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Using a social network environment for Information Systems Group Work

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Declaration

I declare that the dissertation/thesis, which I hereby submit for the degree Magister Commercii in Informatics at the University of Pretoria, is my own work and has not previously been submitted by me for a degree at this or any other tertiary institution.

Signature: S. Visagie

Abstract

Group work and online discussions are not new terms in education and are important activities for Information Systems students. It has become important because it encourages creative thinking and provides more efficient problem-solving approaches. Online social networking sites, like Facebook, have pedagogical potential and the consideration of its academic application should not be ignored by lecturers or students. The main problem identified in this thesis is that the awareness and application of the emerging pedagogical potential of online social networking sites, like Facebook, especially for the purpose of group work and online discussions, is limited among Information Systems lecturers and students. The purpose of this study is to determine the level of awareness and application of Facebook as an academic tool by Information Systems lecturers and students, and whether it can enhance the learning experience of students, related to the effectiveness of group work and online discussions. The perceptions of both Information Systems lecturers and students were recorded by means of questionnaires and interviews. It was found that most lecturers and students were aware of Facebook's pedagogical potential. However, the consideration and application of Facebook as an academic tool, by lecturers and students, are limited. From a cultural perspective, it was found that students from a private institution, where no Learning Management System was implemented, as well as black students, showed increased levels of utilisation and performance, in terms of enhanced learning experienced, on the academic groups on Facebook. The researcher developed a model for the academic application of Facebook for Information Systems students, based on the Task-Technology Fit and the Social Software Performance Model theories. This study concludes with the recommendation that Information Systems lecturers and students should become increasingly aware of and consider the pedagogical potential of Facebook as a supplementary tool and with suggestions for future research.

Keywords

Online social networking; Facebook; Group work; Online discussions; Task-Technology Fit theory; Social Software Performance Model; Information Systems; Kolb's learning styles.

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CHAPTER 1: Introduction

Chapter 1 provides an introduction to the importance of group work and online collaboration skills for Information Systems students as well as the emergence of the pedagogical potential of online social networking sites. It identifies the problem statement, sets out the research questions and the chosen research methodology, briefly explains the limitations of the research, and provides a brief overview of this thesis.

1.1 Introduction

Group work is important for students involved in undergraduate Information Systems courses because they need to be equipped with group work skills before entering the workplace. In this thesis group work is defined as an activity requiring individuals to collaborate and work together on tasks to achieve pre-determined results (Dalsgaard, n.d.).

Lecturers have realised the importance of incorporating group work into students' courses, in order to prepare them for the future workplace, as they will be required to be effective participants in group work. According to Bistrom (2005), group work prepares students for the challenges of working life.

There is an extreme level of growth in online social networking sites and interest in these sites is clear from popular media as well as academic research (Dwyer, 2007). Students of today are overly engaged in online social networking and they spend a lot of their time on sites such as Facebook (Eberhardt, 2007). Online social networking sites have become an explosive tool in social, political, academic and many other worlds.

Students need to be equipped with skills related to the use of online tools, such as wikis, blogs, podcasts and various online social networking sites. These tools are used in industry for information sharing, group work and other forms of collaboration efforts (Sendall, Ceccucci & Peslak, 2008). In contemporary society companies are using Web 2.0 tools for marketing, customer service and interaction. It is thus a

necessity for students to be equipped with skills related to the use of these tools for when they enter the workplace.

The purpose of this study is to

- determine Information Systems lecturers' awareness of the pedagogical potential of online social networking sites such as Facebook and their consideration of Facebook as a supplement to their teaching strategy;
- determine whether Information Systems students benefit from group work and online discussions on Facebook, related to their specific courses, and whether Facebook enhances the learning experience; and
- examine the possible differences in the learning styles adopted in an online social networking versus a face-to-face environment.

After lecturing the theoretical component of the course (which runs over a year) and facilitating weekly tutorial sessions where course content was discussed and practised in small groups, the researcher became interested in traditional group work in the context of a second-year Systems Analysis and Design course. An interest in online social networking followed as current students are actively participating in online social networking, especially Facebook, and online social networks are changing the way in which students interact with their peers and acquire different types of skills. The global popularity of Facebook and its pedagogical potential became a subject of interest to the researcher.

Research on the use of Information Communication Technology (ICT) in higher education institutions remains important for academic staff. Adequate research may assist in better identifying ICT trends and students' needs on campus (DeGagne & Wolk, 2007). This statement supports the need for an increased awareness of online social networking sites for academic purposes.

According to Sandars (2005), there has been limited research conducted on the social network facets of learning and research on online social networking with face-to-face interaction has recently and slowly been directed towards collaborative online networks. Ellis, Goodyear, Prosser & O'Hara (2006) state that some studies have been directed towards students' approaches towards online and face-to-face discussions.

Ramirez & Wang (2008) argue that the potential impact of online social networking sites such as Facebook, which are used as steps during face-to-face discussions, and the social judgements deducted from them, are still unclear.

Facebook is often used by students for online social and academic networking, and for this reason, its pedagogical potential should be studied (Towner & VanHorn, 2007). It is very important for lecturers to understand students' use of online social networks, because it can generate useful information regarding lecturer-student communications (Mazer, Murphy & Simonds, 2007) as well as innovative applied teaching strategies.

1.2 Problem statement

The main problem identified in this paper is the limited awareness and application of the emerging pedagogical potential of online social networking sites, like Facebook, among Information Systems lecturers and students – especially for the purpose of group work and online discussions. Many students spend hours per day on Facebook – why not utilise this tool for academic purposes?

Students are extensively involved in online social networking for social purposes. Lecturers and students have a limited awareness of the academic potential of online social networking sites – especially Facebook. Many ICT lecturers are not considering the use of Facebook as part of their teaching strategy (Cloete, De Villiers & Roodt, 2009).

Limited awareness of the differences in learning styles adopted in an online social network versus a face-to-face environment also exists. Ramirez & Wang (2008) discuss modality switching, meaning a change from the online to the offline environment, and they state that some people dissemble their styles and skills in online environments and provide different impressions in these two environments.

Extensive research has been conducted on the differences between face-to-face and online discussions (Lantz, 2001; Baskin, Barker & Woods, 2005; Cho, Lee, Stefanone & Gay, 2005; Ellis *et al.*, 2006; Baker-Eveleth, Stone & Pendegraft, 2007; Wang & Woo, 2007; Ramirez & Wang, 2008), but very limited research exists on the effect of

an online environment on subjects in a face-to-face environment related to group work and online discussions for academic purposes (Eberhardt, 2007).

This study differs from other reported research, as it addresses the lack of awareness, consideration and utilisation of Facebook from both lecturer and student perspectives. The pedagogical potential of an online social networking site such as Facebook is not highlighted enough in the academic world.

1.3 Research questions

The underlying questions that need to be addressed are the following:

- What is group work?
- What is the value of face-to-face group work?
- What is online social networking?
- What is the value of group work and/or online discussions via online social networking?
- What is Facebook?
- What are the differences between face-to-face and online interaction?
- What are Kolb's learning styles?

An underlying problem is that Information Systems lecturers are not considering the pedagogical potential of online social networking, especially Facebook, to enhance or supplement their teaching strategies (Cloete *et al.*, 2009). The following sub-questions emerged:

- Are lecturers aware of the pedagogical potential of online social networking sites?
- Have lecturers previously considered and applied online social networking as part of their teaching strategy?
- Would lecturers consider using Facebook as a supplement to their teaching strategy?
- Are lecturers aware of possible differences in students' learning styles when interacting in an online social networking versus a face-to-face environment?

- What do lecturers regard as advantages and disadvantages of students participating in face-to-face and online social networking group work/discussion environments?
- How should lecturers inform and educate students on the use of online social networking in an academic environment?

Another underlying problem is that Information Systems students are unaware of the potential academic benefits of online social networking for group work and/or online discussions and few students are actively participating on these sites for academic reasons. Another question is whether students' adopted learning styles in the online social networking environment differ from that in a face-to-face environment. The following sub-questions emerged:

- Are students aware of the potential academic benefits of online social networking for group work and online discussions?
- Are students utilising online social networking for academic purposes?
- How do students feel about knowledge sharing and their understanding of the content when participating in face-to-face group work and group work via online social networking?
- What do students regard as advantages and disadvantages of participating in face-to-face and online social networking group work/discussion environments?
- How do learning styles affect students' success in an online social networking environment?

1.4 Research methodology

Personal motivation is an important element in choosing a particular research method, and people have different motivations (Walsham, 2005). The researcher's personal motivation relates to interpretivism and the researcher will remain subjective to the study.

The interpretivist approach best supports what the researcher aims to achieve. In her opinion, this approach is best suited to interpret and understand the situation surrounding online social networking and group work, to remain subjective and be

open to change. In this way, a valuable contribution can be made to the Information Systems education field and body of knowledge.

The relationship between theory and practice supports the researcher's adoption of the interpretivist approach. In the interpretivist philosophy, the relationship between theory and practice cannot be assumed as encompassing neutrality in values and these values are always entailed in the phenomenon studied. "Researchers' prior assumptions, beliefs, values, and interests always intervene to shape their investigations" (Orlikowski & Baroudi, 1991).

From an ontological perspective, online social networking and group work are viewed as a social world without a reality of its own. From an epistemological perspective, the nature of the researcher's acquired knowledge of reality will be classified as socially constructed and it will be intentionally formed by the researcher's experience.

1.5 Limitations of research

There is a limited awareness of how students are engaged in online social networking for academic purposes. Some students are utilising these online social networking sites for academic purposes – they meet their group members online to work on tasks or to engage in online academic discussions. A random search on Facebook revealed that a large number of academic groups exist where students are learning, sharing information and supporting each other. One such example is the INF370 group. This group was formed by final year Informatics students at the University of Pretoria involved in third-year Systems Analysis and Design projects. The students do extensive knowledge sharing across different project groups and thus acquire more insight into approaching and applying the content of the course. It is difficult to determine how many academic groups exist (nationally or globally) and how many are actively utilised by students from a specific institution.

This research is further limited in terms of the fact that it only encapsulates views of Information Systems lecturers from five countries and only the views of students from South Africa.

1.6 Roadmap to the thesis

The chapters are divided as follows:

CHAPTER 1: Introduction

The researcher introduces the topic, outlines the research problem, sets out the research questions and methodology, explains the limitations of the research and provides a brief overview of the thesis.

CHAPTER 2: Research Methodology

In this chapter the research questions are discussed, the methodological approach is explained, and the theoretical approach is set out.

CHAPTER 3: Literature review

The literature is discussed in this chapter, covering a wide range of topics to create a strong foundation for the findings explained in the next chapter.

CHAPTER 4: Research findings

In this chapter lecturer and student questionnaires as well as lecturer interviews are discussed in great detail. The Facebook group administration is also explained.

CHAPTER 5: Conclusion

In this chapter answers to the research questions are provided, the research is evaluated, the contribution of the research is explained and avenues worth exploring in future research are identified.

1.7 Conclusion

Chapter 1 provided an introduction to the importance of group work and online collaboration skills for Information Systems students. The problem statement, research questions and chosen research methodology were identified; the limitations of the research were briefly explained and a roadmap of the thesis was provided. The research methodology will be explained in Chapter 2.

CHAPTER 2: Research Methodology

Chapter 2 elaborates on the research questions. It explains methodological approaches in Information Systems research. It also explains the methodological approach adopted by the researcher by explaining the interpretivist approach, its relevance, the research strategy, the data collection time frame as well as a justification of the selected data collection strategies. Finally, the theoretical approach is described by focusing on the Task-Technology Fit (TTF) theory and the Social Software Performance Model.

2.1 Research questions

It is valuable to view a research problem form various perspectives. This can be achieved by listing a variety of questions in order to study different facets of the problem. Figure 2.1 below, constructed by Roode (1993), illustrates this statement:

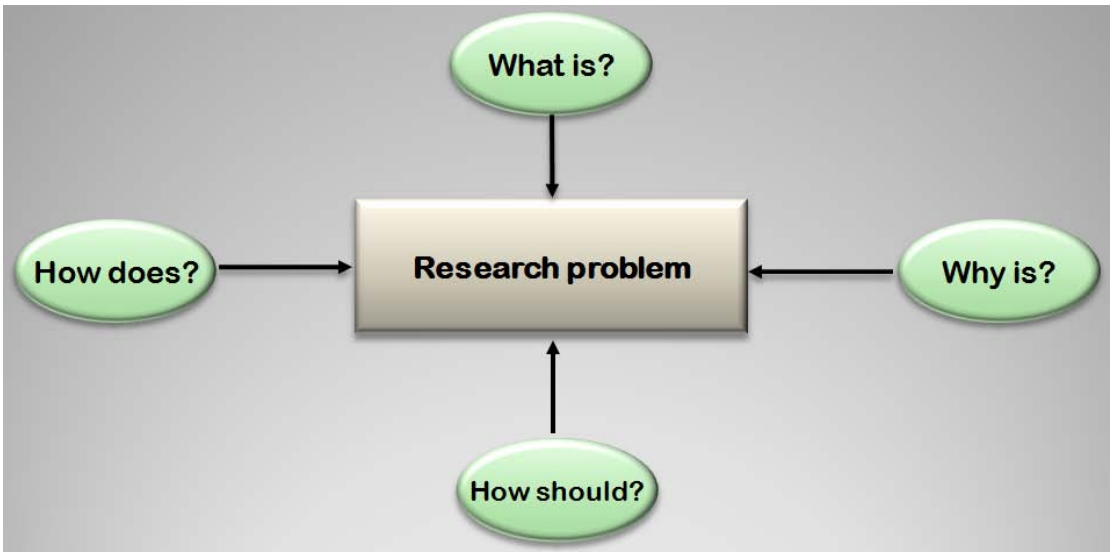


Figure 2.1 Research questions

2.1.1 What is?

These questions explore the core of the research problem and expose the problem structure. They also provide meanings for the underlying constructs (Roode, 1993). The following questions emerged:

- What is group work?
- What is the value of face-to-face group work?

- What is online social networking?
- What is the value of group work and/or online discussions via online social networking?
- What is Facebook?
- What are the differences between face-to-face and online interaction?
- What are Kolb's learning styles? (In order to determine whether there is a change in the learning styles students adopt in face-to-face and online social networking environments where students interact and discuss course content, Kolb's two-dimensional learning model and four learning styles will be applied.)
- What is lecturers' and students' awareness of the pedagogical potential of online social networking sites?
- What are the possible differences in students' learning styles when interacting in an online social networking versus a face-to-face environment?
- What are the advantages and disadvantages of students participating in face-to-face and online social networking group work/discussion environments from a lecturer and student perspective?

2.1.2 Why is?

These questions support and explain the characteristics of the research phenomenon and set out the relationships between various components related to the research (Roode, 1993). The following question emerged:

- Why is online social networking important for academic purposes?

2.1.3 How does?

These questions offer a description of the reality of the research phenomenon and the answers become clear through direct observation of the phenomenon. Direct observation refers to a qualitative approach and the interpretation of results, or a quantitative approach and the statistical analysis and interpretation of results (Roode, 1993). The following questions emerged:

- How do lecturers consider and apply online social networking as part of their teaching strategy?

- How do lecturers consider using Facebook as a supplement to their teaching strategy?
- How do students utilise online social networking for academic purposes?
- How do students feel about knowledge sharing and their understanding of the content when participating in face-to-face group work and group work via online social networking?
- How do learning styles affect students' success in an online social networking environment?

2.1.4 How should?

These questions support the generation of conclusions and guidelines used by the researcher to make recommendations based on the results of the study (Roode, 1993). The following question emerged:

- How should lecturers inform and educate students on the use of online social networking in an academic environment?

2.2 Methodological approach

2.2.1 Research approach (Interpretivism)

2.2.1.1 Ontology

As an interpretivist researcher, the ontological perspective holds the belief that online social networking and group work/online discussions are in existence in higher education, because they are products of our minds or individual cognition (Roode, 1993). Online social networking and group work/online discussions are viewed as a social world without a reality of its own and the researcher believes that reality is socially constructed. The social reality of students is constructed and reconstructed through ongoing interaction. In other words, students are able to change the reality of online social networking related to group work/online discussions (Orlikowski & Baroudi, 1991). Nandhakumar & Jones (1997) explain that, in interpretivism, the concept "reality" is referred to as "external realism" or "subjective idealism".

A non-functionalist/interpretivist view of society will be adopted (Roode, 1993). The researcher denies objective reality. This means that practicality and literal truth are not favoured, and a nominalist approach will be followed. This relates to nominalism, which can be explained as various objects labelled by the same term having nothing in

common, but their name. Roode (1993) explains how “the nominalist argues that there is no real invariant structure ‘outside’ the individual and the individual creates structures by naming, labelling or defining concepts”. Nandhakumar & Jones (1997) supportively explain normativism – where scientific knowledge is seen as ideological and serving the interest of social groups. The researcher will influence the research process and aim to understand online social networking and its relation to Information Systems lecturers and students.

2.2.1.2 Epistemology

From an epistemological perspective, the nature of the researcher’s acquired knowledge of reality will be classified as soft and gained from personal experience due to her influence in the study. Online social networking and group work/online discussions are in existence because of human actions related to its creation and recreation. The researcher will aim to get inside the students’ worlds (Orlikowski & Baroudi, 1991).

Goede & de Villiers (2003) explain the soft systems approach well which falls under the umbrella of systems methodologies: “The soft systems approach views a system as a representation of the human mind to make sense of the reality.” Some critique is that, as opposed to the hard approach, only human understanding is achieved and no creation of environmental control or predictions or a strong enough emphasis on power relationships is achieved in the soft systems approach.

As Klein & Myers (1999) explain, the researcher’s knowledge will be gained through social constructions, like language, consciousness, shared meanings and other tools. This knowledge of reality is thus socially constructed and it will be intentionally formed through the researcher’s experience (Weber, 2004). The researcher will follow a nondeterministic perspective where the intent of this research will be to increase the understanding of the phenomenon within its context; thus within the set of facts or circumstances that surround this situation of online social networking.

The context of this study involves understanding two perspectives:

- Information Systems lecturers’ awareness and consideration of online social networking for academic purposes; and

- Information Systems second- and third-year students' awareness and utilisation of online social networking for academic purposes.

Understanding this phenomenon within its context will enable the researcher to contribute to a particular body of knowledge (Orlikowski & Baroudi, 1991).

The researcher will not attempt to generalise as she believes objects are different when removed from their context. For example, if the researcher studies the effect of online social networking on first-year students, she might find that they are more active actors and thus might be affected more than older students. The best way to gain this knowledge will be to use techniques to help the researcher understand the effect of online social networking. The researcher's aim will thus be to achieve human understanding through qualitative and quantitative methods. The researcher strongly favours field studies and will conduct semi-structured interviews and distribute questionnaires. The researcher will aim to create knowledge which is credible and transferable (Weber, 2004).

2.2.1.3 General

The research field of Information Systems has been dominated by the positivist paradigm (Orlikowski & Baroudi, 1991; Chen & Hirscheim, 2004). Most prior research on online social networking was conducted within this paradigm (Sparrowe, Liden, Wayne & Kraimer, 2001; Cho *et al.*, 2005; Fu, Liu & Wang, 2008; Mayer & Puller, 2008), and most online social networking studies refer to one online social networking site, thus researchers need to take caution when generalising (Hargittai, 2008).

In order to study the academic application of online social networking, the researcher will remain subjective to the study; meaning that reasoning will take place within her mind and modified by individual bias and have an influence on the respondents, being the lecturers and students. According to Goede & de Villiers (2003), the researcher can distance herself from the situation by taking the views of different people into account.

The context of the study will impact on the researcher's contribution as she believes that objects change when placed in different contexts. Thus, the researcher does not

believe that generalisations can be made about the academic application of online social networking, as she will study it in a specific context (Shanks & Parr, 2003). The researcher's methodological position involves the following: She will aim to capture participant's perspectives as the primary source for her understanding and investigation, and she will respect the culture and context (Chen & Hirschheim, 2004).

The relationship between the researcher and the phenomenon explains how lecturers and students interpret their own situations, whether academic involvement in an online social networking site or group work/discussions during a traditional classroom lecture. The researcher will also interpret the situation which highlights the hermeneutic section of social sciences (Nandhakumar & Jones, 1997). In this study the researcher's social constructions will be derived from the constructions of her respondents. The researcher will thus aim for intersubjectivity (Walsham, 2006).

It is important to understand how virtual communities (for online social networking) produce personal identities. Also, the World Wide Web has enabled new social practices, which influence and multiply personal interaction (Flores, 1998). Online social networking sites, like Facebook, have taken over many people's personal lives and have become their preferred method of interaction. Network building also relies on identity building and information processing, and as in group work activities, depends on communication (Flores, 1998).

The researcher will use the following data gathering techniques: A lecturer and student questionnaire will be distributed and semi-structured interviews will be conducted with the lecturers. The questionnaires will offer support in finding answers for many of the research questions related to both the student and lecturer perspectives. The interviews will help explicate lecturers' motivations of the level of awareness and the consideration of online social networking sites for academic purposes (Nandhakumar & Jones, 1997).

Walsham (2006) explains how recording interviews will allow a researcher to concentrate on the engagement with the interviewee and also allows for retrieving

direct quotes. The researcher decided not to record the interviews, but to take extensive notes (typing) in Microsoft Word.

Interpretive research is sometimes regarded as qualitative research and it is used to investigate emotions and feelings (Goede & De Villiers, 2003). Based on a statement by Walsham (2006) the researcher added a quantitative method (questionnaire). Walsham (2006) states that "interviews should be supplemented by other forms of field data in an interpretive study". He states how participant observation can also be used and that quantitative data are absolutely valid inputs for an interpretivist study.

2.2.1.4 Relevance of approach

"Information Systems research can be classified as positivistic, interpretive or critical" (Goede & De Villiers, 2003). The researcher will focus on the relationship between theory and practice to support her recommendation and personal motivation for using the interpretivist approach.

In the **positivist** philosophy, the relationship between theory and practice is mainly technical. If knowledge of the general laws exists and if the initial conditions can be manipulated, a desired state of matters can be acquired, whether natural or social (Orlikowski & Baroudi, 1991). Evidence like testing hypothesis and including quantitative measures of variables can also be linked to positivism (Goede & De Villiers, 2003).

In the **interpretivist** philosophy, the relationship between theory and practice cannot be assumed as encompassing neutrality in values and these values are always entailed in the phenomenon being studied. "Researchers' prior assumptions, beliefs, values, and interests always intervene to shape their investigations" (Orlikowski & Baroudi, 1991). Gaining one's knowledge of reality through social constructs like language and various other artefacts relates to interpretivism (Goede & De Villiers, 2003).

In the **critical** philosophy, the relationship between theory and practice shows that the researcher's role is "to bring to consciousness the restrictive conditions of the status quo, thereby initiating change in the social relations and practices, and helping to eliminate the bases of alienation and domination" (Orlikowski & Baroudi, 1991). If

one's aim is to eliminate possible causes of alienation or domination or to offer critique for social conditions, one's approach relates to critical research (Goede & De Villiers, 2003).

Orlikowski & Baroudi (1991) mention how a researcher cannot select a perspective based on a topic's nature, but rather choose which aspects of the topic he/she wishes to focus on.

Personal motivation is an important element in choosing a particular research method, and people have different motivations (Walsham, 2005). The researcher's personal motivation relates to interpretivism. The researcher's aim is to identify and focus on a growing phenomenon called online social networking (Goede & De Villiers, 2003).

The relationship between theory and practice supports the researcher's adoption of the interpretivist approach. In the interpretivist philosophy, the relationship between theory and practice cannot be assumed as encompassing neutrality in values and these values are always entailed in the phenomenon studied. "Researchers' prior assumptions, beliefs, values and interests always intervene to shape their investigations" (Orlikowski & Baroudi, 1991).

Although use of the interpretivist approach is questioned because of the absence of generalisations, the researcher's preference remains constant as she believes that the social context cannot be ignored. The researcher strongly favours the awareness of the social context of Information Systems studies and agrees with du Plooy (n.d.) who explains that the full social context in the human environment should be taken into account.

The validity and reliability characteristics of the positivist and interpretivist approaches differ and serve different research interests (Weber, 2004). Another reason for the predominant adoption of interpretivism and qualitative methods, is that it offers support to better investigate the research questions and to enhance an in-depth understanding of the phenomenon. The type of research investigation offered by the positivist and critical paradigm will not support what the researcher wants to accomplish (Chen & Hirschheim, 2004).

The researcher is aware of the dominance of the positivist paradigm in Information Systems research (Orlikowski & Baroudi, 1991; Chen & Hirschheim, 2004), but does not recommend this approach. The researcher agrees with Shanks & Parr (2003) about the inability to detach oneself form a social situation, and Orlikowski & Baroudi (1991) explain that if we neglect historical influences (such as previous studies on the pedagogical potential of online social networking), it may produce an incomplete depiction of Information Systems phenomena.

Furthermore, the researcher does not view the physical and social worlds in the same way and is aware of this anomaly created by the positivist approach. With regard to social reality the researcher assumes that humans do not interact in stable and orderly ways. Because the researcher needs to understand meaning, the positivist approach is not useful. The researcher cannot detach herself from the study as she will administer three academic groups on Facebook and possibly influence the process as administrator of these groups (Orlikowski & Baroudi, 1991).

The researcher does not recommend a critical approach as the topic does not relate to a form of emancipation and it does not support the type of knowledge she wants to create (Orlikowski & Baroudi, 1991). Walsham (2005) explains that a critical researcher should act critically in any environment they find themselves in, whether at home or at work. The choice of research focus cannot be supported by following a critical approach. This does not support the researcher's personal motivation and would not support the results she aims for.

The researcher is also aware of a weakness of the critical approach, which is according to Avgerou (2005) and Walsham (2005), limited contributions of critical social issues in Information Systems research thus far. The researcher's motivation for this study is not based on an awareness of forms of control and domination (Stahl, 2005; Kvasny & Richardson, 2006), and critical research tends to be time-consuming (Walsham, 2006).

When conducting a study on CMC (Computer-Mediated-Communication) discussions, Trauth & Jessup (2000) showed how positivist and interpretivist approaches could complement each other. The findings from both approaches were

valuable. Certain coding categories obtained from the interpretivist approach could also be used by a follow-up positivist study.

Orlikowski & Baroudi (1991) explain that a researcher should adopt an approach compatible with their own research interests. The researcher's interest is to understand the effect of online social networking on lecturers and students. The researcher's intent is not to criticise as she does not aim to free an oppressed group or possible inequalities.

The study of people in their natural settings and a high level of interpretation also support the recommended approach. The researcher's intention is to understand the lecturers' and students' views of their world and their roles in it (Orlikowski & Baroudi, 1991). The researcher feels it is best to interpret and try to understand the situation surrounding online social networking group work/online discussions, to remain subjective, and to be open to change, in order to conduct useful conclusions for a contribution to the field of Information Systems and body of knowledge. The researcher's findings are intended to inform other people of her understanding of the online social networking phenomenon and its pedagogical potential and to provide a basis for further research on this topic. All of the above motivates the adaptation of the interpretivist approach.

2.2.2 Research strategy and the respondents

The researcher will apply both quantitative and qualitative data collection methods as part of the research strategy undertaken. The following methods will be applied:

2.2.2.1 Lecturer questionnaire

A questionnaire was distributed to more than 500 Information Systems, Computer Science and Computing lecturers from a large number of universities across five countries:

- Australia
- Canada
- South Africa
- the United Kingdom
- the United States of America

2.2.2.2 Student questionnaire

A questionnaire was distributed to more than 80 second-year Informatics students from the University of Pretoria in South Africa, as well as third-year Information Systems students from CTI (a private education institution) in South Africa.

2.2.2.3 Lecturer interviews

Semi-structured interviews were conducted with 16 Informatics lecturers from the Department of Informatics at the University of Pretoria in South Africa.

2.2.2.4 Facebook group administration

The researcher managed the administration of three academic groups on Facebook:

- INFORMATICS 271
- CTI 3rd year IT students – 2009
- CTI 3rd year IT students – 2010

2.2.3 Data collection time frame

- The lecturer questionnaire link was distributed via email during the period from 1 September to 1 October 2009. The reason for this timeframe was because of the lengthy process of gathering over 500 email addresses from five countries. The researcher searched a large number of Departments of Information Systems, Computer Science and Computing by browsing the official University or College websites in order to obtain the email addresses.
- The student questionnaire link was distributed via the Learning Management System of the University of Pretoria (ClickUP) for the second-year students in the Department of Informatics as well as via email to the students from CTI during November 2009 and June 2010 respectively.
- The lecturer interviews were conducted on 16 and 17 November 2009.
- The administration of the three academic groups on Facebook spanned a period of 15 months (starting in July 2009 and ending in September 2010).

2.2.4 Justification of data collection strategies

- The questionnaire is a valuable quantitative method which supplements qualitative methods and it is a successful strategy when interpreting data to obtain useful information.

- The interviews, as a valuable qualitative method, will provide the most direct evidence of lecturers' perspectives and it is useful in obtaining an in-depth understanding. These interviews will be semi-structured to leave room for improvisation and for the researcher to probe initial responses of the respondents.
- Facebook group administration will add value by studying the level of adoption and utilisation of Facebook as an academic tool by students. This will offer support for the research findings.

2.3 Theoretical approach

Kolb's two-dimensional learning model and four learning styles are applied in this study to determine whether students' learning styles change in face-to-face as opposed to online social networking environments where students interact and discuss course content. The researcher thus aims to study students' adoption of learning styles specifically in these two environments. Kolb's model is explained in greater detail in Chapter 3, Paragraph 3.8.

The researcher selected two theories applicable for this study:

- ✓ Task-Technology Fit (TTF) theory.
- ✓ Social Software Performance Model.

The researcher will now briefly discuss both of these theories respectively. The research questions will be mapped to the theories for examination of successful application of the academic use of online social networking sites in Chapter 5.

2.3.1 Task-Technology Fit (TTF) theory

Information Systems research is concerned with the relationship between Information Communication Technology (ICT) and the performance of an individual. Students adopt various ICT tools for the accomplishments of various tasks and it is important for lecturers to be aware of how specific technologies fit the tasks that students perform during their studies, as it effects the enhancement of learning (Cruz, 2009).

The Task-Technology Fit (TTF) theory was initially studied on an individual level by Goodhue & Thompson (1995) and on a group level by Zigurs & Buckland (1998).

The TTF theory describes that ICT will have a more positive effect on an individual's performance and will be utilised by an individual if the ICT capabilities match the task that the individual needs to conduct (Cruz, 2009). Gebauer & Ginsburg (2009) and McGill & Klobas (2009) highlight how the success of Information Systems can be recognised by focusing on the task for which the technology is required as well as the fit between the task and the chosen technology. Nicholson, Nicholson & Valacich (2008) support this view and add the abilities of the individual to the fit between task and technology and say that this will have an impact on performance.

The main dependent factors linked to this theory are individual performance and system utilisation, and the main independent factors consist of task and technology characteristics (TTF, 2010). According to Dwyer (2007), TTF aids in the analysis of utilisation or use (e.g. post implementations) and it does not focus on obtaining requirements or conducting analysis and modelling. TTF also assists users and organisations to better understand the effective use of ICT (McGill & Klobas, 2009).

