of documents provided to the students;
- everything works as it is supposed to work;
- the online course site (on WebCT) contains a section/page that deals with frequently asked questions (FAQs), and that

- groups should first try to solve their problems on their own before one of them consults the facilitator.

An online facilitator also has to develop some kind of "magical power" to anticipate the type of messages that students are likely to send during various stages of the course. For example, the week before a test it is likely that some students (mostly those who did not attend the contact session) will send messages to ask about the test scope, time and venue. If the facilitator sends out a general message to all students before these messages start to arrive, the number of messages can certainly be reduced. The same approach can be used to "re-communicate" any important administrative information that was communicated during the contact sessions. This also helps to minimise the number of students who use the "but I did not know" excuse. It might be a good idea to send out a "general" message every day/second day to remind students of due dates, discuss general issues and to provide answers to general questions. If the students know that the facilitator will be communicating with them on a regular basis it might also motivate them to visit the course site more often.

The grouping of received student messages into various folders also helped to make future referencing much easier. It is very important that no messages (sent or received) are deleted for the duration of the course as one never knows when one might need some evidence of messages sent or received.

4.4.2 Limited face-to-face contact time

On the University timetable two 50-minute sessions (one Afrikaans and one English) were scheduled for RIS222. For most students this weekly contact session of 50 minutes was their only opportunity to interact with the lecturer in a face-to-face situation.

I identified the following problems with the contact classes:

- *Due to timetable clashes many students were unable to attend any of the two contact sessions. Most of these students ended up alternating between the “clashing” classes and therefore only attended class every second week.*
- *The Afrikaans session was scheduled at 07:10. Most students (especially the Afrikaans ones) just do not attend such early classes.*
- *The English session was scheduled at 19:10. The students who were dependent on public transport to get home had to leave before the end of the class to catch the last bus home.*
- *The students are taking such a variety of subjects (Mathematics, Statistics, Chemistry, Physics, Geography, Accounting...) that it is impossible to find another more suitable/convenient time slot for the contact sessions.*
- *The contact time of 50 minutes per week provided me with very little time to cover a large amount of content. There was also hardly any time left at the end of the contact sessions to discuss additional examples or issues relating to the assignments.*

As it was impossible to change the timetable or schedule additional contact sessions the facilitator devised a way in which she could get through the content more easily/faster whilst giving the students a better idea of what content would be covered during each session (especially for students who were unable to attend).

During the second cycle the facilitator started to develop a series of short worksheets.

The new worksheet will be made available to the students on Monday mornings (on the WebCT course site). The students have to download the worksheet and complete it before they attend the weekly contact session on Thursday.

Through the use of these worksheets the facilitator not only managed to get the students to prepare for class but also ensured that all students had a basic prior knowledge of the topics to be covered during a particular session. This meant that the contact sessions could focus on the discussion of more advanced topics (as

students were already familiar with the basic concepts from completing the worksheet). While the students completed the worksheets they were also able to identify problem areas beforehand which they could request the lecturer to explain more thoroughly during the contact session.

Although the facilitator had no guarantee that all students would complete the worksheets beforehand, most of them quickly realised the value of this preparation. Two of the students commented as follows in their final course reflection:

“I do feel that the worksheets were a useful aid in my preparation for the lectures because I found that upon having done the worksheets, I was on par with what the lecturer was saying in class, as opposed to being blank when I had not done the worksheets beforehand.”

“I too, particularly found the worksheet preparation a great way for class prep. I must admit that there were two occasions that I was unable to complete the worksheets before class and found that lectures were a lot less clear than when I actually completed the worksheets”.

One student suggested that the worksheets should in future be submitted for grading as students would then take it more seriously and that it could also serve as additional motivation for them (to try to improve their marks).

Although it took a lot of time and effort to prepare the worksheets and ensure that it was made available to the students in time, the facilitator regards this additional effort as fully worthwhile. Not only did the worksheets help the students to prepare for class but it also helped the facilitator to cover the content in less time (making up for the limited face-to-face contact time). An additional benefit was also realised – students were more active during the face-to-face discussions as they already identified problem situations/concepts before they attended the contact session. Small in-class group discussions were also more meaningful as the students already had some answers/opinions which they could compare/discuss.

4.5 Student dishonesty

Student dishonesty is a universal problem that is not restricted to any one academic discipline. It is generally assumed that cheating and plagiarism are a greater problem online than in a traditional class (Heberling 2002). In reality, maintaining academic integrity is equally a challenge in both delivery modes. Although each institution/department/module has its own definition for academic dishonesty, the concept generally includes at least the following aspects (Goebel 2003):

- copying another student's work during an examination;
- using unauthorised materials during an examination (e.g. cheat notes);
- copying another student's assignment; and
- failing to give proper credit to another individual's ideas and/or published work.

Academic dishonesty amongst students is a problem of considerable dimensions in all the undergraduate Information Technology courses at the UFS. The level of plagiarism ranges from students handing in exact copies of each other's assignments to students that apply slight changes to the assignment of another student and then submit it as their own work. As a result the facilitator always has to devise ways to minimise the likelihood of "copying". This is even more difficult in IT courses where most assignments require students to write short computer programmes. Many students become "experts" in adapting someone else's programming code and passing it off as their own.

In Unit 3 of Cycle two each student was required to develop a small personal web site (consisting of four web pages according to certain specifications). They then had to upload this web site to their group's file sharing area on WebCT and then link their personal home page to the group's home page. (All the group home pages were created by the facilitator and each contained the name of the group and a list of all the group member's names. Each group's home page already resided in the file sharing area on WebCT.) The facilitator was of the opinion that the use of the group's file sharing area on WebCT was the best way to approach this assignment

as it meant that a group's files were totally inaccessible to the rest of the class – which would not have been the case if the web pages were published on the Departmental web server. Unfortunately this did not help to eliminate the copying of assignments.

While grading the Personal Web Site assignments I was totally shocked to learn that in some groups there are group members who put in no effort to develop their own CV's and time tables. They just waited until one of their fellow group members uploaded his/her web pages. They would then download these pages, changed the wording/contents (but not the format) and upload it again as their own.

While six of the fifteen groups in cycle two were affected by the copying of fellow group member assignments there was an additional number of students (11% of the class) who were involved in the “copying” or “sharing” of individual assignment files across group lines. By trying to minimise the plagiarism the facilitator actually made it easier for the students to copy! As it was in some cases impossible to determine who the original culprits were, all the students in a group who had similar assignments were penalised during grading. Once the grades were released this issue resulted in a few heated group discussions that consisted of students accusing each other of copying without anyone ever taking responsibility. In an attempt to resolve the issue the facilitator requested each group to participate in an online discussion on the issue of “plagiarism” and “copyright”. In preparation for this discussion the students were required to familiarise themselves with the IT department's policy on Plagiarism and Copyright.

In the copyright discussion the groups mainly focused on analysing the departmental policy, airing their views on what they consider as “wrong” and what punishment they would suggest for perpetrators.

Through years of experience in marking assignments a facilitator learns to spot the signs of “copying”. In many cases, however, it is very difficult or even impossible to prove that two students have worked together on an individual assignment. On the other hand there are always cases in which it is quite obvious that students have

worked together. In such cases it is hard to believe it when you confront the students and they then claim that they have never even met each other.

From the students' discussions it became apparent that very few of them actually believed that it was possible for the facilitator to spot signs of "copying" if the two copies were not identical. Although most of them agreed that all perpetrators should receive a zero mark if they were found guilty there were students who suggested that no action should be taken against the perpetrators as "they are anyway going to fail the module".

In the students' discussions there were also very noticeable differences in the opinions of the white students (both Afrikaans and English-speaking) and the African students (English second language speakers) regarding the copyright/copying issues. While the white students mostly agreed that one should never copy and always work alone on individual assignments (although some of them admitted to being guilty on previous occasions) the black students were more concerned about how this issue affected or related to "students helping each other", as is noticeable in the comments below:

"Although the lecturer might prefer to call it copying from a fellow student this is just help from one student to the other."

"I can't see anything wrong with people initially working together on an individual assignment and then just making the necessary changes."

"I think it's OK to sample other people's work and then personalise it later."

"Some students find it hard to approach the lecturer; they find it easier to ask a fellow student."

"I think the lecturer should see the difference between helping each other and copying."

It seems that the students' rationale for “copying” was not only limited to “lack of understanding” or “lack of time to complete the assignment”. In investigating the matter it became clear that some students relied heavily on their fellow students (usually someone in their support/study group) to help them complete assignments and consequently pass the course.

Although it was probably not the best idea to use the WebCT file sharing facility for an individual assignment, students should learn that they cannot just “take” something and pass it off as their own. Students should be made aware of exactly what is acceptable and what is not when it comes to “helping” each other with individual assignments.

I have two students (twins!) who have been found guilty of “copying” on two occasions. Although the coding in both their assignments look almost identical (identical comments, variable names, identical use of white space, identical mistakes, etc.), they refuse to admit that they worked together. I’ve consulted a few of my colleagues and all of them agree that these students have beyond reasonable doubt worked together on the assignment. Despite the concluding evidence the two students continue to accuse me of being “ignorant”, “unnecessarily suspicious” and “biased”.

*After three visits to the head of the department the twins finally admitted that both of them independently approached another (the same) student (someone who took the course on a previous occasion) who “helped” them “individually” with their assignments. Although they are admitting that someone else basically did the assignments for them (which is even worse than copying!), they still refuse to acknowledge that they have done anything wrong! According to them I am accusing them of helping **each other** while that was never the case.*

The question remains how to deal with students using the “but I didn’t know that was wrong” or the “does that mean we are not allowed to help each other” phrases when they are confronted with violating the copyright policy.

For the collaborative assignment (in both cycles) a live, in-class “lotto draw” was used to allocate a unique destination/event to each group. As the group members had to “sub-divide” the allocated topic amongst them (according to certain specifications) this meant that no two students could work “together”. Everyone was working on something totally different. There was therefore no problem with plagiarism among the students. As the collaborative assignment required the students to search the Internet, the “plagiarism” consequently shifted towards students not citing their Internet sources. Although they were not copying from each other, they were now illegally “copying” from the Internet. Although the Internet plagiarism can in most cases be regarded as a result of ignorance, the biggest problem among undergraduate IT students still remains the copying of fellow students’ assignments. As the students are clearly not put off by the possible consequences and severe punishments they can receive if they are found guilty of “copying”, it might be possible that most of them do not regard their actions as wrong. The responsibility again lies with the facilitator to inform the students of acceptable actions/behaviour and to devise ways in which to minimise the likelihood of copying amongst students. The negotiation of an acceptable code of conduct on the issue of copying beforehand might be an option to consider in future.

4.6 Feedback and grading in large classes

Although the role of the facilitator in an online class differs from that in the traditional classroom, one of the main roles of any facilitator (independent of the learning environment) is that of a mentor (Online Classroom 2005:2). He/She has to guide the students through the course, provide encouragement where needed, and respond timeously to concerns and questions. One of the facilitator's other main tasks is to provide constructive feedback (Jackson 2005:8) to both groups and individuals. It should also be noted that prompt facilitator feedback is considered one of the deciding factors in a student’s decision whether or not to continue with an online course (Dahl 2004:1).

In any course the facilitator’s ability to provide detailed and timely feedback is, however, constrained by the number of students following the course. When there are only 10 or 20 students in a class it is fairly easy to provide individual online

feedback on a regular basis, but when the facilitator has to deal with 160 students the situation changes drastically.

I can empathise with the students who complained about the large number of assignments they had to complete because I had to mark all those assignments!

I'm spending one hour on average each day just to read all the new discussion postings. It is also quite a challenge to keep up to date with the progress of all 21 groups. Although I committed myself to being a silent observer to these discussions, there are times when I feel that some kind of intervention is needed. The problem is that I just don't have enough time to respond to all of the cases.

It took me so long to grade each of the 160 individual assignments that I was unable to give feedback to the students before they had to submit their next assignment. Many of them ended up making the same mistakes in the follow-up assignment. If only I had time to explain to each of them what they have done wrong.

This collaborative assignment took ages to mark. If I ever give a similar assignment it will be structured differently and will definitely be much shorter. It might also help if students are given a "framework" document that they just have to complete. This will definitely make the grading process easier and possibly faster.

The problems associated with providing feedback to large classes are, of course, not restricted to the online mode; the facilitator has to devise ways in which the issue can be addressed both online and offline.

Instead of submitting a few small assignments each week the students will now have to submit one larger assignment every two weeks. The nature of the course also allows me to only select certain sections of the assignment for grading. I hope that this measure will not only reduce my grading load but also make it easier for the students without making sacrifices in the quality department.

During the second cycle the facilitator devised a method to easily compile individual, electronic mark sheets.

I created an Excel worksheet with columns for each of the grading categories, one column for the final mark and one column for comments.... During the grading process I compile a list of common mistakes and comments.... I can therefore just copy-and-paste the necessary comments into each student's comment column which is much faster than typing/writing individual comments from scratch. ... After I've finished grading I import each student's marks and comments into a mail merge template I've prepared in MS Word.... I then give the merged document to my assistant (Yes, I've finally realised that the facilitator does not always have to do everything!!) who uses a series of shortcut commands to save each student's mark sheet as a separate document. A combination of the student's student number, surname and initials at the top of each document ensures that there is no need to specify a filename – MS Word automatically takes the first words in the document as the default filename when saving a document for the first time.... Once the assistant learned the shortcut commands it took him only 30 minutes to create and save the 160 individual mark sheet documents! These documents were then uploaded to WebCT as the grades were entered into the student grade tool.

In order to ensure the success of online teaching and learning, it is crucial to nurture the belief that the online environment offers certain conveniences over and above that of the offline mode. By responding to all student messages in a timely manner, the facilitator can help to ensure that students send e-mail messages rather than coming to visit her in person. It is much easier to cut and paste a message/feedback or to make slight changes to a previous message/feedback than to explain the same thing repeatedly in a face-to-face situation.

4.7 Sharing with and learning from others

Sharing your findings with others is part of the professional development in an action inquiry process. Most of the time this sharing goes hand in hand with the gaining of experience and with learning. This researcher's diary carries several examples of

sharing-learning opportunities which in the end largely contributed to her professional development (and the finding of possible solutions to some of the blended learning dilemmas spelled out in the previous paragraphs). These occasions are divided into two main sections: presentations on the UFS campus, and participation in an international conference in China.

4.7.1 Presentations on campus

During the second cycle of her study, the researcher was invited to make a presentation on her action inquiry methodology in her department (Computer Science and Informatics – IT) as part of a regular seminar series in which staff members and post-graduate students get the opportunity to share their research findings with colleagues. The aim of these seminars is not only to get feedback and inputs from colleagues but also to serve as motivation for students and lecturers to contribute to the generation of new research ideas.

I have no nerves left. The positivists in my department only believe in statistics and objectivity and proof. I don't think an hour will be enough to convince them that there is "truth" beyond the experimental method!

Everything went quite well. Professor M. clapped very enthusiastically and described the presentation/research as "Very impressive"....

Since her first presentation the researcher has shared her findings with colleagues in the IT department on a regular basis. The researcher also presented her preliminary findings at a presentation day organised by her research department (Higher Education Studies) at the end of 2004. During 2005 she was also invited to make another presentation directed to her experiences at the quarterly meeting of the University's e-learning interest group. The interaction with colleagues and the feedback received can be described as true learning experiences.

4.7.2 International conference

The action researcher is advised to record significant events in the research journal/diary and reflect on these events (Zuber-Skerritt 2005:40). The researcher's most significant event was participation in the Fourth International Conference on Technology in Teaching and Learning in Higher Education (4th ICTTHE). This conference took place in Beijing, China, on the campus of the University of Peking in July 2005. Although it was a relatively small conference with a total of just over 70 presentations, the nature of the conference was such that almost every single presentation fell in the researcher's field of interest. And even though interdisciplinary in nature, the use of technology in teaching and learning in higher education was the focus in every paper. Because of the vastness and relative inaccessibility of Beijing (mostly due to communication problems), almost all the conference delegates attended all three days of the conference. This enabled the participants to form strong "academic" bonds and lasting friendships.

What a day! Two papers delivered. Had a full house for the first one. Our session was described by the session chair as one of the "most exciting" so far. I got very good feedback. People were mostly interested in the diversity issue, in particular the medium of instruction. After the second paper people were mostly interested in my use of pre-class worksheets. ... I learned so much, met many people. Exhausted!!!

In her first session, with the theme "Community building, social presence and interaction in the technology classroom", the researcher explained her design for interaction approach. Pedro Willging from Argentina gave an impressive demonstration of his three-dimensional interaction models. These models make use of Social Network Analysis techniques to create a graphic representation of the interaction patterns between students participating in an online discussion (Willging 2005). Xiuwen We (We & Zilla 2005) of the USA spoke on the building of online communities as a transaction of technology and pedagogy; and Thao Le (2005) of Tasmania gave an outline of his analysis of reasons for students' e-mail messages (revealing that students are mainly concerned about academic procedure and conformity as opposed to intellectual development and the creation of interpersonal

relationships). And this was just one of many sessions. Nordmann (2005), for example, provided an explanation on how buzz groups can be used to stimulate and sustain the development of a community among online learners. Her study also revealed that personal openness and interpersonal involvement are the main characteristics of successful online learners and that these characteristics are the main ingredients in stimulating and sustaining online community involvement.

There is no doubt that the insights gained at the conference contributed to adapted visions and strategies in the action inquiry described in this study.

5. CONCLUDING OVERVIEW

The reflections in this article are a direct outflow of the recording of events, experiences, emotions, frustrations and revelations/discoveries in an action research diary/journal. The use of this type of data collection method has been illustrated in a rather informal way. The perspectives provided have already been triangulated with other methods, including comprehensive analyses of student reflections (over two cycles) on their own experiences in the project. It was also complemented by an extensive literature review. The researcher is therefore convinced that the diary keeping and the reflections based on her entries gave “a soul” to her investigations. In this sense she is satisfied that she has complied with the prerequisites for a valid report as formulated by Wolcott (1994, in Mills 2001) in his highly applicable framework for validity in action research, namely: record observations accurately; begin writing early; be candid; report fully; seek feedback; and most importantly, let readers “see” for themselves.

There is furthermore evidence that the researcher has been learning from experiences, that she is in the process of taking appropriate action, and that she has been developing various learning principles for more effective blended learning in the UFS context. The experiences helped her in becoming a more effective and reflective practitioner, illustrating that, according to Zuber-Skerritt (see section 3), the “outcomes” of the diary keeping and reflection have been attained.