The TTF model has been applied in the context of a diverse range of Information Systems. McGill & Klobas (2009) explain that parts of the TTF theory have been tested in various domains, like software development, health studies, management decision-making and library systems. They specifically studied the possible effect of TTF on the performance impacts of Learning Management Systems. They found that TTF strongly influenced the impact of Learning Management Systems on learning but had a weak effect on students' grades. Another study was conducted by Gebauer & Ginsburg (2009) in which they applied TTF to mobile Information Systems taking into consideration the evolving nature of technology. They suggest that a good fit between the task, technology and level of use can be related to positive user evaluations.

Nicholson *et al.* (2008) also applied TTF and studied technological attributes and the effects that it had on learning. They explain how earlier research did not focus enough on the technological features or attributes that would enhance the learning experience or how the complexity of a task could influence the outcome of the learning process. Nicholson *et al.* (2008) state that "prior research has shown mixed results for the effectiveness of utilising multimedia technology in a learning environment".

TTF has also been combined with other models or applied as an extension related to the technology acceptance model (TAM). Numerous modifications have been made to the TTF model of Goodhue & Thompson (1995) in order to match the purposes of specific studies.

The diagram below illustrates this theory:

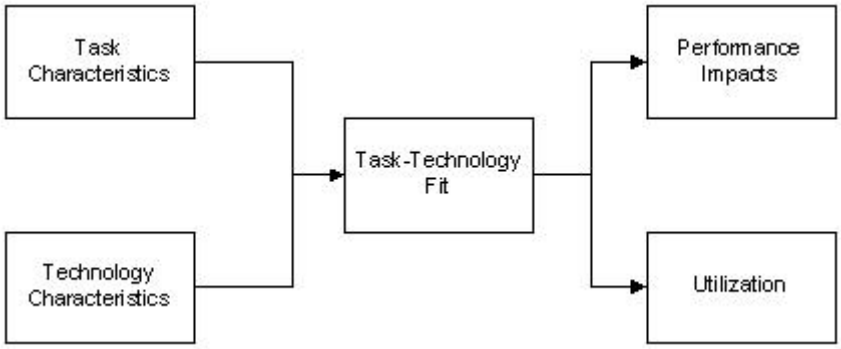


Figure 2.2 Task-Technology Fit (TTF) (Goodhue & Thompson, 1995)

Goodhue & Thompson (1995) studied TTF and individual performance and contend that a specific technology must be utilised and the technology and task must fit each other for the technology to have a positive affect on an individual's performance. They explain a gap between a task's requirements and a technology's functionalities. If this gap widens, the task-technology fit reduces. For example, if a user needs to type a paragraph but the functionality of the technology does not fit a word processing system, the TTF will be reduced.

How is performance measured specifically in the use of online social networking sites? People aim to build and maintain relationships and for this reason, performance can be seen to relate to how effectively and efficiently these websites support this task. The use of these sites is not compulsory and when people are satisfied with the website and they enjoy using it, performance will be positively influenced. Effectiveness and efficiency are the criteria used when people need to evaluate the use of online social networking sites (Dwyer, 2007; Dwyer, Hiltz & Widmeyer, 2008).

Goodhue & Thompson (1995) found that the TTF measured together with utilisation, was a very good predictor of how users feel about improved work performance related to the system under investigation. Under utilisation they describe the beliefs and attitudes of the user which can predict utilisation. For example, if a user has a negative attitude towards using a certain technology, like an Information System in the work environment, it will have a negative effect on utilisation.

Goodhue & Thompson (1995) explain that if utilisation increases, it will link to a more positive performance level, but, if a poor system is utilised, it will not improve the performance. They also mention that if a technology fits the task, it will also account for increased performance.

They created a combined model which they named the Technology-to-Performance Chain (TPC). Goodhue & Thompson (1995) focused both on task-system fit and utilisation and created the model below:

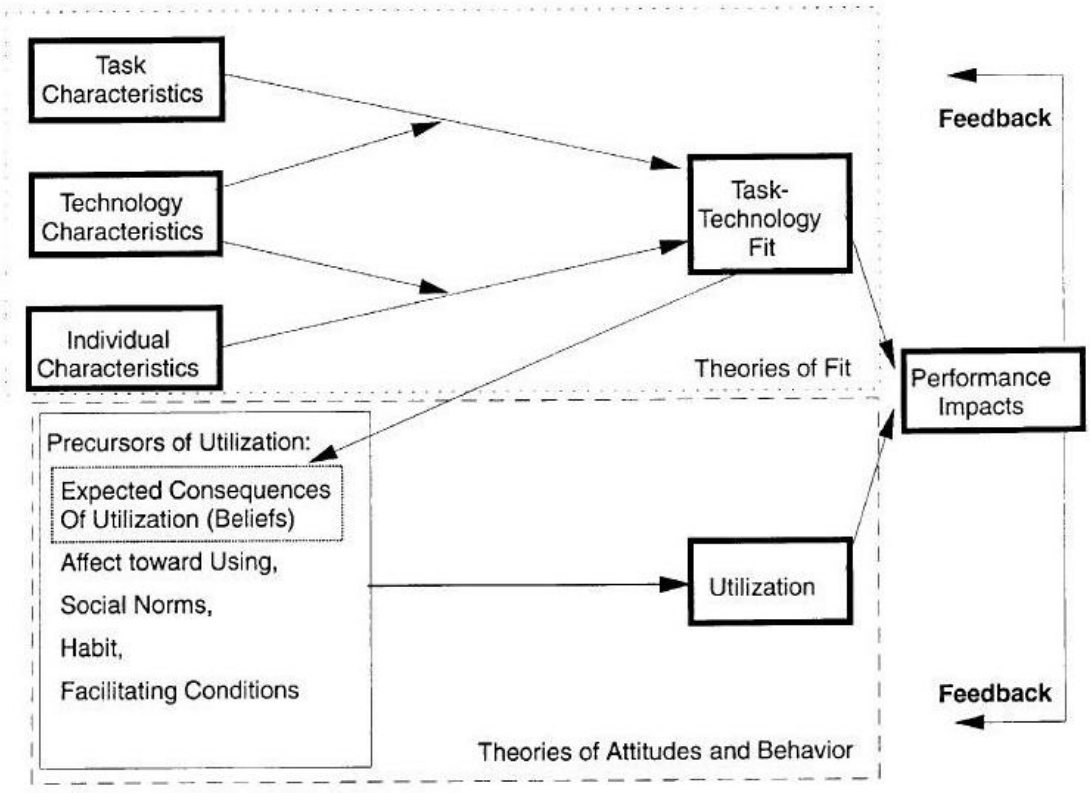


Figure 2.3 Technology-to-Performance Chain (TPC) (Goodhue & Thompson, 1995)

Figure 2.3 describes the task, technology and individual characteristics moving towards a fit between these characteristics; taking into account the precursors of utilisation. When the technology fits the other characteristics and it is utilised, there will be impacts on the performance of individuals depending on the outcome of the characteristics and the level of utilisation.

Goodhue & Thompson (1995) conclude that if one wants to predict individual performance, both utilisation and TTF need to be included in the study. If users are involved in systems development, for example, chances are higher that the technology will fit their tasks because their input was captured. To apply the theory to this study, it can be said that if users' input was seen as imperative for Facebook's academic design, the online social network might serve academic needs better. There may be a need for a redesign of Facebook's academic capabilities for it to be regarded as a social and academic tool.

In order to understand user evaluations of Information Systems, Goodhue (1995) conducted a study to determine whether users can successfully evaluate task-technology fit and he found that users were able to successfully evaluate TTF. Goodhue (1995) defines user evaluations as "elicited beliefs or attitudes about something".

The TTF perspective views technology as a way by which an individual with his or her own goals, carries out specific tasks. TTF focuses on the extent to which the characteristics of a system fit the user task demands. The higher the TTF, the better an individual's performance will be (Goodhue, 1995). For example, if a user needs to draw a use case diagram, a Computer-Aided Software Engineering (CASE) tool will be a good fit for the task and will thus result in better individual performance of the task at hand.

Goodhue (1995) explains that organisations spend a lot of money on Information Systems to improve business processes and performance within the organisation. He also states that "objective measures of system success are extremely difficult to achieve" (Goodhue, 1995). In order to determine the success of a system one relies on the users' evaluation thereof. If a system scores high marks with users, surely the

system must increase individual performance. User evaluation measures have been criticised for the lack of theoretical underpinning. Many perspectives have been related to the impact of an Information System on an organisation, for example, a human relations perspective; a focus on individual behaviour or utilisation; and a political and cultural perspective. The TTF as an additional perspective was added with a focus on productivity and efficiency in business.

Goodhue (1995) defines technology as a tool used by individuals to carry out tasks. He defines tasks as "the actions carried out by individuals in turning inputs into outputs". TTF suggests that the better the fit between the functionalities of technology, the requirements set by tasks and the abilities linked to individuals, the better the performance will be.

Goodhue (1995) compares the TTF to the Cognitive Cost/Benefit Framework and states that these two "are both based on the same basic propositions", including that the performance of an individual is affected by how well a technology fits a task; the "fit operates through its impact on task processes"; and "individuals can evaluate fit and choose technologies on that basis". Goodhue (1995) states that the Cognitive Cost/Benefit perspective can be regarded as a "special case of the more general TTF perspective". He explains the difference between the two perspectives: the Cognitive Cost/Benefit perspective holds the assumption that individuals will choose a specific technology, whereas with TTF, individuals will evaluate different technological options but they don't have a choice in using them.

TTF and organisational structural contingency theories are also similar (Goodhue, 1995). For high performance, according to the latter theory, an organisation's structure must fit the context (the task or technology). With TTF, the technology must fit the task requirements. TTF operates at an individual level where organisational structural contingency theories operate on an organisational level, but there is a clear similarity between the logic of each. The methodological assumptions made about organisational structural contingency theories are thus relevant to the studies behind TTF.

In his study, Goodhue (1995) chose a specific task, identified subtasks and dimensions of TTF which users might possibly evaluate. He introduced four propositions:

- Characteristics of Information Systems/services will affect user evaluations of TTF.
    - Example: Common systems, decentralisation of assistance.
- Task characteristics will affect user evaluations of TTF.
- Users being engaged in more interdependent, difficult, various and hands-on tasks, will place more demands on the Information System and this may lead to lower user evaluations.
- Individual skills and abilities will affect user evaluations of TTF.
    - Example: Competence, familiarity.
- The interaction between task and technology (and individual) will affect user evaluations of TTF.

In his study, Goodhue (1995) found "general empirical support for four TTF propositions about the determinants of user evaluations of TTF". He found that individual, task and system characteristics directly influenced user evaluations and that users seem capable of accurately evaluating the TTF of technologies related to them (Goodhue, 1995).

In conclusion, user evaluations of TTF can be a strong research tool to test the impact that systems have on organisations and to identify and diagnose problem areas in organisations (Goodhue, 1995). This can be linked to an example highlighting the importance of user feedback for continuous improvement of systems development.

On a group level, Zigurs & Buckland (1998) studied the effectiveness of Group Support Systems (GSS). In their paper they discuss TTF in GSS environments focusing on task complexity and the different dimensions of GSS technologies. It is important to focus on the nature of a specific task as it will impact the group's interaction processes, performance and the type of GSS needed to best suit the needs of the task.

It was found that, in idea-generation tasks, groups supported by GSS performed better or no worse than non-supported groups, but for correct-answer and negotiation tasks, GSS groups performed worse (Zigurs & Buckland, 1998).

In defining group tasks, Zigurs & Buckland (1998) discuss four conceptualisations of tasks and only focus on two: "task *qua* task" and "task as behaviour requirements". "Task *qua* task" is described as "the actual task materials that are presented to the group" and the importance of task complexity is emphasised. "Task as behaviour requirements" focuses not only on what should be achieved to meet predefined goals, but also on how the goals should be attained. By analysing these conceptualisations they define a group task as: "the behaviour requirements for accomplishing stated goals, via some process, using given information". For example, a student group is provided with a case study (given information) from which they need to draw a use case diagram (a stated goal), by working together in groups of 3–5 students (some process).

Sometimes the emphasis will be on another task (other than the one set out in the goals) because of a group member's hidden goals responsible for redefinition of a task or if a task is redefined because of the GSS structure or the GSS tool forcing the task to match the GSS (Zigurs & Buckland, 1998). For example, a lecturer may ask students to complete a group assignment on Facebook, but a specific student has other hidden goals and thus goes off track and uses Facebook for socialising purposes and not for the initial intended task.

The importance of and ongoing interest in task complexity are emphasised. Task complexity requires high levels of cognition from individuals and also influences different task environments (Zigurs & Buckland, 1998).

Based on three themes extracted from various definitions, a definition of GSS was formulated. The three themes are (Zigurs & Buckland, 1998)

- support for communication;
- process structuring; and
- information processing.

Based on these themes, Zigurs & Buckland (1998) define GSS technology as "a set of communication, structuring, and information processing tools that are designed to work together to support the accomplishment of group tasks".

An important statement is that GSS technologies can be used in other ways than originally intended by the designers (Zigurs & Buckland, 1998) or it is referred to an "unfaithful appropriation", where the technology is not utilised in ways intended by the designer (Dwyer *et al.*, 2008). For example, "Facebook was begun in February 2004 by Mark Zuckerberg while he was a student at Harvard University. Fellow students, Dustin Moskovitz and Chris Hughes, worked with Zuckerberg in their dorm room to create the site for fellow students" (Lawrensen, 2007). Facebook then became a high class online socialising networking website for people around the world. The academic potential of Facebook, such as creating academic groups, was embedded in the capabilities.

Table 2.1 below shows examples of elements for the dimensions of GSS technology. This is related to the definition of GSS technology provided earlier by Zigurs & Buckland (1998).

Dimension	Examples of Elements
Communication Support	• Simultaneous input • Anonymous input • Input feedback • Group display • Physical configuration of communication channels (e.g., synchronous or asynchronous, proximate or dispersed)
Process Structuring	• Agenda setting • Agenda enforcement • Facilitation • Complete record of group interaction
Information Processing	• Gather information • Aggregate information • Evaluate information • Structure information (e.g., allocation, stakeholder analysis, multiat-tribute utility analysis, cross-impact analysis)

Table 2.1 Examples of elements for the dimensions of GSS technology (Zigurs & Buckland, 1998)

Based on Table 2.1 and comparing Facebook as a possible tool for group support, Facebook can possibly be linked to communication support as it offers some of the

elements listed above, like simultaneous input, group display and asynchronous characteristics.

In support of Goodhue & Thompson's (1995) findings, Zigurs & Buckland (1998) state that a proper fit between task and technology can be linked to groups performing at higher levels and Zigurs, Buckland, Connolly & Wilson (1999) state that the task type and characteristics of the GSS technology should fit in such a way that group performance is enhanced. The following question is then highlighted: Is Facebook structured in such a way that it is able to enhance the performance of an academic student group?

Zigurs & Buckland (1998) discuss different types of tasks and the researcher feels that mostly simple academic tasks will be executed on Facebook. Simple tasks "have a single desired outcome, a single solution scheme, and no conflicting interdependence or solution scheme/outcome uncertainty". An example of TTF for a simple task is illustrated in Figure 2.4 below.

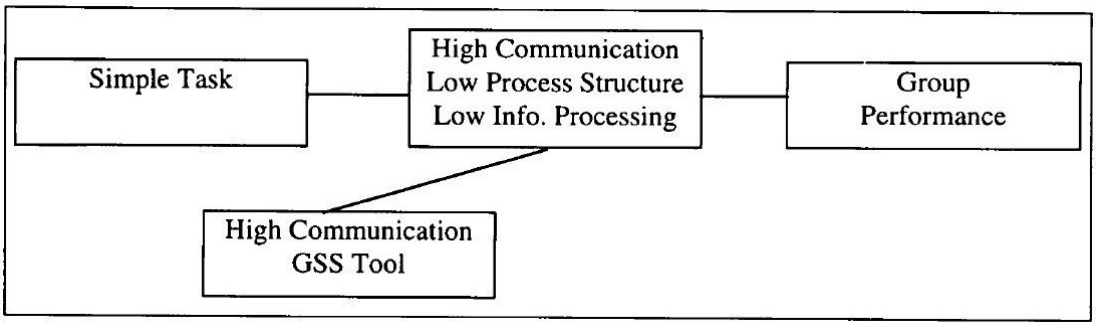


Figure 2.4 Model of TTF for a simple task (Zigurs & Buckland, 1998)

Facebook, if regarded as a high communication GSS tool, has a high level of communication support if compared to the other dimensions and by completing simple tasks, students should be able to satisfy their simple task needs for group work and/or online discussions with a tool like Facebook. In return, this should then positively impact group performance. According to Zigurs *et al.* (1999), simple tasks only need communication support and ideas need not be assessed or compared.

To conclude on the work of Zigurs & Buckland (1998), group tasks have different levels of complexity and thus different technological demands. Depending on the TTF outcome, the group's performance will be affected. They add that lecturers can choose the best GSS for certain tasks. Thus, depending on the nature and complexity of the tasks at hand, lecturers should make the right decisions based on the selection of appropriate tools to fit the tasks. The challenge is that flexible GSS technologies should be developed to suit specific tasks.

Zigurs *et al.* (1999) conducted a further study based on the study by Zigurs & Buckland (1998), in which they tested the TTF theory with a large set of existing GSS studies. They realised that GSS-supported groups sometimes perform better than non-supported groups, sometimes the same and sometimes even worse. These mixed results are still unexplained. A possible reason for this may be that a poor fit between the chosen GSS and a specific task exists.

Matching taks with the correct GSS technologies is a complex activity. An adequate evaluation of the tasks should be carried out. McGrath's circumplex (in 1984) is said to be the "most widely used task classification scheme for GSS research" (Zigurs *et al.*, 1999), but it is also said that "it is only one of several different ways to define task" (Zigurs & Buckland, 1998).

An application called the EBS (Electronic Brainstorming) module of Group Systems software provides high communication support, where group members can post comments and view others' comments at the same time, while information is not manipulated or processed (Zigurs *et al.*, 1999). Facebook's discussion board and wall have similar characteristics to EBS in this example.

From the findings by Zigurs *et al.* (1999), it is clear that where simple tasks were matched to the right GSS technologies, the performance of the group was enhanced. Also, if a specific GSS technology matches or fits a specific task, GSS-supported groups will most likely perform better than non-supported groups. It pays to test various GSS technologies against each other in order to find a good fit (Zigurs *et al.*, 1999). For example, if one would test Facebook against the Learning Management

System of a higher education institution, it may become clear which technology would better fit the various types of tasks that students need to accomplish.

It is important to describe a task in detail and to focus on the instructions given to the group. The instructions assist in developing a more complete picture of the overall task in order to understand it better (Zigurs *et al.*, 1999). In this way, if the task is understood and properly analysed, the most appropriate GSS technology can be chosen for that specific task in order to ensure enhanced group performance.

A good idea is to apply a collection of tools which can be integrated, for example, a link on the Learning Management System course website to an academic group on Facebook. Flexibility in the fit between task and technology is needed and this will become the norm in the future. “Greater flexibility, availability and interoperability” will assist in making the ultimate choices for task and technology fit (Zigurs *et al.*, 1999).

Dwyer (2007) conducted a study addressing TTF and the Social Technical Gap theories related to online social networking sites. She mentions that limited research has been done on the relationship between Information Systems theories and the application of online social networking sites.

The Social Technical Gap theory in short holds the idea that technical support must be in place for the social aspects to be supported. The social requirements mentioned are cooperation, coordination and communication. A poor fit related to the Social Technical Gap is the lack of fit between what is required on a social level and the technical solutions which are or are not in place to support the social requirements (Dwyer, 2007).

The integration of TTF and the Social Technical Gap theories captures the idea that performance will be influenced by the task fit as well as the social requirements being met (Dwyer, 2007).

2.3.2 Social Software Performance Model

Dwyer *et al.* (2008) created a very interesting theoretical model, the Social Software Performance Model. In order to capture the true essence of the analysis of online social networking sites, this model consists of an integration of three theories, namely Task-Technology Fit (TTF), Fit Appropriation Model and Socio-technical Systems Theory.

The need for an integrated model is highlighted, which, according to Dwyer *et al.* (2008), aids in focusing on "social, personal, and technical factors" and this is needed for online social networking sites. TTF is used because of the fit between task and technology and its relation to performance; the Fit Appropriation Model is used for its appropriation support (encouraging pro-social behaviour in order to eliminate any anti-social behaviour); and the Socio-technical Systems Theory is used for its feedback cycle related to the evolution of an application or system (Dwyer *et al.*, 2008).

TTF was explained in Paragraph 2.3.1. The Fit Appropriation Model can be seen as an extension of TTF and combines TTF with appropriation theories, like the Adaptive Structuration Theory. It covers TTF with added appropriation support. The appropriation construct defines how individuals apply and adapt a specific technology to suit their tasks. The term "faithful appropriation" indicates that users use a system as intended by the designer. Thus, as mentioned before, an "unfaithful appropriation" would be where the technology is not utilised in ways intended by the designer (Dwyer *et al.*, 2008).

There are three ways in which appropriation support can be provided for (Dwyer *et al.*, 2008):

- Facilitation: An individual leader or an external facilitator who is able to offer support and guidance.
- Software restrictiveness: "The extent to which a system constrains individual behaviour", for example, the system blocking out some unnecessary features for group collaboration.

- Appropriation training: Training the people in order to use the specific technology successfully.

The Fit Appropriation Model also anticipates that if TTF and appropriation support are present, performance will be enhanced (Dwyer *et al.*, 2008).

According to Dwyer *et al.* (2008) a feedback loop is missing and highlights the need to incorporate the Socio-technical Systems Theory. This theory holds the notion that usage patterns will influence the development of a system. For example, based on global user feedback, Facebook is undergoing ongoing enhancements and improvements, which are necessary to continuously improve Facebook. The idea behind this theory is that the social technical system consists of artefacts and components which are interrelated and work together to achieve an overall system goal. This was studied by Hughes in 1989 (Dwyer *et al.*, 2008) and is illustrated in Figure 2.5.

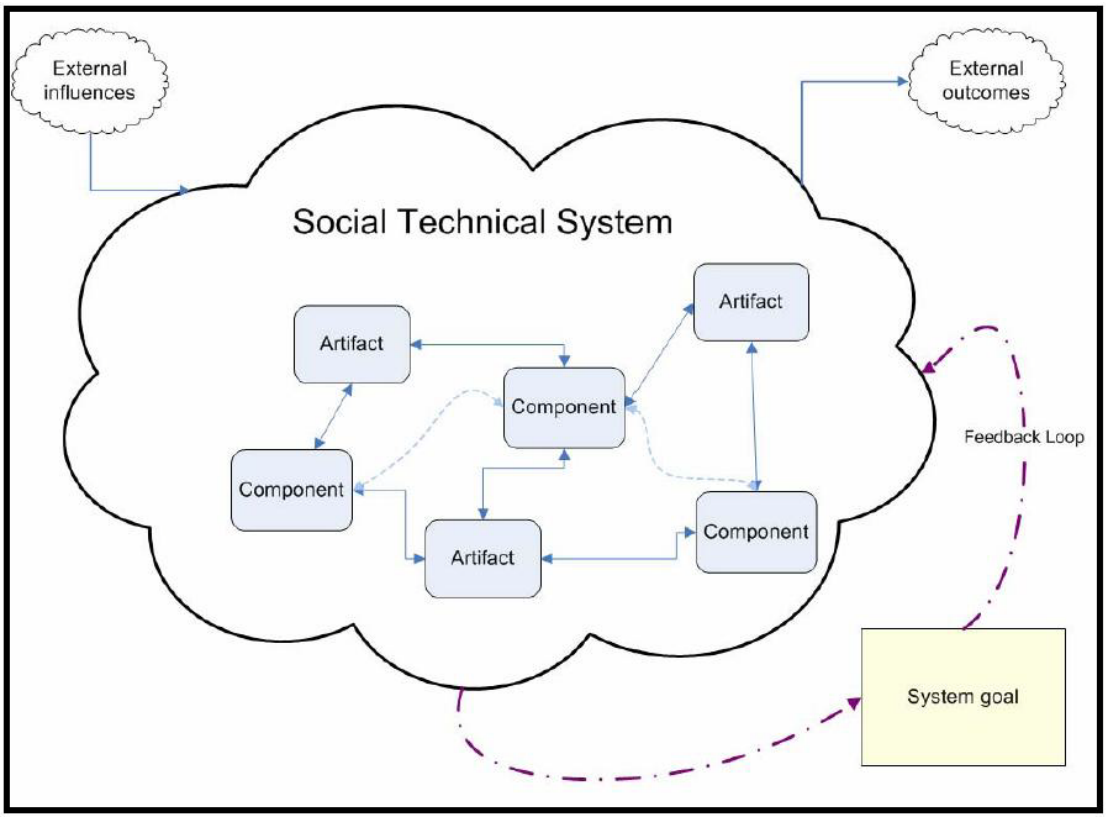


Figure 2.5 The structure of a social technical system (Dwyer, Hiltz & Widmeyer, 2008)

As there is a gap between the goals and performance of a system the ongoing feedback loop, which is completed by people (or users), is crucial to the improvement of the performance of the system. Facebook, for example, is continuously evolving as

a result of the user feedback loop. In this loop, artefacts and components of the system (Facebook) are continuously changed and improved while the system expands and becomes more complex over time (Dwyer *et al.*, 2008).

The reason why Dwyer *et al.* (2008) developed the Social Software Performance Model was to be able to "predict the structure and use of online social networking sites more accurately". To construct the Social Software Performance Model, the Fit Appropriation Model is based on TTF and extended to include the feedback loop and connecting performance to the design processes of the system through habitual routines. This model also assumes that the system will be used as intended by the designer. The Social Software Performance Model is illustrated in Figure 2.6.

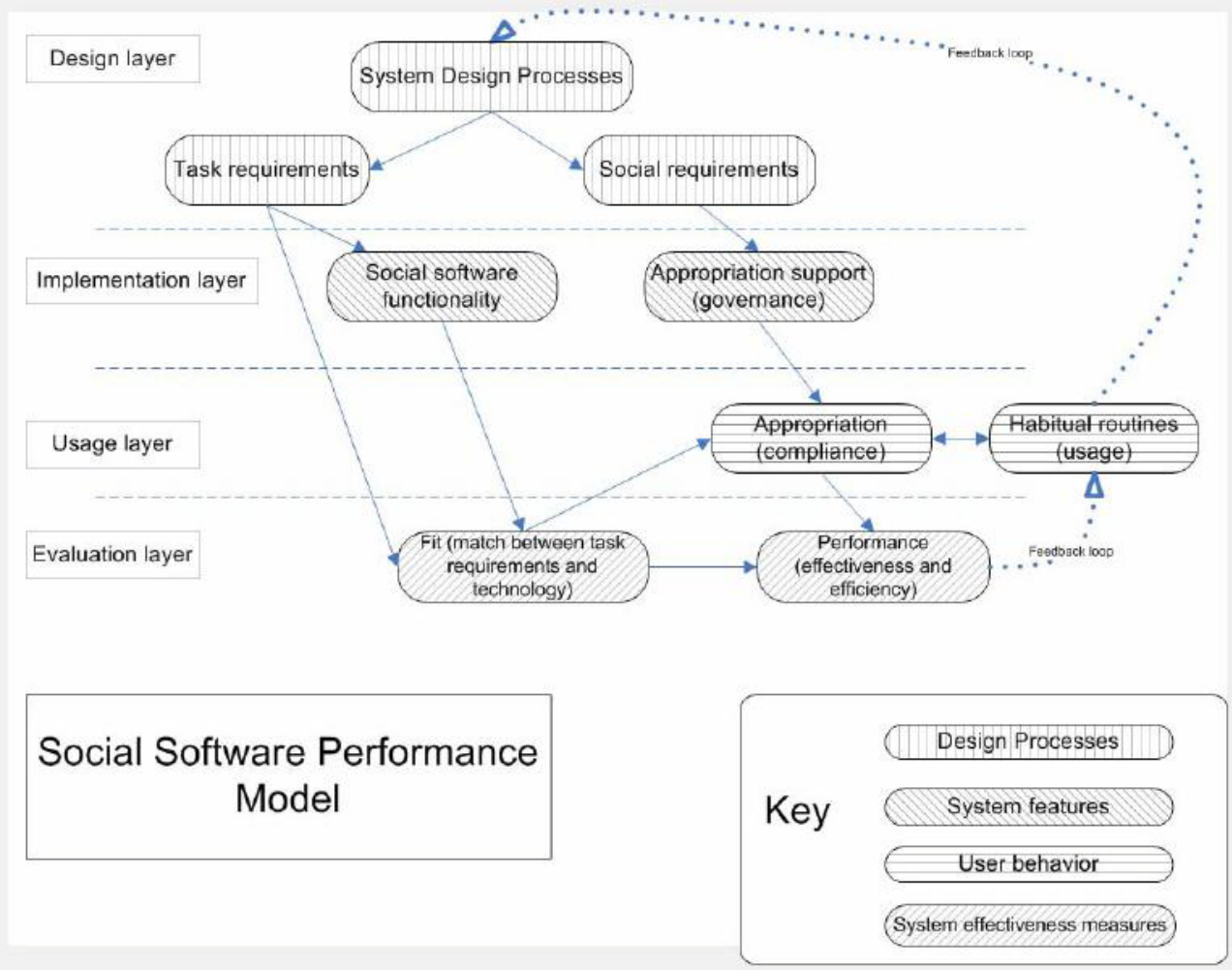


Figure 2.6 The Social Software Performance Model (Dwyer, Hiltz & Widmeyer, 2008)

The idea behind this model is that, for a proper understanding of online social networking sites, a feedback loop going back to the design processes, must exist. This

is indicated by the dotted line in Figure 2.6. Dwyer *et al.* (2008) further describes the four layers as well as the feedback loop as follows:

Design layer: This includes basic system functions, appropriation support and task requirement development to support social interaction. Social requirements, like privacy and ethical behaviour should also be met, for example where users on Facebook can report problems. Some of the task requirements mentioned are:

- Self presentation: For example, the digital identity/profile of a member.
- Relationship initiation: For example, building relationships with other members by interacting and sharing information.
- Management of ongoing relationships: For example, being in contact with other members and viewing their activities, like in the news feed on Facebook.

Implementation layer: When the task model is understood, the designers will develop the system features. Social interaction needs to be supported on an online social networking site with the following system functionalities:

- "Digital self representation through profiles".
- "Communication tools for both synchronous and asynchronous contact".
- "Linked, visual representation of ego-centric online social networks".
- Appropriation support is also within this layer. Pro-social behaviour is encouraged in social systems. With online social networking sites, appropriation support is carried out through functionalities that support social relationship building. It can include the following:
    - Reputation management, for example where users can report unwanted actions.
    - Restrictive features: Defining the information that may be searched.
    - Privacy controls: Customers can customise their own privacy settings.

Usage layer: This describes how members use the site. It includes appropriation, or complying with behavioural standards set out by the site, and habitual routines describe how members utilise the site and how often they return to the site.

Evaluation layer: This layer measures, by means of fit and performance, the effectiveness of the system. Regarding fit, it can be determined whether the sites'

functionality supports the task of members socially interacting. Regarding performance, satisfaction with the usage of the site and efficiency is measured.