At this stage some of the most important lessons learned (covering many learning principles) applicable to the specific blended learning environment, are the following:

- The group allocation strategy should make provision for interaction between students from different cultural groups.
- The reasons for allocation by the facilitator must be made explicit to the class at the beginning of the project.
- Group members must attend the same contact sessions in order to make it easier to plan collaborative activities.
- Initial face-to-face meetings can make planning for collaboration easier, and may also help to increase motivation and stimulate the development of learning communities.
- Online communication creates opportunities for the development/practice of collaborative/"group work" skills. Reasons for collaboration must be made explicit.
- The online mode provides opportunities for communication in the student's preferred language of instruction, although awareness among students is needed to guard against possible cultural clashes. Language issues in a parallel medium (South African) institution have, however, to be handled sensitively and with great care.
- Students should be given ample/repeated opportunities to practice the use of the various e-learning tools and develop the necessary e-knowledge needed for teaching and learning in the blended learning mode.
- The reality that many African students make extensive use of support groups and do not regard "help" as copying, must be handled in a sensitive manner. The negotiation of an acceptable code of conduct on the issue of copying beforehand might be a solution to problems in this regard.
- The handling of large amounts of e-mail can pose problems for the facilitator. However, daily communication from the facilitator (highlighting important issues and upcoming events) can help to minimise the number of procedural "enquiries" by students. This might also help to motivate the students to visit the course web site more regularly. It might also be a good idea to send out a

"general" message every day/second day to remind students of due dates, discuss general issues and to provide answers to general questions.

- Pre-class worksheets can be very helpful in stimulating face-to-face discussions, in particular at the UFS where undergraduate students are very reluctant to participate in class discussions.
- Any rules/regulations (e.g. copyright, use of language, etc.) and their application/relevance/implications should be thoroughly explained to students.
- The use of common feedback "templates" will help to significantly reduce the amount of time a facilitator spends on answering student e-mail messages. These "templates" should be skeleton messages which can be pasted into the e-mail editor and "personalised" by the facilitator as needed.
- Grading of and feedback (to individuals and groups) on assignments can be made much easier by using an electronic mark sheet accompanied by the pasting of ready-made/"template" comments. It is also very easy to make these mark sheets available to the students via the chosen LMS or as an attachment to a regular e-mail message.

The above are some of the most important guidelines or learning principles which have been exposed in this report. It is quite clear that these guidelines cover a variety of interrelated issues which can be categorised as mainly pedagogical, diversity, ethical or psychological issues. In accordance with the view taken in this article, all such issues, relating to several of Khan's dimensions (see section 1) need to be addressed in order to enhance meaningful blended learning practices (and the learner experience as a whole). It is, however, important to keep in mind that this article was intentionally written from the perspective of the researcher/facilitator. In-depth analysis of the large amount of student feedback is needed to ensure that their opinions, reflections, feelings, and attitudes are adequately considered before a more extensive set of learning principles are developed and a strategy for the third cycle is devised.

The researcher has become convinced that by discussing and sharing her experiences with colleagues and other specialists in the field, further insights can be

developed and ideas generated into dealing with the teaching and learning situation, and in particular with psycho-pedagogical problems, in a complex blended learning environment. The ideas of several participants at the 4th ICTTHE can be built into the next cycle, for example the use of buzz groups put forth by Nordmann (2005), an analysis of the nature of e-mail messages sent by students (Le 2005), as well as some of the many ideas for the development of online communities. The action inquiry employed proved to be extremely valuable for such “experimenting” and in getting to the “heart” of the classroom situation. Continuation may certainly bring further benefits, not only for the specific institution, but also for other institutions in similar contexts.

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ENHANCING COLLABORATIVE LEARNING IN A BLENDED LEARNING ENVIRONMENT: APPLYING A PROCESS PLANNING MODEL

Abstract

In an action research/inquiry project the planning phase is considered crucial in devising a strategy for the next phase of the project. After completion of two full cycles of the action inquiry on which this article is based, the researcher decided to structure the planning for the third cycle according to a recognised process. Her choice fell on an existing process planning model which was originally developed for the design and planning of team-based action learning and action research (ALAR) projects. In the article the illustration of the application of the model focuses on the aspect of student collaboration in a blended learning environment. The intention is to illustrate how the original process planning model was effectively adapted and applied during the re-planning phase of the action inquiry project. The planning that took place in each of the three major components of the model (vision, context and practice) is discussed in detail. The researcher also provides an exposition of how her experiences and findings in the study relate to each stage of the process. The final deliverable is a set of action plans for future collaborative learning that could help to make the student learning experience in the blended learning environment more effective and meaningful.

1. INTRODUCTION

The University of the Free State (UFS) in South Africa has joined the global higher education community in its search for more effective teaching and learning in an increasingly diverse and increasingly technological environment. A more open, flexible approach in teaching and learning is advocated in which various forms of online learning have taken shape. The most general format is the blended learning mode which combines face-to-face and online delivery modes. It is believed that this

type of instruction holds benefits for students and facilitators at a rapidly growing institution with a diverse student population and very large classes in many departments.

The interest in blended learning has surged since the dawn of the new millennium. Several reasons for this have been put forth. It is firstly a reality that learner-centred models of teaching and learning have replaced the traditional models, with the emergence of new advanced technologies providing educators an “unprecedented opportunity to create blended learning environments that are highly interactive, meaningful and learner-centred” (Kirkley & Kirkley 2005:42). More and more universities are getting accustomed to using an online learning management system (LMS). The student of this century (especially in the developed world) is knowledgeable about and comfortable with online communication, while the greater flexibility offered by the various forms of online learning is something much sought after in modern times. The aim of blended learning is basically to join the best of classroom or face-to-face learning with the best of online learning: “When the two are thoughtfully integrated, the educational possibilities are multiplied” (RIT 2005).

The study on which this article is based can be regarded as a quest in search of such “educational possibilities”. Simply put, however, the purpose of the study can be described as a search for improved classroom practices in the blended learning environment in a specific context, namely that of the UFS.

In pursuing this goal, it was decided that an investigation within the action research paradigm might hold important benefits, in particular because of its cyclical and “experimental” nature which comprises repeating cycles of *plan*, *act*, *observe* and *reflect*, where “each turn of the spiral is an opportunity for learning and change” (Dick 2002a:162). The study has already stretched over almost three years, with two full cycles of inquiry completed, taking the researcher into the planning phase of a third cycle. This (re-)planning forms the focus of the article as it was realised that effective planning must take place according to recognised guidelines. After extensive reading the researcher decided to structure the third phase around an existing process planning model which was originally developed for the design and planning of team-based action learning and action research (ALAR) projects (Passfield 2004).

The discussion of the application of the process planning model in this article will focus on the aspect of collaboration in the blended learning environment. The question might be asked: Why this focus? Smith and MacGregor (1992:10) describe collaborative learning as an umbrella term for a variety of educational approaches involving “joint intellectual effort”, which represents a significant shift away from the teacher-centred approach in higher education. As such it also covers the concept of cooperative learning which, according to these authors, represents the most carefully structured end of the collaborative learning continuum with small groups of students working together to maximise their own and each other’s learning. Various studies have shown the benefits of group-based, cooperative or collaborative learning as pedagogy in either contact or online teaching/learning. In referring to the contact situation Killen (2000:104-105) refers to a range of advantages, including enhanced achievement; improved time management; less reliance on the teacher; enhanced problem-solving skills; the fostering of positive interdependence among learners; improved ability for reflection; and the promotion of cross-cultural understanding.

These advantages are very similar to those mentioned for the online environment (Fisher 2003; Conrad & Donaldson 2004; Roberts 2005). Fisher (2003:227) emphasises that one of the distinctive requirements of an effective online course is that it relies heavily on effective collaboration to create a meaningful and engaging learning environment. Kearsley (1997, in Kidney & Puckett 2003:204) considers interaction as “the single most important element of successful online instruction”. In the same vein Pallof and Pratt (2001:26) emphasise that effective collaboration can enhance the learning experience and can therefore be regarded as one of the determining factors in measuring the success and quality of any online course. There is thus more than enough merit in assigning a central place to “the collaborative factor” in any search for the best online/face-to-face blend.

The purpose of the article is therefore twofold:

- to illustrate how a process planning model can be effectively adapted and applied during the re-planning phase of an action inquiry project; and

- to devise action plans for future collaborative learning that could help to make the students' learning experiences in the blended learning environment more effective and meaningful.

For a full understanding of the application of the process model, a brief overview of the classroom and course context of the study is provided as background.

2. BACKGROUND TO THE STUDY

The module (RIS222) that was selected for this inquiry is a one-semester Information Technology (IT) module (“Introduction to the Internet and web page development”) on second-year level that was presented by using a blended learning approach. The students had one face-to-face contact session per week while the WebCT LMS was used for the online delivery component. Considering the possible benefits collaborative learning holds in both contact and online teaching/learning it was decided to involve the students in one large online collaborative activity in each cycle of inquiry. Group allocation was handled by the facilitator. In an attempt to increase the level of online interaction among students no face-to-face discussions of the assignment were allowed – all communication had to take place in the group's online discussion forum on WebCT.

As reflection is such an important phase of the action research methodology, students were directly involved in the reflective phase by means of an additional assignment. This took the form of an asynchronous online group discussion where the students could reflect on the positive and negative aspects of online collaboration in their group. They also had to make suggestions on how the collaborative experience could be enhanced. A total of 250 students made reflective contributions over the two full cycles of the project.

From analysing the student feedback it became clear that the students had not only identified common problems with the current approach, but they also had very interesting ideas on how future collaborative assignments could be enhanced. It was therefore decided to incorporate the students' suggestions in the re-planning phase

for the third cycle. This aspect involves one of the major adaptations made to the original process model, which will be discussed in this article.

3. RESEARCH DESIGN AND METHODOLOGY

The project falls within the action research paradigm. There are various definitions for action research, but all concur that action research concerns inquiring into one's own practice through a cyclical process which involves *planning, acting, observing* and *reflecting* (Zuber-Skerritt 2002:144). Dick (2002a:159-160) regards action research as a family of research methodologies which pursue the dual outcomes of action and research. The action takes the form of change, improvement or implementation in the researcher's own workplace, while the research consists of learning and understanding, often leading to publication. Hubball and Burt (2003) emphasise that action research is "a complex and multifaceted form of inquiry" and a "critical component of a scholarly approach to university teaching". And although many authors argue that action research has to be participative, Dick (2002b) is of the opinion that the researcher has to decide on the level of participation. The model described by Zuber-Skerritt (2001:12-13) provides for three choices in this regard, namely the technical, the practical and the emancipatory approach. In the application of the model the approach in this study resembles the *practical* approach where the aims relate to improvement of the effectiveness and efficiency of professional practice. The researcher is not a mere outside expert as in the *technical* approach, but encourages participation and self-reflection. The relationship between practitioner and participants can therefore be described as cooperation rather than collaboration (Zuber-Skerritt 2001:13).

Tripp (2003), who prefers to use the term *action inquiry* to describe the extended action research family, regards action research as a more formal and deliberate form of reflective practice in which research methods are used to produce a more detailed and schematic description of the situation. In such an approach the data are drawn from multiple sources; the conclusions surface gradually over the course of the study and are regarded as most effective when the end result transpires from the data (Dick 1993, in Hall 1997). In this study the data were predominantly qualitative in nature and based on "a constructivist philosophy that assumes reality as multilayer,

interactive, and a shared social experience interpreted by individuals.... It is concerned with understanding the social phenomena from the participant's perspective... (and shows) context sensitivity" (McMillan & Schumacher 2001:396).

In this study the data have slowly emerged over a period of almost three years, during two completed cycles of the action inquiry, with the planning of the third cycle described in this article. Elements of action research and reflective practice are easily recognisable. Data collection included multiple sources such as a comprehensive review of contemporary literature, keeping a research journal, facilitator observations, as well as student questionnaire surveys, reflection exercises and analyses of large amounts of student feedback. The surveys provided, among others, feedback on the students' expectations of the blended learning course, reflection on experiences with collaborative assignments, and suggestions on ways in which online collaborative learning can be enhanced. The data used in the planning process rely on all these sources of information, but because of the extent of the available information, the different procedures employed in the process of data generation and analysis (e.g. the SWOT analysis) are not spelled out in detail. The focus rather falls on the use of key information/findings in applying the process planning model in the re-planning phase of the project.

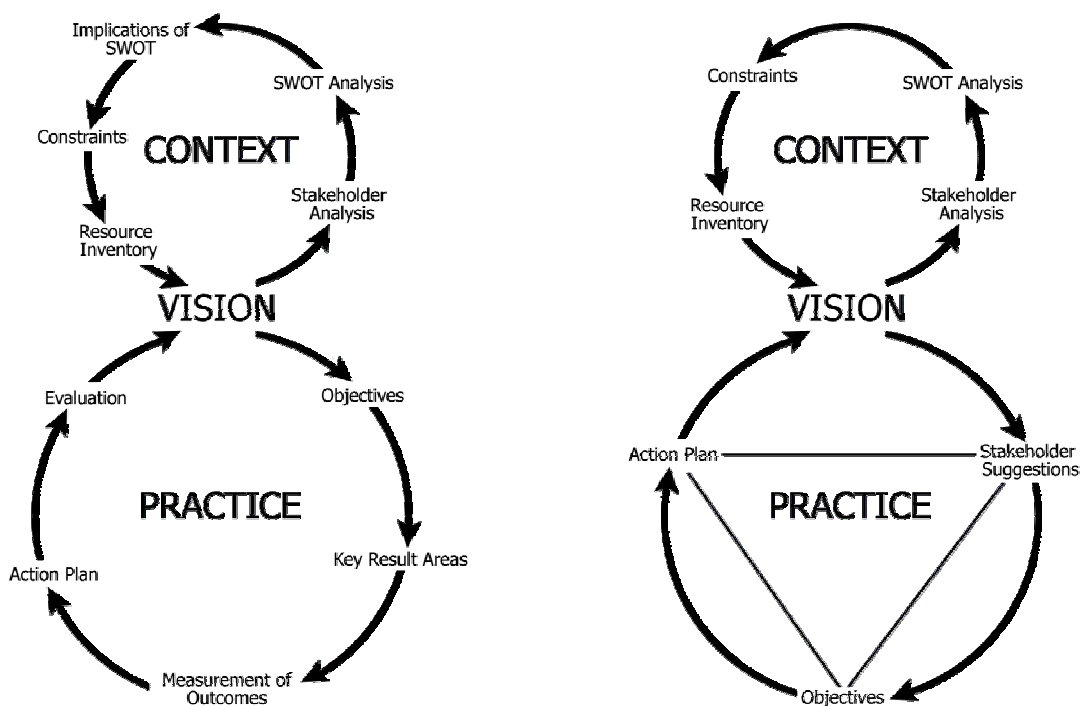
4. THE PROCESS MODEL

One of the crucial ingredients of any project is the planning phase. Zuber-Skerritt (2002:144) devised a generic model for designing ALAR projects. One of the eight phases in this model (the "start-up workshop") suggests the use of a process model during the project planning (design and management) stages of the project. This so-called "figure eight" model consists of three major components: vision, context and practice (see Figure 1a).

In applying the three major components of this figure eight model, according to Passfield (2004), the first step will be to devise a strategic vision statement for the project. This vision statement should describe the ideal situation that one is trying to create. The main idea of such a statement is to help provide some direction for the project by visualising the researcher's vision of the project and communicating this to

other parties involved. It is regarded as critical that this vision should not be constrained by present realities or limitations. In applying the model, the second step will be to do a thorough analysis of the project context (through a series of stages) after which the vision is revisited and revised. The last component of the model deals with planning for improved practice based on the revised vision and the results/findings of the context analysis. This cycle of revised vision, context analysis and improved practice can be repeated as many times as needed during the project.

Figure 1: The process of project design and management



(a) Zuber-Skerritt model (2002:145)

(b) Adapted version used in this study

Although two full cycles of the action inquiry project was already completed at this stage, the researcher was of the opinion that the vision-context-practice approach suggested by Zuber-Skerritt (2002:145) for the "start-up workshop" phase of a research project could easily be adapted for use in the planning phase of the third cycle of the project. The main idea behind the modified model was to devise ways in which to apply the model to an action inquiry project of this nature and to incorporate the students' suggestions (from the first two cycles) in the enhancement of the third cycle.

In applying the adapted figure eight model (see Figure 1b), the results of the analysis are presented in the following four main sections:

- Initial vision.
- Context analysis.
- Revised vision.
- Planning for improved practice.

The guidelines followed for the implementation of this model is based on the *Change Management Resources* workbook that was developed by Ron Passfield (2004) for his Australian-based consulting firm, SCOPE. The workbook is intended to assist project teams that wish to use the original figure eight process model in their project planning.

5. INITIAL VISION

We all have a vision of what the future would be and what part we would like to play in it. Identifying the initial vision of a project allows us to visualise what the future could be like and to imagine the experience of working in those circumstances (Passfield 2004:6). In order to visualise an ideal situation it is important that the setting of the initial vision should not be constrained by current reality or the strategy required for getting there.

Imagine the following situation:

It is a Wednesday morning at 08:10 – time for the contact session to start. All 90 students are present and eagerly wait for the lecturer to hand out their next collaborative assignment. After the contact session the students cannot wait to get online to start working on the project. Each student group is confident about the assignment as they know exactly what is expected of them. They also feel that they possess all the necessary group/collaborative skills needed to be successful in this collaborative activity. Group diversity, language and access issues are non-influential and all students are fully committed to the

successful completion of the assignment. Everyone keeps to the deadlines and assignment specifications. By engaging in the process, they are all becoming active participants in their own (and the group's) learning experiences.

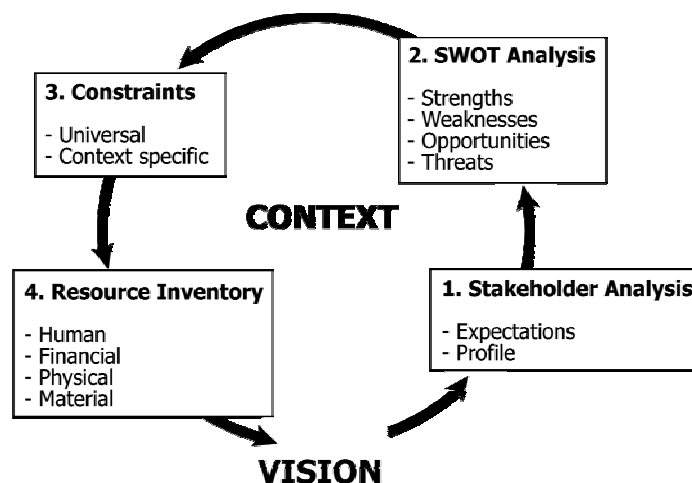
The facilitator monitors each group's progress on a regular basis and provides feedback/comments where needed (on a daily basis). She is confident that each group's final product will incorporate all the assignment specifications and that the work will be of a very high standard.

In order to live up to this vision, it is vital to launch an investigation to determine why the initial vision had not quite been realised during the first two cycles of this project.

6. CONTEXT ANALYSIS

In accordance with the Zuber-Skerritt model (see Figure 1a), the context analysis component comprises five main stages, namely stakeholder analysis; SWOT analysis; implications of SWOT analysis; discussion of possible constraints; and discussion of existing and additional resources. In the adapted version (see Figure 2) the only change was to combine the “SWOT analysis” and “implications of SWOT analysis” to form one stage as it was not deemed necessary to keep these stages separate for the purposes of this specific article.