Feedback loop: The loop affects the evolution of the site. It cannot be said, however, that the evolution can be predicted or will be consistent. Based on the performance and habitual routines, input can improve the system design processes.

Dwyer *et al.* (2008) provides an example to explain the feedback loop. Facebook introduced a news feed function to display users' daily activities on the website. Some members became concerned about their privacy and in a couple of days; more than 700 000 members joined a group called "Students Against Facebook News Feed". The founder of Facebook, Mark Zuckerberg, explained the purpose of the news feed and considered members' concerns by adding privacy controls to support the news feed. This is an example emphasising just how quickly online social networking users can become unhappy, respond, and trigger changes in a system's functionality. The feedback loop is thus a critical mechanism to support effective evolution of a system.

In conclusion of the work by Dwyer *et al.* (2008), they state: "We believe that an understanding of both task technology fit and appropriation are needed to accurately describe and predict usage of online social networking sites. We also add a feedback loop that reflects both the current development techniques that emphasize frequent changes based on user feedback, and our observations regarding the rapid evolution of these sites."

2.4 Conclusion

The research questions were described in Chapter 2. The interpretivist methodological approach adopted by the researcher and its relevance to this study were also explained. The research strategy and respondents, the time frame for data collection as well as a justification of the selected data collection strategies were also explained. Lastly, by elaborating on the TTF theory and the Social Software Performance Model, the theoretical approach was described in detail. In Chapter 3 a detailed review of literature related to this study is provided.

CHAPTER 3: Literature review

Chapter 3 offers a detailed review of literature related to face-to-face group work and its value; online social networking and its value; Facebook; face-to-face versus online group work; Kolb's learning styles and the learning styles evident in face-to-face and online environments; and finally how lecturers and students experience group work and discussions (face-to-face and via online social networking).

3.1 Introduction

The interaction between students and lecturers; students and students; as well as students and the course content, all contribute to the learning process (Meyer, 2003). Group work is not a new term in education (Burdett, 2003). An extremely important aspect of the learning and teaching environment is the improvement of the quality thereof, which has become a favourable exploitation in tertiary education (Patel, 2003). Group work is practised in various Information Systems courses.

Houldsworth *et al.* (2000) observe that group work has become a constitutional part of various undergraduate courses over the last decade, and many previous studies have focused on group work in the workplace, specialising in management groups. Burdett (2003) supports this by describing the shift in education preference from individual learning to group work related to a confirmation of tertiary education, and students need assistance in understanding and translating the composite world in which they live today.

In modern education learners are not merely passive receivers of information, but active knowledge workers working on the construction of knowledge (Cartelli, Stansfield, Connolly, Jimoyiannis, Magalhães & Maillet, 2008; David, 2010). Knowledge construction is supported by the application of group work in the classroom, and Dwyer & Malani (2006) state that there is a strong focus on group work projects in Information Systems Education.

Industry, employers and government highlight the need for increased attention on group skills development in higher education graduates in order to bridge the divide

between education and industry through the application of group work (Baskin *et al.*, 2005). Attention should also be given to the development of students' digital literacy skills as these are critical (Vie, 2008). It is thus the responsibility of higher education institutions to create an environment where students can develop various offline and online skills. According to Cruz (2009), Information Communication Technology (ICT) continuously influences higher education and tools such as Facebook are changing the way students learn.

Today's students are experts in the use of technology and expect more from the learning process. Technological advances create opportunities for a wider range of education delivery methods and more effective learning processes. The popularity of online learning has grown and rising numbers of students are interested in a variety of applications for online learning (Aragon, Johnson & Shaik, 2002; DeGagne & Wolk, 2007; Cruz, 2009; Küçük, Genç-Kumtepe & Taşcı, 2010). David (2010) explains that new students on campus increasingly expect that Web 2.0 technologies will be applied for academic purposes.

Social software creates new ways for collaboration between students beyond the classroom and this remains a new trend on campus (Bryant, 2006). Popular Web 2.0 applications in education like wikis, blogs and podcasts, are just the beginning of social software used for academic purposes. Web 2.0 technologies create opportunities for more collaboration and interaction between individuals and this is crucial for active learning online, and it allows for feedback from tutors. Through this interaction, students can construct their knowledge better and become responsible "active knowledge generators" who manage their learning (Boulos & Wheeler, 2007).

Late in the 1990s websites which allowed users to upload different content already existed. Late in the 2000s social media, like media-sharing sites, blogs, wikis, online social bookmarking and online social networks have become widely accepted. Social media affect the way in which people interact in an online environment. Social media offers new and improved ways for online discussions and other types of collaboration to take place (Dewing, 2010). Meyer (2003) implies that students generate more messages when interacting in online discussions than in the traditional classroom and thus become more involved in the learning process.

The culture of the student's environment is lately more socially orientated because of the emergence of online social networks among other technologies (Eberhardt, 2007). Students' methods of engagement are very different than it was many years ago and the way students communicate and interact have changed because of new technologies. The use of technology by students has developed, and as a result, higher education institutions invest money in these new technologies to provide for the needs of their students (Loyd, Dean & Cooper, 2007).

Dalsgaard (n.d.) explains that a relationship exists between networking and learning and that it is important to connect learners. He mentions a question which needs to be addressed: What role do online social networks play in relation to the learning process? Eberhardt (2007) raises the following questions: How do online social networks affect students' learning? Does online social networking aid in the development of students' interpersonal and personal development? And how does online social networking affect the face-to-face interaction between students? He mentions that research needs to be conducted to provide an answer for these vital questions. A need thus exists to understand the possible influence of new technologies such as online social networking sites, on student learning.

In the past, online social networking has not been included in academia, but this is changing. Many technologies have been considered and included for lecturing, like blogs, wikis, word processing software and Learning Management Systems, but some technologies like online games, mobile devices and online social networking have not received enough academic attention even though the pedagogical potential is apparent (Vie, 2008).

Online social networks have growing pedagogical potential, because it offers an opportunity for students to share ideas, knowledge, and individual and group activities (Dalsgaard, n.d.), and there is a need to improve ICT in higher education institutions (DeGagne & Wolk, 2007). Also, many modern students are ICT literate when they join higher education institutions because of the continuous advances in technology over the last decade. For example, many students enjoy reading their emails or accessing Facebook via their mobile phones because of the anywhere-anytime access

to these sites. There are currently more than 100 million active users who access Facebook via their mobile devices (Facebook, 2010).

Online social networks have been developing at a high rate over the last three decades (Mazer *et al.*, 2007). Online social networking communities on the internet, such as Facebook, Bebo, Cyworld and MySpace, are an integral part of students' daily lives and most people's daily practices (Baker-Eveleth *et al.*, 2007; Boyd & Ellison, 2008), and online environments create opportunities to learn (Sandars, 2005).

The spread of online social networks has raised various questions on the implications for university students and research needs to be conducted to determine whether online social networking is in competition with other activities students undertake in their free time, and whether online social networking decreases the time spent on academic work, or if it increases the effectiveness of students in the classroom (Eberhardt, 2007).

Facebook's popularity has grown extensively globally at universities and colleges and students frequently engage in activities on online social networking sites (Mazer *et al.*, 2007; David, 2010). The use of these types of technologies enables students to communicate with much more ease (Loyd *et al.*, 2007). An example is that students can access a site such as Facebook anytime and any place (twenty-four seven) and there they can collaborate and interact with their peers on a social and academic level.

Dede (1996) states how "emerging technologies may reshape both face-to-face and distance education". There is a need for an increased awareness of how these online social networks are possibly influencing the learning process of students. It is also critical for lecturers and students to be aware of the pedagogical potential of online social networking sites such as Facebook.

3.2 Group work

Group work is not a new term in higher education. It adds immense value to the learning experience of university students enrolled for Information Systems courses on first-, second- and third-year level. Group work is important because it encourages

creative thinking and provides more efficient problem-solving techniques. It also equips students with the necessary skills for when they enter the workplace where they will be required to work successfully in diverse groups (Cloete, 2006).

A group is defined as a "collection of individuals, such as a study group" (Dalsgaard, n.d.). The group works together to achieve a specific goal or task. Mutch (1998) implies that a group supports individual efforts and achievements, forming a mutually supportive group all of whom have to produce a similar output. Group work has become important because it encourages creative thinking and provides more efficient problem-solving approaches. According to Luczyn (1999) T.E.A.M is described as: 'Together Everyone Achieves More'.

Why should group work be considered in the teaching of Information Systems courses? Patel (2003) argues that innovative thinking patterns are expected in Information Systems studies and group work fosters advanced thinking among students.

Because of the content complexity of most Information Systems courses, it is better for students to discuss problems and make sense of the work in groups, than to struggle individually. Students learning from peers are seen as a foundation for education, changing students' learning perceptions (Blumenfeld, Marx, Soloway & Krajcik, 1996).

In a study conducted by Cloete (2006) the value of group work for second-year Informatics students, enrolled for a Systems Analysis and Design course, was analysed. It was found that group work is important in a Systems Analysis and Design course, as these students struggle with the application of theory and modelling techniques to case studies. This might also explain the need for interaction beyond traditional class times. Students have a need to discuss course content beyond normal lecture times because of the complexity of most Information Systems courses.

Projects are very popular in Information Systems courses, especially in the second and third year of study. These projects support the evolvement of various skills, such as working in groups, solving problems, making decisions, interpersonal

communication and time-management skills (Smith, 2004). Information Systems courses, like Systems Analysis and Design, are problem based, and this is a good enough reason to explain why students benefit from group work or problem-based learning (PBL) in the form of tutorial sessions where they can share ideas and make sense of the course content. Johnson, Johnson & Smith (1998) argue that when students learn together and discuss theory, their individual performances increase. Blumenfeld *et al*. (1996) express a similar view and state that when students share their approaches, discuss their findings and points of views while taking risks, the outcome of the level of understanding and knowledge is much higher than when students work individually. This is also because many Information Systems courses require deep thinking patterns and negotiation skills, which group work and discussions provide for.

Learning in groups is very demanding at tertiary level. It is more difficult to enforce and monitor group work on this level. Students experience frustration about personal interaction difficulties and discouragement from a perceived lack of progress (Kennett & Stedwille, 1996). Soller (2001) supportively states that “traditional lecture-oriented classrooms do not teach students both the cognitive skills necessary to learn the subject matter and the social skills they need to communicate well in a team”. At this level, students also feel that they can work more independently on their courses as opposed to high school, not realising the benefits of group work for shared knowledge, increasing the effectiveness of the learning process as a whole (Kennett & Stedwille, 1996).

Based on the researcher’s experience as a group work facilitator, it can be said that group work on tertiary level is difficult to enforce as students are more mature and prefer to follow their own preferred learning styles. For example, some students prefer to work individually while others prefer group work. This can clearly be seen in students’ attitudes. In support of this statement, Soller (2001) argues that “placing students in a group and assigning them a task does not guarantee that the students will engage in effective collaborative learning behaviour”, and that “while peer groups seem to interact naturally, others struggle to maintain a balance of participation, leadership, understanding, and encouragement”. This also relates to the personal preferences and learning styles of students.

Students benefit from tutorial sessions related to many Information Systems courses, because many courses are problem based. Students are able to share ideas and knowledge, and they experience better academic performance on an individual level. Blumenfeld *et al*. (1996) support this view by stating that the level of understanding and knowledge generation is higher than individual work efforts.

Cloete (2006) found that group work positively contributes and adds immense value to the learning experience of students enrolled for a Systems Analysis and Design course and it also enhances the students' ability to apply theory to real-time situations and to generate appropriate modelling solutions.

Students involved in group work are able to learn more effectively (Dwyer & Malani, 2006). Extensive knowledge sharing and peer learning takes place while students are engaged in group work. Many inputs are received from members, if all participate, and thus with a lot of input, the learning process can be more effective.

3.3 The value of face-to-face group work

Faculty fear that technology will replace them, but this will not happen as the benefits and value of face-to-face instruction are known. Academics should not oppose students' dependance on the internet, but rather see the opportunities in working with the internet (e.g. online social networking) during the learning process (Towner & VanHorn, 2007).

Many Information Systems courses, like Systems Analysis and Design, involve higher-order thinking skills and students need to integrate theory with realistic scenarios. Discussions regarding the content help students to understand the course better and to apply the theory to case studies. From the researcher's own experience as a student and lecturer of a Systems Analysis and Design course, it can be said that systems analysis and design contains difficult theoretical concepts and complex modelling techniques and in order to fully understand the content, one has to develop deep thinking skills in order to make sense of the work. It is not sufficient to study individually in all areas of the course, as practical application of theory is not an easy task that can be mastered immediately.

What is the value of group work as a teaching strategy, and how does it influence students entering the workplace in the future? Higher education institutions are aware of the importance of group work skills for their students to be competent in the workplace. Involving students in tutorial group work is thus critical for their careers because they will one day need to be able to work in groups and understand their roles as group members (Burdett, 2003; Smith, 2004).

An increased awareness exists among lecturers of the increasing need for students to acquire non-technical skills (e.g. group work skills), which are important to meet the demands of workplaces in the employment market (Burdett, 2003; Cassidy, 2006). The approach followed in group work is more directed at student-centred learning, for example, problem-based and collaborative learning. Employers and lecturers see the exploitation of students to successfully work in groups as a suitable result of tertiary education studies, and potential employers have a need to know what students are capable of achieving in groups (Bonanno, Jones & English, 1998; Webb, Nemer, Chizhik & Sugrue, 1998).

According to industry, graduates need certain attributes such as being able to work collaboratively in an environment which is complex, changing and where decision-making is decentralized. Work teams are more relied on to carry the workload. Being able to work in groups is a graduate skill and like all other skills, it needs to be learned (Baskin *et al.*, 2005).

Students need exposure to group diversity. Smith (2004) states that students need to understand the diversity of group work, work with people from different cultural backgrounds and also understand other aspects related to group work. According to Mayer & Puller (2008), students interact with others from different backgrounds and this creates a learning environment which prepares students for the diversity of the workplace. Students need to work with different people from different cultures or else it may become an obstacle for task or project completion in the work environment.

Different teaching methods are used for variable purposes, depending on which method will best suit a specific situation. One of the best methods to practice knowledge is the use of tutorials (Patel, 2003). For example, in teaching a Systems

Analysis and Design course, students listen and take notes during the lecture, and certain areas are then discussed further in small group tutorials (Hendry, Heinrich, Lyon, Barratt, Simpson, Hyde, Gonsalkorale, Hyde & Mgaieth, 2005). Student learning is positively influenced by the use of tutorial groups, which promotes better intrapersonal and communication skills. Students' cognitive abilities are positively affected and a higher level of interest in the course content is apparent (Bonanno *et al.*, 1998; Dolmans, Wolfhagen, van der Vleuten & Wijnen, 2001).

From the researcher's own perspective and experience as a facilitator of tutorial group work sessions for second-year Systems Analysis and Design students, she defines tutorials as sessions of intensive tuition delivered to a small number of students (8–15 students) by a facilitator. Tutorials supplement the information encountered in the traditional lectures and are usually conducted outside of normal classroom times and various topics are discussed on a weekly basis. The tutorials add immense value to the learning process of these students and they obtain a deeper understanding of the course content because of their participation in tutorials. Many students mention that the tutorials are very valuable and that they believe their results have improved because of the group work conducted during the tutorial sessions.

Many tertiary institutions are becoming aware of the advantages of tutorials, and are involving their students in this type of learning, because they realise that group work in tertiary education is an efficient way to learn and elevate useful skills, and that group work improves social interaction among students where they are encouraged to cooperate and interact (Potter, 1997; Burdett, 2003). Group work in Information Systems aligns hard and soft skills, which contends to the workplace in how practice emphasises group work as a crucial activity (Smith, 2004).

Group work has many other positive outcomes related to students. They

1. are equipped with improved thinking skills;
2. obtain better academic results;
3. have a well-established self-esteem;
4. possess better adaptability skills among peers;
5. have greater continuity and retentiveness regarding the course content;
6. are equipped with higher-order thinking capabilities;

7. can better integrate information; and
8. have an improved accommodation of peers' views and learning methods

(Blumenfeld *et al*., 1996; Towns & Kreke, 2000).

Regarding point 5 above, Bistrom (2005) supportively states how the highest retention rate of students is achieved by teaching others and this can be achieved through the application of group work. This highlights the possible reason for students experiencing improved results.

Learning in groups improves the development of students' social and cognitive skills, leads to knowledge restructuring, a higher performance level and a higher level of understanding. Previous research supports that students working in tutorial groups experience positive outcomes related to learning (Dolmans *et al.*, 2001; Bistrom, 2005; Ellis *et al.*, 2006).

Group work, in the form of tutorials, allows for efficient learning as well as an improvement of social interaction between peers (Burdett, 2003). Baskin *et al.* (2005) also states that face-to-face group work is a "socialising agent" and it teaches students about different forms of groups. Group work also teaches students about themselves, various relationships, risk management related to one's feelings, learning to be assertive and about different group roles.

3.4 Online social networking

The first thousands of internet users were said to be the producers of this technology. In the 1970s ICTs emerged and were globally disseminated in an uneven manner (Castells & Cardoso, 2006). The internet caters for two-way interaction as well as worldwide online social networks where people can interact and collaborate. People enjoy creating a digital identity which supports and enables social interaction in the long term (Dwyer *et al.*, 2008).

According to Castells & Cardoso (2006), society shapes technology based on people's interests and needs and it is stated that "technology *is* society". In the past, Castells & Cardoso (2006) have highlighted a sociological theme called the "Networked

Society", as part of the description of emerging social forms. The network society is a structure that is socially constructed and based on networks which are operated by ICTs. It is also global and its anchor consists of "digital communication networks". In short, it is the interaction between new technology and the social organisation. In the last decade there has been a strong movement towards the creation of online networked communities (Castells & Cardoso, 2006).

This emergence can be seen in the move from Web 1.0 to Web 2.0, including the wide range of online applications, from wikis, podcasts, blogs, and social bookmarking, to online social network sites such as Facebook. This rapid growth occurred due to technological advances and the improvement of tools, like mobile devices and computers, as well as social factors, like the youth's increased participation in online social networking (David, 2010; Dewing, 2010). Web 2.0 tools are defined as online applications for communications being facilitated between group members and companies. Wikis, blogs and online social networking are some examples of Web 2.0 tools (Sendall *et al.*, 2008). Dewing (2010) also defines Web 2.0 as an enabler of "online interactivity, networking, sharing and collaboration" and David (2010) adds that it involves a "two-way exchange of information", relying on active user participation in order to be successful.

Web 1.0 is static and almost like interacting with a book, while Web 2.0 is more accessible, dynamic and relies on media expansion (Vie, 2008; David, 2010). Another difference between Web 1.0 (World Wide Web) and Web 2.0 is that Web 2.0 offers more member participation in the development and management of content, resulting in varied information in terms of the nature and the value thereof. Web 2.0 tools are of importance to individuals and companies worldwide. Examples of Web 2.0 tools are the following:

- blogs: a "web log" where individuals publish text;
- wikis: page modification and individuals publish text collectively;
- media-sharing sites: add photos and videos (e.g. YouTube);
- podcasts: audio recordings; and
- vodcasts: video material

(Sendall *et al.*, 2008; Dewing, 2010).

"Social networking sites are not the new Learning Management Systems", but it "has pedagogical potential", and its consideration as a supplementary tool should not be ignored (Dalsgaard, n.d.). Online social networking sites focus more on social interaction and connections between people, but are lecturers aware of its application for academic purposes?

Kay (2007) defines online social networks as "web sites that enable people to create a network of connections to other individuals". Online social networks are made up of online communities of people who are able to contact people they would like to know for either personal or professional reasons, but the likelihood of meeting these people is not very high (Kay, 2007).

Boyd & Ellison (2008) define online social network sites as "web-based services that allow individuals to

- construct a public or semi-public profile within a bounded system;
- articulate a list of other users with whom they share a connection; and
- view and traverse their list of connections and those made by others within the system."

It is clear that the core of online social networks is the connectivity between people.

Beer (2008) engaged with the vision of Boyd & Ellison (2008) in a response to further their contributions of their article, and explains that the term "social network sites" is actually a broad term and a deeper explanation would be useful. For example, a social network does not necessarily refer to an online social networking site such as Facebook or MySpace. Castells & Cardoso (2006) support this by explaining global networks of social organisation as well as the history of networks and rise of the network society, otherwise labelled, globalisation. They further state that technology is necessary even though not an adequate means for new social organisations to emerge based on networks.

An advantage of online social networking is the ability to keep up with one's friends and to stay informed of what is going on in their lives (Dwyer, 2007). People soon started to realise that not only can Facebook cater for their online social needs, but also for other needs, like the need to belong to a group with similar interests (e.g.

political groups) and the need to interact with peers in an academic setting (e.g. academic groups).

In most communities there is a move towards online interaction beyond face-to-face interaction (Cho *et al.*, 2005) and the emergence of the internet increased the scope of computer-supported activities (Dwyer, 2007). Online social networking is taking up more of university students' time and changing the way in which they interact socially. This social interaction can be characterised as more global, accessible and diverse as in the past. Boyd & Ellison (2008) also state that "social networks are increasingly attracting the attention of academic and industry researchers" and Beer (2008) supportively states that there is a "burgeoning academic interest in this phenomenon".

The success rate of online social networking sites can be seen in the number of members as well as in the online traffic to these sites (Dwyer *et al.*, 2008). Online social networking has become an integral part of students' lives, and it is important for them to connect to their peers through sites such as Facebook. Students playing computer games and socialising with their peers, are not new, but interacting with other students through the use of online social networks, is a relatively new trend. The way in which students behave on these online networks, influences their experiences related to education (Eberhardt, 2007; Vie, 2008). It also affects the ways in which students communicate.

According to Dalsgaard (n.d.) communication within an online social networking site is transparent – being aware of the actions of other people. Communication occurs through notifications, for example, a member receiving a notification that he or she has been tagged in a photo by another friend on Facebook. Most of the time, there is no direct communication needed for any type of communication to take place. In April 2008, Facebook launched an instant messaging application, Facebook Chat (Facebook, 2010). This application allows for more direct communication between members.

Members of an online social network share information. According to Minocha & Thomas (2007), blogs, wikis and online social networking sites such as Facebook,

have all been part of the growing trend towards the creation and sharing of information. The nature of this information can be social or academic.

Online interaction can have a significant influence on students' interpersonal processing and the outcomes thereof (Ramirez & Wang, 2008). Online social networks enable online interaction and thus became a subject of interest to be understood. Universities are responsible to present courses which develop students' knowledge and skills in "collaborative networked environments" (Minocha & Thomas, 2007). It supports the importance of this research, as universities are probably not on par with the growing trends in technology and the needs of the new generation students that they have to teach in their classrooms.

There is a concern about the digital divide between lecturers and the Generation M students (Vie, 2008). Vie (2008) further explains that Generation M is also known as "Generation Media" or the "Millennials". David (2010) says the term "the Social Networking Generation" is also applied. Vie (2008) explains that these students were "born between the early 1980s and late 1990s" and most find the use of technology easy. She states that lecturers need to catch up with these students in order to bridge the existing digital gap. Meyer (2003) supportively states that some lecturers struggle with new technologies but that they need to gain an understanding of the advantages and disadvantages of face-to-face and online activities.

Many lecturers are concerned about the safety of students using online social networking sites. One concern is the amount of personal information displayed on the site, which can possibly lead to stalking or other forms of abuse (Eberhardt, 2007). One example is how Facebook is used by external parties to look for information on users (Jones & Soltren, 2005).

The distance that exists between students when they interact on an online social networking site may cause some students to behave in a negative manner towards their peers (Eberhardt, 2007). This might be as a result of the fact that distance creates a false boundary where the individual feels protected and safe from harm without realising that at some stage in the future physical meetings might occur.

It is important for students to have a positive image and identity when they are ready to join the workplace. According to Eberhardt (2007), employers lately do background checks on students by looking for online information which can aid in their decision to consider an individual for employment. Towner & VanHorn (2007) supportively note how employers are specifically using Facebook to do background checks for recruitment purposes.

There is an increased interest in online social networking sites by companies because the outreach to people is so much broader (Dewing, 2010). Online social networking sites are not only used for social purposes but for marketing as well, for example, many companies have their own Facebook page for online marketing purposes (Jones & Soltren, 2005; Sendall *et al.*, 2008). It is very clear that these sites are being utilised for more and more purposes than it was initially developed for. This is why the researcher is interested in the academic application of online social networking sites.

Other examples of online social networking sites are: YouTube; Twitter; Flickr; EBay; Yousendit; Cyberchair; Blogspot; Amazon; et cetera. The following are regarded as competitors to Facebook: MySpace; Bebo; Friendster; LinkedIn; Tagged; Hi5; Piczo; and Open Social (Crunchbase, 2009).

Figure 3.1 below illustrates research carried out by TopTenReviews, showing the rankings of the Top 10 online social networking sites in 2010. It is clear from these results that Facebook is ranked as the best online social networking site (TopTenReviews, 2010).

Figure 3.1 Top 10 online social networking sites (TopTenReviews, 2010)

These sites were ranked in terms of various functionalities classified in the following groups (TopTenReviews, 2010):

- Ratings;
- Demographics;
- Profiles;
- Security;
- Networking Features;
- Search; and
- Technical Help/Support.

Table 3.1 below was created by the researcher in order to compare the most popular online social networking sites:

Online social network:	**Facebook**	**MySpace**	**Bebo**	**Friendster**
Launched:	4 February 2004	August 2003	July 2005	22 March 2002
Users:	More than 400 million active users.	More than 110 million monthly active users.	More than 45 million members.	More than 115 million members.
Official description:	"Millions of people use Facebook everyday to keep up with friends, upload an unlimited number of photos, share links and videos, and learn more about the people they meet."	"MySpace is a technology company connecting people through personal expression, content, and culture. MySpace empowers its global community to experience the Internet through a social lens by integrating personal profiles, photos, videos, mobile, messaging, games, and the world's largest music community."	"Bebo is a popular social networking site which connects you to everyone and everything you care about. It is your life online - a social experience that helps you discover what's going on with your world and helps the world discover what's going on with you."	"Friendster is focused on helping people stay in touch with friends and discover new people and things that are important to them. Friendster is one of the best sites that allow people to meaningfully participate with others in exciting and fun ways."
Reference:	Facebook (2010).	MySpace (2010).	Bebo (2010).	Friendster (2010).

Table 3.1 Online social network comparison

3.5 The value of online social networking for academic purposes

David (2010) explains how staff members at Iowa State University (ISU) noted a deficiency in participation levels on WebCT by chemistry students and considered a more student-friendly tool. They turned to Facebook's discussion boards and in the end, Facebook had "400% more posts than WebCT". The reason for this might have been that students are already familiar with and active members of Facebook.

Dalsgaard (n.d.) notes how students engaged in group work, are not aware of the actions of other students enrolled in the same course, and that it is very important to support the student to become aware of others' actions. How can this be done? "Social networking can support students' indirect sharing of resources, thoughts, ideas, productions, writings, notes, et cetera." By sharing, students have access to other students' thoughts and perceptions.

It is extremely important for students to establish a social foundation between them and their peers before they engage in online group work or discussions. Facebook clearly provides for this as it is initially socially constructed – a social utility that has been identified as having academic potential in the form of internal networks and groups (Minocha & Thomas, 2007). Dalsgaard (n.d.) supportively states that social relationships for groups are a necessity for the learning process and "the starting point for social networking sites is socialising", thus emphasising the importance of the social foundation.

Undergraduate students today learn in a different way than most academics have done. Active learning takes place where students change the channels when their needs are not being met. The reason why Web 2.0 tools are not widely applied in today's curriculum is because many lecturers are not really interested in learning about Web 2.0 techniques (Sendall *et al.*, 2008). Cruz (2009) describes how various technologies can support active learning. Meyer (2003) further states how active learning can be enhanced through online interaction and that students favour online assignments and online communication tools like email, discussion boards, et cetera. Küçük *et al.* (2010) contend that it is important for students to actively participate rather than just passively receive during the learning process.

The application of Web 2.0 tools in education is receiving a lot more attention than in the past. It is said that Web 2.0 tools can be effective for academic work and can increase the feeling of ownership of learning among students. Students are engaging with and even creating these technologies (David, 2010). Students are deploying various Web 2.0 tools for social and academic purposes, and lecturers need to be aware of the ongoing utilisation thereof in order to be on the same playing field as their students. An awareness and consideration of these tools are necessary in order to meet students' needs and to keep them interested and motivated during their studies.

Sendall *et al.* (2008) mention one application of online social networking in the classroom: "We used social networking sites to learn about online communities and social network marketing. The students and professor launched out to their Facebook sites, viewed and discussed the ads, and privacy and security considerations. This exercise enabled the professor to discuss how companies are making money on social networking sites." This is a good example of the incorporation of online social networking for group discussions and a good method used to keep students interested in the course content. Vie (2008) adds that online social networking can help students to broaden their knowledge on social issues, like intellectual property rights and marketing.

It was expected that today's students, who extensively use technologies, would prefer these technologies for their course work, but, according to a study by ECAR in 2008, this was not the case. Students are adopting different Web 2.0 technologies in their personal lives, but not as much in their academic lives. There is only a moderate need for technology in courses. Most students do not prefer extensive ICT usage for their courses and place a lot of value on face-to-face interaction with their peers (ECAR, 2008).

In their study (ECAR, 2008), many students state that they enjoy searching the internet to learn, for example the use of Wikipedia, and others also mention using wikis and blogs for learning. Just fewer than half the students feel that the use of IT in their courses will improve their learning (ECAR, 2008). Facebook has the potential to enhance the learning experience, however, Eberhardt (2007) argues that "online social

networking can enhance students' educational experience or interfere with learning and development".

It is important that the time students spend between and after classes be utilised for academic purposes via technology. Dede (1996) explains how this time needs to be "educationally fulfilling". For example, if students are encouraged to take part in group work or online discussions on Facebook, chances are they might utilise Facebook for academic purposes and not only for social purposes. This can benefit their learning and motivate them to engage in academic work before and after classes.

One public university applied Facebook's Chat feature to serve as online office hours rather than face-to-face office hours. It was found that students favoured the online office hours where they were able to chat to their lecturers via the Facebook Chat application. Not only is Facebook used. The University of Minnesota created their own library blogging site to capture students' opinions (David, 2010).

Cartelli *et al.* (2008) explain the constructivist learning environment (CLE). This environment is not the same as e-learning via a Learning Management System. The CLEs provide a place where students can work together by using different ICTs to engage in problem-solving activities. An example of such an environment can be the use of a wiki, blog, email or an online social network.

Dede (1996) highlights the importance of peer tutoring which is difficult to carry out in a traditional classroom setting. Online group work caters for peer tutoring where students can collaborate and become involved in discussions related to their academic work and also build on the student-student relationship. In the online environment, their relationships grow and they learn how to work virtually as will be required of them in the workplace.

Group work methods change in industry where teams across divisions and from different countries work together. Graduates will be required to work in a virtual environment with colleagues, clients and competitors. "The Gartner group predicts 60% of an individual's work within five years will depend on group input from team

members, many located in different countries and time zones" (Dwyer & Malani, 2006).