Figure 2 – Context Analysis Component



6.1 Analysis of the students as stakeholders

The main stakeholders in this project are the RIS222 students. This is in accordance with the view that stakeholders are “those individuals or groups who are likely to be affected by your project or those who may have an impact on how you carry out your work or on your likely success” (Passfield 2004:10). RIS222 is an IT module on second year level that serves as an introductory course to Internet fundamentals and web page development. As all of the students are studying IT, it can be assumed that they have enough IT competency to use a LMS such as WebCT (Masiello, Ramberg & Lonka 2005:182).

At the beginning of each research cycle an e-mail survey was undertaken among the students regarding their expectations of the course. Analyses of all the feedback led to the identification of the following as key expectations:

- Learn more about the Internet and how it works.
- Learn how to design good, effective and interesting web sites.
- Learn how to distinguish between good and bad web sites.
- Develop creative thinking skills.
- Be equipped with skills necessary for future IT careers.
- Have fun while gaining practical experience in the development of web sites.
- Interact online with fellow students.

From analysing the students' expectations it also became apparent that they were very enthusiastic about the concept of blended learning and the opportunity to use the various WebCT tools.

In order to place the abovementioned expectations in context, the following should be noted:

- The RIS222 class groups are usually fairly large (160 for the first cycle and 90 for the second cycle), especially when considering that an online class size of between 20 and 50 students are regarded as reasonable (Yang, Wang, Shen

& Han 2005). This meant that much time was spent on managing the students (e-mail correspondence, reading of discussion postings, etc.) and grading assignments. Due to these numbers the amount of feedback received during the reflective process at the end of each cycle was also significantly large.

- On average, the majority of the students were male (66%) with the average age of the students being 20.9 years.
- With regard to the first language (mother tongue) of the students 30% were Afrikaans-speaking, 13% English-speaking and 45% African language speakers. The remaining 12% were made up of international students (non-residents of South Africa). As the UFS presents all undergraduate classes in both Afrikaans and English (parallel medium), this means that only 43% of the students had the opportunity to attend lectures in their mother tongue.
- At the UFS, students do not have unlimited, free access to the Internet. Due to the financial implications many of the students are therefore very reluctant to use the Internet to do research for assignments. However, access to the university's web site and the WebCT course site is free to students who use computers connected to the campus network.
- About 60% of the students in the first two cycles did not have Internet access at home. These students therefore had to visit one of the on-campus computer laboratories if they wanted to get access to the course web site and do research for their assignments.
- Seventy-five percent of the students indicated that they had worked with WebCT before. As many UFS lecturers only use the most basic features of this LMS to make course content, notes, etc. available to the students, the assumption can be made that these students only had limited experience with WebCT.
- The students thus had very little prior experience of blended learning or online collaboration, if any. At first they were very excited about this mode of delivery but some of the initial excitement faded as they started to realise that more was expected of them than in the traditional face-to-face mode.

- There were a few students who indicated that they were not particularly fond of the idea of blended learning and/or online collaboration. These feelings/attitudes may be attributed to the students' past experiences, their first impressions of the WebCT course site or even the fact that they were not entirely certain about what to expect from the new approach.
- Although most of the students (94%) indicated that they had very little or no experience with the Internet and web page design, there were some who were using the Internet on a daily basis and were already familiar with the fundamentals of web page design. It can be acknowledged as a definite challenge to keep students like these interested in the learning material and not to bore them with concepts they are already familiar with.

From the above it is clear that the RIS222 students are usually a very diverse group with mostly no prior knowledge of the content they would have to master during the course. They also have very limited experience in using the WebCT learning management system. Although some of the students might have had the opportunity to collaborate in the “face-to-face” environment, they had no experience of online collaboration.

6.2 SWOT analysis of the current approach

The main aim of any project manager is to deliver or produce a successful end-product. According to Passfield (2004:16) the success of a project is likely to be dependant on how well appropriate strategies were chosen. A strengths, weaknesses, opportunities and threats (SWOT) analysis is regarded as a powerful tool for determining a project's capabilities (strengths) and deficiencies (weaknesses), its unexplored opportunities, and the external threats to its long-term/future success (Schwalbe 2000:77; Thompson, Strickland & Gamble 2005:91). With regard to the process model, the SWOT analysis is regarded as an important tool to assist in reviewing the vision statement and planning/devising the new approach/strategies accordingly.

In the application of the context analysis component (see Figure 2), the second stage was to analyse the positive and the negative aspects of online collaboration as identified by the students in their reflections. By means of qualitative analysis techniques, encompassing coding and pattern seeking, the views of the students were categorised into strengths, weaknesses, opportunities and threats as summarised in Table 1.

Table 1: SWOT analysis of students' views on online collaboration

Strengths	Weaknesses
<ul style="list-style-type: none"> • Less anxiety for shy students. • No need for students to feel isolated. • No time wasted in organising face-to-face meetings. • Workload divided among students. • Learning outcomes attained by majority of students. 	<ul style="list-style-type: none"> • Difficult to get information on certain topics. • Insufficient incentives to increase participation. • Limited time for formation of learning communities. • No synchronous or face-to-face contact between group members. • Time-consuming nature of assignment.
Opportunities (to)	Threats
<ul style="list-style-type: none"> • Develop collaborative skills needed for future assignments. • Practise use of e-learning tools. • Stimulate activity and motivation. • Strengthen personal relationships and social interaction. 	<ul style="list-style-type: none"> • Actions (no action) of individuals can demotivate the rest of the group. • Carelessness in following assignment specifications. • Lack of access to technology at home. • Lack of e-knowledge. • Lack of planning on students' side. • Lack of the required "group skills". • Attitudes of individual students.

From studying Table 1 it is clear that the online collaborative approach presented an attractive set of strengths, as identified by the students themselves. Although some of the weaknesses (e.g. lack of face-to-face contact) are not very serious and can be addressed easily, some of the identified weaknesses can have a negative impact if they are not remedied in future assignments. The opportunities presented by an online collaborative activity are plentiful and resemble those identified in the literature. By exploiting these opportunities students would be more active and would definitely receive more opportunities to develop the skills needed in future

collaborative assignments. It should also be noted that some of the identified threats described in Table 1 have the potential to derail any collaborative attempt (e.g. the lack of e-knowledge, lack of group skills and lack of computers at home).

Overall the strengths and opportunities of this online collaborative approach have the potential to be a major enhancement to the learning experience, while ignoring the identified weaknesses and threats can lead to failure. In order to create an effective and efficient online collaborative environment, it is crucial to devise ways to eliminate or minimise the impact of these “negative” factors.

6.3 Identifying constraints

The third stage in the context analysis component of the process model (see Figure 2) is to reflect on all the information that was generated during the stakeholder analysis (stage 1) and SWOT analysis (stage 2) and to identify the major constraints of the project. By analysing (and realising) these constraints, it should be easier to adapt the initial vision to be more realistic (Passfield 2004:20).

The constraints of the current online collaborative approach can be grouped into two categories: universal and context-specific constraints.

6.3.1 Universal constraints

When the students' initial expectations and reflections are compared with research reported in literature it becomes evident that many of the identified constraints of online collaboration should not necessarily be regarded as specific to the UFS or the South African (developing country) context. Each and every online course/module/activity seems to have some universal constraints independent of its context. It should also be noted that although the constraints mentioned below are regarded as universal to all online collaborative activities, some of these factors are likely to be less of an issue in advanced countries.

The identified universal constraints are presented in five categories: perceptions, attitudes, skills, technology and reality. The students themselves can be regarded as the source of constraints in the perceptions, attitudes and skills categories, while technology and reality can be regarded as external and/or general influences.

Perceptions

As most of the students had no prior experience with online collaboration it is understandable that many of them initially had various misconceptions. Not only were they uncertain about the online environment, but also about what it would require of them to be successful learners in this unfamiliar setting. They were mostly unaware that the inclusion of an online learning mode would require them to play a more active role in their own and their fellow students' learning experiences (Masiello *et al.* 2005:182). While some students perceived online activities to be more difficult and time-consuming than any face-to-face activity (Taylor 2005:21), others believed that the course would be easier to pass (than a traditional face-to-face course) due to the inclusion of an online element (Springfield 2005:18). It became apparent that many students perceived e-learning as "easy-learning". As a result of this misconception there was a general belief that students did not need to attend the contact sessions if some of the course content was available online. This misconception also nurtured the belief that the structure (online/blended) of the course would make it easier for students to catch up (Springfield 2005:18) – although experience have proved that catching up in an online environment is actually very difficult (Learnonline 2005).

Students were not allowed to select their own group members. Some of them consequently thought it would be impossible to successfully interact with unfamiliar group members. As soon as the course material had been made available, there were students who were seemingly of the opinion that the facilitator would also be "available" online at all times (day and night) and that she would consequently respond to all e-mail messages immediately (Springfield 2005:18).

Attitudes

When the facilitator announced that all students were required to participate in an online collaborative activity, she was not greeted with much enthusiasm. According to Roberts (2005:6) it is fairly common for students to initially show resistance to the idea of working in groups. While some students' negativity might stem from prior experiences in similar situations, others might just not like group work (Taylor 2005:21). These students probably do not like to be dependent on others and consequently prefer to work on their own. From analysing the students' initial expectations it also became apparent that some students were not very excited about the course content, especially those who had failed the course on a previous occasion.

Skills/Knowledge

In terms of participation and learning activities, students are usually unaware of what they can expect or what is required of them in online environments. They therefore do not realise that they need different/additional skills and/or knowledge to successfully interact/operate in this environment (Muirhead 2000; Masiello *et al.* 2005:182). Macdonald (2003:378) also warns that the extent to which students will collaborate and interact in the online environment is dependent on their level of competency. As the students in the study had limited experience of group work and the LMS, and hardly any experience with online interaction/collaboration, they were unlikely to possess the group/collaborative skills (Macdonald 2003:378; Browne 2003:254; Roberts 2005:5; Taylor 2005:21) needed to successfully complete an online collaborative activity and/or participate in an online discussion. And although all the students who enrolled for the module were computer literate, they had very different levels of prior knowledge. This made it even more difficult for some students to successfully contribute to subject-related discussions (Browne 2003:274).

Technology

Even though the use of technology in this project was intended to enhance the student learning experience, it was certainly not always the case. A few students indicated that they experienced some level of anxiety about using

the online mode which resulted in them not being as active online as they would have liked to be. Due to their inexperience, the discussion forums (and in some cases even the LMS) were initially very confusing for some students (Masiello *et al.* 2005:178). Certain parts of the online material were also visited more/less frequently than others. It therefore became apparent that students needed some initial guidance and/or training in the use of the various e-learning tools as well as training in how to learn in the online environment (Pallof & Pratt 2001:43). Masiello *et al.* (2005:173) also reminds facilitators of the need to “assist those students who are still resistant to using technology and have difficulties in adapting to a more active and independent method of learning”.

As some students did not have access to a personal computer and the Internet at home (Masiello *et al.* 2005:178) it prevented them from participating during the evenings and over weekends (Browne 2003:256). Since the students were completely dependent on technology to complete the collaborative assignment (no face-to-face discussions were allowed), they quickly realised how difficult it was to solve problems and clarify issues through an asynchronous discussion.

Reality

Any facilitator/designer wants to create an ideal environment for online collaboration, but reality will (in most cases) prevent him/her from achieving an idyllic vision. While most students prefer to select their own group members, others might not even be prepared to collaborate in order to learn (Browne 2003:247). Just as there will always be some students who are more active than others (Masiello *et al.* 2005:177), there will also be students who do not keep to deadlines. It is also unlikely that all (most) students will prepare before participating in an online discussion or attending a face-to-face session. Another hampering factor is the duration of the module. Due to tight timelines there might not be enough time to engage the students in repeated collaborative activities during the semester as students need time to adapt to the online environment (Browne 2003:254). They also need to be provided

with more opportunities to practice their online collaboration and interaction skills (Macdonald 2003:378).

It has become clear that in dealing with the perception and attitude constraints, the facilitator will need to convince students that their preconceptions are not necessarily true. He/she also has to devise ways to motivate the students and help them develop more positive attitudes towards online collaboration. It has also become apparent that students need guidance and opportunities to develop and improve their collaborative skills and knowledge. Failure to address the skills/knowledge constraint will undoubtedly result in students not possessing the necessary skills/knowledge to successfully participate in and complete an online collaborative activity. The technology and reality constraints will be the most difficult to deal with as many of the issues listed can be considered “facts”. Therefore, in most cases, these issues are not likely to change in the near future (if ever) and course facilitators will need to design (redesign) their course/online activities bearing these constraints in mind.

6.3.2 Context specific constraints

In the context of online/blended learning in an undergraduate IT module at the UFS, the following constraints were identified:

- With only 13% of the students being English mother tongue speakers, the majority of students might find it difficult to use English as online communication medium.
- Low credit value modules, like RIS222 (with 8 credits), are sometimes regarded as "less important"/"unimportant" by the students. They therefore often assume that such modules can be passed without putting much effort into it.
- Due to various reasons (personal, financial, administrative, etc.) some students will only start to attend classes or go “online” a week or two after the commencement of the module.

- Face-to-face contact time for RIS222 is only 50 minutes per student per week. Very limited time is therefore available in which to cover a huge amount of content.
- Very few students make use of the scheduled computer laboratory time (three hours per week for each undergraduate IT student).
- Students do not have unlimited, free Internet access and are therefore reluctant, even unwilling, to engage in any assignment activity that requires them to “surf” the web.
- Due to the parallel-medium language approach followed at the UFS, students from the different class groups (Afrikaans and English) never get the opportunity to interact face-to-face. This situation can be regarded as an undesirable segregation of cultural groups.
- Due to timetable clashes some students are unable to attend any of the scheduled contact sessions. They therefore have to miss another subject’s class if they want to attend one of the RIS222 contact sessions.

It will certainly be a challenge in itself to try and address all of the abovementioned constraints in the revised plan.

6.4 Resource analysis

Resources can be regarded as a key ingredient for the successful completion of any project. In applying the figure eight model, the resource inventory (see Figure 2) will include people, materials, financial and physical resources and the personal qualities of the researcher (Passfield 2004:22). This resource inventory will not only include/identify currently available resources but also any additional resources which might be needed.

The first human resource available in this project is the researcher with her knowledge, experience, personal attributes and also the initiatives to improve her practice. Within this project the careful observations, journal keeping and deliberate efforts to implement and evaluate new practices can be regarded as a key resource

on the way to better blended learning practices. The researcher is furthermore surrounded by colleagues in her department and on her campus and has access to peers at other institutions, nationally and internationally, with whom she can share her understandings and who will be willing to disclose their personal experiences in the field of e-learning. Within this study regional, national and international attendance of conferences can add to insights, while the new information and communication technologies bring the world into the studying environment of every researcher. The planned evaluation of the findings of this study by specialists in the field at other institutions in South Africa will provide yet another valuable resource available to the project.

Of equal importance are the students with their personal attributes, prior knowledge and experience, their natural feeling for either better or less successful teaching practices, and their youth and energy. In total they present a powerful resource to exploit in any search for improved academic practice, with special acknowledgement of their ability to critically evaluate that practice. In the group setup the latent group synergy can become an even more powerful resource, if handled correctly and sensitively. In this study the contributions of the student resource play a very important role. In the context analysis, and specifically in the expectation surveys and SWOT analyses, it has already been shown how valuable their inputs can be. In the next phase, the search for improved practice, the students' suggestions provide further authority and legitimacy to the findings.

The (un)availability of special financial resources or earmarked funding has played no direct role in the execution of this study. This resource can mainly be linked to the reality that students already find themselves at a university and do have some funding to pursue their studies. The availability of materials and physical resources, which relate to financial resources, is another key ingredient in the resource package of this project. The computer, together with infrastructure and other available technology, is the physical resource determinant and unobtrusive focus in the study. Everything centres on how the technology can be best utilised to improve teaching and learning practices in higher education. In this project access to computers takes place from students' homes and/or from computer laboratories on campus. Not every student has access to a computer (and the Internet) at home, but all can make use

of the three hours of laboratory time per week at their disposal, or visit any of the other "open" computer labs on campus. (These "open" computer labs are available for use by all UFS students). WebCT, the RIS course design and the learning materials made available are also important resources in the project. In addition to the campus library and other university structures and infrastructure, students have access to the vast resources of the Internet for utilisation in projects. Similarly, the researcher has access to a multitude of documents from real and virtual libraries. The possibility of incorporating the research findings of technology-focused projects undertaken all over the world can be regarded as a major resource in any project undertaken in the 21st century.

A resource analysis such as this one can provide exciting evidence of how much a project has at its disposal in the pursuit of its goals, often without realising it. It provides more evidence of the value of the application of a process model in the planning/re-planning of a research project. The statement of the improved vision and measures to enrich the current practice which are described in the next sections, provide further evidence of this.

7. REVISED VISION

It is clear that some aspects of the initial vision will be very difficult or even impossible to achieve. The following, more realistic vision might be more attainable:

It is the end of the second week of the RIS222 module. All students have at least been in contact with the facilitator (either at the face-to-face introduction session or through online communication on WebCT). The first week was used to introduce the students to their group members and help them prepare for their first collaborative activity. Although the facilitator was in charge of the group allocation process, care was taken to ensure that all students are satisfied with the allocation. Each group has already had an opportunity (face to face) to discuss the assignment, clarify assignment specifications with the facilitator and devise a group strategy for the first assignment. The students are familiar with the LMS environment and have already participated in a series of small assessment activities which were designed to help with the

development of their group/collaborative skills. All groups are highly motivated and they realise the importance of keeping to deadlines and adhering to assignment specifications. The group members have also agreed to keep encouraging each other to help ensure that each group member becomes an active participant. Each group is on the road of becoming a very interactive and successful learning community.

The lecturer plays the role of an active facilitator. In addition to monitoring the groups and providing feedback, she is prepared to guide the individual students and the groups in mastering the learning content and becoming active participants in their own and the groups' learning experiences.

This adapted vision becomes the springboard in the planning for improved practice.

8. PLANNING FOR IMPROVED PRACTICE

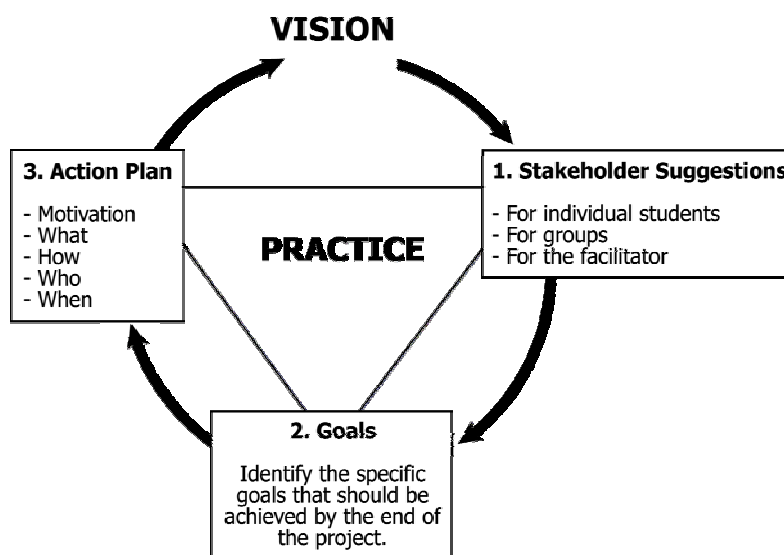
The third major component of the figure eight model is practice (see Figure 1a). In discussing the original model, Zuber-Skerritt (2002:146) describes the practice component as “*Planning for improved practice*”. The stages involved include an analysis of the situation and the thematic concern followed by discussions of and agreement on the aims, objectives, desired outcomes, outcome measures, action plan and evaluation strategies to be used.