Sendall *et al.* (2008) further state the following: "It is necessary for educators to take time to carefully reflect upon the nature of these Web 2.0 applications as online learning environments" and students need to be ready to use Web 2.0 tools in the workplace as employers prefer graduates with good to advanced technical skills. It is thus clear that companies expect students to be competent in the use of Web 2.0 tools when joining the workplace and Web 2.0 tools will offer students numerous benefits before they enter the real world (David, 2010). Lecturers are responsible for creating opportunities for their students to practice various online skills.

Baskin *et al.* (2005) describe group work via ICTs and state that the development of group skills occur "when a group member determines connections and makes relevant associations between the ideas and feelings related to managing group work experiences". They explain that students acquire group work skills gradually in an online environment. Thus the acquisition of group skills is not a once-off process, but it grows with time. They further explain how the rich ICT environment is gaining a lot of success in the following:

- harnessing group skills development;
- supporting transfer of group skills behaviours to situated (industry) practice; and
- developing group skills as a graduate attribute.

The value of group work via ICTs is also highlighted by how these ICT rich environments support the development of group work skills in students.

Maznevski & Chudoba (2000), Dwyer & Malani (2006), Cartelli *et al.* (2008) and Gillard, Bailey & Nolan (2008) emphasise the importance of virtual team dynamics and information sharing skills related to organisations. Students might be required to work in teams with colleagues abroad or third parties and thus need the skills required to successfully take part in virtual group work. To create an environment for students to learn how to interact in virtual group work settings may be seen as a necessity before entering the workplace. Gillard *et al.* (2008) further explain that organisations are expecting new graduates to adapt to the use of the technologies within the

business environment. Thus the need for the skills related to technologies used within the business environment is critical.

A decade ago virtual teams were not a big part of the business vocabulary, but virtual interaction serves as an information integrator where decision-making within the company and the implementation of tasks take place globally (Maznevski & Chudoba, 2000). Minocha & Thomas (2007) supportively state how organisations such as IBM and Nokia are increasingly using blogs, wikis and online social networking sites as collaborative tools for increased interaction. They further state as follows: "These organisations require people who possess skills of critical thinking, analysis, and reflection on practice, and who can participate in collaborative and creative practices." It is thus clear that students need to interact in online environments where they can develop collaboration skills to be prepared and skilled for the workplace.

Sendall *et al.* (2008) explain that "there are approximately 60 million blogs in existence today; a new blog is created every second and there are 1.3 million new blog posts each day". They further state that lecturers can prepare their students to be innovative in the use of collaborative tools by, for example, using wikis in the classroom. Lecturers can also consider the incorporation of online social networking into their courses. Cloete *et al.* (2009) explain how Facebook was used for first-year BCom students (1 600 registered students at the University of Pretoria) as part of one of their assignments. The reason for this was to create awareness of the academic application of Facebook among students. The students were asked to create a profile for themselves, to load applications to their profile, to join an academic group, and some other tasks.

Universities are changing their strategies because of changing employment demands and "the arrival of the knowledge-driven society". This is why universities have implemented e-learning systems and focused on the virtual campus environment (Cartelli *et al.*, 2008). If there was no need for online tools, universities wouldn't have invested in it, but the opposite is apparent.

The value of group work via an online social network can also be deducted from the following: Online social networks are solving the coordination problems of groups as

they are able to meet at desired working times despite geographical distance between group members. Students who have full timetables, transport restrictions and who struggle to find the time to meet with group members face-to-face can benefit from doing group work via an online social network (Bistrom, 2005).

McKenna & Green (2002) state that “interpersonal communication has become the primary use of the Internet at home and people are increasingly turning to the Internet to fulfil important social and psychological needs”. People feel a need to belong to a group with similar interests. Chester & Gwynne (1998) supportively state that people are social beings driven by a need for association.

According to Hewitt & Forte (2006), new channels of communication complement existing channels for social interaction. An example of a new channel may be new online communities that were created, such as Facebook. Ramirez & Wang (2008) supportively mention how online and face-to-face settings are able to complement each other if applied in the correct manner.

The use of wikis for team tasks is also popular. Minocha & Thomas (2007) conducted a study at the largest UK University, the Open University, and discovered the effectiveness of a wiki for collaborative learning and how ideal it is for group work in corporate and educational environments. The use of wikis is part of the online collaboration tool category for information sharing and interaction between members of a group. Dwyer & Malani (2006) mention the appropriateness of wikis for group developments of software and other projects requiring group work.

A blog is also a popular tool for team tasks. The term “blogs” is short for web logs and it serves as online journals. Opinions can be expressed on several topics and these can be easily created or edited. With only limited knowledge of HTML or PHP, a person can create and update a blog (Dwyer & Malani, 2006).

Another tool for team work is Microsoft SharePoint. “It is an enterprise level collaboration and document management platform. It provides very sophisticated functionality through a web portal, allowing group, department, or public access to information resources” (Dwyer & Malani, 2006).

Mazer *et al.* (2007) explain that the following question remains: "What motivates a faculty member to use such a network as opposed to other forms of mediated communication?" It is not clear what drives lecturers to use new technologies or online social networks for academic purposes or as extra mediums for teaching. Is it because the lecturer is creative and innovative? Or does the lecturer have the knowledge and skills to incorporate technological mediums as teaching strategy while others don't?

On the contrary, some students are "overly engaged online" and spend too much time on online social networking and other sites on the internet. This can have a negative impact on students' personal development, especially if they connect online with people from their past, and do not connect to the individuals in their current social environment. Face-to-face interaction with diverse people is extremely important for the development of needed skills (Eberhardt, 2007). Too much time spent on online sites can possibly decrease the educational value that group work or any academic interaction online could have generated for the student.

Students who do not prefer to engage in online socialising or be a part of the virtual campus may experience a lot of pressure because of their behaviour and preferences. This makes it difficult for students to grow in their social and academic environments (Eberhardt, 2007). Another concern is the way staff and students portray themselves on online social networking sites. This can be done in a negative or positive way with various consequences related to the maintenance of a professional self-image (David, 2010).

Eberhardt (2007) further explains that it is still uncertain whether online social networking is bringing academic learning down (by students wasting time that could have been spent on academic work) or whether it enhances the learning experience.

There are many challenges in implementing web tools in the classroom, and these should be regarded as a supplement to traditional instruction methods. Web tools and new technologies create a big learning curve for lecturers and students and there remains a battle over funding and available resources. The effectiveness of the internet as a pedagogical tool is noticed and its integration into the classroom holds

benefits for lecturers and students. The new technologies on the internet cater for effective teaching and lecturers are able to implement active learning as part of their coursework, and in this way develop a "cyber learning community" (Towner & VanHorn, 2007).

Towner & VanHorn (2007) further explain active learning. Traditional lectures are an effective way to address work, but some suggest the use of both lecturing and active learning to enhance students' attention spans and maintain higher levels of cognitive processing. Peer learning should be managed to create an effective learning space.

Lecturers are also concerned about cheating efforts through students downloading other students' research papers or using the wrong websites to gather information (Towner & VanHorn, 2007). Academic time is wasted if students browse through various websites which are not credible. Lecturers should inform students of the consequences of their online actions.

The value of online social networking for group work and online discussions exists. The concern lies in the implementation thereof and the effective academic use by students. The social use of these networks takes up students' time, but if lecturers can implement it in a meaningful and interesting manner in the classroom, students will surely benefit academically by using tools they are competent in using and which they enjoy using every day.

3.6 Facebook

Universities distributed headshots of incoming freshman many years ago, and the collection of those headshots were called a facebook. Today, the online social networking website called Facebook is regarded as a necessity for any university student (Towner & VanHorn, 2007).

"Facebook is a social utility that connects you with the people around you" (Facebook, 2008). Facebook helps you connect and share with the people in your life (Facebook, 2009) and "it is a highly interactive virtual social network" (Mazer *et al.*, 2007). It was created in 2004, and by 2007 it was reported that Facebook had more than 21 million members (Ellison, Steinfield & Lampe, 2007). In June 2009, statistics

on the official website highlighted more than 200 million active users (Facebook, 2009) and in July 2010, Facebook had more than 400 million active users (Facebook, 2010).

The following description can be found in the "Press Room" under "Facebook Factsheet" on the official Facebook website (Facebook, 2010): "Founded in February 2004, Facebook is a social utility that helps people communicate more efficiently with their friends, family and co-workers. The company develops technologies that facilitate the sharing of information through the social graph, the digital mapping of people's real-world social connections. Anyone can sign up for Facebook and interact with the people they know in a trusted environment." What is Facebook's mission? On the official Facebook page, the mission is explained on the "Info" tab: "Facebook's mission is to give people the power to share and make the world more open and connected" (Facebook, 2010).

Online social networking members can digitally present themselves to the outside world with the help of their online profiles (Dwyer *et al.*, 2008). Based on the researcher's observation, Facebook members are able to create personalised profiles, find people, invite friends, schedule events, join groups, add various applications, add photos and videos, participate in instant messaging and socially interact with other members, just to name a few functionalities.

The following statistics were extracted from the official Facebook website on 12 December 2008, 25 May 2009 and 17 July 2010 respectively, and are compared in Table 3.2 below (Facebook, 2008; Facebook, 2009; Facebook, 2010). The structure and sections of the Facebook statistics were changed on the official website in 2010, therefore, where the same sections were not found, it states: 'n/a' (not applicable). Some interesting 2010 statistics are however added in Table 3.3 that were not included in previous years' statistics.

12 December 2008	25 May 2009	17 July 2010
More than **130** million active users.	More than **200** million active users.	More than **400** million active users.
More than half of Facebook users are outside of college.	**More than two-thirds** of Facebook users are outside of college.	n/a
The fastest growing demographic is those **25** years old and older.	The fastest growing demographic is those **35** years old and older.	n/a
More than **19** million active user groups exist on the site.	More than **25** million active user groups exist on the site.	n/a
More than **35** translations available on the site, with more than **60** in development.	More than **40** translations available on the site, with more than **50** in development.	More than **70** translations available on the site.
More than 70% of Facebook users are outside the United States.	**About** 70% of Facebook users are outside the United States.	**About** 70% of Facebook users are outside the United States.

Table 3.2 Facebook statistics comparison

17 July 2010	
Category	**Statistics**
Minutes spent on Facebook per month by all users:	Over 500 billion.
Connectivity to pages, groups and events:	Average user is connected to 60 pages, groups and events.
Websites that have integrated with the Facebook platform:	More than one million.
Monthly engagement with Facebook on external websites:	More than 150 million.
Active users currently accessing Facebook through their mobile devices:	More than 100 million.
Mobile users of Facebook are twice more active on Facebook than non-mobile users.	

Table 3.3 Facebook statistics 2010

As can be seen from these comparative statistics in Tables 3.2 and 3.3, Facebook is showing phenomenal growth in all areas, and with an extensive number of user groups, it is clear that active group collaboration is taking place. This indicates a clear opportunity to address the possible beneficial application of Facebook Groups for

group work and online discussions by students in higher education. A strong movement of user activity towards the mobile application of Facebook is also evident.

Facebook was initially designed for universities and colleges, while high schools and companies were included later (Dwyer, 2007). When browsing Facebook groups one finds an extensive number of organisational, political, educational, social and other groups on Facebook where people collaborate, express their viewpoints and interact with other group members.

Students are well aware of Facebook's pedagogical potential and they are encouraging their lecturers and instructors to apply Facebook as part of their teaching method. Students are using Facebook as an academic tool and they are involved in a classroom network based on the online social network as foundation. It has become imperative for lecturers to learn how to use the interface of the network (Towner & VanHorn, 2007).

Students and lecturers can be more closely connected, which in return can benefit the lecturer-student relationship. According to Mazer *et al.* (2007), Facebook is a unique online social networking site because it creates connections between students and faculty within an online academic community.

Facebook is aimed at college and high school students (Acquisti & Gross, 2006), but Dodge (2008) adds that Facebook is now also focusing on work groups: "Facebook became a professional utility almost two years ago when it added work networks to what until then had just been schools". Other online social networks include Friendster, LiveJournal, MySpace, Xanga, WiredSafety, et cetera (Dyrli, 2006). Also, online social networking has been applied in the business environment for increased collaboration (Baker-Eveleth *et al.*, 2007), thus the participation of students on these sites is valuable in order for them to gain skills for their future careers.

Many different communication channels, which enable communication between lecturers and students and between students, are used in academic communities. Academic institutions realise the popularity of Facebook and how it has become a pervasive element in students' lives. Faculty members are also creating personal

Facebook accounts and engaging in online communications with students (Hewitt & Forte, 2006).

Hewitt & Forte (2006), who studied student-faculty relationships on Facebook, found that two thirds of the students interviewed were satisfied with their lecturers being members of Facebook. The question that remains is whether students want to interact with their lecturers on Facebook for academic purposes.

Facebook was initially used for social interaction, but people soon started forming groups for academic purposes where peer learning takes place. Mayer & Puller (2008) mention how online social networks have an impact on student learning. Thus, sites such as Facebook are characterised by personal, academic and professional (work-related) groups where members interact for different purposes and to fulfil different needs.

Very little research regarding the use of Facebook in the classroom has been published (Ellison, 2007), as this method (Facebook) is not really applied as part of lecturers' teaching strategies. A study conducted by Cloete *et al.* (2009), focusing on Facebook as an academic tool for ICT lecturers in Southern Africa, highlighted that most lecturers have not applied any online social networking site as a tool for academic learning. However, most of them think that an online social networking site, such as Facebook, can be applied as a tool for academic learning as part of their teaching strategy, although the majority would not consider using Facebook as an academic tool for group work or online discussions.

Towner & VanHorn (2007) conducted research to determine student usage of Facebook and its pedagogical potential. They surveyed students from four political science courses at a large mid-western university in the spring of 2006. They found that the vast majority of students contacted their peers on Facebook to ask questions about assignments or examinations and to access class notes and form groups to study. Some students mentioned how they used Facebook to discuss group projects and that when they missed a class, they would use Facebook to find out what announcements were made in class and to obtain class notes and other material. The

researchers argue that Facebook is a site that "indirectly creates a sense of community on campus and in the classroom" (Towner & VanHorn, 2007).

Facebook helps to increase peer contact. If applied correctly, Facebook can potentially increase student participation in both the traditional and online learning environments (Towner & VanHorn, 2007). This again highlights the pedagogical potential of Facebook (if applied correctly).

The following are potential advantages of using Facebook in academic courses (Ellison, 2007):

- it is already integrated into students' daily activities;
- students engage more in academic activities;
- a student's personal identity can be made more prominent during discussions in class;
- the "social peer-to-peer component" is added; and
- online literacy skills can be developed.

Another advantage includes the management of alumni through Facebook. At the University of Pretoria the researcher administered the alumni page of the Department of Informatics on Facebook, where valuable information, like events and news, were communicated to members. Effective communication between institutions and alumni can thus be increased via the application of Facebook.

Facebook can be beneficial to lecturers and students on an academic level. According to Dwyer & Malani (2006), Facebook is regarded as a low-cost collaborative tool and they state that a strong argument exists for the "deployment of low-cost collaborative tools in higher education". Towner & VanHorn (2007) supportively state that Facebook is cost effective because of its successful network infrastructure already in place and they highlight Facebook's potential to become an academic network for active learning. They further mention how universities and other institutions are applying Facebook as a tool. Police services and campuses have used Facebook to do crime investigations and investigate underage drinking. David (2010) explains how the University of Arizona applies an online social network called, RoommateClick, for student housing purposes. Students can create profiles and do research before

choosing a roommate. Also, many other universities and colleges are applying Web 2.0 tools for marketing purposes. For example, the student affairs divisions at the University of Florida and other institutions have applied Facebook Groups or Pages for brand marketing.

Administrators at universities are using Facebook for disciplinary actions (Jones & Soltren, 2005). Bugeja (2006) supportively states that campus administrators browse students' Facebook profiles in order to gather evidence of any illegal behaviour by students. Facebook also eliminates any fabrications of identities. A spokesperson mentions that misrepresentation of a person is against the "Terms of Service". He says: "When users report a profile, we take a look and decide if the content seems authentic. If not, we'll remove the user from the network."

The following are potential disadvantages of using Facebook in academic courses (Ellison, 2007):

- an unwanted relationship between lecturers and students can develop;
- a lecturer's image can be harmed by him or herself;
- students can be exposed to advertisements; and
- students can show resistance to Facebook.

Generation M students are used to technology and its ongoing advances, but also to advertisements being directed at them (Vie, 2008).

The researcher added the following disadvantages based on her experience as an active Facebook user and academic group administrator:

- privacy issues;
- limited internet access by students from home;
- productivity levels can become lower as students prefer to interact for social purposes or because of distractions;
- any form of abuse that might occur due to information sharing and interaction between peers; and
- too many online channels being available can de-motivate students (e.g. instant messaging software like MixIT; email; Learning Management Systems; blogs; wikis; online social networking sites).

Towner & VanHorn (2007) contend that Facebook has been criticised by college employees and that there is a growing concern among administrators regarding the safety and privacy of students. They mention how students might think that they are working in a safe and secure environment by assuming that their profiles are only accessed by their friends, but in reality, their profiles are most probably accessible to anyone on the internet. This can lead to stalking and unwanted exposure of students. Many universities have blocked access to online social networking sites because of security concerns. "The University of New Mexico blocked access to Facebook because of security concerns" (Bugeja, 2006).

The developers of Facebook have worked towards finding methods to overcome security concerns, for instance, members can now be more in control of their own accounts and security settings. They can thus control access to their profiles. It is stated on the official Facebook site that the privacy of users is viewed as a top priority and the company has worked with companies like the National Center for Missing and Exploited Children. It is also stated that "Facebook is TrustE certified" (Facebook, 2010).

The researcher states that Facebook can distract students and cause them to lose focus in class and to spend less time on their studies. Bugeja (2006) is concerned about the use of computers in the classroom during lectures. Students engage in various online activities while lectures are taking place. They use search engines to browse content, they send messages and emails, or they read the daily news. It is known that many higher education institutions block access to online social networking sites. However, this does not mean that the situation is under control. According to Vie (2008), Generation M students are good at multitasking and are comfortable in using many technologies at once. Students use various technologies for non-academic purposes during traditional lectures (DeGagne & Wolk, 2007) and as most students have access to Facebook, emails, et cetera on their mobile devices, they can engage in these activities during traditional lectures. As is clear from the statistics, users who access Facebook through mobile devices are twice as active on the site as non-mobile users (Facebook, 2010). Lecturers' control in their classrooms diminishes because of students' online interaction via their mobile devices.

Facebook members tend to reveal extensive information about themselves in their profiles, which are visible to other people. Some members are not even aware of the privacy and security settings or their visibility to external parties. Another concern is "control over access to information" (Dwyer *et al.*, 2008). Many inexperienced Facebook users can be negatively affected by false advertising or any form of online abuse.

What can educators do? Online social networking sites should not be avoided, but should be considered as a supplementary tool. Lecturers should determine how best to apply such sites in order to enhance the academic environment. In order to guide students to benefit from the use of online social networking sites, which will support their learning experience and personal development, lecturers need to understand new technologies (Eberhardt, 2007).

3.7 Face-to-face versus online group work

In order to understand traditional group work as well as group work and discussions via online social networking, there is a need to briefly compare face-to-face and online group work.

Virtual campuses have evolved at a high rate and have been considered as an alternative to education via face-to-face methods (Cartelli *et al.*, 2008). Most people find it much easier and convenient to interact with people via online discussions from home than to meet people at a specific location.

Computer-supported collaborative learning (CSCL) increases group performance by the use of tools and techniques, enabling the communication of ideas and active decision-making (Dede, 1996). Dede (1996) further explains that although there is a strong preference for face-to-face interaction by most people, people find that "just-in-time, anyplace access to others often outweighs the disadvantages of distributed sharing of ideas, experiences, and support".

Dede (1996) states that people engage in face-to-face interaction where they enjoy others' humour and the sharing of ideas, but although it is different, online interaction

can also satisfy these needs of people twenty-four seven and at any location. He highlights the importance of keeping a balance between online and direct interaction.

Participants in online group work need to manage their communications more extensively because of the absence of non-verbal and verbal cues (Lantz, 2001; Meyer, 2003). These participants find other ways in which to show emotion. The online setting also differs from the face-to-face setting in terms of the required skills and pedagogical application (Chester & Gwynne, 1998).

Ramirez & Wang (2008) state that as computer-mediated communication (CMC) has the ability to fulfil many of the same functions as traditional face-to-face settings, this is the reason for the rising interest in CMC. According to Chester & Gwynne (1998), the longer students spend time in an online setting, the less important face-to-face settings become. In order to improve or adjust face-to-face teaching, lecturers should be aware of how students interact online.

Students share a common focus in face-to-face discussions and interact with the group as a whole. Students work towards a shared understanding. In online settings, students engage with isolated contributions of individuals, while rich interaction comes naturally in a face-to-face environment (Wang & Woo, 2007). Furthermore, social dynamics in online and face-to-face environments are quite different (Thomas, 2002).

Face-to-face group work involves more interaction and communication and it is easier to express one's thoughts in this setting, while it seems as though conclusions are reached earlier and with more ease (Wang & Woo, 2007). However, due to the convenience of unlimited access to the online environment, discussions may continue long after the end of the lecture (Meyer, 2003).

Meyer (2003) also highlights a disadvantage of online interaction. From students' perspectives, it is very time-consuming to read through and think about all the posts and to then prepare a suitable reply. After some time students also need to go back to check whether new messages have been posted.

In an ICT environment, the absence of non-verbal cues is apparent. People are less able to differentiate between different communications stimuli. This results in people having less control over meeting or exceeding the expectations of a group and executing critical group roles. In a face-to-face group work environment, "both social presence and corresponding social context cues are a necessary and integral part of the group work process". In an ICT group work environment, the social presence as well as social context cue settings are limited (Baskin *et al.*, 2005).

Regarding the design of online courses and support services, Küçük *et al.* (2010) explain that group design efforts should be taken into account as the delivery method differs from traditional face-to-face methods, especially with regard to the level of support offered to both lecturers and students. More support is needed for online work as the delivery method is much more complex. If adequate support is not provided, online methods will not be as effective as planned.

3.8 Kolb's learning styles

The incorporation of learning styles into this study is useful because the researcher needs to determine how online social networking affects learning styles adopted by students and to determine whether different learning styles are adopted in online and offline environments.

Learning style research aids in the development of course designs and teaching strategies (Küçük *et al.*, 2010). Research on learning styles assists educators in modifying their classroom structures to benefit their students. Students are also becoming increasingly aware of their own preferred learning styles, which supports their knowledge of the learning process and fosters individual growth (Hendry *et al.*, 2005).

Küçük *et al.* (2010) use the following definition of learning styles: "The way in which learners perceive, process, store, and recall attempts of learning." Learning styles can also be defined as an academic way in which students express their personalities and it also involves learners' levels of motivation and attitude (Tickle, 2001). Cassidy (2006) defines learning styles as approaches to learning tasks, taking characteristics of

learners into account. A learning style can also be described as the method that a learner adopts to concentrate, transform, and take in new and complex information. It is also a procedure of inherent attributes such as extraversion (a person's view of the outer world) and introversion (a person's view of the inner world) (Hendry *et al.*, 2005; Boström & Lassen, 2006). Sadler-Smith (1996) defines a learning style as "a distinctive and habitual manner of acquiring knowledge, skills or attitudes through study or experience", and Yazici (2005) elaborates on the explanation by stating that "learning style refers to a learner's pattern of behaviour in approaching a learning experience: taking in new information, developing new skills, retaining new information and applying new skills to life situations".

Aragon *et al.* (2002) mention that a powerful cultural component is linked to learning styles and strategies, and that our cognitive development is determined by the type of environment in which we interact.

Different types of students adopt different learning styles (Yazici, 2005). It is clear that students adopt different learning styles based on their personality types and level of maturity. Group work activities are a way of recognising various learning styles among learners as they process information. Their personality types also highlight their preferences (Gilbert, 1999; Towns & Kreke, 2000).

As every individual has his/her own preferred learning style, the learning experience is not the same for all students. An individual's learning style develops as a consequence of genetic factors, past experiences, and the challenging demands of the present learning environment. Individuals' learning styles may change and evolve (Towns & Kreke, 2000; Pheiffer, Holley & Andrew, 2005).

More educators are becoming aware of learning style implications, and find ways to promote students to adopt a meta-cognitive approach. Educators explain learning processes to students and broaden their knowledge on different approaches and aspects of learning. Lecturers also realise that, in order to raise students' level of performance, such as higher achievement, improved content retention, better attitudes, and to equip students with the ability to understand the importance of learning, different classroom techniques should be developed while students' individual

differences (especially learning styles) should be taken into consideration (Boström & Lassen, 2006; Evans & Sadler-Smith, 2006).

Knowledge about and an awareness of different learning styles enhance learning for both facilitators and students, and the persuasion of learning styles differs from experience in education and gender (Yazici, 2005). Yazici (2005) further contends that research indicates that facilitators should choose activities that are similar to students' learning preferences, and they should realise the worth of diverse learning styles in groups.

A well-known model in which many practitioners and researchers have shown an extensive amount of interest is Kolb's experiential model (ELM). This model is based on Jung's construct of types where high level interaction, integration and construction of non-dominant styles assist in achieving development (Loo, 2004). Figure 3.2 below illustrates Kolb's model:

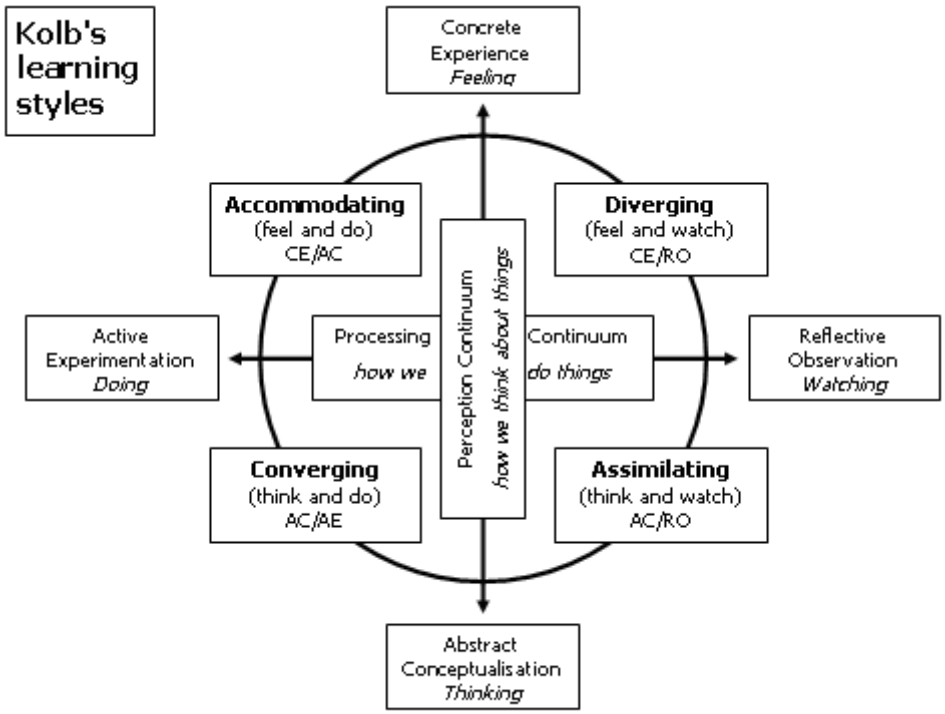


Figure 3.2 Kolb's two-dimensional learning model and four learning styles (Loo, 2004)

Effective learners rely on four different learning modes (Zanich, 1991):

- Concrete Experience (CE)
- Abstract Conceptualisation (AC)
- Active Experimentation (AE)
- Reflective Observation (RO)

These four learning modes are also contained in Figure 3.2 above.

People with high scores in Concrete Experience show the following characteristics (Zanich, 1991):

Approach to learning:	receptive, experience based
Rely on:	feeling-based judgments
Tend to be:	• empathetic and "people-oriented" • oriented more towards peers and less toward authority
Learn best from:	examples in which they can become involved
Benefit most from:	feedback and discussion with CE peers
Prefer:	to treat each situation as a unique case
Unhelpful:	theoretical approaches

Table 3.4 High score in Concrete Experience

People with high scores in Abstract Conceptualisation show the following characteristics (Zanich, 1991):

Approach to learning:	analytical, conceptual
Rely on:	logical thinking and rational evaluation
Tend to be:	oriented more towards things and symbols and less towards other people
Learn best from:	authority-directed, impersonal learning situations that emphasize theory and systematic analysis
Benefit little from:	unstructured "discovery" learning approaches like exercises and simulations

Table 3.5 High score in Abstract Conceptualisation

People with high scores in Active Experimentation show the following characteristics (Zanich, 1991):

Approach to learning:	active, "doing" orientation
Rely on:	experimentation
Tend to be:	extroverts
Learn best from:	projects, homework, or small group discussions
Dislike:	passive learning situations, like lectures

Table 3.6 High score in Active Experimentation

People with high scores in Reflective Observation show the following characteristics (Zanich, 1991):

Approach to learning:	tentative, impartial and reflective
Rely on:	careful observation in making judgments
Tend to be:	introverts
Prefer:	learning situations such as lectures

Table 3.7 High score in Reflective Observation

Kolb's model explains two dimensions which are independent of each other. The first is the "concrete experience-abstract conceptualisation perceiving dimension", and the second is the "active experimentation-reflective observation processing dimension". Four quadrants, formed by these two dimensions, show four learning styles (Loo, 2004):

a. Accommodator

Accommodators' dominant learning abilities are Concrete Experience and Active Experimentation. Accommodators mainly learn from concrete experiences and not from logical procedures. They usually rely on intuition and prefer active experimentation. They can easily adapt to change and tend to rely on others for information (Zanich, 1991; Buch & Bartley, 2002; Loo, 2004).

b. Diverger

Divergers' dominant learning abilities are Concrete Experience and Reflective Observation. Divergers can adopt many points of view and observe situations in a reflective manner. They are imaginative, good listeners, open-minded, and their

values are important to them. They are also sensitive to other people's emotions and good at group sessions (Zanich, 1991; Buch & Bartley, 2002; Loo, 2004).

c. Assimilator

Assimilators' dominant learning abilities are Abstract Conceptualisation and Reflective Observation. Assimilators possess good thinking skills, are able to order information and can express much in a few words. They can take in and understand a lot of information and are less concerned about human issues. They prefer learning from paper, and resist computer-based learning the most (Zanich, 1991; Buch & Bartley, 2002; Loo, 2004).

d. Converger

Convergers' dominant learning abilities are Abstract Conceptualisation and Active Experimentation. Convergers can easily transform ideas and theories into practical applications, thus they are good at experiments. They are good at making decisions, and prefer working with technical rather than social issues. They have the strongest preference for computer-based learning (Zanich, 1991; Buch & Bartley, 2002; Loo, 2004).

Learners possess specific personality strengths, which form the basis for the preferred learning style, but although there appears to be proof that an individual's learning style is stable over a specific time, it is also evident that an individual can adapt his/her style to the requirements of different situations (Sadler-Smith & Smith, 2004; Hendry *et al.*, 2005). Loo (2004) supportively states that an efficient learner is one who is able to apply a different style in different situations of learning, rather than depending on one preferred learning style. It is in fact possible for a learner to adopt more than one learning style, as preference for one style does not mean that other styles are excluded (Evans & Sadler-Smith, 2006). It is important for students to be aware of their preferred learning styles and to be able to choose the most pertinent style or preference (Sadler-Smith & Smith, 2004).