In the adapted model (see Figure 1b) some of the abovementioned stages were combined while others were regarded as of lesser importance in the current project and were therefore eliminated. It was also deemed necessary to add an additional stage to make provision for the incorporation of stakeholder suggestions for improved practice into the model. As a result the practice component of the modified model (as illustrated in Figure 3) consists of three main stages – referred to as the Practice Triangle.

In discussing the application of the adapted figure eight model, the planning for the improved practice component is presented in the following three stages as illustrated in Figure 3:

- Suggestions from the major stakeholders (the students).
- Main goals and objectives of the project.
- Action plans for the next (third) research cycle.

Figure 3 – Practice Component



8.1 Stakeholder suggestions

As already indicated, the students can be regarded as the main stakeholders in this project. The suggestions made by them in the reflective phase of the first two action inquiry cycles on how future collaborative assignments could be enhanced, can undoubtedly be regarded as suggestions for improved practice.

After the completion of an extensive qualitative analysis, the students' suggestions were grouped into three categories: suggestions for individuals, suggestions for the group and suggestions for the course facilitator. The main suggestions in each category are listed in Table 2.

It is interesting to note that most of the suggestions listed in Table 2 address the weaknesses and threats identified during the SWOT analysis of the current approach (compare Table 1). Some of the main suggestions are discussed in more detail

below. Where deemed necessary, quotes from the students' suggestions are included.

Table 2: Students' suggestions for future collaborative assignments

For individual students	For the course facilitator
<ul style="list-style-type: none"> • Regular participation. • Preparation in advance. • Individual responsibility. • Patience with asynchronous environment. • Confidence to speak up and ask for help. 	<ul style="list-style-type: none"> • Facilitator to be more "visible" online. • Individual feedback to groups. • Students to be involved in group allocation. • Initiatives to increase participation. • Orientation session on the use of discussion forums. • More in-class discussions of the assignment. • Opportunity for peer evaluation.
For the group	
<ul style="list-style-type: none"> • Regular, improved online communication sessions. • Scheduling of face-to-face meetings. • Scheduling of synchronous online meetings. • Development of a group strategy. • Learning from mistakes. 	

8.1.1 Suggestions for individual students

According to the students, many of the problems they experienced with the collaborative assignment could have been avoided if all students had visited the WebCT course site on a regular basis. They felt that, due to the limited time available to complete the assignment, it was crucial that students should start to "communicate" with their groups as soon as possible. Most students were reluctant to specify precisely how often a student should visit WebCT. Timeframes such as "as much as possible", "often" and "regularly" were used. But there were students who suggested more specific timeframes such as "once a week", "twice a week" and "once a day". One student suggested that there should be a minimum number of required discussion postings per student for each assignment as he was of the opinion that such a drastic measure would force the students to participate in the online discussions.

The students also felt that most of the initial confusion with the assignment could have been avoided if all group members had familiarised themselves with the assignment specifications before they engaged in their first online discussions. Another popular suggestion was that students should take responsibility for their actions and realise that they were part of a group which depended on their individual contributions. Group members were requested to play their parts, submit assignments on time and to forget about personal issues and rather focus on the job to be completed. As one student remarked:

"The crux of the matter is that at some point, all of us have to get over ourselves and try to make this collaboration a success."

The students also realised that it was not of much use to wait until after the submission date to complain about things that went wrong with the assignment:

"Students should say it loud if they are upset or have problems. Don't wait until it is too late!"

As already mentioned in the SWOT analysis (see Table 1), students were often frustrated by the asynchronous nature of the discussions and the difficulty they had to clarify group issues as a result of this. One student remarked that *"students should be patient with the new approach"* and that they should realise that the approach was being used as *"a way to improve group working skills"*.

8.1.2 Suggestions for the group

According to the students it would not be enough for individual students just to visit the WebCT course site on a regular basis – the groups also needed to schedule regular communication sessions. One student suggested that improved group communication would help the group members to show more commitment to their tasks. Another student commented that their group had a good working relationship but that a little more communication would have made it even better:

"Communication involves understanding, agreement and exchange of information. We need more of this!!"

Some students were of the opinion that it was very difficult to collaborate with people whom they had never met. Others felt that it was impossible to successfully complete such a collaborative assignment without having at least one face-to-face meeting:

"We need to be given a chance to discuss assignments offline as well. I really don't think we were able to discuss everything, especially problems, as well as we would have offline."

They suggested that each group should have at least one initial meeting. This meeting should be used for getting to know each other, allocate initial tasks, ensure that everyone knows what to do and develop a "group strategy". The students agreed that the best time for such a meeting would be during or immediately after the weekly contact session.

A few groups suggested the scheduling of a weekly synchronous group meeting. This would mean that the group members would not meet face to face but that all would agree to be online at the same time for a live chat session.

There was general consensus among the group members that they should learn from their mistakes and that they should try not to repeat the same mistakes in future assignments.

8.1.3 Suggestions for the course facilitator

The students were clearly divided into two very distinct groups when it came to the allocation of groups. The one group wanted to select their own group members while the other wanted the facilitator to make the selection. Students from the former group were of the opinion that the collaborative experience could be improved by letting students form their own groups. They wanted to be in a group with their friends as they felt that this would improve the group communication and that it would make the

scheduling of face-to-face meetings easier. They also held the view that it would be easier to solve problems if they knew their group members:

"... with strangers one is going to be rather shy to admit your problem."

Although the latter group of students agreed that the facilitator should be in charge of group allocation, they had various suggestions in this regard. They urged the facilitator not to mix students from the different contact classes into the same group. They felt that it would be much easier for them to locate their group members and to schedule meetings if they were all attending the same contact session. One student suggested that the facilitator should announce the groups during the contact session. The group members should then get the chance to have a face-to-face meeting during the class to get to know each other and to discuss the assignment. However, there were a few students who liked the idea of never having to meet their fellow group members face-to-face and therefore wanted the facilitator to keep the group allocation process the same.

The students also felt very strongly about the possibility that inactive group members should receive some kind of "punishment" for not participating in the group discussions. Two students in fact suggested that perpetrators should be "kicked off the course". Another student wanted the facilitator to intervene in situations where communication was non-existent. Some students urged the facilitator to increase the weight of a student's level of participation in the grading of assignments. There were also students who felt that the facilitator should visit the discussion forums more "visibly" and provide regular feedback on the group's progress. They were of the opinion that inactive students might be more active if they knew/saw that the facilitator was "listening in" to their online conversations.

The students also had various ideas on how the facilitator could get the students to participate more actively in the group discussions. Ideas ranged from a competition to identify the most active group to having groups present their final projects during a face-to-face session.

Although it might not be possible to incorporate all of the abovementioned suggestions into the intended action plan, some of the suggestions indeed have the potential to increase student participation and consequently improve the collaborative experience for the students.

8.2 Main goals

The second stage in applying the practice component of the model (see Figure 3), is to evaluate the project's strategic visions and the stakeholder suggestions, and identify the specific goals that should be achieved by the end of the project (Passfield 2004:28). Although the revised vision might only be achieved in time, the following goals are implicated:

- To make the students enthusiastic about the module content, collaboration and blended learning.
- To consider/consult students during group allocation.
- To improve group communication and functioning (face-to-face and online; synchronous and asynchronous).
- To persuade students to do proper planning before attempting/engaging in a collaborative activity.
- To persuade all group members to commit themselves to a set of rules for all group activities.
- To “enforce”/increase student participation.
- To persuade more students to attend the face-to-face sessions.
- To devise measures of dealing with inactive group members.
- To provide students with repeated opportunities to engage in collaboration.
- To have an active facilitator who is committed to regular participation and providing constant support and feedback to individuals and groups.

Identifying these objectives/goals allows the researcher to focus the project and allows her to start thinking about how the current practice can be improved/changed/modified/adapted to incorporate these goals.

8.3 Action plan

The third and final step in the practice component of the model is to devise an action plan (see Figure 3). Passfield (2004:33) suggests that the action planning should be used to convert goals and expected key results into a detailed plan of action. According to Zuber-Skerritt (2002:146) the action plan should describe the actions to be taken, by whom, how and when. With reference to this project, the action plan indicates which steps (or actions) should be taken in future projects to enhance collaboration among the students. Care was taken to ensure that the enhanced collaborative strategy would be designed around the current strengths while improvising attractive defensive moves to improve the weaknesses concerned and lessen the impact of the threats – as identified in the SWOT analysis (see Table 1). The resulting action plan is presented as six separate actions. The motivation for the various actions is followed by a summarised table of actions (see Table 3).

Action 1: Prepare students for collaboration

Undergraduate students at the UFS do not have much experience with collaboration and are in most cases not even aware of the positive impact collaboration can have on their learning experience. Students need to be prepared to work in groups (Taylor 2005:30). They need to be made aware of the strengths and opportunities of collaboration and how it can help to enhance their learning experience. They also need to learn how to interact online with their peers (Macdonald 2003:383). A face-to-face contact session is the ideal place for such an orientation session (Fisher 2003). The facilitator will have the opportunity to welcome and encourage the students (Kelly 2004:55); guide the groups on how to approach the assignment; get rid of student preconceptions (Roby 2005:4); address the lack of appropriate attitude among students (Lim 2004:20); emphasise certain aspects that need to be considered; provide a clear explanation of expectations (ethics, behaviour, etc.) (Weaver 2005:4); and explain the assessment strategy

(Fisher 2003:242) that will be used for assessing the project outcome(s) as well as the students' collaboration effort. Not only should the students know how each learning outcome will be assessed, but also what weight their individual contributions and collaborative efforts will contribute towards the final mark (Macdonald 2003:390). Once the students are prepared for group work, the orientation session (or a separate face-to-face session) can be used to allocate the groups and give the students the opportunity to meet their group members face to face.

Action 2: Draw up a group contract

Many of the weaknesses and threats identified (see SWOT analysis in Table 2) could have been eliminated if the groups had done proper planning (Macdonald 2003:383) and if all the students had committed themselves to prompt and regular online participation (Kelly 2004:54). It is suggested that the groups make use of a face-to-face session to discuss the assignment specifications, assign roles to members, plan their approach, establish group rules for frequency of communication and conflict management, and agree on group deadlines (Conrad & Donaldson 2004:66; DiRamio 2005:6; Betz 2005:4). Once they have devised a group strategy it should be set up in writing. In order to assist the groups with their strategic planning they can be provided with a standard group contract (template) which can be changed/modified/personalised as deemed necessary. In addition the completed contract could also be submitted to the facilitator for comments and suggestions. Once the group contract is finalised it should be signed by all group members and the facilitator. This group contract, as suggested by Browne (2003:255), can serve as an agreement between the group members and should also indicate what is expected of each group member with regard to active participation and individual responsibility. This contract may not only help to stimulate group activity and motivation, but also to increase the group members' level of commitment to the assignment.

Action 3: Help students acquire the necessary e-knowledge

Although various actions are necessary to improve the online communication/collaboration in a group, it is crucial that the group members

are familiar with the online environment and the working thereof (Siemens 2002). Even if a student is willing to be an active online participant, he/she might be unable to actively participate online if he/she does not understand (for example) the working of an online discussion forum or chat room. The students therefore need to be prepared for participation in an online "society" (Daradoumis & Xhafa 2005:218). Macdonald (2003:390) also emphasises the importance of including the practice of such skills into an assessment activity. It is therefore suggested that students are given a "live" demonstration of the various e-learning tools that they are expected to use as part of a collaborative activity (Lim 2004:18). This demonstration session can be conducted as a separate session in a computer laboratory or it could be combined with/included in the face-to-face orientation session described in Action 1. Afterwards the students can be given small "introductory" assignments where they are required to use each of the demonstrated e-learning tools. This "practice run" will provide them with an opportunity to practice their e-skills before they start with a larger collaborative activity (Jackson 2005:8). It could also help to give the groups some practice in interacting/collaborating online. (Experience has shown that "computer literate" students who are unfamiliar with the online environment should be given at least one or two weeks to complete these "introductory" assignments).

Action 4: Provide opportunities for the development of group/collaborative skills

As mentioned before, many undergraduate students lack the necessary skills needed to be successful in a collaborative environment. Johnson, Johnson and Holubec (1994:6) mention that "placing socially unskilled individuals in a group and telling them to cooperate does not guarantee that they will be able to do so effectively. Skills such as leadership, decision making, trust-building, communication, and conflict management must be taught just as purposefully and precisely as academic skills." Students therefore need to learn how to collaborate. Roby (2005:4) suggests that students should also be provided with information and tips on how to interact with classmates, how to criticise constructively, how to divide and assume responsibilities, how to organise

their work, and how to manage their time. It is also vital to guide students on how to produce an end product which is "seamlessly representative" of the group's collaborative efforts.

As a result of time restrictions in many courses, students are often provided with limited opportunities to develop the skills necessary to be successful in a collaborative environment. Macdonald (2003:390) suggests the use of a series of linked assessments/assignments to provide for gradual development of skills over the course. Roby (2005:4) also emphasises that the initial amount of collaboration should be manageable. If the class size and classroom arrangement allow it, group members can also be seated together during face-to-face sessions. As many students – especially introverts and students of non-Western cultures – tend to be reluctant to engage in face-to-face discussions with the facilitator (Lake 1999:17), they will be given the opportunity to participate in small group discussions or group tasks during the face-to-face sessions. Although these discussions/tasks will relate to the class topic and not necessarily to a specific collaborative assignment, students will receive more opportunities to interact with their group members, practise their collaboration/interaction skills and learn from their mistakes. This engagement can further assist the groups to form a learning community (Pallof & Pratt 2001:33), which is likely to improve their online collaboration skills. It is also anticipated that this seating arrangement might help to motivate students to attend the face-to-face sessions more regularly. DiRamio (2005:6) also argues that as soon as students are engaged and there is a sense of community, it is more likely that learning will take place.

Action 5: Active facilitation

There are various actions the facilitator can take in an attempt to enhance the collaborative experience for the students. According to Daradoumis and Xhafa (2005:221), the specific roles and the means the facilitator has to take in guiding the learning process of the students are fundamental to the success of any collaborative learning process. The facilitator's first role will be to ensure that the students are motivated, prepared for the collaboration, and able to work through the activities themselves (Lim 2004:22). The second role

will be to design/employ strategies and techniques for establishing and maintaining groups (and hopefully learning communities) among the students (Taylor 2005:31). Although the group allocation strategy is likely to be determined by the nature of the collaborative assignment, it is vital that students are consulted during this process. Groups should be allocated as soon as possible and, if possible, kept the same throughout the course (Roby 2005:4). It should also be noted that small groups (three to six members) tend to be easier to manage and students are more likely to affect each other (Strijbos, Martens & Jochems 2004:414). As additional motivation for groups, the group which achieves the highest marks for the collaborative activity could be given the opportunity to present its end-product to the whole class.

The third role in the active facilitation process will be to support the students during the collaborative effort. According to Elearnspace (2002) students perform at their best when "given control of the experience, under the guidance and direction of a skilled facilitator". The facilitator should therefore try to make it easier for the groups to do their work (Dempster 2004). The facilitator's supporting role should include: Responding to concerns and questions in a timely manner (Elearnspace 2002); encouraging students to share their ideas and experiences; sharing ways of thinking about problems and problem-solving with students (DiRamio 2005:2); arbitrating disputes (Elearnspace 2002); ensuring that participation is appropriate and balanced; encouraging critical thinking and reflection during interactions (Siemens 2002; Dempster 2004); keeping the discussions focused; and drawing conclusions and providing content expertise (Lim 2004:23). According to Siemens (2002) this kind of active support will also help to let students know that the facilitator is accessible. In a blended learning environment the facilitator also has the added opportunity to devote a part of each face-to-face session to discussing and answering of questions regarding the collaborative assignment.

Action 6: Regular assessment and feedback

It is crucial that individual students and groups are assessed formatively and summatively at regular intervals during the semester (Roby 2005:5; Jackson 2005:8). By receiving plenty of constructive feedback the students will not only

receive some indication of their progress but the groups will also get some indication of what they can do to improve collaboration within the group. Face-to-face contact sessions can also be used to deliver general feedback to the whole class.

When it comes to the grading of collaborative activities, it is often difficult to determine the extent of an individual's contribution towards the final deliverables. As the group members are normally the best informed about each individual's contribution, they should be given the opportunity to do a peer evaluation of their group members' contributions. This mark could also contribute towards a student's final mark for the activity. In cases where all the group communication takes place online, the facilitator could work through the transcripts of the online discussions in order to get an idea on how students arrived at the final product (Taylor 2005:37) and what contribution each of the individuals made towards it.

Siemens (2002) stresses the importance of receiving student feedback on collaborative activities. Such reflections can be very valuable for the continuous enhancement of collaborative activities (Lim 2004:23; Roby 2005:5). This has also become evident from the stakeholder (student) reflections and suggestions that were analysed during the application of the process model.

The actions suggested in the discussion of the action plan are summarised in Table 3 since the figure eight model requires a clear indication of the what, how, who and when of the action plan (Zuber-Skerritt 2002:146).

The value of displaying the action plans in the format of a table is self-explanatory. It provides clarity on all the steps needed to implement the revised strategies. It also provides a "wholeness" to all the discussions in the article. It brings the researcher to a point where she feels ready for continuing on a new cycle of action, observation and reflection, up to the point where the figure eight model needs yet further adaptation to her vision for creating effective and meaningful learning experiences in the blended learning environment. But the most important is that she has realised

that she is not alone; she has a multitude of resources at her disposal. Her carefully developed action plans can be submitted to colleagues and peers for scrutiny; but in the final instance the students will always be there to assist in the crucial phase of reflection upon action.

Table 3 – Summary of action plans

What? (Action)	How?	Who?	When?
Student preparation	<ul style="list-style-type: none"> • Encouragement. • Awareness. • Motivation. • Expectations. • Dealing with attitudes and preconceptions. 	<ul style="list-style-type: none"> • Facilitator. 	During a face-to-face orientation session at the beginning of the semester.
Group contract	<ul style="list-style-type: none"> • Group discussions and planning. 	<ul style="list-style-type: none"> • Students with guidance from facilitator. 	During a contact session as soon as groups have been allocated.
Acquisition of e-knowledge	<ul style="list-style-type: none"> • "Live" demonstrations in the use of various e-learning tools. • Opportunities to practice use of LMS and e-learning tools. 	<ul style="list-style-type: none"> • Facilitator with demonstrations. • Students through "practice run". 	During a contact session before the first collaborative assignment is made available.
Development group/collaboration skills	<ul style="list-style-type: none"> • Provide guidance on how to function as part of a group. • Gradual development of skills. • Group members to sit together during face-to-face sessions. 	<ul style="list-style-type: none"> • Guidance from facilitator. • Students as participants in activities. 	Face-to-face and online as soon as students are more comfortable with the online environment.
Active facilitation	<ul style="list-style-type: none"> • Prepare students for collaboration. • Establish and maintain groups. • Constant support to students. 	<ul style="list-style-type: none"> • Facilitator. 	Preparation and group allocation at the beginning of the semester. Support for the duration of collaboration.
Regular assessment and feedback	<ul style="list-style-type: none"> • Regular formative and summative assessment. • Grading level of participation. • Opportunities for peer evaluation. • Reflections after collaboration. 	<ul style="list-style-type: none"> • Facilitator. • Students through their peer evaluation and reflections. 	During and after collaboration.

9. CONCLUSION

The purpose of this article has firstly been to illustrate how a process planning model can be effectively adapted and applied during the re-planning phase of an action inquiry project. The author specifically explains the rationale behind the introduction of each stage of the model. This is followed by an exposition of how her experiences and findings in the study relate to each stage of the process. Gradual understanding of the complexity of the situation develops and almost brings despair about the situation. But the perseverance of the researcher (as key human resource), the incorporation of student contributions (as another strong human resource), and experiences gained in related research (literature as resource), lead to the recognition of possible solutions to many of the problems and constraints identified. At the same time the second purpose of the article is achieved, namely to take the reader through the process of devising action plans for future collaborative learning that could enhance the students' learning experiences in the specific blended learning environment.

What has transpired is that the incorporation of student feedback in particular can lead to a better understanding of the nature of the problems experienced in an academic setting. Many of the solutions suggested by the students have shown remarkable correspondence to the recommendations made in literature. The student resource is within reach of every facilitator in a higher education classroom. What is needed is deliberate efforts to research the classroom environment and exploit the multitude of resources available. The value of action research as method of inquiry in such efforts is indisputable, and even more so the potential of blended learning to introduce the student of today to the interaction and collaboration needed to be successful in both the real and the virtual world of tomorrow.

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ESTABLISHING A FRAMEWORK FOR MEANINGFUL BLENDED LEARNING PRACTICES IN THE UNDERGRADUATE CLASSROOM: A SOUTH AFRICAN PERSPECTIVE

Abstract

At the University of the Free State (UFS) blended learning (a combination of face-to-face and online modes of delivery) is regarded as a relatively new practice with possibilities of addressing many of the context-specific teaching and learning problems at the institution. During the planning phase for the third cycle of an action inquiry project the researcher decided to subject some of the multitude of findings, gathered over the first two cycles, to scrutiny by fellow online/blended learning facilitators/designers/researchers at other higher education institutions in South Africa. She hoped that sharing experiences would not only broaden her own insights, but would also lead to “informed” agreement on at least some practices in which blended learning in either her own or the broader higher education environment could be enhanced. In this article the findings of the inter-institutional opinion survey are presented and analysed. The researcher also makes use of various “agreed upon” learning principles to develop a preliminary framework for meaningful blended learning which could serve as a springboard (and also hypotheses) for further investigation.

1. INTRODUCTION

In the new, technologically advanced higher education environment interest in blended learning has dramatically escalated since the beginning of the 21st century. The blended learning mode, in its simplest form, is a combination of face-to-face and computer-supported or online education in order to encompass a much richer set of learning strategies (Osguthorpe & Graham 2003:228; Kerres & De Witt 2003:101). The aim of blended learning is basically to join the best of classroom or face-to-face learning with the best of online learning: “When the two are thoughtfully integrated,

the educational possibilities are multiplied” (RIT 2005). Alonso, Lopez, Manrique and Vines (2005:234) point out that several authors have found that a blended approach is the “most efficient teaching model”. Various institutions in the United States, such as Stanford University and the University of Tennessee, have reported a significant increase in student throughput after the introduction of blended learning into some of their courses (Singh 2003:53). In the bi-annual report of the Rochester Institute of Technology (RIT 2005) research data are provided to emphasise the advantages that the shift to blended learning has brought the institution. In this report faculty members, for example, are cited who mentioned that what “worked best” in their blended courses were the good group activities; the improved contact between students and facilitators; the immediate feedback which could be provided to students; and the enhancement of the actual time spent on in-class teaching (RIT 2005:3).

As blended learning is only starting to evolve, one is not surprised that little formal research exists on the construction of the most effective blended learning practices in a higher education classroom. The same applies to the University of the Free State (UFS), where blended learning is regarded as a relatively new practice with possibilities for addressing many of the teaching and learning problems at the institution. In this regard one can refer to problems such as the diverse student population from different socio-economic backgrounds; large classes; inadequate preparation of students for higher education; the continuation of some of the inequalities of the past; and some students' lack of technological skills. In addition, the policy of parallel-medium instruction demands creative ways of dealing with the challenges of executing such a policy. It is therefore realistic to look at ways in which the face-to-face mode (which students expect and are used to) can be effectively combined with new technologies. The question thus arises: *How does one create meaningful/effective blended learning practices in undergraduate education taking into account a context such as that of the UFS?*

As point of departure, any search for effective blended learning practices in undergraduate education can always make fruitful use of the Seven Principles of Good Practice for Undergraduate Education (Chickering & Gamson 1987). These principles have also been adapted for electronic learning by Chickering and

Ehrmann (1996) and emphasise that technology can support any given instructional strategy. However, care has to be taken to ensure that the best and most appropriate technology is selected. In summary, these relatively well-exploited principles indicate that good practice encourages student-tutor contact; give prompt feedback; uses active learning strategies; develops cooperation among students; emphasises time on task; communicates high expectations; and respects diverse talents and ways of learning (Chickering & Ehrmann 1996).

Khan's Octagonal Framework (Khan 2001) provides another useful theoretical point of departure in pursuit of providing answers to the research question. According to the framework, there are eight interrelated and interdependent dimensions that need to be addressed in order to create meaningful online learning experiences; these can also be applied to blended learning. The dimensions embrace aspects related to the institutional, management, pedagogical, technological, evaluation, resource support, interface design and ethical facets of educational delivery. The premises are that technology should be incorporated in such a way that it will not only enhance traditional face-to-face practices, but also the learner/student-experience as a whole. In fulfilling the purpose of the study, the researcher has therefore decided to focus on the following aspects/issues (which relate to several of Khan's dimensions):

- Pedagogical issues in the blended learning environment, with a special focus on online collaboration.
- Ethical issues in the blended learning experience (e.g. the occurrence of and handling of unethical behaviour such as academic dishonesty by students and the incorporation of student diversity into the blended learning environment).
- Evaluation/assessment issues when dealing with large classes in the blended learning mode.

In order to address the above issues and simultaneously improve her own practice, the researcher has embarked onto an action research project. The study has so far stretched over two full cycles of inquiry and has brought her into the planning phase of a third research cycle of plan, act, observe and reflect (Tripp 2003). During this phase the researcher decided to subject some of the multitude of findings gathered over a period of three years to scrutiny by fellow online/blended learning

facilitators/designers/researchers at other higher education institutions in South Africa. She hoped that sharing experiences would not only broaden her own insights, but would also lead to “informed” agreement on at least some practices through which blended learning in her own and possibly the broader higher education environment could be enhanced. Although such agreement would confirm the findings and thus the applicability of her findings to her own context, no actions were planned to “enforce” consensus (e.g. by employing a Delphi technique with several rounds of evaluation). The idea rather was to elicit a variety of opinions by means of an inter-institutional questionnaire survey, which would reflect the richness of experience on online/blended learning already available in South African higher education. Such a mutual search for solutions to context-specific problems could at the same time bring some understanding of the unique complexity of the specific environment and stimulate further research in this regard.

The purpose of the article can therefore be seen as threefold, as it intends to:

- present an overview of the research design and methodology employed in the study;
- present and interpret the findings of the inter-institutional opinion survey; and
- make use of “agreed upon” learning principles to develop a preliminary framework for enhanced blended learning which could serve as a springboard (and also hypotheses) for further investigation.

The discussion of the nature and findings of the questionnaire survey is preceded by a brief overview of the research design and methodology employed in the study.

2. RESEARCH DESIGN AND METHODOLOGY

This study falls within the action research paradigm. There are various definitions for action research, but all authors concur that action research concerns inquiring into one's own practice through a cyclical process which involves planning, acting, observing and reflecting (Tripp 2003). Hubball and Burt (2003) emphasise that action research is “a complex and multifaceted form of inquiry” and a “critical component of a scholarly approach to university teaching”. In such an approach the data are drawn

from multiple sources; the conclusions surface gradually over the course of the study and are regarded as most effective when the end result transpires from the data (Dick 1993, in Hall 1997).

The module (RIS222) which was selected for the inquiry is a one-semester Information Technology (IT) module on second-year level that was presented using a blended learning approach. The students had one face-to-face contact session per week while the WebCT learning management system (LMS) was used for the online delivery component. During each cycle of inquiry the students were also required to participate in one large online collaborative activity.

In the study, the data have emerged slowly over a period of almost three years and have mainly been accumulated within the RIS222 module. Data collection included multiple sources such as a comprehensive review of contemporary literature, keeping an extensive research journal, facilitator observations as well as student questionnaire surveys, reflection exercises and analyses of large amounts of student feedback. The surveys provided, among others, feedback on the students' expectations of the blended learning course, reflection on experiences with collaborative assignments, and suggestions on ways in which online collaborative learning can be enhanced. The data collection focus in this article is on the use of key findings of the inquiry in an inter-institutional opinion survey.

For purposes of the inter-institutional opinion survey a structured questionnaire was developed. The issues addressed in the questionnaire were mainly based on a set of learning principles for blended learning derived after completion of the first two cycles of the study. The researcher also included a few statements on "uncertainties" (in her own mind as well as in the literature), such as the responsibility for group allocation, the most appropriate structuring of collaborative groups, the handling of diversity in the South African/UFS context and the combating of academic dishonesty. She also put a few of her own ideas to the test (e.g. the use of pre-class worksheets and the handling of large amounts of feedback and assignments).

In order to incorporate a variety of the identified learning principles in the questionnaire, it was decided to divide the questionnaire into four main sections.

Each of these sections consisted of a lead-in paragraph (providing section-specific background information) followed by the various statements. An optional comments/suggestions space was also provided at the end of each section. The main sections were preceded by two sections; the first dealing with personal information from respondents and the second providing relevant background regarding the nature and context of the research. The four main sections requested responses to statements in the following four categories:

- Handling culturally diverse groups.
- Student attitudes and level of participation.
- Academic dishonesty.
- Communication, grading and feedback.

The statements in each of these categories related to blended learning in a South African higher education classroom, with specific reference to the UFS. Respondents were requested to rate their agreement on each of the statements on a five-point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree.

To ensure easy distribution and completion of the questionnaire the researcher decided to develop a web-based questionnaire. All responses could be captured and saved in a database, with no need for the respondents to physically return the completed questionnaire. By using the web-based format the researcher could also employ various "error-handling" techniques to ensure that the respondents had to respond to all the statements before the questionnaire would be accepted for submission.

The web-based questionnaire was developed by the researcher herself with Microsoft Visual Studio 2003, using ASP.NET (Microsoft server-side web technology), C# (a Microsoft programming language) and a Microsoft Access database. After completion, the web site was published on the UFS IT Department's web server.

Six people were invited to participate in a pilot run to test the working of the web-based questionnaire and to determine if questions were stated clearly and unambiguously. The selection of the pilot participants was based on either their involvement in online/blended learning or their technical expertise in the design and development of web sites or questionnaires. The feedback was analysed and a few minor changes were made to the structure of the questionnaire. As these participants were merely asked to test the operation of the questionnaire and provide feedback on the clarity of the statements, their responses and comments were not included in the final data analysis.

With the selection of the respondents the researcher wanted to ensure that she selected people who would be able to provide informed insights, comments and suggestions on the statements and who were familiar with the context. It was therefore decided to limit the selection to participants who satisfied both the following criteria:

- Experience of the online and/or blended learning environment.
- Employed at a South African higher education institution.

The researcher set her aim at involving at least 25 purposefully selected respondents to complete the “Blended Learning Questionnaire”. In compiling the list of possible participants the researcher studied proceedings of South African academic conferences and searched for relevant journal articles with South African authors. In employing some network sampling she also contacted colleagues at various institutions for possible references.

As participants were to be invited via e-mail, the researcher also had to get hold of the participants’ e-mail addresses. This proved to be a very time-consuming and sometimes impossible task. Through visits to the web sites of various South African higher education institutions it quickly became apparent that the web sites of most institutions were not very user-friendly. In most cases the design of the web sites made it almost impossible to find the e-mail addresses of staff members – especially if a person’s affiliated department was not known. On some web sites this information was only available on the institutional Intranet and therefore not

accessible to “outsiders”. In the end a list of 50 possible participants from 10 institutions was compiled. An individualised letter was sent to each of these identified participants. The letter served as an invitation to complete the “Blended Learning Questionnaire” and provided some background on the research project and the context in which it had been conducted. Each participant was given the Internet address (URL) of the web-based questionnaire and a unique username and password which they would need to access the web site. Respondents were informed that the questionnaire would only be available for a fixed period of eight days. During the eight-day period the goal of drawing at least 25 participants was matched with a final total of 26 respondents.

3. ANALYSIS AND DISCUSSION OF THE INTER-INSTITUTIONAL SURVEY

The questionnaire survey provided interesting and intriguing results which in many cases corresponded with either the findings of the action inquiry project and/or the literature. The responses also provided a unique insight into the functioning of online/blended learning and the experiences of course facilitators and designers at other South African higher education institutions. It was decided to group the discussion of results and findings according to the different sections of the questionnaire. In discussing the responses to the provided statements, the results are presented in a table format. Each table indicates the percentage of respondents who chose responses in the disagree/strongly disagree, no strong feeling and agree/strongly agree categories. The mean and standard deviation (s) for each statement are also indicated.

3.1 Profile of respondents

The respondents represented nine higher education institutions (see Figure 1) while their experience with online/blended learning ranged from one to ten years. Most of the respondents (60%) indicated that they were fulfilling more than one role with regard to online/blended learning at their institutions. Of the 26 respondents, 68% indicated that they were at that stage involved in facilitation while 60% indicated that they were involved in the designing of web-based course material. Figure 2 provides

a graphic representation of the roles fulfilled by the participants. The “other” roles depicted included research, staff development and technical assistance.

Figure 1 – Affiliation of respondents

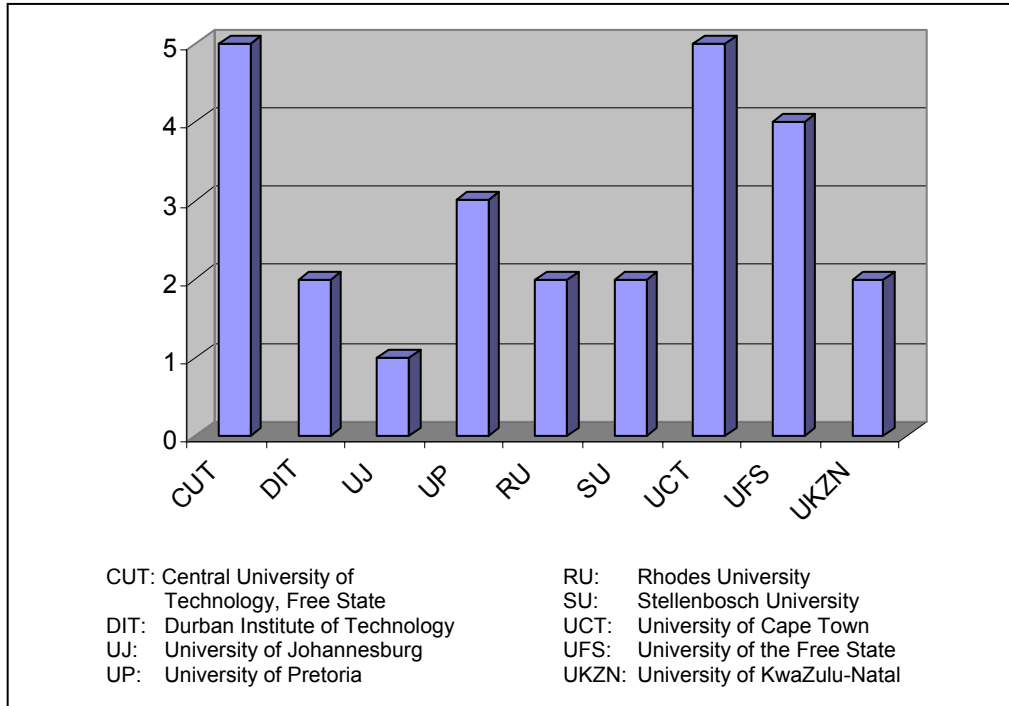
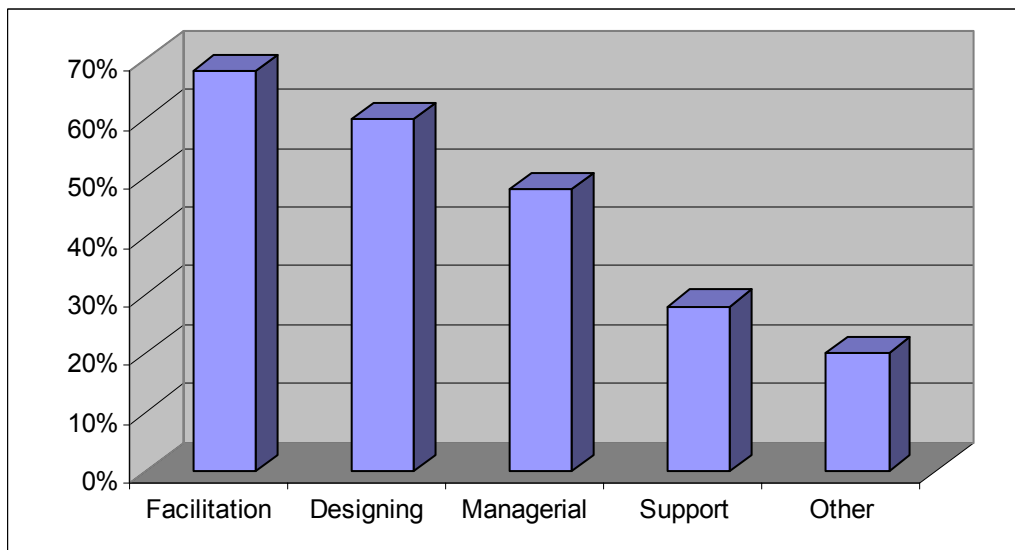


Figure 2 – Roles fulfilled by respondents



In the descriptions of their experience, four of the respondents also indicated that they were part of the original “teams” who initiated online/blended/e-learning at their institutions.

3.2 Handling culturally diverse groups

As is the case with most South African universities, the UFS has an extremely diverse student population with students coming from various socio-economic backgrounds and having very different educational needs. In addition, the UFS has implemented a demanding policy of parallel-medium instruction. By including the “Culturally diverse groups” section in the questionnaire, the researcher hoped to gain insights into how the issue of cultural diversity is dealt with in collaborative activities at other South African higher education institutions and whether (and how) blended learning could help to address the issue.