Schaller, Borun, Allison-Bunnell & Chambers (n.d.) studied the relationship between learning styles and online interaction. They mention the following: "There are significant relationships between learning style and preferences for online educational

activities". They further explain that many different labels have been added to Kolb's four learning styles and they have assigned the following:

- Social (Accommodator)
- Creative (Diverger)
- Intellectual (Assimilator)
- Practical (Converger)

As a summary of the work done by Schaller *et al.* (n.d.) on Kolb's learning styles, the researcher created the following characteristics and preferences:

Social learners – Accommodators:

- are leaders;
- learn best by tackling a problem as a group;
- rely on their own intuition and information from others rather than books and lectures;
- seek new experiences;
- often take risks; and
- employ hands-on methods to accomplish their goals.

Social learners prefer "role-play". Such an activity holds information in the voices of characters, thus these learners find it appealing (Schaller *et al.*, n.d.).

Creative learners – Divergers:

- are imaginative;
- are open to new ideas;
- seek out multiple points of view;
- enjoy brainstorming with a group, but often listen and observe before sharing their own ideas;
- rely on concrete examples to learn; and
- trust their own feelings when making decisions.

Creative learners prefer "discussion". As with social learners, they learn best from concrete experiences, like interacting with others. Creative learners also seek new ideas and perspectives from others (Schaller *et al.*, n.d.).

Intellectual learners – Assimilators:

- are organized, logical, and precise;
- like to learn from lectures, reading and contemplation;
- seek direct contact with information, whether in print or online;
- find facts, ideas and information fascinating and prefer these to people and emotions;
- are more scientific than artistic;
- like to conduct experiments; and
- find it hard to make decisions or to take action.

Intellectual learners prefer "interactive reference" (Schaller *et al.*, n.d.).

Practical learners – Convergers:

- are both thinkers and doers;
- learn through experimentation;
- have a desire to solve problems and find useful applications for ideas;
- seek new ideas and find practical applications for these;
- can focus intently on a few courses, preferring technical challenges to interpersonal matters; and
- are goal oriented and make decisions easily.

Practical learners prefer "puzzle-mystery" (Schaller *et al.*, n.d.).

Schaller *et al.* (n.d.) mention that characterising learning styles adds value as it highlights people's interaction with different content. They found that most adults adopt Practical or Intellectual learning styles and they mentioned that Kolb's research shows that as people grow older, there is a change towards increased abstraction and reflection, highlighting the Intellectual learning style (Assimilator) (Schaller *et al.*, n.d.).

The Facebook capabilities of social communication and networking can enhance students' and lecturers' learning and teaching experiences as it can address and cater for a larger number of learning styles. "Instructors can meet the students where they spend a great deal of their time and adjust learning styles to create a more effective learning community" (Towner & VanHorn, 2007).

Aragon *et al.* (2002) conducted a study and found that students learn equally well in both face-to-face and online environments, regardless of the individual's preferred learning style. They also mention that numerous studies focussed on learning style preferences and the success of learning of students in both face-to-face and online courses.

3.9 Learning styles evident in face-to-face and online environments

According to Schaller *et al.* (n.d.), little research has been done on the effectiveness of informal online education and specific learning style preferences. Schaller *et al.* (n.d.) studied students' learning style preferences for different tasks and found that an individual's preferences are influenced by learning styles.

Environments which cater for online learning need to be designed in such a way that they accommodate the differences between people (Küçük *et al.*, 2010). A study by Aragon *et al*. (2002) indicates that if a course is properly designed according to the learning process, students gain knowledge equally well in both face-to-face and online environments, regardless of the learning style adopted.

According to Aragon *et al.* (2002), students in an online setting are required to utilise "reflective observation (learning by watching and listening) and abstract conceptualisation (learning by thinking)". This is a result of the method in which the course resources are delivered. No facilitator or instructor is present and course material is presented through text and audio using programs for enhanced delivery. They also mention that "the online environment is likely to capitalise on a student's watching, listening, and thinking abilities probably more so than a face-to-face environment would". Students draw more on these abilities as the online environment provides for anytime and anyplace access and students can choose at which pace they want to work (Aragon *et al.*, 2002).

Aragon *et al.* (2002) further explain that there is a higher utilisation of "active experimentation (learning by doing)" for students involved in a face-to-face environment. The design of face-to-face group work can be linked to a higher utilisation level for "active experimentation (learning by doing)" and it is said that

active participation is found more in face-to-face than in online environments. Aragon *et al.* (2002) also found differences in learning styles when face-to-face and online students were compared.

The following summary provides a brief overview of the four learning styles and the learning preferences:

- Convergers:
  - They prefer group work. Lectures are not really useful, as their concentration span becomes affected because of minimal interaction (Loo, 2004);
  - They can easily transform ideas and theories into practical applications, thus they are good at experiments (Loo, 2004);
  - Küçük *et al.* (2010) found that the highest involvement in online discussions was related to convergers; and
  - They enjoy interactive activities (Küçük *et al.*, 2010).
- Accommodators:
  - They learn best by solving problems as a group (Schaller *et al.*, n.d.); and
  - They prefer active learning (Küçük *et al.*, 2010).
- Assimilators:
  - They prefer lectures and resist computer-based learning the most (Loo, 2004; Küçük *et al.*, 2010);
  - Schaller *et al.* (n.d.) argue that Computer Science students tend to be classified as assimilators; and
  - They tend to be “high risk distance education students” (Küçük *et al.*, 2010).
- Divergers:
  - They tend to be “high risk distance education students” (Küçük *et al.*, 2010); and
  - They prefer discussions and group work (Küçük *et al.*, 2010).

Küçük *et al.* (2010) studied the influence of learning styles on online discussions and emphasise that varying findings emerged from studies on learning styles in online environments. It was implied that convergers and assimilators enjoy online learning

more than the others and that convergers participate most on discussion boards. It was added that convergers post more and lengthier messages than their peers linked to other learning styles. Finally, it remains unclear whether there is a substantial difference between the lecturing environments and learning style preferences by students.

3.10 Lecturers' experiences of group work (face-to-face and via online social networking)

3.10.1 Lecturers' awareness of the possible effect of online social networking on students

It is important to first investigate the adoption of ICT innovations by educators. Gillard *et al.* (2008) state that ICT lecturers have an important role as educators as they need to prepare their students for the ICT work environment. ICT lecturers shouldn't fall behind the technology curve, but be innovative and early adopters of new technologies. Vie (2008) emphasises a concern about the digital divide between lecturers and students regarding online social networking and other technologies with pedagogical potential.

The ICT professional is bombarded with a stream of new technologies including innovative methods and techniques as well as innovations in hardware and software. Marketers target ICT lecturers who are left with the decision of using new innovations in the classroom or not (Gillard *et al*., 2008). Faculty members are considering and applying Web 2.0 technologies for academic purposes in order to get students more involved and interested in the learning process (David, 2010).

Gillard *et al.* (2008) further state that a variety of factors influence lecturers' decisions to adopt various ICT innovations. The following factors are mentioned:

- budget constraints;
- company resources;
- lecturing support materials;
- lecturers' schedules;
- personal preferences; and
- employees' decisions.

According to Bugeja (2006), academic staff needs to learn more about Facebook in order to assess and understand the impact thereof, while it is commonplace for most students to often visit the site. As was mentioned before and confirmed by Bugeja's (2006) statement, Facebook is an integral part of students' daily lives as they use the site for various social and academic purposes. It is thus important for academic staff to go where their students are in order to deliver a better academic service and meet the needs of their students.

Some lecturers create Facebook accounts to connect and communicate with their students, and as mentioned before, some students are comfortable with their lecturers being members of Facebook while others find it awkward (Hewitt & Forte, 2006). If more lecturers join sites like Facebook, the awareness of its possible effect may become stronger. Vie (2008) implies that lecturers need to become familiar with Web 2.0 technologies like online social networking, blogs, et cetera.

Businesses develop websites and different software applications to exploit online social networking. Lecturers need to be aware of the application of these tools in the workplace to be able to adapt their teaching methods and educate students on its use. Group work in the workplace is also a "frequent fact of professional life" (Baker-Eveleth *et al.*, 2007).

According to Towner & VanHorn (2007) lecturers need to develop and design their courses in such a way that they incorporate online social networking sites like Facebook. Re-engineering of course delivery may be needed and this will be the lecturer's responsibility. Towner & VanHorn (2007) also mention how the integration of Facebook into the traditional classroom will highlight some new challenges and lecturers and students will need to be open-minded about the adoption of Facebook as a learning network in the classroom. In this way lecturers can enhance the active learning experience of students through the use of Facebook as a learning community. Lecturers can also test the effectiveness of an online learning community such as Facebook.

Cloete *et al.* (2009) conducted a study on how ICT lecturers use Facebook as an academic tool. Relevant research data were gathered from 45 ICT lecturers in South Africa.

Cloete *et al.* (2009) found that 56% of lecturers have Facebook accounts. This finding helped the researchers to note that without a Facebook account, the lecturers would most likely not consider Facebook as a tool to supplement their traditional teaching methods – the reason being that they are not competent in the use of the tool nor interested in applying it.

Lecturers were also asked for what purposes they interact with students on Facebook. The following findings emerged (Cloete *et al.*, 2009):

1. 48% who did have Facebook accounts stated that they did not interact with students on Facebook;
2. 36% stated that they interacted with students for social purposes; and
3. 16% stated that they interacted with students for academic purposes.

The reason for point 1 above might be that lecturers want to maintain lecturer-student relationships, the level of respect from students towards lecturers, and the credibility of lecturers (Cloete *et al.*, 2009).

Cloete *et al.* (2009) asked the lecturers whether they have ever applied any online social networking site as a tool for academic learning as part of their teaching strategy. They found that 76% of lecturers have not applied any online social networking site as an academic tool before. 24% of lecturers have applied some type of online social networking site for learning. The reason for this low percentage might be that lecturers do not use online social networking sites themselves, or are not aware of or competent in the use of these tools.

Cloete *et al.* (2009) also asked lecturers whether they thought that online social networking sites like Facebook could be applied as a tool for academic learning as part of their teaching strategy. They found that the majority (64%) of lecturers thought that Facebook could be applied as a tool for academic learning. When asked whether they would actually consider using Facebook as a tool, 58% of lecturers mentioned

that they would not consider using Facebook as an academic tool for group work or online discussions.

The following possible reasons why lecturers would not consider using Facebook as an academic tool for learning are listed (Cloete *et al.*, 2009):

- course content not conducive to online networking tools (12,5%);
- there are better tools (25%);
- already have a dedicated secure site (54,2%);
- security issues (4,2%); and
- I am not competent in the use of Facebook (4,2%).

Most lecturers feel that they already have a site to apply as a tool for academic learning. This might include a Learning Management System or other tools that are already applied in the university setting (Cloete *et al.*, 2009).

3.10.2 Advantages and disadvantages of group work (face-to-face and via online social networking) – The lecturer

Almost all lecturers implement face-to-face classroom activities, but not all choose to enter an online social network environment, even though the pedagogical benefits of online learning are known by educators – especially the pedagogical potential of online social networking sites (Mazer *et al.*, 2007; Vie, 2008).

Cloete (2006) interviewed eight lecturers and asked them what the advantages of face-to-face group work were. The following advantages were raised:

- the student-centred approach is very useful because students learn from each other and develop good communication skills;
- students get to work in a diverse environment;
- it is good for students to see a problem from different perspectives and not just from the facilitator's perspective;
- students are able to achieve more in less time. This can be due to more than one individual providing valuable input;
- students develop more self-confidence and dynamic skills associated to group work, as well as conflict management skills which will equip them for the workplace;

- group work enhances the communication between students where they typically discuss the course content;
- the learning process is improved;
- group work teaches and gives students practical experience on group dynamics, which is a key business skill;
- group work enables students to do a larger piece of work which closely resembles real-life work situations;
- group work enables students to write a higher quality piece of work;
- students gain experience in delivering work of higher quality and thus raise their standards;
- fewer items to assess/mark; and
- group work simulates the Information Systems work environment.

Face-to-face group work holds many other advantages. Group work challenges and develops deep thinking skills and it encourages students to take part in the learning process. Students invent and share new ideas with other members of the group (Bonanno *et al*., 1998; Burdett, 2003). Facilitators find the work content and lessons more fun, more manageable and they realise the value of group work to students. The group work sessions also take place outside of normal lecture times, which eliminate time constraints. Facilitators also find that their workload is not extensively affected in terms of marking, and their students develop excellent communication and interaction skills, as well as good experience for working in groups (Potter, 1997; Bonanno *et al*., 1998).

Advantages of working in a group are purposeful involvement and participation in activities, face-to-face interaction, reinforcement of skills previously taught, combining of resources, higher-order cognitive skills and an opportunity for self-discovery and growth (Luczyn, 1999). Towns & Kreke (2000) argue that the relationships students form in groups are of great value to the learning process, especially when students share the same level of commitment and common goals. Singhanayok & Hooper (1998) further state that group work allows for students to take control of the decision-making process, and because students put more effort into the whole process it improves the learning experience. Students involved in group work use their meta-cognitive skills more often and are more positive than students

who work individually. As a result, students taking part in group work activities learn on a higher level as the required thought patterns are being activated (Singhanayok & Hooper, 1998).

Baskin *et al.* (2005) state that group tasks can often be too complex for individuals to complete and that group work allows for many perspectives to be considered. Group work assists in developing students' personalities and creates opportunities for socialising. The group is thus regarded as a motivational tool and a "social support system".

Cloete (2006) interviewed eight lecturers and asked them what the disadvantages of face-to-face group work were. The following disadvantages were raised:

- students can disappear in group work when it is not well planned;
- the evaluation and teaching methods don't equate with each other;
- time management and availability for group work activities is a problem;
- conflict between students can cause a break-up;
- personalities that dominate the group are the cause of others not getting a chance to give input;
- students sometimes don't have enough time to get together and work as a group;
- personal conflicts, loafing, and time scheduling difficulties;
- some good students can be effectively penalised by not achieving similar marks for group work as they would have achieved for individual assignments; and
- team members are not responsible enough.

Face-to-face group work has many other disadvantages. According to Houldsworth & Mathews (2000), facilitators have to deal with many problems related to students involved in group work. Firstly, "social loafing" is when a group member doesn't put in the same amount of effort as the other members, or when students who perform poorly are identified. This causes group members who do put in some effort to become angry or frustrated at those guilty members. Secondly, "free-riding" is when a low-ability group member leaves the work for the other members to complete, believing that his/her efforts won't help the group's progress. Behaviours caused by

these actions are students trying to eliminate the "sucker effect", in which a member who puts in a lot of effort realises that the other members are taking him/her for a "free ride", and then reduces his/her effort to not being taken advantage of (Houldsworth & Mathews, 2000; Smith, 2004).

Members withdrawing from groups negatively affect a group's performance and students often become obstinate when lecturers do not allow them to choose their own group members. Students sometimes resist peer interaction and prefer to be responsible for their own results. Withdrawing occurs when a student's intentions are to withdraw from the group activity on purpose. The member usually feels that other members do not value his/her efforts. Another reason for withdrawing is when a member feels incompetent and of no help to the group, especially when the other members don't pay attention or reject that member's efforts (Houldsworth & Mathews, 2000).

Face-to-face group work may also cause ritual behaviour, and often discourages students involved in tutorial groups, which affects their level of active participation. Ritual behaviour occurs when students appear to be dynamically involved in the tutorial, for example, when one group member hasn't thoroughly prepared individually before the tutorial session. This will have an effect on the group as a whole (Dolmans *et al.*, 2001). A problem related to ritual behaviour, is that the student doesn't prepare before the session, thus causing the facilitator to turn the tutorial session into a lecture to explain the work, which is not the objective for the tutorial. This causes the students to stay dependent on the facilitator and limits the students to mature as competent learners (Dolmans *et al.*, 2001; Chen, 2006).

Face-to-face group work requires a high level of cognitive ability and social interaction, which results in many students feeling negative towards group work. If a group consists of students who are unable to adjust and cope, the group's interaction will be poor and the group's performance will be below average (Houldsworth & Mathews, 2000; Chen, 2006). Group learning is a complex task and not always easy to accomplish. When the group work process is not managed correctly, differences between students, like status and ability, affect the performance of the group. The

interaction among group members is also negatively affected (Blumenfeld *et al*., 1996).

Involving students in group work is not a guarantee that they will work together effectively. A problem, which often surfaces in group work, is unequal contributions by group members, and proof that group members don't interact on a social level. Furthermore, students often withdraw or observe in silence in the fear of other members regarding them as being incompetent to participate or contribute (Blumenfeld *et al*., 1996).

Burdett (2003) provides more reasons why group work is viewed in a negative light. These include group evaluation methods; competition among group members and with other groups; group kinetics; and inadequate organisation of groups. Burdett (2003) also describes two reasons why group work may be unsuccessful. Firstly, group kinetics is sometimes very complex as students are required to use their cognitive and social interaction skills, which may not be fully developed. As a result students don't always welcome this new approach, and may show rejection. Secondly, the university setting is a highly competitive environment in which students have to cope, and different evaluation methods make some students uneasy, because they fear being graded in an unfair manner.

From the lecturer's perspective the following are some advantages regarding online social networking for group work/online discussions:

- it promotes critical thinking among students and less domination by other members (Wang & Woo, 2007);
- it offers twenty-four seven access to resources and greater flexibility in terms of a suitable time and place (Aragon *et al.*, 2002);
- it provides a shared "learning-through-doing environment" (Dede, 1996); and
- it expands the reach to diverse audiences (Dede, 1996).

When students interact in online communities, it complements their relationships in a face-to-face setting (Dede, 1996). This might be because students learn a lot about each other in online settings and thus benefit from online interaction.

According to Mazer *et al.* (2007) it is easy for students and lecturers to connect with each other on Facebook. In their study they found that most students did not mind their lecturers being on Facebook. This connection can have positive affects on the student-lecturer relationship. They also found that the more a lecturer discloses of him/herself, the higher the motivation levels among students and the more positive the classroom climate.

Dalsgaard (n.d.) argues that online social networking sites are a combination of personalisation and socialisation, which has the potential to "facilitate transparency between students". Personalisation is the creation of a personal page by a person. Socialisation occurs when a person's personal pages are linked to others' personal pages. The actions executed on an online social networking site are classified as being transparent. Transparency can be explained as students gaining insight into the work, productions and thoughts of other students.

Lecturers regard the following as some disadvantages regarding online social networking for group work/online discussions:

- there is a lack of social and non-verbal cues (Thomas, 2002; Sandars, 2005);
- interruptions from the real world affect interaction negatively as there are time delays and thus increased waiting time, causing frustration (Lantz, 2001);
- the presence of antisocial behaviour and flaming – a term describing aggressive behaviour (Chester & Gwynne, 1998);
- it is sometimes viewed as a supplement to face-to-face settings (Lantz, 2001);
- friends, strangers or students can post negative messages on a lecturer's Facebook Wall, which can be viewed by others (Mazer *et al.*, 2007);
- the unconventional use of technology by students (Bugeja, 2006); and
- technology is equally viewed as a distraction and an academic tool in the classroom (Bugeja, 2006).

Mazer *et al.* (2007) state that Facebook allows a user to create his or her own virtual identity. Hewitt & Forte (2006) and Eberhardt (2007) also explain how students attempt to control their personal images and strive for an idealised vision of the self, which may be contrary to the true self-image. Thus, a misrepresentation of the self is also viewed as a negative aspect of online interaction, and as Eberhardt (2007)

explains: “Virtual connections may add another level of pressure to present a false image.”

Many lecturers mention that they do not participate in online social networking because they are concerned about online privacy, spam emails, surveillance and inadequate boundaries. Some lecturers regard online social networking sites as environments specifically for students and not for lecturers (Vie, 2008). However, some lecturers do wish to get involved in online social networking sites such as Facebook, but should understand that they can portray a positive or negative image of themselves on Facebook. A negative image might have a negative impact on the lecturer’s credibility and create a lower level of respect from students. Mazer *et al.* (2007) argue that it is important for lecturers to be consistent in their self-disclosure on Facebook and their lecturing style in the traditional classroom environment. It is clear that consistency in the portrayal of the self-image in both environments is important.

Maznevski & Chudoba (2000) argue that culture influences the use of Information Systems. The effect of culture on virtual group work can be positive (in the sense that a mixture of diversity can bring many different views and ideas to the table) and negative (conflicts may arise in terms of values and differing perceptions and viewpoints).

DeGagne & Wolk (2007) conducted a study about the use of ICT in higher education environments. They found that students were using their laptops and other technologies for non-academic reasons. This happens both inside and outside of the classroom. Vie (2008) supportively states how Generation M students are good at multitasking and can use many technologies at once.

3.10.3 How should lecturers inform and educate students on the use of online social networking in an academic environment?

Lecturers should become aware of the pedagogical potential of Web 2.0 technologies, especially online social networking sites. According to Eberhardt (2007), lecturers need to understand the phenomenon of online social networking in order to guide students in their learning processes. According to Vie (2008), the first step for

lecturers is to become aware of and familiarise themselves with online social networking sites and other Web 2.0 technologies which most students are already familiar with. Lecturers need to be aware of these technologies which have an influence on students' digital literacy skills. Online social networking sites should be viewed through an academic lens in order for lecturers to understand its pedagogical potential. Vie (2008) further proposes that lecturers need to incorporate technologies that students are familiar with into their pedagogical approach.

Eberhardt (2007) contends that students can experience comfort in new social environments if they gain early knowledge of online education and connections. Lecturers can enhance the learning experience of students by helping them to apply their networking capabilities and knowledge.

Eberhardt (2007) captured some suggestions for lecturers, which the researcher summarised as follows:

- First-year students should be educated about the advantages and disadvantages of online social networking sites via printed hand-outs or resources posed online.
- Training should be offered for campus or class representatives to promote the academic benefits of online social networking sites and encourage them to show others how to use these sites and create groups with similar interests.
- Discussion sessions should be held where students can talk about the effect of online social networking on their lives and the ways in which they can portray their online identities.
- Campus newspapers should be used to educate students about the responsibility they should take regarding their online identity and the management thereof, as well as the content they distribute.
- Residence hall staff should be encouraged to educate students on the possibilities offered by online social networking to create past and present connections and on the consequences of extensive time spent online.
- Information about the security and privacy issues of online social networking should be disseminated.

- Students who wish not to participate in online social networking activities should not be excluded, but should rather be motivated to participate in traditional campus activities.
- Lecturers should create appropriate profiles and allow students to connect with them without posting information that is too personal.
- Lecturers should engage in discussions and consider profiles for their departments where its services and information can be hosted. This could also be a space where students can seek professional advice and assistance.
- Research should be conducted on the involvement of students in online social networking sites in order to generate learning benefits for students.

These suggestions by Eberhardt (2007) are a good starting point for creating an increased awareness among lecturers and students about the effective use of online social networking for social and academic purposes.

Important factors to be considered when choosing an online environment are the existence of support services and the level of involvement of lecturers in the environment. Küçük *et al*. (2010) offer valuable advice by focusing on support services required for efficient online work. Academic guidance for lecturers, administrative support, adequate information resources and technical support are all crucial factors. Küçük *et al.* (2010) also explain that lecturers should be present in the online environment, just as they would in the traditional classroom environment, as that is what students expect. Cruz (2009) highlights that the mere presence of a tool will not contribute to learning transformation, but that lecturers also need to be self-efficient in the use of computer technologies.

Küçük *et al.* (2010) conclude that it is no longer the main issue whether lecturers should choose between face-to-face, online or distance teaching strategies, but that whatever the choice, the support services should be in place and be effective.

3.11 Students' experiences of group work (face-to-face and via online social networking)

3.11.1 Knowledge sharing and understanding content

In the modern world of education, the focus is on constructivism, focusing on constructing knowledge, rather than reproducing knowledge, and the appropriate use of online tools aids in the creation of "constructivist learning environments" (Cartelli *et al*., 2008). Cartelli *et al*. (2008) further contend how "students were better able to develop problem-solving skills not detected in more traditional teaching approaches". The importance of problem-solving skills for Information Systems students cannot be emphasised enough.

Students create and share knowledge through online social networks and this can be used to their advantage. Online social networks are "knowledge networks", have a powerful impact on knowledge creation and sharing which is central to learning, and it also increases performance (Sandars, 2005).

Knowledge sharing enables individuals interacting in an online environment to access relevant knowledge from a broad range of resources. Most individuals who use the internet have an expectation for the acquisition and sharing of valuable knowledge in order to meet their needs (Yang & Chen, 2008).

The way in which students interact and successfully complete group work tasks has an effect on their performance in terms of grades. Sparrowe *et al.* (2001) supportively state how online social networks have an influence on both individual and group performance and that cohesive group interaction is positively related to the grades of a group.

Cartelli *et al.* (2008) argue that students can construct knowledge in three ways:

- Individual knowledge: The autonomous interaction with real or virtual phenomena.
- Community knowledge: The active participation in the learning community where peer support is regarded as being important.

- Social knowledge: The social interaction between people in a community and between different communities.

Students experience higher-order thinking capabilities and higher-order processing of information when they reflect on their peers' contributions in online discussions and this supports the social construction of knowledge and increases participation (Thomas, 2002; Meyer, 2003).

Minocha & Thomas (2007) state how students develop their knowledge because of interaction with their peers, lecturers and the course material. Shared understanding allows students to enact knowledge. It is further said that the learning process requires a social foundation for interaction where a sense of belonging can exist. As mentioned before, Facebook, as a social utility, provides for this.

Students gain an improved understanding of the course content when working in groups. Group work causes students to be more interested in the course content, because of in-depth discussions of problems or scenarios. Students then also realise which aspects they do not fully understand, and thus involve themselves in the discussions to improve on this (Dolmans *et al.*, 2001).

Students are aware of the value of group work and many of them realise a close relationship between being involved in group work throughout their undergraduate studies. They are aware of their improved experience of working in groups and of the development of group and learning skills, which will be very useful when they become part of the workplace (Bonanno *et al*., 1998).

Group work requires students to share their own understanding of the content with other members, to ask questions in the group to solve a problem and also to make sense of their own understanding compared to that of the other group members. Different problem-solving approaches are also discussed and students elaborate on their level of understanding and compare this to other students' approaches. This guides students to realise which aspects of the content they do not fully understand (Towns & Kreke, 2000). To adopt an overall view of how students feel about group work, it is clear that students find the activities to be fun and the content more

interesting while receiving individual attention from people they may look up to (Potter, 1997).

Students with good peer relationships and good communication abilities often have the same goals and levels of commitment, which enables them to approach tests and examinations with the adequate knowledge and understanding of the course content, causing a higher level of student performance. In other words, they "actively teach each other to success" (Towns & Kreke, 2000). Singhanayok & Hooper (1998) supportively state that students' levels of achievement are improved when they teach each other, because they learn the content better and understand it in more detail when old and new information is compared in terms of deep-thinking skills being activated.

According to a study by Towner & VanHorn (2007), students from an online enhanced class performed better in terms of knowledge acquisition, than students engaged in traditional lectures only.

3.11.2 Advantages and disadvantages of group work (face-to-face and via online social networking) – The student

Face-to-face group work has many advantages for students. It provides them with an opportunity to participate in exercises, solve problems together, and discuss solutions and other difficulties they may have experienced during the tutorial session (Bonanno *et al.*, 1998; Dolmans *et al.*, 2001). Dolmans *et al.* (2001) further contend that group work activities increase students' motivation levels and foster a caring environment in which students want to work together to succeed. Bonanno *et al.* (1998) state that group work also clarifies the course content and students feel that group work is a necessity for the learning experience.

Cassidy (2006) identifies more advantages, such as the student's ability to

- communicate about behaviour;
- ask for help or provide help;
- carry out tasks with a positive attitude;
- be aware of other students' feelings;
- be aware of his/her own feelings, weak and strong points;
- learn how to make the right decisions;

- initiate certain plans of action to solve a problem;
- obtain resources without a lecturer's help and support;
- set out goals; and
- grow as an individual.

The most apparent advantages of face-to-face group work, as derived from a study by Burdett (2003), fall into five categories:

1. Students generate innovative ideas and share different views. When more than one contribution is made, the knowledge base of the individual student expands and the level of understanding increases.
2. Students make new friends and create friendships through communication.
3. The learning process is amended, because students' interpersonal communication skills are improved through interaction with other students.
4. The work is shared by all students who contribute equally.
5. Students' results improve.

A sense of trust exists between members of the group, and thus students care for each other and acknowledge individual differences, which in turn provides for a positive learning environment (Towns & Kreke, 2000). As students form new relationships and use interpersonal communication, they create a sense of unity among each other. The communication includes discussions of problems and possible solutions by teaching each other, and other aspects not related to the work, for example social communication. It is also apparent that students learning individually struggle to achieve a good end result as opposed to students working in groups who help each other and engage in active discussions. These groups have a more positive attitude towards group work because of improved learning processes (Singhanayok & Hooper, 1998; Towns & Kreke, 2000).

According to Burdett (2003) and Ellison, Boykin, Tyler & Dillihunt (2005), group work increases the quality of learning and improves the academic performance of students, but although group work is a very popular teaching and learning method, students still get frustrated with certain parts of group work.

Face-to-face group work has many disadvantages. Some of the most common problems which students are faced with in tutorial groups are students who are unprepared or who are absent most of the time. Group members who pull their weight and are negatively affected by such issues tend to contribute less because of other members who are guilty of "free-riding". As a result there is no group spirit and members tend not to care about each other or the group's goal. The end result is a group being labelled as a "social loafing" group, unable to achieve social cohesion (Dolmans *et al.*, 2001).

Students experience increased pressure while involved in group work activities, because of reasons like peer pressure to perform, fear of how they will be evaluated, a competitive environment among groups and individuals and complex group kinetics. Students may also become confused about what exactly is expected of them (Bonanno *et al*., 1998; Burdett, 2003). Burdett (2003) further describes the demanding phases students have to go through, especially when they have to work with people they don't know or are not comfortable with at first. The four stages are "forming, norming, storming and performing", and it is pointed out that many groups don't reach the performing phase successfully, due to personality and other differences within the group. Bonanno *et al.* (1998) state that students' schedules are not the same and it puts pressure on them to organise meetings.

The most apparent disadvantages of face-to-face group work, as derived from a study by Burdett (2003), falls into three categories:

1. The unequal contributions made by group members. Students become frustrated when members' efforts are unequal and conflict situations usually arise from this, which may become a serious obstacle. Students who put a lot of effort into the work are aware that other members are guilty of "free-riding" and they become irritated and angry, because the guilty students benefit in terms of higher grades which they don't deserve. The fact that students have different attitudes toward group work and different levels of motivation also makes coordination of group functioning very complex.
2. The complex task of scheduling meeting times that suit all members. Some students are more committed than others, and they become frustrated when

those who are not that committed benefit from their hard work and effort, as well as the marks they receive, which don't truthfully portray the level of their contribution and effort.

3. The support from staff is inadequate. Students sometimes perceive the design of group work being poor, and that staff are unaware of the demands placed on the students due to the complexity of the work to be done. Students feel that the facilitator is not aware of unequal contributions and evaluation related to this, and doesn't take action to prevent it from recurring, as well as not being caring enough about these issues. Students are often under the impression that lecturers only use group work to reduce their workload and not to provide a learning strategy for improvement.