During the first two cycles of inquiry in the project, it became apparent that students preferred to collaborate with students from the same cultural background. Lanham and Zhou (2003:283) attribute this tendency to the fact that students prefer to be paired with other students who hold similar opinions, values and ethical beliefs. Ahles and Bosworth (2004:57), however, advise facilitators to “actively discourage students from assembling a... team based upon inconsequential factors such as who their friends are or geographical proximity”. They suggest that facilitators should rather encourage and guide students to assemble a group where the group members have “shared goals and standards of excellence, as well as a complementary set of skills”.

Group allocation

In the survey the respondents were rather divided on the issue of the preferred profile of group members for collaborative work (mean = 3.32, s = 1.28) (see Statement 3.2 in Table 1). With 48% of the group indicating agreement with the statement that groups should be “as heterogeneous as possible”, the sentiment might have been on the side of more diverse groupings. Very similar findings (mean = 3.32; s = 1.23; 48% agreement) were obtained on Statement 3.1 in Table 1, i.e. whether the facilitator should be in charge of group allocation. Some respondents, obviously drawing from their own experiences, mentioned that groups tended to function better if the students themselves organised the groups. It was also indicated that the facilitator might sometimes need to intervene in groupings or make

suggestions – especially in situations where the facilitator wants students to be exposed to new group members. Although experience and research have shown that students from the same language groups tend to group together automatically, one respondent made the very important comment that commonality of race and/or language within a group would not necessarily ensure the successful functioning of that group. It was also suggested that groups should consist of both known and unknown “elements”. One might draw the conclusion that the extent of the facilitator’s involvement in group allocation should be determined by the context and nature of the collaborative activity.

Table 1 – Summary of responses on culturally diverse groups

Statements	Responses				
	Disagree/ Strongly disagree	No strong feeling	Agree/ Strongly agree	Mean (n = 26)	s
3.1 Group allocation should be done by the facilitator.	20%	32%	48%	3.24	1.23
3.2 Groups should be as heterogeneous as possible.	24%	28%	48%	3.32	1.28
3.3 Groups should only communicate online.	64%	12%	24%	2.36	1.32
3.4 Face-to-face contact may counteract some of the disadvantages of the online environment.	12%	4%	84%	4.20	1.12
3.5 Group members should sit together during contact classes in order to strengthen the development of learning communities.	12%	48%	40%	3.40	1.12
3.6 Inter-group activities may counteract the negative effect of segregation caused by assigning students to same-language groups.	8%	24%	68%	3.76	0.97
3.7 The online environment provides opportunities to all students to communicate/use their preferred language (either English or Afrikaans).	24%	20%	56%	3.40	1.38
3.8 The facilitator needs to create awareness amongst students regarding the implications of the institutional language policy.	16%	16%	68%	3.68	1.18
3.9 Where students are unfamiliar with the online environment they should be given repeated opportunities to practise the use of the various e-learning tools.	8%	8%	84%	4.28	0.94

Blended approach

As mentioned before, blended learning in the context of this study refers to the combination of face-to-face and online modes with the aim to find the ideal

mix. As 84% of the respondents agreed/strongly agreed that face-to-face contact may counteract some of the disadvantages of the online environment (Statement 3.4: mean 4.20; $s = 1.12$), this might serve as an indication that a blended approach to collaboration could offer numerous advantages. However, these advantages are unlikely to be realised if the students are not familiar with the online environment (Pallof & Pratt 2001:30). In this regard 84% of the respondents agreed/strongly agreed that students should be taught and provided with repeated opportunities to practise the use of the various e-learning tools available in the chosen LMS (Statement 3.9: mean = 4.28; $s = 0.94$). The year level and prior relevant experience of a group of students would be a determining factor in the amount of time spent on assisting the students in this regard. It was also emphasised that this practice opportunity should take place in a "safe, non-assessed and less formal space" before the students engage in their first collaboration activity.

With regard to the seating arrangements during contact classes (Statement 3.5), 48% of the respondents had no strong feeling in this regard. As this suggestion was put forth by the researcher after reflecting on the two completed cycles of inquiry, it is understandable that not everyone was convinced of the advantage of such an arrangement. The fact that 40% of the respondents selected an agree/strongly agree response is an indication that some respondents were of the opinion that such an approach could possibly help to strengthen the development of learning communities. Further investigation is needed to determine whether or not it would be attainable in a real-life class situation.

The respondents expressed relatively strong disagreement with the statement that groups should only communicate online (Statement 3.3: mean 2.36; $s = 1.32$: 64% disagree/strongly disagree), which further suggested that a blended approach to collaboration might be more suitable. One respondent mentioned that he would be somewhat concerned at any efforts aimed at forcing particular behaviours by students as the students would "probably end up doing what they feel most comfortable with".

Language issues

The statements on language showed a relatively high measure of agreement among respondents. A two-thirds majority (68%) agreed/strongly agreed that inter-group activities might counteract the negative effect of segregation caused by same-language groups (Statement 3.6), and similarly, that the facilitator needed to create awareness amongst students regarding the implications of the institutional language policy (Statement 3.8). A somewhat lower percentage of 56% showed agreement with the statement that the online environment provides opportunities to students to communicate in their preferred language (English or Afrikaans) (Statement 3.7).

The extent of disagreement with these three statements, although relatively low (ranging from 8% to 24%) may be attributed to the fact that many of the respondents are affiliated with institutions where English is the only medium of instruction; it is understandable that some of them might not have realised the extent of problems experienced in a dual-language environment. For example: Due to the parallel-medium language policy at the UFS all undergraduate classes are presented in both English and Afrikaans and students from the various classes hardly ever get the opportunity to interact with each other. It is possible that the online environment might not be the best "tool" for actually solving the language problem as students still need to use a "common" language (which is likely to be English) if they want to communicate with each other – either face to face or online. The online environment should, however, be acknowledged for the opportunities it provides to people to work and communicate in their own languages. The UFS gives prominence in its language policy to the development of Sesotho as medium of instruction. The online environment may just prove to be the most realistic way in which the first major advances in this direction can be made.

In general the respondents mentioned that the complexity of the particular context had to be acknowledged and that each individual case needed a special "made to fit" design – there was no "one size fits all" solution. As cultural diversity tended to make collaboration even more challenging, this design would also need to evolve and it

might take “several years” to determine what worked best for a specific context. One respondent also expressed concern with the “massification of education which has turned group work assignments into a compromise to counter marking loads”. He argued that the weight assigned to such assignments either needed to be scaled down or should be primarily used for formative purposes.

As a final remark in this section, one must acknowledge the work done with regard to online collaborative learning and the overwhelming evidence of research in many parts of the world regarding the advantages of the approach (Fung 2004; Taylor 2005). There is thus more than a suggestion that such potential advantages should also be built into the blended learning environment and that it holds the potential to counteract some of our existing culturally informed biases.

3.3 Student attitudes and level of participation

After studying the student reflections from the first two cycles of inquiry it became apparent that although the students were involved in a collaborative activity, their individual feelings, attitudes and uniqueness played a major part, not only in their own performance, but also in the functioning of their groups. This section of the questionnaire focused on attempts to prepare and motivate students, and increase their level of participation in various facets of the blended learning environment.

Face-to-face orientation

The results of the inter-institutional survey indicated that 80% of the respondents agreed/strongly agreed with the idea of using a face-to-face orientation session to prepare students for collaboration (see Statement 4.1 in Table 2: mean 4.24; s = 1.09). This provides further conformity that students first need to learn how to collaborate and interact (Pallof & Pratt 2001:43; Macdonald 2003:378) before they have to engage in such an activity and that a face-to-face session is the ideal place for such an orientation (Fisher 2003). Respondents also mentioned that students needed to understand the value of online collaboration and how it relates to the course material. Several of them actually stated that there was no gain in using collaboration if it did not fit the

course/module content, whilst providing some pedagogical advantages (also see Macdonald 2003:378).

Table 2 - Summary of responses on student attitudes and level of participation

Statements	Responses				
	Disagree/ Strongly disagree	No strong feeling	Agree/ Strongly agree	Mean (n = 26)	s
4.1 A face-to-face orientation session is the ideal situation to prepare students for collaboration [i.e. to explain reasons for collaboration, prepare students on what to expect, establish rules, etc.]	8%	12%	80%	4.24	1.09
4.2 Requiring students to complete a pre-class worksheet before each contact session may help to stimulate/increase student participation/activity in the in-class discussions.	8%	36%	56%	3.68	0.90
4.3 In order to improve participation a significant portion of the marks allocated for a collaborative assignment should be awarded for each student's level of participation.	8%	20%	72%	4.00	1.08
4.4 When assignment topics appeal to the majority of a diverse student group it may help to stimulate motivation and active participation amongst individuals.	4%	8%	88%	4.20	0.76
4.5 Students will be more active if they are allowed to select their own group members.	28%	28%	44%	3.28	1.24

Assessment of collaboration

Research has shown that assessment-related activities are more appealing to students than non-assessed activities (Macdonald 2003:378; Davies, Ramsay, Lindfield & Couperthwaite 2005:624). Although the majority of the respondents (72%) agreed or strongly agreed that students should be rewarded for their level of participation (Statement 4.3: mean = 4; 8% disagreement) it was also proposed that the marks on offer should not represent “a significant portion” of the final mark (as suggested by the statement). Some of the respondents also posted a reminder that the students, in most instances, were in a better position than the facilitator to rate an individual's level of participation in a collaborative activity. Peer assessment is therefore assigned an important role in the assessment of collaborative activities.

Student motivation

In the survey 88% of the respondents agreed or strongly agreed that appealing assignment topics are more likely to stimulate motivation and active participation (Statement 4.4: mean = 4.20; s = 0.76). This provides further evidence that facilitators should take great care in the selection of topics applicable to real life situations (Fisher 2003:239). If students are in addition required to draw on their personal knowledge and experience it might also help to increase their interest in and commitment to the successful completion of a collaborative assignment.

In the action inquiry project undertaken by the researcher/facilitator, she wanted her students to realise the vastness and application possibilities of the information available on the Internet while attaining the “Internet search skills” module outcome. It was therefore decided to incorporate Internet searching/researching in the collaborative activity of both cycles of inquiry. During the first cycle of inquiry, participation in the collaborative activity required student groups to plan a three-week budget holiday abroad for one person. The collaborative activity for the second cycle centred on the compilation of a “brochure” on one of the previous Summer Olympic Games (1936-2000) covering six topics per event (one per group member). When comparing the student reflections after both activities, it was apparent that the students related better with the Olympic Games assignment. (It should be noted that the “Olympic Games” assignment took place in the two weeks before the opening of the Athens 2004 Games.) The students were much more motivated and participated more actively than with the “travel” assignment.

In the survey one respondent commented that the students’ attitudes were more likely to be dependent on how the facilitator structured the collaborative experience and not necessarily on whether or not the students chose their own group members or whether the students were motivated or not. The validity of this respondent’s conclusion is partially confirmed by the largely divided responses to Statement 4.5 which suggested that students would be more active if they were allowed to select their own group members. On this

item the responses were rather evenly distributed between the disagree (20%), no strong feeling (28%), agree (24%) and strongly agree (20%) options. There was therefore no general agreement that students would be more active if they were allowed to select their own group members. The differences in opinion were also evidenced by the largest standard deviation (1.24) in the section.

Pre-class preparation

While reflecting on the first cycle, the researcher/facilitator decided that she had to do something to persuade her students to participate more actively during the weekly contact session. She argued that if the students were better prepared for class it would help to stimulate more active in-class discussions. As the contact sessions were limited to one session of 50 minutes per student per week, she also hoped that proper preparation by students would allow her to spend less time addressing basic concepts (which the students should have been familiar with if they had prepared for class). This would also leave more time for the discussion of the more difficult concepts. The subsequent implementation of carefully designed pre-class worksheets led to surprisingly positive results; and overwhelmingly positive feedback was received from the students in their reflections. The researcher consequently decided to include one statement on the idea of pre-class worksheets in the questionnaire (see Statement 4.2 in Table 2). She was, however, aware that respondents might not have been entirely certain of how and if the use of pre-class worksheets could help to stimulate student participation in the in-class situation. The 56% agreement on the possible advantages of the approach (with only 8% disagreement), is regarded as a positive sign by the researcher. As this idea/measure was devised by the researcher herself, further investigation and more tangible evidence might be needed to completely convince the academic community of the advantages of such worksheets.

In this section of the questionnaire it has become clear that it is important to design/select assignments and discussion topics that appeal to the majority of the students – especially when dealing with a very diverse student population. When students are not interested in an assignment topic it will be so much more difficult to

motivate them and to get them to become active participants in the collaboration. The facilitator will also have to devise ways in which to address individual students' negative attitudes and make the students aware of the consequences of their inactive behaviour.

3.4 Academic dishonesty

Academic (dis)honesty seems to be one of those recurring topics in academic circles which affects all modes of learning (Varvel 2005:1). As experience has shown that the identification of academic dishonesty is in most cases a very difficult and time-consuming exercise (Ross 2005:29), it might be easier to discourage students from being dishonest. Academic dishonesty amongst students is also a problem which has taken on alarming dimensions in all the undergraduate Information Technology courses at the UFS. The level of plagiarism ranges from students handing in exact copies of each other's assignments to students who apply slight changes to the assignment of a fellow student and then submit it as their own work. There has also been one instance where two students submitted almost identical versions of the same computer program but, when confronted, refused to admit that they have worked together. After numerous attempts the two students finally admitted that both of them independently approached another (the same) student (someone who did the course on a previous occasion) who "helped" them "individually" with their assignment. Although they eventually admitted that someone else basically did the assignment for them (which is considered a serious case of academic dishonesty), they still claimed to be innocent. According to them they were being accused of helping each other which had never been the case. This example gives a clear indication of how important it is to educate students on the extent of academic dishonesty and how time-consuming and difficult it can be to prove infringements in this regard.

Student awareness

Almost all the respondents in the survey (92%; mean = 4.36; s = 0.860) agreed/strongly agreed that students should be provided with practical examples to illustrate what would be regarded as plagiarism and/or copying (see Statement 5.3 in Table 3). A comment was made that some students

cheated "without even knowing it" – especially with regard to Internet sources. In this regard it is important to note that Varvel (2005:3) considers "lack of understanding of plagiarism, copyright and/or cheating" as one of the main reasons why students cheat, while Renard (2000:38) defines a student who transgresses in this respect as someone who "has never learned how to properly use and document resources" – an "unintentional cheater". Varvel (2005:8) furthermore suggests that students firstly need to be educated that copying from the Internet is wrong. They also need clear definitions of important terms such as "attribution, citation, copyright, common knowledge, fair dealing, paraphrasing, plagiarism, and public domain" and real-life examples or demonstrations are deemed necessary. Such a demonstration of examples (as described in Statement 5.3) can therefore be considered the first and most important step in combating academic dishonesty.

Table 3 - Summary of responses on academic dishonesty

Statements	Responses				
	Disagree/ Strongly disagree	No strong feeling	Agree/ Strongly agree	Mean (n = 26)	s
5.1 The facilitator should show sensitivity towards the custom among some students to make use of study/support groups.	12%	24%	64%	3.80	1.00
5.2 The problem of plagiarism may be counteracted by means of the initial signing of a code of conduct on the issue of copying the work of others.	28%	20%	52%	3.24	1.13
5.3 The facilitator should provide practical examples to illustrate what would be regarded as plagiarism/copying.	8%	0%	92%	4.36	0.86
5.4 When submitting an assignment, students must list the names of their support group/study group members.	4%	16%	80%	4.28	0.89
5.5 Students must submit a signed declaration with each individual assignment which states that they have worked on their own and that all sources have been cited.	4%	16%	80%	4.24	0.88

From studying various academic dishonesty cases with programming assignments, it seems that students who study together (as part of the same study/support group) are more likely to "work together" on individual assignments. This is a very difficult and sensitive issue to address. On the

one hand the facilitator is trying to eliminate plagiarism and copying, but on the other he/she does not want to discourage the students from studying together and discussing the subject contents, which are very important aspects of the students' learning experience. With regard to the issue of sensitivity towards the use of study groups (see Statement 5.1 in Table 3), 64% of the respondents selected an agree/strongly agree response. From their comments it became apparent that plagiarism is not necessarily regarded as a problem because of study groups although members of a study group may encourage and facilitate plagiarism. The biggest problem seems to be with students who collaborate on individual assignments. Again, this problem can only be dealt with by creating awareness among students as to what types of assistance will be regarded as academic dishonesty with regard to individual assignments.

Student declarations

Although 80% of the respondents were in agreement that listing names and signing declarations (see Statements 5.4 and 5.5 in Table 3) might be useful in preventing dishonesty, it was emphasised by some of the respondents that such actions might not help to stop those students who are determined "to beat the system" or those who unintentionally plagiarise as a result of ignorance. It was suggested that other means of combating academic dishonesty should also be explored. Some respondents suggested that the best way to combat plagiarism is to make use of collaborative assignments or to design assignments or other assessment tasks in such a way that students cannot copy from one another. Positive results in this regard were experienced by the researcher during the collaborative activities in the first two cycles of inquiry where each student was required to research a completely unique topic. In reality, however, it is not always possible (or easy) to allocate a unique topic to each student. This is even more difficult in IT courses where most assignments require students to write short computer programs. Many students become "experts" in adapting someone else's programming code and passing it off as their own.

Even though there was some level of agreement among the respondents (52%) on the signing of a code of conduct (see Statement 5.2 in Table 3) it was mentioned that the facilitator might again have to deal with "dishonest signatures". It was also mentioned that the purpose of such a code of conduct should rather be to inform students about what would be regarded as academic dishonesty and to explain penalty aspects and procedures that will be followed if a student is found guilty. It should also be remembered that there is no use in having such an "anti-plagiarism" plan in place if the rules are not strictly enforced by the facilitator (also see Varvel 2005:9).

A very interesting comment, made by two of the respondents, was that non-English mother tongue speakers seem to experience more difficulty in putting information in their own words due to their poor English-language proficiency. Such students might therefore need additional support to improve their writing/reflecting skills (and therefore preventing mere copying from the Internet, for example).

Facilitators must take note of the availability of various software tools or Internet resources (like My Drop Box, Turn It In, and Eve2) which can be used to search for various sources of plagiarism in student assignments. Although the researcher has used Turn It In and Eve2 to test "research" assignments on previous occasions (with amazing results), she has not had the opportunity to apply these tools/resources to test computer programming assignments. Therefore, the researcher cannot provide any evidence at this stage on how successful these tools/resources might be in detecting plagiarism/copying in these types of assignments. As especially first year programming assignments always need to contain at least some element of similarity (otherwise the program would not "work") but not too much thereof, further investigation into the existence and use of systems specifically designed to detect "software" plagiarism is needed.

3.5 Communication, grading and feedback

In a blended learning environment, the facilitator has many communication channels at his/her disposal. In addition to face-to-face contact during in-class sessions, the online mode also presents various e-learning tools which can bring clear benefits in

terms of overcoming isolation and enhancing learning and interpersonal student-to-student and student-to-facilitator interaction (Dempster 2004:8). E-mail seems to be one of the most popular tools in this regard and has in many instances replaced face-to-face interaction between facilitators and students (Le 2005:168). While analysing the content of students' e-mail messages, Le (2005:170) revealed that most student messages were related to procedural queries/enquiries. Students therefore seem to be more concerned about academic procedure and conformity as opposed to intellectual development and the creation of interpersonal relationships.