Another important problem related to group work from a student's point of view, is the problem of "free-riders". This concern was also highlighted by lecturers. As defined by Burdett (2003), a "free-rider" is a student who benefits from the group's success without contributing or putting in effort; engaging in "social loafing". Towns & Kreke (2000) contend that students who contribute to the group effort don't enjoy working in groups that include students who are "free-riders" – also referred to as "piggybacking". A reason for this behaviour is that students that dominate group discussions and pressure others to accept and welcome their points of view, cause other students to withdraw or listen in silence, rather than to provide valuable input. Other students are often humiliated and rejected by the dominant members in a group, causing exclusion and withdrawal from the group activity (Blumenfeld *et al.*, 1996; Bonanno *et al.*, 1998).

Burdett (2003) states that students who don't share the same values but have to work together might cause negative group cohesion and poor end results, and Bonanno *et al.* (1998) imply that if some students have less experience in group work, it might negatively affect members' attitudes and group performance.

From the student's perspective the following are some advantages of online social networking:

- companionship, access to information, and emotional and material support (Donath, 2008);

- an opportunity for students to get to know their lecturers better (Hewitt & Forte, 2006);
- an opportunity to expand human social reach (Donath, 2008);
- students have more confidence because they can act anonymously (Chester & Gwynne, 1998);
- students have more opportunities to develop personal relationships with their peers (Mazer *et al.*, 2007);
- students disclose more about themselves which can positively affect peer relationships (Mazer *et al.*, 2007);
- students are aware of the lecturer's attempt to develop positive relationships via Facebook (Mazer *et al.*, 2007); and
- many people find collaborative virtual environments attractive, because they gain things of value by collaborating and interacting with others (Dede, 1996).

If one focuses on the use of Facebook in particular, advantages are that most students already use Facebook on a daily basis and Facebook is also used at most universities (Towner & VanHorn, 2007).

Students regard the following as some disadvantages of online social networking:

- the risk of procrastination (Bistrom, 2005);
- the online setting is viewed as an isolated participation mode (Thomas, 2002);
- a member hindering the work of others (Sparrowe *et al*., 2001);
- it creates opportunities for deception (Sandars, 2005);
- members manipulate relationships (Donath, 2008);
- 'flaming' (aggression) and a decrease in trust (Chester & Gwynne, 1998; Sandars, 2005);
- lecturers may exhibit improper behaviour and lower their credibility according to students (Mazer *et al.*, 2007);
- not all students posses technological skills or access which can negatively impact the learning process (Loyd *et al.*, 2007); and
- students sometimes view peers negatively before having met them in person (Eberhardt, 2007).

DeGagne & Wolk (2007) found that students prefer technology only moderately and most have mixed feelings about the use of technology in the classroom (even those students with a high level of technological skills). They further argue that ICT skills used for academic tasks, are developing slowly among students and this places a limit on the value of technology. On the contrary, Vie (2008) explains that many Generation M students feel that they have more knowledge of specific technologies than their lecturers. Even though this is said to be stereotypical, it holds some truth.

The application of Web 2.0 tools in higher education institutions can offer extensive benefits to students, lecturers, other staff members, departments and faculties (David, 2010). Facebook has pedagogical potential and its academic application should be considered by both lecturers and students.

3.12 Conclusion

Chapter 3 offered a detailed review of literature related to face-to-face group work and the value thereof, online social networking and the value thereof; Facebook; face-to-face versus online group work; Kolb's learning styles and the learning styles evident in face-to-face and online environments; and finally the experience of group work and discussions (face-to-face and via online social networking) by both lecturers and students. Chapter 4 covers the research findings in detail.

CHAPTER 4: Research findings

The research findings of this study are discussed in detail in Chapter 4. These findings are related to a lecturer questionnaire, lecturer interviews, a student questionnaire and an explanation of the Facebook group administration done by the researcher. The chapter concludes with a general discussion of the findings.

4.1 Introduction

The researcher distributed two questionnaires. The first questionnaire was distributed to a large number of Information Systems, Computer Science and Computing lecturers from universities in five countries. The second questionnaire was distributed to second-year Informatics students from the Department of Informatics at the University of Pretoria in South Africa, as well as third-year Information Systems students from CTI (a private educational institution) in South Africa. Semi-structured interviews were conducted with Informatics lecturers from the Department of Informatics at the University of Pretoria in South Africa. The researcher also created and administered three student academic groups on the Facebook website.

The research findings will now be discussed by first focusing on the lecturers and then on the students.

4.2 Facebook questionnaire – Lecturer

The researcher conducted thorough research on Informatics, Computer Science and Computing departments at universities in five countries, and a large number of lecturers' email addresses were collected through extensive research. A questionnaire link was distributed via email to lecturers of Informatics, Computer Science and Computing departments from the following countries:

- Australia (AU);
- Canada;
- South Africa (SA);
- the United Kingdom (UK); and
- the United States of America (USA).

86 anonymously completed questionnaires were received. The number of responses received from each country is listed in Table 4.1 below:

COUNTRY	RESPONSES	%
South Africa	32	37.2%
United States of America	7	8.1%
Canada	8	9.3%
United Kingdom	15	17.4%
Australia	22	25.6%
Other	2	2.3%
TOTAL	**86**	**100%**

Table 4.1 Responses per country and total responses

The questionnaire consisted of 21 questions. The questionnaire is attached as Appendix A. The questions posed in the questionnaire and the findings assembled from the respondents will now be discussed.

4.2.1 Question 1: Gender

Lecturers were asked to specify their gender.

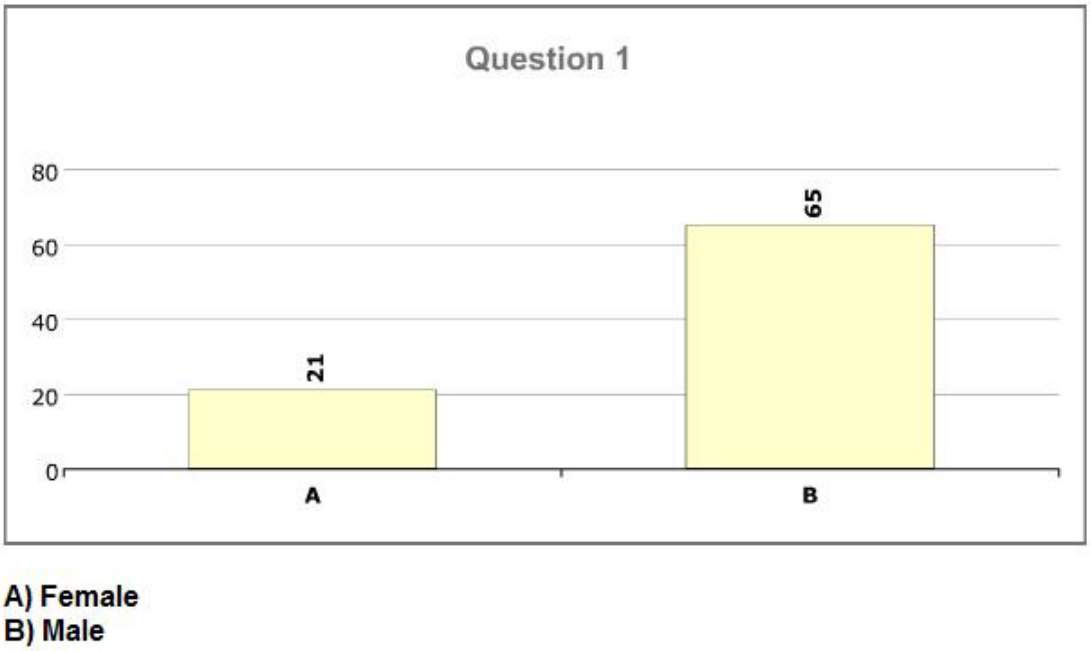


Figure 4.1 Gender

All lecturers answered this question. As is clear from Figure 4.1 the gender distribution was 24.4% female to 75.6% male lecturers.

4.2.2 Question 2: Age

Lecturers were asked to choose their age group. The age distribution is presented in Table 4.2 below:

AGE	%
21–30	14%
31–40	34.9%
41–50	24.4%
51–60	20.9%
61–70	5.8%

Table 4.2 Age

All lecturers answered this question. It is clear from Table 4.2 above that the largest number of lecturers were within the 31–40 age range (34.9%), secondly in the 41–50 age range (24.4%), thirdly in the 51–60 age range (20.9%), fourthly in the 21–30 age range (14%), and lastly in the 61–70 age range (5.8%).

4.2.3 Question 3: Ethnicity

Lecturers were asked to specify their ethnicity. The ethnicity distribution is presented in Table 4.3 below:

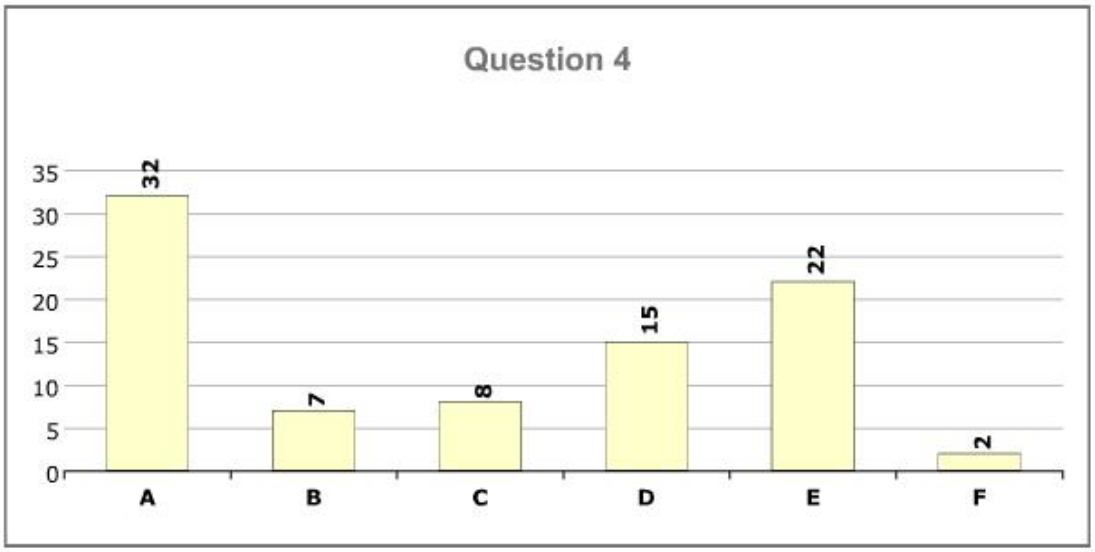
ETHNICITY	%
White	80.2%
Black	7.0%
Coloured	0%
Asian	0%
Indian	4.7%
Other	8.1%

Table 4.3 Ethnicity

All lecturers answered this question. It is clear from Table 4.3 that most respondents were White (80.2%), Other (8.1%), Black (7%), and Indian (4.7%). None of the respondents were from the Coloured or Asian groups (0%).

4.2.4 Question 4: Country (where you work)

Lecturers were asked in which country they were then employed.



A) SA
B) USA
C) Canada
D) UK
E) AU
F) Other

Figure 4.2 Country of employment

All lecturers answered this question. From Figure 4.2 it is clear that 37.2% of lecturers worked in South Africa, 25.6% in Australia, 17.4% in the UK, 9.3% in Canada, 8.1% in the USA and 2.3% stated that they worked in other countries. It is clear that most lecturers who completed the questionnaire were at the time of the research employed in South Africa.

4.2.5 Question 5: I am a lecturer in

Lecturers were asked in which field of Information Systems they lectured.

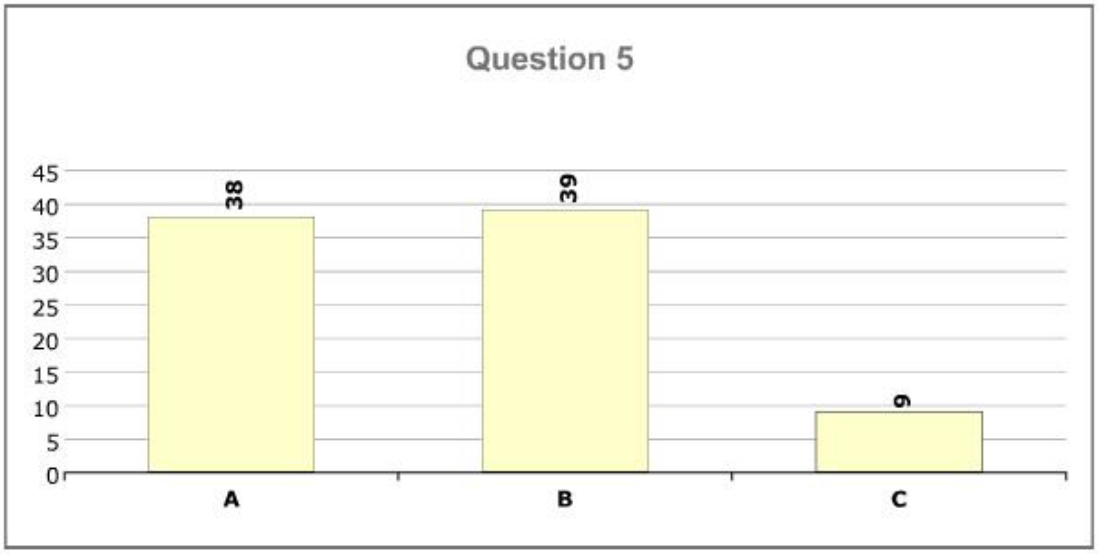


Figure 4.3 Field of lecturing

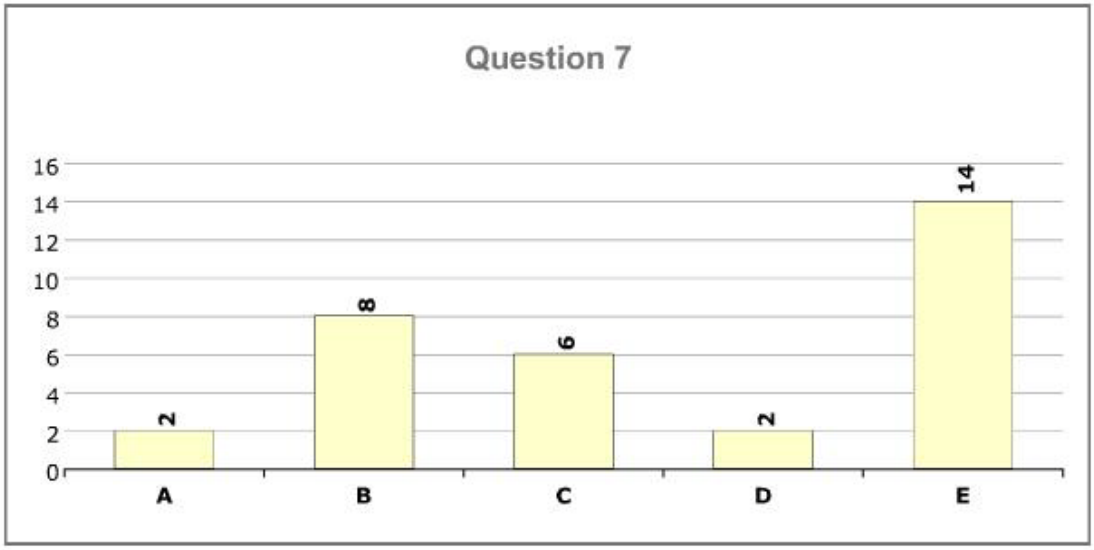
All lecturers answered this question. From Figure 4.3 it is clear that 45.3% of lecturers lectured in the field of Computer Science, 44.2% in the field of Informatics and 10.5% in another field.

4.2.6 Question 6: I have a Facebook account

Lecturers were asked to indicate whether they had Facebook accounts. All the lecturers answered this question. 64% lecturers stated that they did have a Facebook account while 36% stated that they did not have an account. This is an indication of the level of Facebook usage by lecturers. If lecturers wanted to take part in the activities on Facebook and utilise it as an academic tool to supplement their teaching strategy, they would already have had an active Facebook account showing their interest in the tool. A reason for not having a Facebook account might be that lecturers are not adequately aware of the academic potential of Facebook and all the possibilities for collaboration with regards to their research and teaching. The next question attempts to determine the possible reasons why lecturers have or do not have a Facebook account.

4.2.7 Question 7: If you answered "No" to Question 6, please choose the most appropriate reason why you do not have a Facebook account

The following question was asked to determine the possible reasons why lecturers do not have a Facebook account.



A) I am a member of another social networking site
B) I am too busy with other tasks
C) I do not like Facebook
D) Facebook is a waste of time
E) Other

Figure 4.4 Reasons for not having a Facebook account

37.2% of lecturers answered this question. The responses to this question from Figure 4.4 are listed below:

- "I make use of another social networking site" (6.3%);
- "I am too busy with other tasks" (25%);
- "I do not like Facebook" (18.8%);
- "Facebook is a waste of time" (6.3%); and
- "Other" (43.8%).

From these findings it is clear that most lecturers had other reasons than the ones stipulated in the questionnaire for not having a Facebook account. It is important to elaborate on this finding to determine what these other reasons might be. For this reason, the researcher further addressed this question in the lecturer interviews discussed in Paragraph 4.4.

4.2.8 Question 8: If you answered "Yes" to Question 6, please answer the following: For which purposes do you interact with students on Facebook?

Lecturers were asked for which purposes they interacted with students on Facebook (if they had a Facebook account).

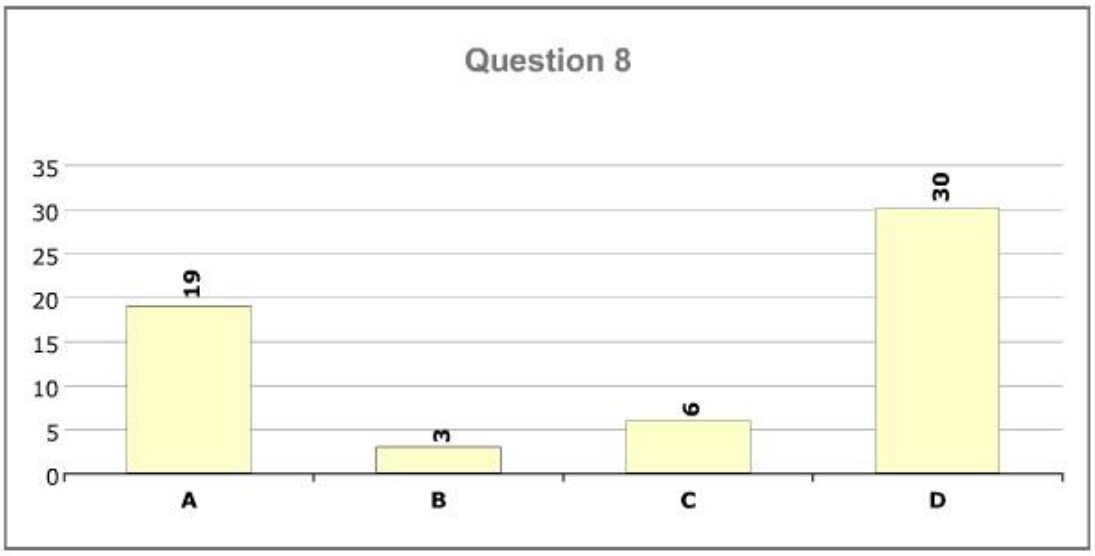


Figure 4.5 Purposes for interacting with students on Facebook

67.4% of lecturers answered this question. From Figure 4.5 it is clear that 32.8% stated that they interacted with students on Facebook for social reasons. 5.2% stated that they interacted with students on Facebook for academic reasons. 10.3% stated that they interacted with students on Facebook for both social and academic reasons and 51.7% stated that they have had no interaction with any students on Facebook. The reasons for "no interaction with any students" are further discussed in the lecturer interviews in Paragraph 4.4.

4.2.9 Question 9: Are you actively participating in any academic groups on Facebook, related to your work (teaching) or research interests?

Several work groups exist on Facebook, where members with the same interests are able to discuss various topics and collaborate with each other on teaching strategies and research related work. These groups enable an individual to have a large number of academic contacts globally. Extensive knowledge sharing takes place and

participation broadens the individual's knowledge base. One such example is a group called "Facebook: Academic Research", of which the researcher is a member. In October 2010 this group had 909 members (Facebook, 2010) and this number is increasing. Lecturers were asked whether they were actively participating in any academic groups on Facebook, related to their work (teaching) or research interests.

All lecturers answered this question. 9.3% of lecturers were actively involved in these types of academic groups, while 90.7% were not involved. This highlights the need for lecturers to become more aware of the advantages of Facebook for teaching and research related work and correspondence with lecturers all over the world in order to enhance and broaden their knowledge base and global reach.

4.2.10 Question 10: If you answered "Yes" to Question 9, please choose which type of groups you are actively participating in

This question was raised to determine which type of academic groups lecturers were participating in most (research or teaching related).

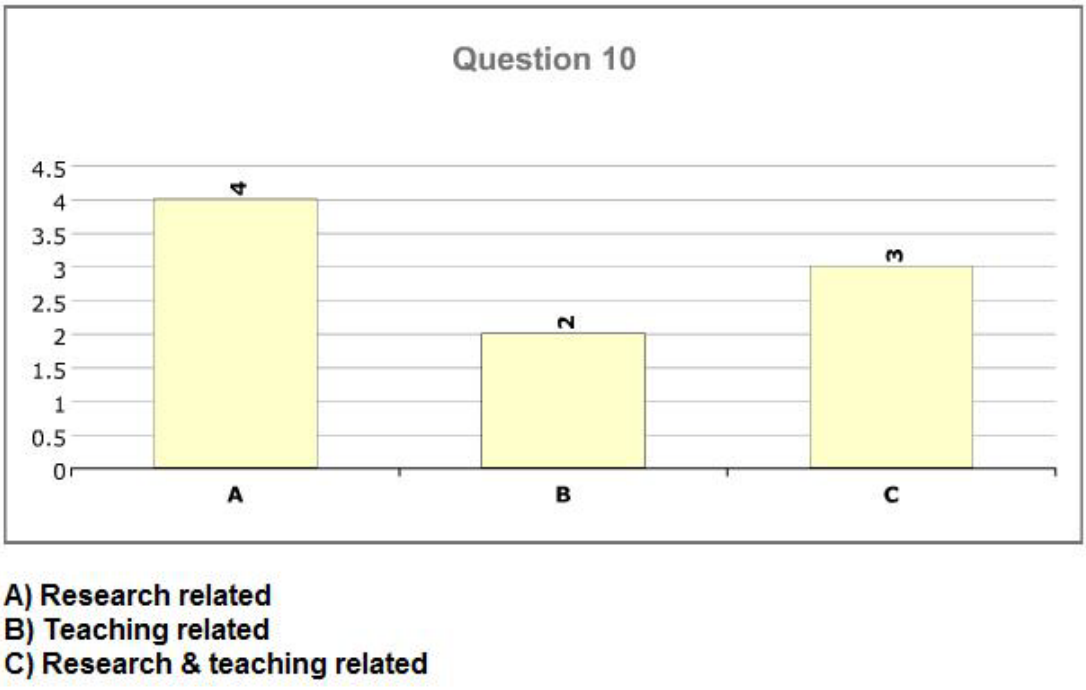


Figure 4.6 Teaching/research groups on Facebook

10.5% of lecturers answered this question. As is clear from Figure 4.6, 44.4% of lecturers stated that they were actively participating in research related academic

groups on Facebook. 22.2% stated that they were actively participating in teaching related academic groups and 33.3% stated that they were actively participating in both research and teaching related academic groups. The majority of lecturers who participated in these academic groups on Facebook did so for research related purposes.

4.2.11 Question 11: Have you ever applied any online social networking site as a tool for academic learning as part of your teaching strategy?

Lecturers were asked whether they ever applied any online social networking site (like Facebook, MySpace, Twitter, etc) as a tool for academic learning as part of their teaching strategy. All the lecturers answered this question. 36% of lecturers have applied an online social networking site as a tool for academic learning before and 64% have not. It is clear that most lecturers have not applied it before. Possible reasons might be that lecturers are satisfied with the Learning Management System at their institution or that they are not aware of the pedagogical potential of online social networking sites. More reasons are explored in the lecturer interviews discussed in Paragraph 4.4.

4.2.12 Question 12: Do you think that an online social networking site, such as Facebook, can be applied as a tool for academic learning as part of your teaching strategy?

Lecturers were asked whether they personally thought that an online social networking site, like Facebook, could be applied as a tool for academic learning as part of their teaching strategy. This question was asked to determine lecturers' views on the application of these tools. All lecturers answered this question. 74.4% of lecturers thought that online social networking sites, such as Facebook, could be applied while 25.6% thought that it could not be applied as an academic tool. The fact that the majority of lecturers believed in the academic application of these tools, is a positive outcome. The reason why others were not convinced might be that they were unaware of the application of these tools for academic learning, or that they had had negative experiences with these tools in the past. It would thus be valuable to filter the results to determine whether the lecturers who felt that it could not be applied, have tried it before. This issue is further addressed in Paragraph 4.3, "Facebook questionnaire – Lecturer: Additional questions and findings".

4.2.13 Question 13: Would you consider using Facebook as an academic tool where students or students and lecturers can engage in group work or online discussions related to the course content?

Lecturers were asked whether they would actually consider using Facebook as an academic tool. All lecturers answered this question. 45.3% of lecturers would consider using Facebook while 54.7% would not consider using it. This is interesting if compared to the result of Question 4.2.12, which indicates that a large number of lecturers believed in its application, but few would actually consider using it. It is important to find reasons for this difference and, therefore, these reasons are further discussed in the lecturer interviews in Paragraph 4.4.

4.2.14 Question 14: If you answered "Yes" to Question 13, please provide a reason why you would use it

Lecturers were requested to provide reasons why they would consider using Facebook as an academic tool. 45.3% of lecturers answered this question. The reasons are categorised under active Facebook members and those without Facebook accounts.

4.2.14.1 Lecturers with Facebook accounts

Lecturers who were members of Facebook mentioned a number of reasons why they would consider using Facebook as an academic tool. The following themes are highlighted from the reasons mentioned:

- Group work and interactivity;
- Student familiarity;
- Sharing and skills; and
- Learning Management Systems.

The reasons are further summarised and related to the different countries in Table 4.4 below:

THEME	COMMENTS	COUNTRY
GROUP WORK AND INTERACTIVITY	Facebook may be useful as a collaboration tool and has excellent support for student group collaboration.	**Canada**
	It is important for students to take part in group collaboration and to become a part of online research discussions.	**SA**
	If many students are already using Facebook for group work, other students might be more eager to also participate.	**SA**
	It allows students to initiate discussions and help them to take ownership of their learning.	**SA**
	Facebook is very interactive and it will get students to interact more, making work easier for them, having better control and it caters for flexible learning.	**AU & SA**
	Distance learners or students from different campuses can meet there and interact.	**AU & SA**
	The lecturer can communicate with students.	**SA**
	An interesting comment was raised by one of the lecturers. He/she stated that: “We have used a local news group for student interaction, but the students do not use it much. I let them self-organise and do not engage much in the discussions” (It may be beneficial to the students if the lecturer does not participate in the group discussions, for the students to get a feeling of ownership and that it is their own space to collaborate and interact).	**UK**
STUDENT FAMILIARITY	Facebook is popular.	**UK**
	Students are already familiar with Facebook; are already “there” and actively using it.	**AU & SA**
	Students are familiar with the interface and this eliminates a barrier to participation.	**UK**
	It is easy for students to use and understand Facebook.	**SA**
	Quite a number of people use Facebook every day.	**SA**
	The following comment was raised by one of the lecturers. He/she stated that: “Facebook is part of a new reality. Lecturers should embrace it rather than fear it.”	**SA**
SHARING AND SKILLS	Students will adapt to online social networking systems and develop technological skills.	**SA**
	Facebook will introduce students to "new" concepts regarding ICT and become exposed to ICT as an educational tool in a fun, playful way.	**SA**
	Facebook caters for assignment discussions and information sharing.	**SA**
	Students can exchange materials and ideas in particular areas of study.	**Canada**

LEARNING MANAGEMENT SYSTEMS	Students like Facebook, so they may be more enthusiastic about it than Learning Management Systems.	**SA**
	A comment made by one lecturer: "I would use it as a social networking tool; however, I think a purpose-designed, controlled environment such as Moodle, would be even better suited to such a task."	**AU**

Table 4.4 Reasons why lecturers with Facebook accounts would consider using Facebook as an academic tool

In the lecturer interviews, which are discussed in Paragraph 4.4, the researcher gathered lecturers' viewpoints in order to analyse the concept behind the use of Facebook compared to the use of Learning Management Systems.

4.2.14.2 Lecturers without Facebook accounts

Lecturers who were not members of Facebook mentioned a number of reasons why they would consider using Facebook as an academic tool. The following themes are highlighted from the reasons mentioned:

- Privacy;
- Acceptance; and
- Discussions and interactivity.

The reasons are further summarised and related to the different countries in Table 4.5 below:

THEME	COMMENTS	COUNTRY
PRIVACY	If there are applications available that would allow a lecturer to separate his or her private profile from a public training space (with sufficient control), then it could be useful.	**SA**
	The identity of individuals should be protected and privacy aspects protected to a level of satisfaction – particularly when considered in the context of teaching, learning and student assessments.	**AU**
ACCEPTANCE	Facebook has gained acceptance as a tool and students enjoy using it.	**SA**
	Facebook appeals to the young and students will most likely subscribe to the site and engage in group discussions.	**SA**

DISCUSSIONS AND INTERACTIVITY	Online discussions have the ability to motivate students to participate and think. A difficulty is that it potentially lacks rigor in the presentation of knowledge and participation.	**SA**
	Group discussions are a vital part of education – even outside the classroom. Anything that increases the legitimate interaction between students is encouraging and worth pursuing. "I use Blackboard's Discussion forum for my class, but students might be more open to something more familiar to them like Facebook."	**USA**
	A comment made: "I would consider using it if it provided a mode of interaction helpful to the work; I'd have to look into it more closely to assess that."	**AU**

Table 4.5 Reasons why lecturers without Facebook accounts would consider using Facebook as an academic tool

4.2.15 Question 15: If you answered "No" to Question 13, please provide a reason why you would not use it

Lecturers were requested to provide reasons why they would not consider using Facebook as an academic tool. 54.7% of lecturers answered this question. The reasons are categorised under active Facebook members and those without Facebook accounts.

4.2.15.1 Lecturers with Facebook accounts

Lecturers who were members of Facebook mentioned a number of reasons why they would not consider using Facebook as an academic tool. The following themes are highlighted from the reasons mentioned:

- Other tools available;
- Security and privacy; and
- Suitability and ethics.

The reasons are further summarised and related to the different countries in Table 4.6 below:

THEME	COMMENTS	COUNTRY
OTHER TOOLS AVAILABLE	The Learning Management System tools are good enough. o ClickUP's discussion facility is adequate **(SA)**. o Blackboard has a wiki and discussion board facility **(AU)**. o WebCT is more appropriate **(UK)**. o Moodle is more appropriate for teaching purposes **(AU)**.	**AU, SA & UK**
	There are much better tools freely available for group work like GoogleGroups and Ning.	**AU**
	Facebook is too open. There are other tools limited to students only.	**AU**
	Universities have control over Learning Management Systems while Facebook has control over Facebook.	**UK**
	Mailing lists for communication related to a course are used.	**AU**
	There are more effective online discussion forums available for academic purposes.	**SA & USA**
	An interesting comment made by one lecturer: "If I was to use an online forum for discussion about a course, I would want it to be integrated into the web resources of my own university – e.g., perhaps a forum hosted on our own website."	**UK**
	A lecturer stated as follows: "We currently use an in-house forum site and interactive group work-based information sites that our students use to maximum benefit."	**UK**
SECURITY AND PRIVACY	There is a lack of control to some extent over the content on Facebook.	**UK**
	Facebook is public domain and students do not like their work to be open to other students or the public.	**AU**
	There is a preference for a tool with more security and reliability. It is not possible to ensure that content is private on Facebook.	**UK**
	A concern is the abuse and misuse of information on Facebook; making it an inappropriate platform.	**UK**
	Lecturers do not want to mix work and social lives. A lecturer from SA stated: "When I'm on Facebook I want to socialise, not lecture." Another lecturer from Canada said: "I want a clear distinction between my professional and social lives. Facebook does not enable me to separate those connections as neatly as other social networks or communication technologies. (I have used and tend to prefer blog or twitter feeds)."	**Canada & SA**
	Students do not want to mix work and social lives.	**SA**

	Students do not want their lecturers to enter into their online social networks.	**USA**
	A learning management system has all the necessary tools for interaction. It is also not open to the general public. "We use Blackboard extensively."	**Canada**
SUITABILITY AND ETHICS	There are a lot of distractions on Facebook. There is no value for students to learn about their courses on Facebook.	**AU**
	Lecturers are not convinced of Facebook's suitability.	**USA**
	Facebook is not within the academic environment and thus not suitable for use by students.	**AU**
	An interesting comment by a lecturer: "Facebook servers are in the USA and consequently subject to the Patriot Act. Forcing students to provide data that might be read by the US government is ethically unacceptable."	**Canada**

Table 4.6 Reasons why lecturers with Facebook accounts would not consider using Facebook as an academic tool

4.2.15.2 Lecturers without Facebook accounts

Lecturers who were not members of Facebook mentioned a number of reasons why they would not consider using Facebook as an academic tool. The following themes are highlighted from the reasons mentioned:

- Other tools available; and
- Suitability and ethics.

The reasons are further summarised and related to the different countries in Table 4.7 below:

THEME	COMMENTS	COUNTRY
OTHER TOOLS AVAILABLE	There are better and more sufficient tools available, like a Learning Management System.	**AU, Canada & SA**
	Learning Management System tools are within firewalls and students can access them from campus.	**SA**
	Don't need more communication channels; already make use of blogs and discussion forums.	**UK**
	A comment made: "All my courses are already provided online on a server to which I have administrative access – Facebook offers no benefits that I do not already have on my own server."	**USA**

	A comment made: "Graduate study is about research, thus lectures can be given online via Moodle (free of charge to use) and there is no need for additional online groups."	**USA**
SUITABILITY AND ETHICS	Undergraduate study requires face-to-face contact with students. All other questions can be solved by email.	**USA**
	One lecturer, who only teaches post-graduate courses, mentioned the following: "I prefer to use the face-to-face situation in class to discuss issues and topics. Note that I only teach post-graduate classes and with those students it is easy to have an intelligent discussion in class."	**SA**
	Facebook is not considered relevant for graduate teaching and is seen as a distraction.	**SA**
	A lecturer stated as follows: "I think that the benefit of engagement between academic staff and students derives from direct contact and immediate feedback neither of which is present with Facebook."	**UK**
	There are too many students to work on Facebook. The task will become unmanageable.	**SA**
	A lecturer mentioned the following: "Forcing students to accept the terms and conditions of a third party as a condition to academic success would not be ethical."	**SA**

Table 4.7 Reasons why lecturers without Facebook accounts would not consider using Facebook as an academic tool

4.2.16 Question 16: Are you familiar with the different learning styles of Kolb?

Lecturers were asked whether they were familiar with Kolb's learning styles. All lecturers answered this question. 24.4% of lecturers indicated that they were aware of Kolb's learning styles while 75.6% indicated that they were unaware of it. The researcher expected more lecturers to be aware of these well-known learning styles, as awareness of different types of learning styles should allow a lecturer to adopt different teaching styles in order to cater for all types of learning styles.

4.2.17 Question 17: Do you think students' learning styles change when they do group work via a social network site such as Facebook, if compared to their learning styles adopted in a face-to-face group work environment?

This question was asked to determine lecturers' awareness of the changes of learning styles in different environments.

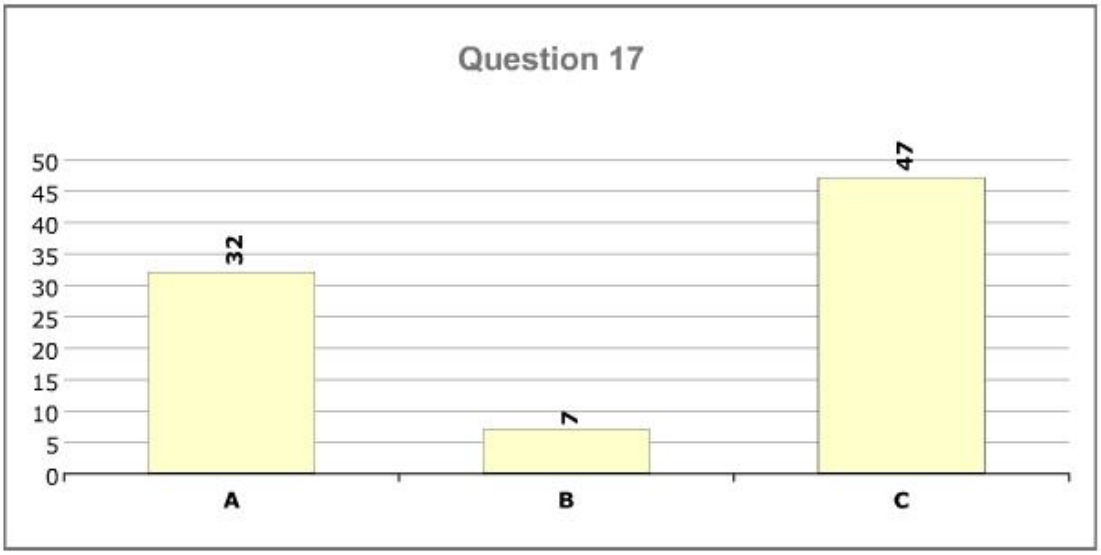


Figure 4.7 Adoption of different learning styles

All lecturers answered this question. From Figure 4.7 it is clear that 37.2% of lecturers thought that students' learning styles changed from one environment to the next, while 8.1% thought that it didn't. Most lecturers (54.7%) were not sure whether students' learning styles changed or not. It is clear from these results that most lecturers were not aware of learning styles and how students can adopt different learning styles in different situations. This highlights a need for possible training for lecturers on learning styles and the application thereof.

4.2.18 Question 18: What are the possible advantages of students engaging in group work via Facebook?

Lecturers were asked what they thought the advantages were of students engaging in group work via Facebook. All lecturers answered this question. The reasons are categorised under active Facebook members and those without Facebook accounts.

4.2.18.1 Lecturers with Facebook accounts

Lecturers who were members of Facebook mentioned many advantages for students engaging in group work via Facebook. The following themes are highlighted from the advantages mentioned:

- Popularity and familiarity;
- Ease of use; and
- Collaboration and interaction.

The advantages are further summarised and related to the different countries in Table 4.8 below:

THEME	COMMENTS	COUNTRY
POPULARITY AND FAMILIARITY	Students are already using Facebook, familiar with it and interested in it.	**AU, SA & UK**
	Facebook is more popular among students than some other tools.	**UK**
	Students possibly spend more time on Facebook than the discussion forums of a Learning Management System.	**Other**
	Students may end up spending more time learning than socialising on Facebook.	**AU**
	Students are closer to an environment they are comfortable in and familiar with.	**Canada & USA**
	When students go online, they are more likely to go to Facebook.	**AU**
EASE OF USE	Students can focus on the idea without a need to process the physical environment which causes interruptions.	**SA**
	Students learn by playing and having fun.	**AU & SA**
	If students are already members of Facebook it will make some of the administration easier.	**SA**
	Students can work together irrespective of geographical location and time (twenty-four seven access) and students can work from home.	**AU, SA & UK**
	It makes distance education possible.	**Canada**
	Individual contributions made by students can be monitored.	**SA**
	Facebook breaks down social classes between people.	**AU**
	Facebook facilitates multitasking.	**Canada**
	Facebook may be a motivator to communicate; it may overcome shyness or language difficulties.	**AU & SA**
	Students may log in for social purposes, but end up being encouraged to do academic work.	**Canada**
	Discussions away from the classroom are possible and learning doesn't have to take place only in timetable sessions.	**UK**
	Some lecturers are interested in providing material to students in a format that they are used to, for example, by using Facebook.	**AU**
	Students get an opportunity to discuss issues with	**AU**

	students they would not meet face-to-face.	
COLLABORATION AND INTERACTION	Facebook caters for collaborative and peer learning.	**SA**
	Groups can be more connected and communicate easier.	**Canada**
	Parallel communication is possible.	**SA**
	Facebook encourages a high level of student group interaction and interaction in a more social manner.	**AU & SA**
	Facebook encourages interaction between students and possibly with lecturers.	**UK**
	Students feel that they belong to a particular group.	**AU**
	Students' motivation and interest levels may be higher.	**AU**
	If lecturers accept the different learning styles they would realise that some students will benefit from interactive tools.	**UK**
	Help for students who struggle – they can find information, tips, or a "learning buddy".	**SA**
	There is a higher probability of students finding academic groups that match their interests.	**Canada**
	Facebook can be included as part of students' assignments/coursework as students tend to be more motivated to use Facebook.	**UK**

Table 4.8 Advantages of student group work on Facebook by lecturers with Facebook accounts

Some lecturers stated that they were unsure what possible advantages there might be.

4.2.18.2 Lecturers without Facebook accounts

Lecturers who were not members of Facebook mentioned many advantages for students engaging in group work via Facebook. The following themes are highlighted from the advantages mentioned:

- Popularity and familiarity;
- Ease of use; and
- Collaboration and interaction.

The advantages are further summarised and related to the different countries in Table 4.9 below:

THEME	COMMENTS	COUNTRY
POPULARITY AND FAMILIARITY	Students are already familiar with Facebook.	**UK**
	Facebook is popular among students and they enjoy using it.	**SA**
EASE OF USE	Students are less tied to their schedules.	**AU**
	Students can work together irrespective of geographical location and time (twenty-four seven access).	**AU, Other & USA**
	Students can "Google" ideas while busy with online discussions.	**Other**
	Facebook is easily accessible to most students.	**SA**
	Students may find it easier to argue for or against something online.	**USA**
COLLABORATION AND INTERACTION	Students enjoy group discussions.	**SA**
	Students may participate more.	**AU**
	Facebook can help students to learn ICT skills.	**SA**
	Facebook facilitates the group work learning style.	**SA**
	Ease of communication.	**SA**
	Track contributions and discussion content.	**SA**
	Students would have to initiate learning on their own which might lead to higher levels of creativity.	**SA**
	Facebook encourages meaningful interaction and increases motivation and participation.	**AU**
	It develops students' group work and communication skills.	**UK**
	Students who are shy may have more courage when working on Facebook with less domination from other members. o A lecturer from SA stated as follows: "From experience, I have noticed that the students who are outspoken in class are more so online and the students who tend to only observe in face-to-face sessions, are also not very active online either."	**Other & SA**
	Student responses may be less confrontational.	**USA**

Table 4.9 Advantages of student group work on Facebook by lecturers without Facebook accounts

A few lecturers stated that they were unsure what the possible advantages might be, and some stated that no advantages in the use of Facebook for group work were apparent. One lecturer stated the following: "If compared to other online tools, the advantages wholly depend on the capabilities of the tools to which Facebook is compared."

4.2.19 Question 19: What are the possible disadvantages of students engaging in group work via Facebook?

Lecturers were asked what they thought the disadvantages were of students engaging in group work via Facebook. All lecturers answered this question. The reasons are categorised under active Facebook members and those without Facebook accounts.

4.2.19.1 Lecturers with Facebook accounts

Lecturers who were members of Facebook mentioned many disadvantages for students engaging in group work via Facebook. The following themes are highlighted from the advantages mentioned:

- Distraction and participation;
- Communication;
- Privacy and security; and
- Technological skills and access.

The disadvantages are further summarised and related to the different countries in Table 4.10 below:

THEME	COMMENTS	COUNTRY
DISTRACTION AND PARTICIPATION	Facebook can be socially distracting, rather than an educational tool. o A lecturer from SA said the following: "Students could get distracted by some of the other applications on Facebook, e.g. games, instead of focusing on the work at hand." o A lecturer from AU stated: "There may be a blurring line between academic work and play." o A lecturer from SA stated that students could easily start participating in a chat group and forget about their academic work. o A lecturer from Canada stated: "The students may find themselves tempted to step away from work."	**AU, Canada, SA & UK**
	Students may share inappropriate material on Facebook.	**AU**
	Some students are not participating actively.	**SA**
	Strong personalities can take over the discussions.	**SA**
	Some students may be too shy to write their comments.	**Other**

	Students sign onto Facebook specifically for social purposes.	**UK**
	Interaction on Facebook should not be compulsory because some feel uncomfortable in this environment. o A lecturer explained: "There must be an alternative for such students to support them in their own preferred medium of learning."	**SA**
	Information overload.	**SA**
	Lack of motivation by students.	**AU**
	It can force students to join Facebook.	**Canada**
	Students may have a "masked identity".	**AU**
	Facebook is not designed for group work. o A lecturer from AU stated: "e.g. No support for a shared file repository." o A lecturer from USA said: "Facebook isn't designed to facilitate group work, so there could be a high level of frustration."	**AU**
	Lack of control over content and methods of presentation.	**AU**
	It would be difficult to ensure that an individual has contributed.	**UK**
	Social skills in respect of group dynamics cannot be assessed.	**SA**
	Students become too informal.	**USA**
COMMUNICATION	There are no non-verbal cues present and verbal skills may not be practised.	**AU & SA**
	Communication is inefficient (maybe due to limited bandwidth).	**Canada**
	There are time delays.	**AU**
	There is no face-to-face interaction. o A lecturer stated: "Online interaction prevents the kind of thought processes that happen in face-to-face contact."	**AU**
PRIVACY AND SECURITY	A higher risk of plagiarism. o A lecturer mentioned: "Easier access to somebody else's ideas and materials."	**Canada**
	Students are not anonymous on Facebook.	**SA**
	Students may not be who they claim to be on Facebook.	**SA**
	Not all students want to be on Facebook.	**SA**
	A lecturer contended: "I would not use sites that the university has no control over."	**AU**
	Students' personal information might be exposed to other members.	**Canada**
	Difficult to ensure privacy of information.	**AU**
	Exposure of students can lead to the risk of online predators.	**AU**
	It will be difficult to keep the work secure.	**UK**

	Facebook can be perceived as bringing students' formal academic study into their personal spaces or lives.	**UK**
	The dependency on third party technologies. o A lecturer from the UK stated: "We can't guarantee the reliability of third party services."	**SA**
TECHNOLOGICAL SKILLS AND ACCESS	Student participation will be limited if they lack the technological skills.	**SA**
	The use of Facebook requires online literacy.	**AU**
	Not all students have access to Facebook (digital divide).	**SA**
	Exclusion of students who do not like Facebook.	**AU**
	Not all students have internet access at home.	**AU & SA**
	The network can be slow.	**SA**
	Some of the Facebook features are not good enough for academic work.	**AU**

Table 4.10 Disadvantages of student group work on Facebook by lecturers with Facebook accounts

Three lecturers stated that they were unsure what the possible disadvantages might be.

4.2.19.2 Lecturers without Facebook accounts

Lecturers who were not members of Facebook mentioned many disadvantages for students engaging in group work via Facebook. The following themes are highlighted from the advantages mentioned:

- Distraction and participation;
- Communication;
- Privacy and security; and
- Other.

The disadvantages are further summarised and related to the different countries in Table 4.11 below:

THEME	COMMENTS	COUNTRY
DISTRACTION AND PARTICIPATION	Students may get distracted by other features on Facebook. o A lecturer from SA explained: "The students will interact more on a social level that is not purely academic related."	**Other, SA & USA**
	Students and lecturers may waste their time on Facebook.	**AU & SA**

	A high level of dedication is needed from the students and the lecturer and it is time-consuming.	**SA**
	Facebook can't replace face-to-face interaction. o A lecturer from AU stated that Facebook was slower than face-to-face discussions. o A lecturer from the UK said: "There is a lack of preparation for future career group work."	**SA**
	Facebook is slower than face-to-face interaction. o A lecturer stated: "Brainstorming, I think, is done best when meeting face-to-face – the chaos and quick bursts of ideas (without often thinking them through) can lead to interesting ideas/solutions."	**USA**
	It can be impersonal.	**AU**
	Facebook requires registration and not everyone wants to be a member. o A lecturer from the UK stated: "Those who don't like Facebook will feel alienated." o A lecturer from SA stated: "I personally think that it is unethical to require a student to create a Facebook profile. Creating a public profile (even under a false name) can generate unwanted consequences."	**AU**
COMMUNICATION	Lack of body language and social cues.	**AU & UK**
	Resources will be needed to facilitate the learning process.	**AU**
PRIVACY AND SECURITY	Some people may abuse Facebook which is linked to security issues.	**SA**
	Limited control of the process.	**SA**
	Students can copy work from others.	**SA**
	Issues regarding the identity of individuals.	**AU**
	One lecturer stated: "I have found Facebook to be quite an invasive social networking forum."	**AU**
OTHER	It will be difficult to work through certain materials, e.g. design aspects. o A lecturer from the USA said: "In technical areas this is almost impossible to do. For technical classes it is important to acquire deep understanding of underlying principles and in my experience it was impossible to achieve by using solely online tools."	**AU**
	Need the right infrastructure for Facebook to work.	**AU**

Table 4.11 Disadvantages of student group work on Facebook by lecturers without Facebook accounts

Five lecturers stated that they were unsure what the possible disadvantages might be.

4.2.20 Question 20: Which teaching strategy (aside from normal lectures) would be most suited for your course, related to group work for students?

This question was asked to determine the suitability of a particular teaching strategy related to no specific course, but to determine lecturers' teaching strategy preferences.

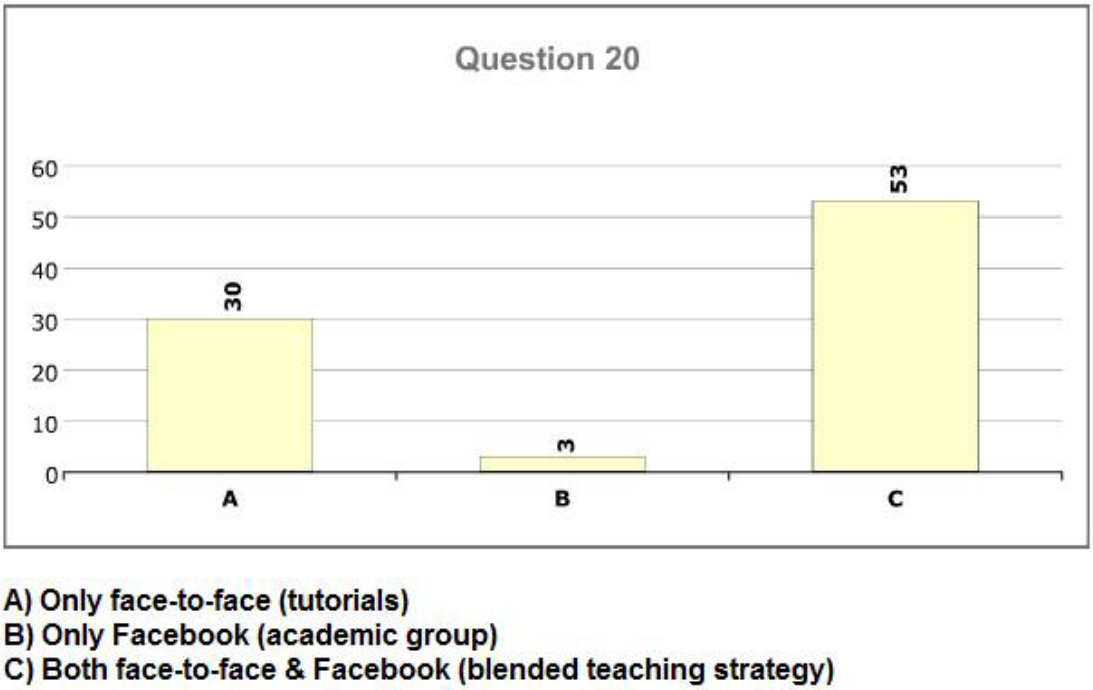


Figure 4.8 Most suited teaching strategy aside from normal lectures

All lecturers answered this question. From Figure 4.8 it is clear that 34.9% of lecturers preferred only face-to-face tutorial sessions as a supplement to normal lectures. 3.5% preferred to use only Facebook and 61.6% preferred a blended teaching strategy consisting of face-to-face tutorial sessions and Facebook. It is interesting to note that this high number of lecturers would consider a blended teaching strategy. It is necessary to mention that from the additional comments (Question 4.2.21 to follow) the researcher found that six lecturers mentioned that they chose "blended teaching strategy", but that they did not agree to Facebook. They felt that there were many other tools better suited to academic purposes than Facebook. One lecturer stated as follows: "Any online tools combined with face-to-face interaction would be better than only one or the other, regardless of whether the online tools included Facebook."

4.2.21 Question 21: Additional comments

The researcher concluded with this question in order to capture any additional comments made by the respondents.

The lecturers' comments added value to this study. The following themes are highlighted from the comments mentioned:

- Face-to-face methods;
- Facebook as a social tool; and
- Using and not using Facebook.

Face-to-face methods:

- "Face-to-face methods will work well for fundamental, basic courses in any field, but Facebook will be useful for students on advanced levels."
- "I think there has to be a balance between online and face-to-face learning. There is a danger of social ineptitude when young people stop communicating in person."
- "I would consider making use of Facebook or similar tools to provide an additional mode of interaction but I don't think it can replace group meetings."
- "Face to face sessions are better, because students learn the type of interaction that they're going to need in the real world. However, electronic communication is an important supplement to that."
- "In the vast majority of jobs, group work will still be face-to-face."

Facebook as a social tool:

- "I'm excited about online collaboration tools. I see little need to use Facebook for this purpose (academic) as there are many other tools that are better suited for academic-type interaction. I use Facebook for interacting with old friends."
- "Facebook is nice for social purposes but I don't think its design suits it towards project group work. There are many other tools available specifically designed for teaching and group projects which are more appropriate for these purposes. I feel however that forums and email are more appropriate for academic work."
- "Our students have a Facebook group of their own for social purposes, but we do not use it for academic purposes."
- "There are several teaching tools that are more appropriate than social sites for teaching and communication."

Using and not using Facebook:

- "I have not tried anything yet, but I am interested."
- "I use both online and face-to-face group work with my students, but I do not use Facebook."
- "I would prefer a system that is secure and provided by a source who can guarantee security, service levels and privacy."
- "Alternative Web 2.0 or more traditional groupware is more appropriate for group work than Facebook."
- "I fail to see what Facebook can offer that we don't already have."
- "It would be a good idea to consider the idea of proposing a network similar to Facebook, but modified to enhance it for academic purposes."
- "The business model currently being pushed onto education where we attack students where ever they happen to be is not based on educational best practice."
- "If you have an educationally sound reason for using a particular technology, format or delivery mode, then it should be taught (don't make assumptions about student skill levels)."
- "When technology is embedded into the curriculum in a pedagogically sound manner, then students will use it effectively and efficiently."

Lecturers' comments under "Face-to-face methods" emphasise that the value of face-to-face methods is still very much appreciated and encouraged by lecturers. Many lecturers felt that online methods, such as Facebook, cannot replace face-to-face communications and the skills it equip students with for when they enter the workplace.

Regarding "Facebook as a social tool", many lecturers felt that Facebook was initially designed as a social tool and that it should be used for this purpose. Many lecturers mentioned that an extensive number of other online tools exist that are more efficient and effective for academic purposes, especially related to online group work.

The comments raised under "Using and not using Facebook" again highlight a low level need for Facebook by some lecturers, as there are other tools, like institutions'

Learning Management Systems, wikis, blogs, podcasts, et cetera, which are said to be pedagogically good enough and satisfy the needs of lecturers and students.

4.3 Facebook questionnaire – Lecturer: Additional questions and findings

The following additional findings draw comparisons between various questions from the lecturer questionnaire and demographic data, as well as other relevant questions which delivered interesting results.

GENDER:

4.3.1 I have a Facebook account

GENDER	YES	NO
Female	66.7%	33.3%
Male	63.1%	36.9%

Table 4.12 I have a Facebook account compared to gender

As can be seen from Table 4.12, more female lecturers had Facebook accounts (66.7%) than their male counterparts (63.1%). A reason for this might be that fewer female lecturers responded to the questionnaire than males. It can thus be derived that there was not really a significant relationship between gender and lecturers with Facebook accounts.

4.3.2 For which purposes do you interact with students on Facebook?

GENDER	SOCIAL	ACADEMIC	SOCIAL AND ACADEMIC	NO INTERACTION WITH ANY STUDENTS
Female	21.4%	7.1%	21.4%	50%
Male	36.4%	4.5%	6.8%	52.3%

Table 4.13 Purposes for interacting with students on Facebook compared to gender

From Table 4.13 it is clear that male lecturers had more social interaction with students on Facebook (36.4%), while female lecturers had more academic interaction

(7.1%) as well as social and academic interaction combined (21.4%). Having no interaction with any students was almost the same for female (50%) and male (52.3%) groups although the difference was small.

4.3.3 Would you consider using Facebook as an academic tool where students or students and lecturers can engage in group work or online discussions related to the course content?

GENDER	YES	NO
Female	38.1%	61.9%
Male	47.7%	52.3%

Table 4.14 The consideration of Facebook as an academic tool compared to gender

The researcher found it interesting to compare the consideration of Facebook as an academic tool to gender in the five countries. From Table 4.14 it is clear that slightly more male (47.7%) than female lecturers (38.1%) would consider the application of Facebook as an academic tool.

AGE:

As mentioned in Paragraph 4.2.2 only 5.8% of lecturers indicated that they were within the 61–70 age range. As this is a very small percentage, the Other group is excluded from the additional findings.

4.3.4 I have a Facebook account

AGE	YES	NO
21–30	91.7%	8.3%
31–40	63.3%	36.7%
41–50	52.4%	47.6%
51–60	72.2%	27.8%
61–70	20%	80%

Table 4.15 I have a Facebook account compared to age

As can be seen from Table 4.15, the 21–30 age group included most lecturers with Facebook accounts (91.7%) compared to the other age groups. A decrease in the number of Facebook accounts compared to an increase in age was expected, but an interesting observation was that the second highest number of lecturers with Facebook accounts was in the 51–60 age group (72.2%). A possible reason for the high number of Facebook accounts within the 21–30 age group may be that the age/generation gap between young lecturers and students is smaller and that younger lecturers are more interested in using Facebook for personal as well as academic purposes.

4.3.5 Are you actively participating in any academic groups on Facebook, related to your work (teaching) or research interests?

AGE	YES	NO
21–30	16.7%	83.3%
31–40	6.7%	93.3%
41–50	4.8%	95.2%
51–60	11.1%	88.9%
61–70	20%	80%

Table 4.16 Academic groups on Facebook for teaching/research purposes compared to age

As is clear from Table 4.16, the highest level of participation in academic groups on Facebook was linked to the 21–30 age group (16.7%). The second highest participation in academic groups was in the 51–60 group (11.1%). It was expected that as age increases, participation would decrease, because of a link between age and lecturers with Facebook accounts, but this was not the case.

4.3.6 For which purposes do you interact with students on Facebook?

AGE	SOCIAL	ACADEMIC	SOCIAL AND ACADEMIC	NO INTERACTION WITH ANY STUDENTS
21–30	33.3%	8.3%	16.7%	41.7%
31–40	42.1%	0%	0%	57.9%
41–50	33.3%	8.3%	16.7%	41.7%
51–60	23.1%	0%	15.4%	61.5%
61–70	0%	50%	0%	50%

Table 4.17 Purposes for interacting with students on Facebook compared to age

Table 4.17 shows that lecturers in the 31–40 age group had no academic interaction with students on Facebook, but the highest level of social interaction (42.1%). It was expected that the 21–30 age group would have the highest percentage of social interaction with students. The 51–60 age group scored the highest percentage (61.5%) and the 31–40 age group the second highest percentage (57.9%) related to having no interaction with students on Facebook.

4.3.7 Have you ever applied any online social networking site as a tool for academic learning as part of your teaching strategy?

AGE	YES	NO
21–30	75%	25%
31–40	36.7%	63.3%
41–50	28.6%	71.4%
51–60	16.7%	83.3%
61–70	40%	60%

Table 4.18 Past academic application of online social networks compared to age

As indicated in Table 4.18, the 21–30 age group had a lot more past applications of online social networking sites as academic tools (75%) than the other groups. As age increased, the results decreased related to having applied any online social network as an academic tool before. This finding is supported by the fact that, lecturers in the 21–

30 age group had more Facebook accounts than those in the other age groups (as mentioned in Paragraph 4.3.2). Lecturers who do not have Facebook accounts may have used other online social networking sites for academic purposes before. It is less common for those lecturers without online social network accounts and without an understanding of how to work with online social networks, to have applied any social network as an academic tool as part of their teaching strategy in the past.

4.3.8 Would you consider using Facebook as an academic tool where students or students and lecturers can engage in group work or online discussions related to the course content?

AGE	YES	NO
21–30	75%	25%
31–40	53.3%	46.7%
41–50	38.1%	61.9%
51–60	22.2%	77.8%
61–70	40%	60%

Table 4.19 The consideration of Facebook as an academic tool compared to age

It is clear from Table 4.19 that lecturers in the 21–30 age group would mostly consider using Facebook as an academic tool (75%). From this result it can thus be deducted that, as age increased, the consideration of the academic application of Facebook decreased. This was expected by the researcher.

4.3.9 Are you familiar with the different learning styles of Kolb?

AGE	YES	NO
21–30	25%	75%
31–40	26.7%	73.3%
41–50	28.6%	71.4%
51–60	16.7%	83.3%
61–70	20%	80%

Table 4.20 Familiarity with Kolb's learning styles compared to age

An interesting finding can be derived from Table 4.20. Lecturers in the 41–50 age group were most familiar with Kolb's well-known learning style theory (28.6%), followed by lecturers in the the 31–40 age group (26.7%) and the 21–30 age group (25%). Lecturers in the 51–60 age group were least aware of Kolb's theory (16.7%). This contradicted the researcher's expectation that the older lecturers would be more aware of Kolb's learning style theory than the younger ones.

COUNTRY (WHERE YOU WORK):

Regarding the Other group related to country, only 2.3% of lecturers stated that they worked in a different country from those listed by the researcher (see Paragraph 4.2.4). As this is a very small percentage, the Other group is excluded from the additional findings.