Communication channels

In responding to the use of e-mail as preferred communication channel (see Statement 6.1 in Table 4) the respondents had contrasting views. Although 48% agreed/strongly agreed with the statement, a significant number of disagree/strongly disagree (28%) and no strong feeling (24%) responses were noted. The reason for this measure of disagreement became more apparent on analysis of the respondents' comments. Although the respondents considered e-mail communication as the preferred online channel for dealing with students' personal matters (e.g. grade enquiries), many did not regard this channel as the preferred way for handling procedural enquiries. A number of respondents indicated that they had found bulletin or discussion boards to be much more useful in this regard.

Respondents emphasised that when a discussion board is used to answer general questions, these questions and responses will be visible/accessible to all students – as opposed to using e-mail where only one student receives the answer. The use of discussion boards may in turn help the facilitator to eliminate the sending of numerous e-mail messages answering the same questions. It was added that if such a public forum is in place, students can be encouraged to respond to each other's queries, which might in turn help to enhance interpersonal interaction among the students. This may also help to alleviate the workload of the facilitator. Over time the questions and answers on the discussion board can also be used to devise a set of frequently asked questions (FAQs) and answers which can in future be made available on the course web site from the beginning of the semester. One respondent also

mentioned that she refrained from responding to any queries for which the answer already appeared somewhere in the course material. In such cases students are just referred to the existing or correct source of information.

Table 4 - Summary of responses on communication, grading and feedback

Statements	Responses				
	Disagree/ Strongly disagree	No strong feeling	Agree/ Strongly agree	Mean (n = 26)	s
6.1 E-mail should be the preferred communication channel for procedural queries/enquiries.	28%	24%	48%	3.16	1.37
6.2 The use of standard message templates will make it easier for the facilitator to provide timely responses to student e-mail messages.	4%	32%	64%	3.76	0.93
6.3 The use of an electronic mark sheet accompanied by the pasting of ready-made comments will allow the facilitator to provide more detailed individual/group feedback.	12%	16%	72%	3.72	1.10
6.4 The facilitator should make use of tutors (e.g. post-graduate students) to handle undergraduate students' queries.	8%	28%	64%	3.72	0.84
6.5 The facilitator can prevent large amounts of procedural queries (online and offline) by sending out a daily "informative" e-mail message to students.	4%	24%	72%	3.88	0.78

The majority of the respondents (72%) also agreed/strongly agreed that a daily e-mail message from the facilitator could help to prevent large amounts of procedural queries (see Statement 6.5 in Table 4). As such a message could be perceived as unnecessary by the majority of the students (those who attend classes and are consequently informed), the use of the public discussion board should be considered. In a blended learning environment the face-to-face contact sessions can also be used to address problems or misunderstanding that might arise from online communication.

In an attempt to enhance interpersonal interaction, one of the facilitator's main tasks is to provide constructive and frequent feedback to both groups and individuals (Jackson 2005:8). If a facilitator responds promptly to a student's questions, it is likely that the student will presume the facilitator to be interested in what he/she has to say. On the other hand, students tend to become uneasy if the facilitator does not respond to their messages within a

reasonable time (Kelly 2004:55). Although most of the respondents in the survey (64%) agreed/strongly agreed that the use of standard message templates would definitely allow the facilitator to respond more quickly to student e-mail messages (see Statement 6.2 in Table 4), a few respondents expressed their concern that such semi-automated mechanisms could potentially destroy the "individualised touch" of the facilitator's messages.

Grading of and feedback on assignments

In the action inquiry project undertaken by the researcher, both research cycles involved a relatively large number of students (160 and 90 respectively). In an attempt to provide more prompt and detailed feedback to the students on assessment tasks, the researcher/facilitator experimented with the use of electronic mark sheets accompanied by ready-made comments. Although there was relatively strong agreement (72%) among the respondents in the survey regarding the use of electronic mark sheets in the grading of assignments (Statement 6.3: mean = 3.72; s = 1.10) it was again mentioned that "individualised feedback" should still be a high priority. Although this might be easily achievable with small groups of students, a large group of students presents unique challenges. As these electronic mark sheets were originally devised by the researcher to handle grading and feedback in a relatively large class, the use of ready-made comments should rather be seen as a "quick way" to provide feedback on general mistakes which in turn, might leave the facilitator with more time to add additional "individualised" comments for each group or individual. The electronic format of this mark sheet also makes it possible to upload the document to the LMS together with the students' grades.

Tutors

At many institutions, including the UFS, the use of tutors is regarded as one way of dealing with large online classes. By dividing the class into smaller, more manageable groups (each with its own tutor) more individualised attention can be provided to each student whilst reducing the facilitator's workload. Sixty-four percent of the respondents agreed (with only 8% in disagreement) that tutors should be used to handle student queries (see

Statement 6.4). The major problem mentioned in this regard was where to find suitable tutors who would be able to provide quality feedback throughout the course. It was also pointed out that the use of postgraduate students who tutor "part-time" was not always advisable as these students' academic schedules might prevent them from being readily available at certain times of the semester. Lack of financial support was mentioned as another factor that can prevent a facilitator from appointing an adequate number of tutors.

In general it should be noted that handling queries from and giving feedback to a large group of students are always time-consuming (as also indicated by the respondents). The actions suggested in this section might not necessarily make the process easier or faster, but it might enable the facilitator to audit the responses and provide structure to the communication/feedback/grading process. These actions should therefore be regarded as techniques that could possibly help to enhance interpersonal interaction in a blended learning environment.

4. A PRELIMINARY FRAMEWORK FOR MEANINGFUL BLENDED LEARNING PRACTICES

A preliminary framework for meaningful blended learning (see Table 5) was devised after analysis of the respondents' opinions on the statements provided in the Blended Learning Questionnaire. This framework is regarded as preliminary as there is still room for improvement in each of the mentioned categories. Also, when compared with Khan's Octagonal Framework (Khan 2001), the framework only addresses some of the proposed dimensions, while there are certainly many aspects still to be exploited.

The first of Khan's dimensions to be addressed is Pedagogy. This dimension refers to various issues regarding teaching and learning and emphasises that any teaching strategy should be based on sound pedagogical principles. Evidence hereof is clear when the preliminary framework is compared to the Seven Principles of Good Practice for Undergraduate Education (Chickering & Gamson 1987). Without deliberate actions in this regard, it became apparent that all seven principles are addressed by the preliminary framework as it:

Table 5 – A framework for meaningful blended learning in South African higher education*

	Guidelines for blended learning
Cultural diversity	<ul style="list-style-type: none"> • Make use of collaboration to provide opportunities for interaction between culturally diverse students. • Involve students in the group allocation process. • Include both familiar and unfamiliar “elements” in each group. • Allow groups to communicate both online and face-to-face. • Provide opportunities for inter-group activities (especially when dealing with homogeneous groups). • Make online material available in all the institution’s official languages. • Address lack of prior e-knowledge by providing students with opportunities to practise the use of the various e-learning tools. • Let students practise the use of e-tools in a safe, non-assessed and less formal space.
Student attitudes and lack of participation	<ul style="list-style-type: none"> • Orientate students on what to expect from a blended learning mode of delivery. • Require students to complete a pre-class worksheet before each contact session. • Make use of a face-to-face orientation session to prepare students for collaboration (i.e. to explain the reasons for collaboration, prepare students on what to expect, establish rules, etc.). • Select interesting and challenging assignment topics to which students can relate. • Assess all collaborative activities. • Incorporate peer assessment for collaborative activities.
Academic dishonesty	<ul style="list-style-type: none"> • Educate students on academic dishonesty (with help of a code of conduct, and practical demonstrations and examples). • Enforce the academic dishonesty policy. • Design assignments to minimise the likelihood of student-to-student plagiarism (e.g. individual topics). • Investigate the possibilities of using plagiarism detection software/resources. • Require students to submit a signed declaration with each individual assignment which states that they have worked on their own and that all sources have been cited. • Require students to list the names of their support group members when submitting an assignment.
Communication and Interaction	<ul style="list-style-type: none"> • Online <ul style="list-style-type: none"> ○ Use an online public discussion board to deal with procedural queries/enquiries. ○ Create an online FAQ section to address the most common or general queries/enquiries. ○ Use e-mail communication only when the message/answer is not intended for the whole class. ○ Do not answer procedural queries for which the answer is already available. ○ Facilitator: Keep an online presence. ○ Design additional activities for students to practise their interaction/collaboration skills. • Face-to-face <ul style="list-style-type: none"> ○ Demonstrate use of e-tools (e.g. discussion threads) ○ Discuss problems/misunderstandings experienced online. ○ Provide opportunities for groups to meet/interact face to face.
Assessment in large classes	<ul style="list-style-type: none"> • Require students to submit assignments online for electronic marking and feedback. • Compile a list of feedback/comments for common mistakes before grading starts. • Devise electronic feedback instruments in order to create more opportunities/time for providing individualised feedback. • Appoint suitable tutors to provide more personalised attention/feedback to students in large classes.

*with special reference to the University of the Free State.

1. makes provision for more student-to-facilitator interaction (both online and offline);
2. allows for more student-to-student interaction through the use of online collaborative activities with incorporation of an in-class element;
3. suggests the use of various techniques (e.g. pre-class worksheets and collaboration) to persuade students to become active participants in their own learning experiences;
4. urges the facilitator to be “active” and to provide prompt feedback;
5. provides opportunities to teach students how to approach the online environment and collaborative activities, how to manage their time, and how to learn in a blended learning environment;
6. requires that students are informed about what is expected of them in a blended learning environment (regarding issues such as academic dishonesty, student participation, student learning, etc.); and
7. addresses the issue of diversity, particularly language diversity, in collaborative activities, involving students in the group allocation process, and providing additional practice time to address historical backlogs.

This comparison provides further evidence that sound pedagogical practices have been incorporated in the preliminary framework.

The second dimension of Khan’s framework to recognise is the ethical dimension. This dimension requires that issues such as cultural diversity, learner diversity, etiquette and legal issues be addressed in the learning environment. The preliminary framework provides various guidelines in this regard, for example suggestions for handling cultural diversity and discouraging academic dishonesty. It also suggests that students should be prepared for collaboration and that they should be provided with numerous opportunities to practise the use of e-tools such as discussion forums. Through these preparations they will learn not only about group etiquette but also etiquette for online communication (referred to as netiquette).

The last applicable dimension of Khan's framework, Evaluation, is addressed through the guidelines for grading and feedback (see Table 5) including the use of electronic feedback instruments which have already been implemented by the researcher with great success.

In applying the preliminary framework it should be noted that these guidelines were specifically developed for an undergraduate module at the UFS which has a very diverse student population and employs parallel medium of instruction. Application of this framework to any other context may need some context-specific adjustments.

5. CONCLUSION

This article has mainly focused on the findings of an inter-institutional survey in which practitioners in the field of online/blended learning in the South African higher education context have taken part. They evaluated a set of guidelines or learning principles the researcher had developed for meaningful blended learning in the course of her more extended study and openly shared their opinions on many aspects related to the specific mode of educational delivery.

The significance of the survey undoubtedly lies with the exposition and acknowledgement of the underlying complexity of the specific teaching and learning environment on the one hand and the exciting prospects the blended mode offers, on the other. With regard to the complexity one can refer to the historic cultural division among students and the backlogs experienced by many of them, with special reference in this case to their lack of e-knowledge and the uncertainties experienced when finding themselves in an advanced technological environment.

On institutional level one can refer to the challenges large class groups offer, the efforts to address prevailing inequalities and, in the case of the UFS, the language policy – which offers solutions to some problems but at the same time leads to diminished interaction among different language (and cultural) groups. In this environment the multitude of possibilities the blended mode of delivery presents is recognised, and in a combined effort the participants in the survey contributed in a

significant way to the identification of an introductory set of guidelines for enhanced blended learning practices in South African undergraduate classrooms.

When judged against the two theoretical frameworks presented in the article, it becomes clear that the value of the study mostly lies within the teaching and learning environment, i.e. in the classroom. It is therefore acknowledged that the formulation of these guidelines is but a small step toward the realisation of a comprehensive framework for effective blended learning practices in South African higher education. As such the researcher hopes that the study and its findings will serve as catalyst for further investigation into ways of joining the best the classroom can offer with the best of the virtual environment.

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In reflecting on this study it has become apparent that there is no "one size fits all" solution for the application of blended learning in the undergraduate classroom. The complexity of the South African context testifies to this. It can be stressed that each facilitator should, through a process of careful experimentation (preferably in the action research paradigm), devise his/her own strategies which are suitable for the applicable context. It has, however, become clear that there are some underlying principles which are appropriate to all undergraduate courses/modules in the blended learning context. This study has, to a large extent, focused on how collaborative learning could be effectively incorporated in a blended learning environment and obviously had not attempted to address all the relevant aspects needed to make the students' learning experience more meaningful.

The identified learning principles (Article 3), the suggested action plans (Article 4) and the preliminary framework (Article 5) for blended learning should therefore be regarded as a preliminary type of "road map" for facilitators and designers at South African higher education institutions. It is hoped that these practitioners will be able to adapt and incorporate these principles/plans/guidelines into the planning of their own undergraduate courses/modules. This might be helpful in pursuing the ideal blend between online and face-to-face modes of educational delivery.

As most facilitators are likely to struggle to find sufficient time during the course of one semester to apply all of the suggested plans and guidelines, the implementation of these should rather be spread over more than one semester or year. The gradual introduction of these aspects is likely to provide the students with sufficient time for becoming accustomed to the blended learning environment. This process should therefore be seen as a long-term strategy/project for enhancing the students' overall learning experience.

The researcher regards the search for best practices in the blended learning environment as a continuous process presenting an almost endless list of possibilities for enhancing the learning experience for both students and facilitators.

It is suggested that future research on the application of blended learning should strive to address at least the following issues:

- Applying the devised learning principles, action plans and guidelines in real class situations in order to test the principles/plans/guidelines and make suggestions for further improvement.
- Looking at further ways in which blended learning (collaboration in particular) can be utilised to enhance interpersonal interaction among a group of culturally diverse students.
- Searching for additional ways in which to address issues such as cultural diversity, academic dishonesty, lack of prior knowledge and lack of participation in a blended learning environment.

Finally, in the words of Warger*:

“Information technology (IT) has little value in the academic world until and unless it brings about change in learning and communication. To justify its expense and the distraction it can cause, IT needs to enable substantial changes in how education happens.”

* Warger, T. 2005. When IT is going right. *The Edutech Report* 21(1): 1-7.

The following is an example of the profile questionnaire which was completed by students at the beginning of each cycle.

RIS222 Pre-Course Survey

Please use an X to indicate your selection for each of the following questions:

1. General Information

- 1.1 Age: 18 19 20 21 22 23+
- 1.2 Gender: Male Female
- 1.3 Home Language: _____

2. Grade 12 Subjects:

- 2.1 Computer Studies: Not taken SG HG Symbol: _____
- 2.2 Mathematics: Not taken SG HG Symbol: _____
- 2.3 Science: Not taken SG HG Symbol: _____

3. Previous Web Design Experience:

Please indicate the level of familiarity that you have with each of the following topics. If you've never heard of the topic, select "none" (and don't worry, you aren't required to know any of this stuff!)

- 3.1 HTML / XHTML: None Some A lot
- 3.2 JavaScript: None Some A lot
- 3.3 Macromedia Dreamweaver: None Some A lot
- 3.4 Microsoft FrontPage: None Some A lot
- 3.5 If you have done some web design/programming before, please indicate any other tools/languages that you have worked with:

4. Do you have a computer at home/the residence that you can work on during the semester? Yes No
5. If Yes, does the computer have Internet access? Yes No
6. Have you worked with WebCT before? Yes No
7. Please indicate your preferred method of studying. Mark your first choice (the method you use most often) with a **1** and your second choice with a **2**.
- | | |
|-------------------------------|-----------------------------------|
| _____ Apply the knowledge | _____ Memorise |
| _____ Draw diagrams/pictures | _____ Repeat aloud |
| _____ Explain to other people | _____ Repeat quietly in your head |

Thank you.

The following is an example of a pre-class worksheet. During the second cycle of inquiry students were required to complete such a worksheet before each contact session.



RIS222 – Worksheet 5

26 August 2004

1. The **image** displayed on the web page in Figure 1 makes use of an image map (Figure 2). The image map is divided into 3 (three) areas. Each area in the image map will act as a hyperlink to a different web page:

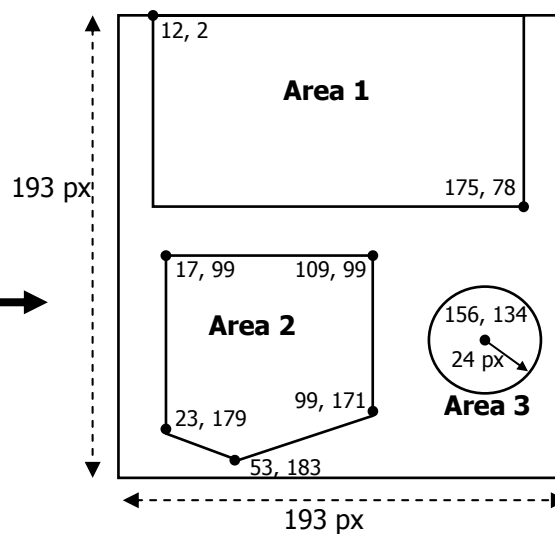
- Area 1 – Link to Physics.html
- Area 2 – Link to Meteorology.html
- Area 3 – Link to Geography.html

Figure 2 also indicates the X-Y coordinates of each area.

Figure 1 – Web page



Figure 2 – Image map



The following is a part of the XHTML markup for the web page in Figure 1. Fill in the blanks to complete the web page.

```
<p>
  <map id = " _____ " >

    <!-- Markup for Area 1 -->
    <area href = " _____ " shape = " _____ "
          coords = " _____ " alt = " _____ " />

    <!-- Markup for Area 2 -->
    <area href = " _____ " shape = " _____ "
          coords = " _____ " alt = " _____ " />

    <!-- Markup for Area 3 -->
    <area href = " _____ " shape = " _____ "
          coords = " _____ " alt = " _____ " />

  </map>
  <img src = " science.gif" width = " _____ " height = " _____ "
        alt = " _____ " usemap = " _____ " />
</p>
```

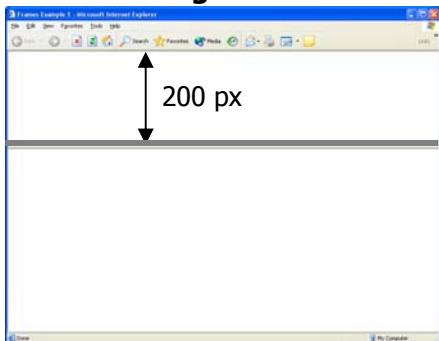
2. Use the **site structure diagram** you created for your personal web site (Assignment 2.1) to answer the following two questions:

2.1 Write down 8 (eight) **keywords** to describe the contents of your personal web site:

2.2 Write a **description** (one sentence) for your personal web site:

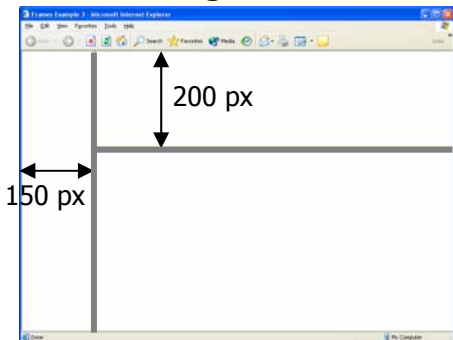
3. Study the following framesets and try to complete the XHTML markup next to each web page.

Figure 3



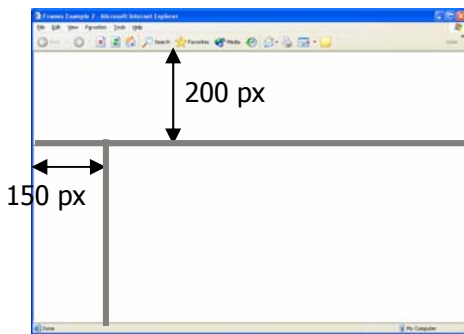
```
<frameset _____ = " _____ , _____ " >
  <frame name = " _____ "
    src = "page1.html" />
  <frame name = " _____ "
    src = "page2.html" />
  <noframes>
    <body>
      ....
    </body>
  </noframes>
</frameset>
```

Figure 4



```
<frameset _____ = " _____ , _____ " >
  <frame name = " _____ "
    src = "page1.html" />
  <frameset _____ = " _____ , _____ " >
    <frame name = " _____ "
      src = "page2.html" />
    <frame name = " _____ "
      src = "page3.html" />
  </frameset>
  <noframes>
    <body>
      ...
    </body>
  </noframes>
</frameset>
```

Figure 5



```
<frameset _____ = "____ , ____ " >
```

```
<frame name = "_____"
      src = "page1.html" />
```

```
<frameset _____ = "____ , ____ " >
```

```
<frame name = "_____"
      src = "page2.html" />
```

```
<frame name = "_____"
      src = "page3.html" />
```

```
</frameset>
```

```
<noframes>
```

```
<body>
```

```
...
```

```
</body>
```

```
</noframes>
```

```
</frameset>
```

The following is an example of an electronic mark sheet. After grading of each assignment the mark sheet was uploaded to WebCT together with each student's grade.

SmithPA2002060606Practical5



University of the Free State
RIS 222 – 2004

Practical 5 - Individual mark sheet

Name:	Smith, PA	
Std. No.:	2002060606	
Group:	7	
	Marks	Max
Personal web site on wwgpu18		
Content	5	/5
Directory/File structure	5	/5
Style sheets	3	/5
Required XHTML elements	6.5	/10
Usability and appearance	8	/15
Working & overall impression	6	/10
TOTAL	33.5	/ 50
Penalty		
Final Mark	67	%
Comments:		
<p>CSS: It is better to use only one external style sheet. All length values must have a unit of measurement (e.g. px, em, ...)</p> <p>Home page: Move the navigation menu up so that the user doesn't need to scroll down to reach the menu (it is not visible on an 800x600 resolution).</p> <p>General: External style sheet(s) not linked to all your pages. No link from any of your pages back to the home page (orphan pages!).</p>		

The following is an example of the inter-institutional web-based questionnaire – the "Blended Learning Questionnaire" – as discussed in Article 5.

Blended Learning Questionnaire

User ID:
Password:

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Section 1 of 6 - Personal Information

Although your name and personal opinions will be treated as confidential in reporting on the findings of this study, we kindly request that you supply the information below in order to establish a profile of all respondents.

1.1 Give a short description of your experience of and/or role in e-learning/blended learning/telematics at your institution:

1.2 Select the role(s) you currently fulfil with regard to e-learning/blended learning:

Lecturing Designing Managerial Support

Other (please specify): _____

Important note: Once you have selected to "Continue" you will not be able to return to this page of the questionnaire.

Continue

Section 2 of 6 - Background Information

At the University of the Free State (UFS), blended learning is regarded as a relatively new practice with possibilities of addressing many of the teaching and learning problems at this rapidly growing institution. In this regard a major impacting factor is the diverse student population from different socio-economic backgrounds and very different educational needs. Many departments struggle to cope with large class groups of up to a thousand and more students. In addition, the policy of parallel-medium instruction demands creative ways of dealing with the challenges of executing such a policy.

It is thus realistic to look at ways in which the face-to-face mode (that students expect and are used to) can be effectively combined with new technologies. The question thus arises: *How does one create meaningful/effective blended learning practices in undergraduate education taking into account a context such as that of the UFS?*

In fulfilling the purpose of the study, the research has focused on various aspects/issues including the following:

- Pedagogical issues in blended learning, with special reference to student collaboration and participation.
- The incorporation of student diversity into the blended learning environment.
- Ethical issues in the blended learning experience (e.g. the occurrence of and handling of unethical behaviour such as academic dishonesty by students).
- The psychological experience as exposed in student perceptions and attitudes on the one hand, and in the researcher's reflections on the other hand.

The study has already stretched over two full cycles bringing the researcher into the planning phase of a third cycle of inquiry. During each of the completed cycles, students were randomly divided into groups in which they were required to participate in various online group discussions and one large online collaborative assignment. Many of the aspects/issues covered by this questionnaire were mentioned by the students in their reflections after completion of the collaborative assignment.

Instructions:

When responding to the statements, please select an appropriate response to each item using the following scale:

1	2	3	4	5
Strongly disagree	Disagree	No strong feeling	Agree	Strongly agree

Providing additional comments/suggestions at the end of each section is optional. Also note that once you have moved on to a new section you will be unable to return to any of the previous sections.

Continue

Section 3 of 6 - Culturally diverse groups

The facilitator allocated students to "unfamiliar" groups for the online collaborative activity. She hoped that this would help the students to improve their cultural sensitivity and teamwork skills. In order to adhere to the institution's bilingual language policy, most groups consisted of either Afrikaans students or English-speaking (mostly black) students. In an attempt to increase the students' online participation they were not allowed to discuss the collaborative assignment face-to-face. In their feedback, however, the students suggested that more face-to-face contact would enhance collaboration. The lack of e-knowledge among certain group members was also a matter of concern.

Please respond to the following statements: (1: Strongly disagree --> 3: No strong feeling --> 5: Strongly agree)

3.1	Group allocation should be done by the facilitator.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
3.2	Groups should be as heterogeneous as possible.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
3.3	Groups should only communicate online.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
3.4	Face-to-face contact may counteract some of the disadvantages of the online environment.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
3.5	Group members should sit together during contact classes in order to strengthen the development of learning communities.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
3.6	Inter-group activities may counteract the negative effect of segregation caused by assigning students to same-language groups.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
3.7	The online environment provides opportunities to all students to communicate/use their preferred language (either English or Afrikaans).	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
3.8	The facilitator needs to create awareness amongst students regarding the implications of the institutional language policy.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
3.9	Where students are unfamiliar with the online environment they should be given repeated opportunities to practise the use of the various e-learning tools.	<input type="radio"/> 1	<input type="radio"/> 2	<input type="radio"/> 3	<input type="radio"/> 4	<input type="radio"/> 5
3.10	Additional comments/suggestions on Culturally Diverse Groups:					

Important note: Once you have selected to "Continue" you will not be able to return to this page of the questionnaire.

Continue

Reset

Section 4 of 6 - Student attitudes & level of participation

It was found that students who had negative attitudes towards the collaborative assignment and/or the whole idea of collaboration were reluctant to participate. The actions of these students were instrumental in demotivating their fellow group members. In general students also failed to do the necessary theoretical preparation before participating in online discussions or attending the face-to-face contact sessions.

Please respond to the following statements: (1: Strongly disagree --> 3: No strong feeling --> 5: Strongly agree)

4.1	A face-to-face orientation session is the ideal situation to prepare students for collaboration [i.e. to explain reasons for collaboration, prepare students on what to expect, establish rules, etc.]	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
4.2	Requiring students to complete a pre-class worksheet before each contact session may help to stimulate/increase student participation in the in-class discussions.	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
4.3	In order to improve participation a significant portion of the marks allocated for a collaborative assignment should be awarded for each student's level of participation.	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
4.4	When assignment topics appeal to the majority of a diverse student group it may help to stimulate motivation and active participation amongst individuals.	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
4.5	Students will be more active if they are allowed to select their own group members.	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
4.6	Additional comments/suggestions on student attitudes and level of participation:	<div style="border: 1px solid black; height: 20px; width: 100%;"></div>

Important note: Once you have selected to "Continue" you will not be able to return to this page of the questionnaire.

Continue

Reset

Section 5 of 6 - Plagiarism / Copying

In all the undergraduate Information Technology modules at the UFS, facilitators are battling with the issue of plagiarism/copying. It seems that students rely heavily on their support groups within the class to complete individual assignments (especially within certain cultural groups) – resulting in a number of students submitting slightly altered or almost identical versions of the same assignment (mostly programming assignments). When confronted, a significant number of students use the “does that mean that we are not allowed to help each other” excuse, since they allegedly believe that as long as the assignments are not 100% identical, they have done nothing wrong. Another problem is plagiarism involving the Internet. Facilitators are constantly looking for ways to solve the plagiarism/copying problem.

Please respond to the following statements: (1: Strongly disagree --> 3: No strong feeling --> 5: Strongly agree)

5.1	The facilitator should show sensitivity towards the custom among some students to make use of study/support groups.	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
5.2	The problem of plagiarism may be counteracted by means of the initial signing of a code of conduct on the issue of copying the work of others.	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
5.3	The facilitator should provide practical examples to illustrate what would be regarded as plagiarism/copying.	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
5.4	When submitting an assignment students must list the names of their support group/study group members.	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
5.5	Students must submit a signed declaration with each individual assignment which states that they have worked on their own and that all sources have been cited.	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
5.6	Additional comments/suggestions on Plagiarism/Copying:	

Important note: Once you have selected to "Continue" you will not be able to return to this page of the questionnaire.

Continue

Reset

Section 6 of 6 - Communication, Grading & Feedback

When dealing with relatively large undergraduate classes of more than 100 students it becomes very difficult for the facilitator to provide detailed feedback on individual and group assignments. The blended mode of learning also means that the facilitator has the additional task of answering a large number of student e-mails and following online group discussions on a daily basis. In addition, the facilitator has to deal with a large number of students visiting her office outside consultation hours.

Please respond to the following statements: (1: Strongly disagree --> 3: No strong feeling --> 5: Strongly agree)

6.1	E-mail should be the preferred communication channel for procedural queries/enquiries.	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
6.2	The use of standard message templates will make it easier for the facilitator to provide timely responses to student e-mail messages.	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
6.3	The use of an electronic mark sheet accompanied by the pasting of ready-made comments will allow the facilitator to provide more detailed individual/group feedback.	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
6.4	The facilitator should make use of tutors (e.g. post-graduate students) to handle undergraduate students' queries.	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
6.5	The facilitator can prevent large amounts of procedural queries (online and offline) by sending out a daily "informative" e-mail message to students.	<input type="radio"/> 1 <input type="radio"/> 2 <input type="radio"/> 3 <input type="radio"/> 4 <input type="radio"/> 5
6.6	Additional comments/suggestions on Communication, Grading & Feedback:	<input type="text"/>

Important note: Once you have selected to "Submit" you will not be able to return to the questionnaire.

Blended Learning Questionnaire

Thank you for completing the Blended Learning Questionnaire.

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The overall aim of this study was to establish guidelines for creating meaningful blended learning experiences in a South African higher education classroom at undergraduate level, and specifically in the context of the University of the Free State (UFS). Blended learning in this study refers to the combination of face-to-face and online modes of educational delivery as applied in the field of Information Technology (IT). For “meaningful learning” to take place, the focus is placed on inter-related dimensions which have to be addressed, such as the pedagogical, the ethical, the interface design and the evaluation dimensions. The significance of the research lies with the possible benefits the blended learning mode offers the institution and its community (students and facilitators), as well as the possibilities for improving educational practice in similar contexts.

In order to address the above issues and simultaneously improve her own practice, the researcher embarked on an action research project. This study has already stretched over two full cycles of inquiry and the perspectives gained in this period are utilised in discussions on the (re-)planning of a third research cycle of plan, act, observe and reflect.

The data collection methods employed were mainly qualitative in nature. Most of the information was gathered by means of comprehensive online feedback by the students while student profile questionnaires provided a basic understanding of the diversity of the students involved. The researcher also kept a detailed research diary/journal during both cycles. As part of the action inquiry, an inter-institutional web-based questionnaire survey was conducted. The aim was to get experienced practitioners in the field of blended/online-learning to evaluate some of the learning principles for blended learning which had been identified in the study.

The research findings are presented in the format of five articles:

In Article 1 the focus is on the research design and methodology employed in search of effective online collaboration in the blended learning mode at the University of the Free State. It includes a brief overview of the nature and underlying assumptions of collaborative learning; an indication of the potential benefits of online collaborative work; and a discussion of and reflection on the two completed research cycles of the action inquiry.

In Article 2 it is demonstrated how the incorporation of student feedback can be utilised in the enhancement of online collaborative activities. The large amount of data gathered from the students' reflections were analysed by means of a SWOT analysis. Through this analysis it has become clear that involving students as “co-researchers” in the reflective process of an action inquiry project holds numerous benefits for the practice of university teaching.

In Article 3 the theory on online and blended learning is discussed against the background of the researcher's experience as facilitator and action researcher in a blended learning environment. The use and value of the research diary/journal as valid data collection method is illustrated and it is shown how the researcher's growing understanding of practice has led to the development of important learning principles for blended learning in the specific context.

The intention in Article 4 is to illustrate how an existing process planning model was effectively adapted and applied during the re-planning phase for the third cycle of inquiry. The final deliverable in this process is a set of action plans for future collaborative learning that could help to make the student learning experience in the blended learning environment more effective and meaningful.

Finally, in Article 5 the findings of the inter-institutional opinion survey are presented and analysed. The researcher also makes use of various “agreed upon” learning principles to develop a preliminary framework for meaningful blended learning which could serve as a springboard for further investigation.

Keywords

South Africa, higher education, undergraduate education, University of the Free State, action research, research diary, blended learning, e-learning, collaborative learning, student feedback.

Die oorkoepelende doel van hierdie studie was die daarstelling van riglyne vir betekenisvolle gemengde leer ("blended learning") in 'n Suid-Afrikaanse hoërsonderwysklaskamer op voorgraadse vlak, en spesifiek in die konteks van die Universiteit van die Vrystaat (UV). In hierdie studie verwys "gemengde leer" na die kombinasie van kontak- en aanlynonderrig soos toegepas in die veld van Inligtingstechnologie (IT). Met "betekenisvolle leer" word die klem geplaas op onderling verwante dimensies wat aangespreek moet word om sodanige leer by studente te laat plaasvind, bv. die pedagogiese, die etiese, die koppelvlakontwerp ("interface design") en die evalueringdimensie. Die belang van die navorsing lê in die moontlike voordele wat die gemengde leermodus die instelling en sy gemeenskap (studente en fasiliteerders) bied, sowel as die moontlikhede om onderrigpraktyke in soortgelyke omgewings te verbeter.

Ten einde bogenoemde aspekte aan te spreek en terselfdertyd haar eie aanbiedingspraktyk te verbeter, het die navorser 'n aksienavorsingsprojek onderneem. Hierdie studie het tot dusver oor twee volledige ondersoeksilusse gestrek en die perspektiewe wat gedurende hierdie tydperk ingewin is, word in die beplanningsfase van 'n derde navorsingsiklus van beplanning, uitvoering, waarneming en reflektoring aangewend.

Daar is hoofsaaklik van kwalitatiewe metodes van data-insameling gebruik gemaak. Die meeste van die inligting het bestaan uit aanlyn terugvoering deur studente, terwyl profielvraelyste die diversiteit van studente aangetoon het. Die navorser het ook 'n volledige navorsingsdagboek/-joernaal tydens die twee silusse van ondersoek gehou. As deel van die aksienavorsing is 'n inter-institusionele webgebaseerde vraelysopname ook onderneem. Die doel hiermee was om ervare praktisyns in die veld van gemengde/aanlynleer te betrek by die evaluering van sommige van die leerbeginsels wat in die studie geïdentifiseer is.

Die navorsingsbevindinge word in die vorm van vyf artikels aangebied:

In Artikel 1 is die fokus op die navorsingsontwerp en -metodologie wat aangewend is in die ondersoek na effektiewe aanlyn samewerking ("online collaboration") in die gemengde leermodus by die UV. Dit sluit in 'n kort oorsig van die aard en onderliggende aannames van gesamentlike leer; 'n aanduiding van die potensiële voordele van aanlyn samewerking; en 'n bespreking van en reflektoring oor die twee voltooide navorsingsilusse van die aksienavorsingsprojek.

In Artikel 2 word aangedui hoe die inkorporering van studenteterugvoer aangewend kan word ter verbetering van aanlyn-samewerking. Die groot hoeveelheid data wat d.m.v. die studente se reflekterings ingesamel is, word met behulp van 'n SWOT-ontleding voorgestel. Hierdie ontleding maak dit duidelik dat die betrokkenheid van studente as "mede-navorsers" in die reflekteringsproses van 'n aksieondersoekprojek veelvuldige voordele vir leerpraktyke op universiteitsvlak kan inhou.

In Artikel 3 word die teorie van aanlyn- en gemengde leer teen die agtergrond van die navorser se ondervinding as fasiliteerder en aksienavorser in 'n gemengde leeromgewing bespreek. In hierdie artikel word veral die gebruik en waarde van 'n navorsingsdagboek/-joernaal as 'n geldige data-insamelingsmetode beskryf en word daar aangedui hoe die navorser se toenemende begrip van die praktyk tot die ontwikkeling van belangrike leerbeginsels vir gemengde leer in die spesifieke konteks gelei het.

Die doel met Artikel 4 is om aan te dui hoe 'n bestaande prosesbeplanningsmodel effektief aangepas kan word en ook toegepas is tydens die herbeplanningsfase vir die derde siklus van die ondersoek. Die finale resultaat van hierdie proses is 'n stel aksieplanne vir toekomstige samewerkingsleer wat moontlik kan help om die studenteleerervaring in die gemengde leeromgewing meer effektief en betekenisvol te maak.

Laastens, in Artikel 5 word die bevindinge van die inter-institusionele meningsopname aangebied en ontleed. Die navorser maak ook gebruik van verskeie "ooreengekome" leerbeginsels om 'n voorlopige raamwerk vir betekenisvolle gemengde leer te ontwikkel, wat as moontlike afspringplek vir verdere ondersoeke kan dien.

Sleutelwoorde

Suid-Afrika, hoër onderwys, voorgraadse onderwys, Universiteit van die Vrystaat, aksienavorsing, navorsingsdagboek, gemengde leer, e-leer, aanlynleer, samewerkingsleer, studenteterugvoer.