4.3.10 I have a Facebook account

COUNTRY	YES	NO
SA	56.3%	43.8%
USA	57.1%	42.9%
Canada	75%	25%
UK	66.7%	33.3%
AU	72.7%	27.3%
Other	50%	50%

Table 4.21 I have a Facebook account compared to country of employment

As is clear from Table 4.21, Canada had the most lecturers with Facebook accounts (75%), followed by Australia (72.7%), the UK (66.7%), the USA (57.1%), and lastly SA (56.3%). Although more lecturers in South Africa had Facebook accounts, the difference between those who did and did not have Facebook accounts was not that extensive. This can possibly be attributed to the differences in age related to having Facebook accounts. The researcher expected that there would be more lecturers in South Africa with Facebook accounts, but the contrary became apparent.

4.3.11 For which purposes do you interact with students on Facebook?

COUNTRY	SOCIAL	ACADEMIC	SOCIAL AND ACADEMIC	NO INTERACTION WITH ANY STUDENTS
SA	25%	15%	15%	45%
USA	50%	0%	25%	25%
Canada	66.7%	0%	0%	33.3%
UK	18.2%	0%	0%	81.8%
AU	37.5%	0%	12.5%	50%
Other	0%	0%	0%	100%

Table 4.22 Purposes for interacting with students on Facebook compared to country of employment

It is interesting to note from Table 4.22, that in the UK, most lecturers (81.8%) had no interaction with any students on Facebook and in Canada and the UK no academic interaction was evident. The lowest percentage related to having no interaction, could be linked to the USA (25%), where there was a fair number of social and academic interaction (25%) with students on Facebook. It can thus be said that the most interaction between lecturers and students on a social and academic level occurred in the USA and the least interaction occurred in the UK.

4.3.12 Have you ever applied any online social networking site as a tool for academic learning as part of your teaching strategy?

COUNTRY	YES	NO
SA	40.6%	59.4%
USA	42.9%	57.1%
Canada	37.5%	62.5%
UK	26.7%	73.3%
AU	36.4%	63.6%
Other	0%	100%

Table 4.23 Past academic application of online social networks compared to country of employment

From Table 4.23 it is clear that the highest level of previous application of an online social networking site as an academic tool was linked to the USA (42.9%), followed by SA (40.6%), Canada (37.5%), AU (36.4%), and the lowest percentage of previous application was related to the UK (26.7%).

4.3.13 Would you consider using Facebook as an academic tool where students or students and lecturers can engage in group work or online discussions related to the course content?

COUNTRY	YES	NO
SA	56.2%	43.8%
USA	28.6%	71.4%
Canada	37.5%	62.5%
UK	26.7%	73.3%
AU	45.5%	54.5%
Other	100%	0%

Table 4.24 The consideration of Facebook as an academic tool compared to country of employment

It is interesting to note from Table 4.24 that lecturers from South Africa (56.2%), followed by Australia (45.5%), Canada (37.5%), the USA (28.6%) and lastly the UK (26.7%) would consider Facebook as an academic tool.

4.3.14 Are you familiar with the different learning styles of Kolb?

COUNTRY	YES	NO
SA	25%	75%
USA	14.3%	85.7%
Canada	12.5%	87.5%
UK	26.7%	73.3%
AU	31.8%	68.2%
Other	0%	100%

Table 4.25 Familiarity with Kolb's learning styles compared to country of employment

It is interesting to note from Table 4.25 that Australian lecturers were most familiar with Kolb's learning styles (31.8%), followed by lecturers in the UK (26.7%), South Africa (25%), and the USA (14.3%). Canadian lecturers were least familiar with Kolb's learning styles (12.5%).

I AM A LECTURER IN:

Regarding the Other group related to the field of lecturing, only 10.5% of lecturers stated that they lectured in fields other than Informatics and Computer Science (see Paragraph 4.2.5). As this is a very small percentage, the Other group is excluded from the additional findings.

4.3.15 Which teaching strategy (aside from normal lectures) would be most suited for your course, related to group work for students?

I AM A LECTURER IN	FACE-TO-FACE	FACEBOOK	BOTH
Informatics/IS	28.9%	2.6%	68.4%
Computer Science	38.5%	5.1%	56.4%
Other	44.4%	0%	55.6%

Table 4.26 Most suited teaching strategy aside from normal lectures compared to field of lecturing

From Table 4.26 it can be deducted that lecturers in Computer Science had a higher preference for the face-to-face teaching strategy (38.5%), while lecturers in Informatics had a higher preference for both face-to-face and Facebook teaching strategies for group work (68.4%).

I HAVE/DO NOT HAVE A FACEBOOK ACCOUNT:

4.3.16 Do you think that an online social networking site, such as Facebook, can be applied as a tool for academic learning as part of your teaching strategy?

FACEBOOK ACCOUNT	YES	NO
Yes	76.4%	23.6%
No	71%	29%

Table 4.27 Facebook's academic potential compared to having a Facebook account

From Table 4.27, it can be deducted that a high percentage of lecturers with Facebook accounts, thought that Facebook could be applied for academic purposes (76.4%). It is interesting to note that 71% of lecturers without Facebook accounts thought that Facebook could be applied as an academic tool for learning as part of their teaching strategy. This indicates a high level of belief in Facebook's use as an academic tool.

4.3.17 Would you consider using Facebook as an academic tool where students or students and lecturers can engage in group work or online discussions related to the course content?

FACEBOOK ACCOUNT	YES	NO
Yes	50.9%	49.1%
No	35.5%	64.5%

Table 4.28 The consideration of Facebook as an academic tool compared to having a Facebook account

It is interesting to note from Table 4.28 that only a little over half (50.9%) of lecturers with Facebook accounts would consider applying Facebook, while 49.1% of lecturers would not consider using it. It was expected that fewer lecturers without Facebook accounts would consider Facebook's academic application, but 35.5% stated that they would consider using it.

4.3.18 Which teaching strategy (aside from normal lectures) would be most suited for your course, related to group work for students?

FACEBOOK ACCOUNT	FACE-TO-FACE	FACEBOOK	BOTH
Yes	34.5%	5.5%	60%
No	35.5%	0%	64.5%

Table 4.29 Most suited teaching strategy aside from normal lectures compared to having a Facebook account

An interesting finding noted from Table 4.29 is that a high number of lecturers without Facebook accounts chose Facebook and face-to-face teaching strategies as best suited for group work (64.5%). This percentage is higher compared to the lecturers with Facebook accounts (60%). Only lecturers with Facebook accounts, although very few (5.5%), chose Facebook only as best suited for group work.

WOULD YOU CONSIDER USING FACEBOOK AS AN ACADEMIC TOOL?

4.3.19 Do you think that an online social networking site, such as Facebook, can be applied as a tool for academic learning as part of your teaching strategy?

THINK FACEBOOK CAN BE APPLIED	WOULD CONSIDER	WOULDN'T CONSIDER
Yes	56.3%	43.7%
No	13.6%	86.4%

Table 4.30 Facebook's academic potential compared to the consideration of Facebook as an academic tool

An interesting finding emerged from examining Table 4.30. It was expected that many lecturers who thought that Facebook could be applied as an academic tool, would consider applying Facebook as an academic tool as part of their teaching strategy. However, a higher than expected percentage (43.8%) is apparent for lecturers who thought that Facebook could be applied, but wouldn't consider using it. Another interesting finding is that 13.6% of lecturers, who didn't think that Facebook could be applied as an academic tool, would actually consider using it.

4.4 Facebook interview – Lecturer

The researcher conducted semi-structured interviews with 16 permanent lecturers from the Department of Informatics at the University of Pretoria in South Africa. The structure of the interview is presented as Appendix B. In the discussion of their responses, the lecturers are referred to as Lecturer A, B, C, D, et cetera, in no specific order.

4.4.1 Please elaborate on your reason(s) for not having a Facebook account

The researcher asked this question to determine the reasons why some lecturers do not have Facebook accounts. This question was also included in the lecturer questionnaire, but an elaboration on the reasons for not having a Facebook account was needed for a thorough understanding of lecturers' personal preferences and motivations. The following themes are emphasised:

One lecturer didn't have a need to use Facebook:

Lecturer A stated that he has never seen the need to use Facebook.

Some lecturers didn't have the time:

Lecturer G stated that he didn't have the time to work on Facebook and Lecturer L felt that Facebook took up a lot of his time. He stated as follows: "If you use it for academic purposes it can work. You need to build a social network for support and interaction but it limits what people want to say. Some people lose their jobs because of comments made about their boss. It's not good to mix work and pleasure." Lecturer M supportively stated the following: "I'm too busy to go and learn and explore a new technology." It was clear that this lecturer was interested in Facebook but just didn't have the time available to explore the tool.

Some lecturers raised concerns about privacy and security issues:

Lecturer E mentioned that Facebook is surrounded by various security issues and that Facebook could probably be misused. He stated the folloiwng: "My privacy being violated is an issue to me". He further stated as follows: "I give class for MBAs at another university. I make use of Google pages (my own website where I communicate with my students). I use it the same way as the University of Pretoria

uses ClickUP. It works for me. When I give them articles et cetera, I just upload it there. I make use of email, phone calls, et cetera and I am fine with what I use." Lecturer H felt that Facebook was intrusive on one's privacy.

One lecturer highlighted the importance of face-to-face communications:

Lecturer J mentioned that she did not like Facebook and that the information on Facebook was very simple. She further stated as follows: "I prefer face-to-face communication. The quality of communication is better with face-to-face communication. Personal relationships are nurtured in face-to-face communications."

4.4.2 If you have a Facebook account, explain why you don't want any interaction with students on Facebook

The researcher asked this question in order to determine why lecturers chose to have no interaction with students on Facebook. The following themes are emphasised:

Some lecturers didn't want students to become involved in their personal lives:

Lecturers B, C, D, F, I, K, N, O, and P had no interaction with students on Facebook. Lecturer B mentioned the following: "I don't want students to see my private, personal life. Some students accessed my profile because it was not blocked, so I felt exposed." Lecturer D agreed by stating that he only used Facebook for social purposes and he, Lecturer I, O and P didn't want to share their personal lives with students. Lecturer F and N supportively stated that they needed to maintain a good distance between social and work life and that they (as Lecturer O) wanted to keep their distance. Lecturer P said that she used Facebook to socialise with friends and added the following: "I do not want to interact socially with my students."

One lecturer emphasised the importance of face-to-face discussions:

Lecturer F added that his students required more face-to-face discussions.

Some lecturers didn't have a need to interact with students:

Lecturer C and I contended that they never had the need for interaction with students on Facebook.

One lecturer wanted to interact with students:

Lecturer K made an interesting comment about interacting with students: "I haven't had time, but next year I will. I do not mind sharing my personal life with students."

One lecturer prefers ClickUP:

Lecturer C mentiond that he preferred ClickUP. He made an interesting comment about the university's Learning Management System: "ClickUP however, is not reliable enough." In order to gain a deeper understanding of the lecturers' perceptions of the Learning Management System of the University of Pretoria, the researcher addressed ClickUP in Question 4.4.11.

4.4.3 Why haven't you ever applied any online social networking site as a tool for academic learning as part of your teaching strategy before?

This question was posed to elaborate on possible reasons why lecturers have not applied any online social networking site as an academic tool before. The following themes are emphasised:

Some lecturers didn't see a need:

Lecturers A and G mentioned that they have never seen a need to use such a tool.

Some lecturers were satisfied with ClickUP:

Lecturer A explained that ClickUP served all his needs. Lecturer B mentioned the following: "Most of my courses are not related to social networking and ClickUP has a discussion forum and we use email." Lecturer C also used ClickUP for academic related work. Lecturer O stated: "We have ClickUP and the students are already using it" and Lecturer P also stated: "I'm employed only for a little while now. I make use of ClickUP discussion forums and it is adequate for these discussions."

One lecturer valued face-to-face discussions:

Lecturer G highlighted the importance of face-to-face discussions. He stated as follows: "I prefer face-to-face discussions and interaction. Online discussions are too impersonal."

One lecturer was concerned about privacy issues:

Lecturer E said that he felt exposed on Facebook and was not comfortable using it because of privacy issues involved.

One lecturer explained the application of a blog site:

Lecturer H mentioned a blog site that he used: "I have used a blog site for academic research. Third-year students had to go and read on the blog, add to it based on research and they had to respond to others' comments. It lets them think and communicate more effectively. It potentially creates social noise, because it is difficult to get to the information that is important (some information posted is not really relevant)."

Some lecturers hadn't applied their minds to it yet:

Lecturer I said that she hadn't applied her mind to it yet, while Lecturer F said: "Maybe I'm not creative enough. I wasn't course coordinator so I didn't make decisions."

One lecturer needed training:

Lecturer J stated the following: "It is a new thing and it is being experimented with. I'm not familiar with it, but I do believe in it. I will need to be trained on how to use it and I want to see the proof in research that it works." This highlights a need to prove that online social networking sites, like Facebook, can account for academic success.

Some lecturers felt overloaded with information and functions of Facebook:

Lecturer L said that sites like Facebook were too limited for what he needed when he had a Facebook account. He said that one lost interest when too many additional functions were added. Lecturer M experienced information overload. He contended as follows: "I am too busy and overloaded with emails, et cetera. Information overload and Facebook will only take up more of my time."

4.4.4 If you have applied any online social networking site as a tool for academic learning as part of your teaching strategy before, what did it entail?

This question was necessary to give some lecturers a chance to explain their application of an online social networking site and for the researcher to gain insight

into past and existing applications of online social networking sites like Facebook. The following theme was emphasised: Group assignments and projects.

Lecturers K and N have applied online social networking sites before. Lecturer K explained that as part of a group assignment, the students had to create a Facebook account for themselves and their group. The students also used Alice (a programming tool) to study green IT and to find out how to apply green IT to generate money. Lecturer N explained a group project for a first-year "Introduction to IT" course. Students had to complete some steps through Facebook and the lecturer reported as follows: "I did research on the task they carried out and found that many students feel that Facebook can be used for online collaboration. If they struggled they used face-to-face communications." This was a clear indication of another exploration of Facebook as part of academic learning and the positive perceptions of many students.

4.4.5 Do you think Facebook can be applied as a tool for academic learning?

This question was not part of the basic structure of the interview, but a valuable comment was raised by one lecturer. Lecturer D commented on this question in the questionnaire and added the following advantage of the application of Facebook as an academic tool: "People can work alongside each other (parallel communication) and you can capture all the thoughts of all the students." This remark supports Facebook's pedagogical potential.

4.4.6 Why would you consider using Facebook as an academic tool where students or students and lecturers can engage in group work or online discussions related to the course content?

This question was raised to determine possible reasons why lecturers would consider using Facebook. The following themes are emphasised:

Some lecturers were not satisfied with ClickUP:

Lecturer A mentioned that ClickUP did not serve all the needs of lecturers but he said that Facebook could be used as a supplement. He also raised concerns regarding technical problems relating to ClickUP and stated as follows: "I haven't used ClickUP that much because of post-graduate studies" and he added that (as another supplement), "Skype can also be used". Lecturer C also raised concerns relating to

ClickUP: “The current system (ClickUP) is not reliable and there are problems with support. We don’t have access and rights to work with the features we want to. If we have problems there isn’t adequate support to assist us.” Lecturer N compared Facebook and ClickUP and said: “Facebook has more freedom than the current ClickUP.”

One lecturer highlighted Facebook’s social approach:

Lecturer B felt strongly about Facebook’s social approach: “I believe that most students use Facebook for social purposes and not for academic purposes. Academics mostly use ClickUP and ClickUP is not mixed with social aspects.”

One lecturer needed guidelines on using Facebook:

Lecturer E mentioned that there was a need for guidelines on how to use Facebook correctly and mentioned identity theft as an issue that could not be ignored. He added the following: “We will need rules and regulations that can be enforced.”

Some lecturers acknowledged students’ interest in Facebook and skills development:

Lecturer F was positive about Facebook and stated the following: “It will be good because you can get students interested and you will get more students who want to participate. Also, it is easy for students to access Facebook and interact from home.” Lecturer K highlighted skills as an advantage for students to use Facebook and explained as follows: “It teaches students to develop technological skills”. Lecturer N stated the following: “Most students are already on Facebook. Many students are on Facebook most of the time and as a lecturer you can just utilise it.” Lecturer O also said that students were all on Facebook and said that lecturers should provide students with a tool that they were already familiar with. She said that “students will want to make use of Facebook as a collaboration tool for discussions”. She added that the lecturer could load a topic onto Facebook and that students could then research that specific topic.

One lecturer preferred face-to-face discussions:

Lecturer H would consider using Facebook but said that he used other teaching strategies for his courses. The researcher then asked him: “Why haven’t you used

Facebook yet?" He answered as follows: "I am not a member of Facebook and I prefer face-to-face group work for one-on-one interaction. It is easy in the classroom situation to get people interested and involved."

One lecturer said changes needed to be made:

Lecturer L would consider using Facebook but explained that it needed some changes first. He said that a wiki facility as well as the creation of additional blogs or wikis would be required. He also felt that it was important to keep one's personal profile private.

One lecturer wanted to use Facebook but struggled to find the time:

Lecturer M was positive about the use of Facebook but struggled to find the time: "I just need time. I wanted to do it a long time ago, especially with my masters students."

4.4.7 Why wouldn't you consider using Facebook as an academic tool where students or students and lecturers can engage in group work or online discussions related to the course content?

This question was posed to elaborate on possible reasons why lecturers would not consider applying Facebook as an academic tool. Lecturers G, I, J, and P would not consider using Facebook. The following themes are emphasised:

One lecturer valued face-to-face discussions:

Lecturer G felt very strongly about the value of face-to-face discussions: "I like face-to-face discussions with my students. One can't see body language online."

Some lecturers felt that ClickUP served their needs:

Lecturers I, J and P stated that ClickUP served their current needs, which included the discussion facility. Lecturer I explained that other tools already existed for the tasks to be carried out. She added the following: "ClickUP has a discussion facility" and "I haven't had the time to do it (Facebook's application) or to try it out." Lecturer J stated as follows: "Facebook is not a part of my life and thus it is not integrated in my everyday life. Email and ClickUP can serve the online communication needs.

Students can get a hold of me via email or the chat room on ClickUP." Lecturer P simply stated: "I have ClickUP."

4.4.8 Choose the best teaching strategy (face-to-face or Facebook or both, or lectures) to fit a student with a particular learning style.

This question was posed in order to capture lecturers' opinions as to which teaching strategy they thought would best suit a student with a particular learning style. The researcher first read and explained the characteristics of each learning style and ensured that each lecturer understood the characteristics of a particular learning style before they were given an opportunity to raise their opinions.

4.4.8.1 The Accommodator

Face-to-face: Lecturers A, B, C, D, E, G, H (7 lecturers)

Facebook: Lecturers F, I, J, K, M, N, O (7 lecturers)

Facebook and face-to-face: Lecturers L, P (2 lecturers)

Lecturer E supported the choice by stating: "Face-to-face discussions are more personal." It is clear from these results that an equal number of lecturers link the face-to-face and Facebook teaching strategies to this learning style.

4.4.8.2 The Diverger

Face-to-face: Lecturers A, B, C, E, F, G, M, N, O, P (10 lecturers)

Facebook: Lecturers D (1 lecturer)

Facebook and face-to-face: Lecturers H, I, J, K, L (5 lecturers)

Lecturer M elaborated on the choice by stating: "Students will not see and feel people on Facebook". It is clear from these results that most lecturers link the face-to-face teaching strategy to this learning style.

4.4.8.3 The Assimilator

Lectures: Lecturers A, C, D, G, I, K, P (7 lecturers)

Face-to-face: Lecturers E, J, N, O (4 lecturers)

Facebook: Lecturers B, H, L (3 lecturers)

Facebook and face-to-face: Lecturers F, M (2 lecturers)

Lecturer G added to his choice by elaborating on lectures as open discussions – like a workshop. Lecturer J preferred the face-to-face option, but on an individual level. Lecturer H chose Facebook as social interaction could be avoided. Lecturer L supported the Facebook option by adding that it could be viewed as virtual paper. Lecturer M partly chose Facebook but mentioned that it would work if students overcame their fears. It is clear from these results that most lecturers link the lectures teaching strategy to this learning style.

4.4.8.4 The Converger

Face-to-face: Lecturers D, L (2 lecturers)

Facebook: Lecturers A, B, C, E, F, G, I, J, K, M, N, O, P (13 lecturers)

Facebook and face-to-face: Lecturer H (1 lecturer)

Lecturer H explained his choice related to the type of student: "This student can be pushed to get an answer in a group and can also distance him or herself and observe what the group is doing. This student has a strong opinion and can be a follower as well." Lecturer L chose the face-to-face option, but mentioned that this should be related to problem-based work. It is clear from these results that most lecturers link the Facebook teaching strategy to this learning style.

4.4.9 Do you think students can adopt different learning styles when they do group work via a social network site such as Facebook, if compared to a face-to-face group work environment?

The researcher asked this question in order to capture the lecturers' opinions as to whether they thougth that students could adopt different learning styles in the online versus offline environments.

Lecturers A, C, D, E, F, H, J, K, L, M, N, O and P thought that students were able to adopt different learning styles online on Facebook, compared to the offline face-to-face environment. Lecturers A and M stated that some students may be shyer in a face-to-face than in an online environment. When students interact online, they may be less shy and participate more actively. Lecturer E added that students were able to adapt to the specific environment.

Lecturers B, G, and I were not sure whether students' learning styles changed in the two environments.

4.4.10 Why is Facebook by itself not adequate enough as a teaching strategy (aside from normal lectures) for your course?

In the questionnaire the lecturers were asked which teaching strategy (aside from normal lectures) would be most suited for their courses, related to group work for students. The options mentioned were face-to-face, Facebook, or both face-to-face and Facebook as a blended approach. The researcher wanted to determine whether Facebook alone could work as a supplement teaching strategy in support of lectures. The following themes are emphasised:

Most lecturers acknowledged the value of face-to-face interaction between students, which is highlighted in these findings:

Lecturer A said that there was a need for personal discussions in the face-to-face environment. Lecturer B stated the following: "I'm doing programming courses and I found that email works well. Also, face-to-face interaction is very important for my courses. Maybe Facebook can work for masters students who are on a higher level, because they know most concepts beforehand." Lecturer D stated as follows: "Face-to-face interaction is good and the interaction on Facebook is extremely impersonal."

Lecturer E also mentioned that Facebook could not provide all functions necessary for group work and that group work was more effective in a face-to-face environment, while Lecturer F said that explaining concepts and drawing models required face-to-face interaction. Lecturer I supportively explained that face-to-face discussions were important for students even if it was scheduled just once or twice a week. Lecturer J emphasised the importance of personal communication compared to online communication, and explained that a shared understanding was reached much quicker in a normal lecture than on Facebook.

Lecturer K also highlighted the importance of class interaction which could not be experienced the same online. He also said: "Face-to-face discussions are still important." Lecturer M explained that face-to-face skills were important for students and face-to-face discussions had other dimensions one could teach students, for

example, they could learn how to manage emotions and argumentation, which are both important skills to learn. The lecturer further said that the real world was more face-to-face oriented than the virtual world and said: “Many companies still conduct face-to-face meetings. Maybe in 20 years it will change to virtual interaction.” Lecturer N focused on the courses presented and stated as follows: “My courses are practical and you need face-to-face contact with them to explain topics.”

Some lecturers valued the presence of body language:

Lecturer A highlighted the importance of body language and interaction between students. Lecturer B also mentioned the importance of non-verbal cues and how important it was to study body language. Lecturer G valued workshops and stated that Facebook was impersonal because there was no body language interpretation or emotion. Lecturer I also said that body language was important and Lecturer J explained as follows: “You can understand more by studying body language.”

Some lecturers highlighted the need for the lecturer to be present:

Lecturer C said that one needed a lecturer to highlight and explain concepts to students, because not all students could figure out things by themselves and many of them were in need of guidance. Lecturer D agreed with Lecturer C about the need for a lecturer to make concepts clear. Lecturer F said: “Students need their lecturers to be physically present to assist them. The lecturer considered another option: “Maybe you can upload a video on Facebook explaining content, but I do not have the time to do it and there are limited resources.” Lecturer J contended as follows: “If you are present, you can encourage participation.”

Some lecturers focused on the importance of physical and personal interaction:

Lecturer H focused on Facebook’s lack of personal interaction and said that it was not good enough by itself. He explained that “students need to communicate in a group and have that type of social interaction.” He acknowledged that Facebook could be a nice supplement. Lecturer O said that students needed that personal touch which they didn’t get online. She said: “Younger students need physical interaction in the class. Maybe when they are older, they need less.”

Some lecturers mentioned the need to take all types of students and their learning styles into account:

Some lecturers focused on the importance of taking different types of students and learning styles into account. Lecturer K contended: “Some students will prefer not to attend class and others want to. The lecturer needs to accommodate both types of students.” Lecturer L said: “You need to take all learning styles into account.” He also said: “It is easier to let small groups work on Facebook than a very large group.” Lecturer P supportively stated as follows: “Some students will not like just Facebook. It’s important to cater for all types of students.”

4.4.11 Do you find the University’s LMS, ClickUP, to be adequate for your work requirements?

This question was posed in order for the researcher to determine whether the lecturers found the University of Pretoria’s Learning Management System, ClickUP, to be adequate for the work they needed to carry out on a daily bais, or whether they needed a tool like Facebook as pedagogical enhancement for teaching. The following themes are emphasised:

Most lecturers regarded ClickUP as being adequate:

Lecturers A, B, D, E, H, I, L, M, N, and P felt that ClickUP was adequate for the work they needed to do, but each of them elaborated on this statement. Lecturer A mentioned that it was adequate, depending on what you wanted to do with ClickUP. He stated as follows: “Some would say Facebook can assist.” Lecturer B mentioned that “ClickUP is on the internal server and it works fast”. He indicated that when ClickUP was down, his students normally emailed him. He also mentioned that not all students could afford to have internet at home. For this reason, ClickUP worked well – because it was on the intranet and students could use it for unlimited periods of time. He added the following related to his courses: “For programming, I don’t see a necessity for Facebook.” Lecturer D said: “ClickUP is fine for teaching”, while Lecturer E supportively stated that ClickUP was good enough in the university setting. He further contended: “I’m not aware of all Facebook’s functions, so I don’t want to talk negative about Facebook, because I do not know enough.”

Lecturer H said that ClickUP was adequate for what he needed to do (distribution of PowerPoint slides and discussions). Lecturer I said the following: “ClickUP is adequate for me as I’m older and set in my ways.” Lecturer L explained that ClickUP was good enough when used in the correct manner and when people were aware of its functions. He added: “Facebook is less moderated and you can do a lot on Facebook, like games, sales, et cetera. On Facebook you can do what you want, but to lead people in education, you need ClickUP, because it helps you to lead people on the right track. With ClickUP, you have more control as a lecturer.” Lecturer M mentioned that ClickUP was technologically adequate and Lecturer N stated: “ClickUP has many valuable features but we are not using it.” Lecturer P said that ClickUP was adequate because of its discussion facility.

Some lecturers felt that they needed Facebook as a supplementary tool for teaching:

Lecturer A mentioned another dimension of Facebook and stated as follows: “On Facebook you can get to know people better if you need to work with them in a group for longer periods of time.” Lecturer D stated the following: “Facebook can be supplement to teaching but it doesn’t have to be part of your teaching strategy.” Lecturer I explained that Facebook was good for collaboration purposes, that students needed Facebook and that lecturers needed to keep up with the students. Lecturer K emphasised Facebook as a complement to ClickUP and mentioned that “online social networking is a new technology and it is open for collaborative learning and one cannot ignore it”. Lecturer M explained as follows: “Many young people are more comfortable with Facebook, so you can supplement ClickUP with Facebook. There’s already an acceptance for Facebook so it will be good to use it.”

Lecturer N said that Facebook would be useful if lecturers did not use all the features on ClickUP. He further explained that ClickUP was a Learning Management System and was used for delivering content to students and for publishing marks. In support of Lecturer I, he said that Facebook was good for collaboration and that it might be good to use both to complement each other. Lecturer O acknowledged both tools’ advantages and supportively stated as follows: “To use ClickUP and Facebook together would be a good option.” She also said that students were more on Facebook than on ClickUP, although ClickUP had features that Facebook didn’t. Lecturer P said

the following: “Students can create their own groups and collaborate on Facebook on a deeper level. I do not want to be part of it. I will administer a group but will not post and participate. I see the pedagogical potential in Facebook.”

Some lecturers highlighted the negative aspects of ClickUP:

Lecturer C stated as follows: “Facebook has more features than ClickUP, Facebook is open, a lot of programmes and applications can be added, and Facebook can provide more than the Learning Management System. If the University says it is fine and I receive training in using Facebook, I will use only Facebook.” Lecturer F contended that “Facebook is more stable than ClickUP” and further added: “I can do much more with ClickUP than with Facebook. I think we need both. The more tools we can use, the better.” Lecturer G showed a lot of frustration and mentioned that ClickUP was not working – “it is either offline or unavailable.” He emphasised ClickUP’s technical problems and felt that it was useless. He further said: “If Facebook doesn’t have similar technical problems, it could be useful.” Lecturer J contended as follows: “I use ClickUP because we have to and I do not really see its value. She explained that ClickUP resulted in fewer emails as students communicate with lecturers via ClickUP’s discussion facility. She said: “ClickUP is more controlled by the University and Facebook is less controllable and this brings about risks.” Lecturer N felt that Facebook was more reliable than ClickUP (focusing on ClickUP’s downtime) and he stated that the students were already using Facebook and “they are already there”.

Some lecturers valued face-to-face discussions:

Lecturer E felt that ClickUP together with face-to-face discussions worked well. He regarded ClickUP as a supplement to the other methods, like face-to-face discussions. Lecturer H admitted that he did not know Facebook well enough. He stated as follows: “If ClickUP didn’t exist, I would use email, although it can be an administration burden.” He said that he’d rather conduct face-to-face group work because of its value.

4.4.12 Additional comments

The researcher invited additional comments for a deeper understanding of all the topics discussed in the interviews.

The power of technology:

Lecturer A stated as follows: “Technology makes life very interesting. ClickUP, Facebook and LinkedIn are all good technologies. It is a network of experts and is very powerful because you’re not alone. You can post information to many people and build up good contacts easily.” Lecturer E discussed Skype and indicated that many people conducted interviews via Skype because it was cheap and easy to use.

The positive aspects of Facebook:

Lecturer B said that there were no interruptions by people on Facebook and “one can convey one’s ideas freely without any interruptions, like body language or other people talking while you want to speak”. He added that Facebook was meant more for socialising purposes while ClickUP is purely academic. Lecturer E was uncertain and stated as follows: “I’m not sure what Facebook was designed for. It wasn’t designed initially for academic purposes. But I’m not sure whether it caters for it now.” He further stated: “Facebook is great as a collaboration tool. You need to think creatively on how you can apply Facebook, and then it will be successful.” Lecturer H explained that “Facebook over mobile devices will definitely accrue in South Africa and online social networking can develop good technological skills among people”. He felt that Facebook was a good tool to teach students the necessary technological skills and that it contained various advantages over face-to-face discussions with regard to difficult geographical factors. Lastly, he said that Facebook would not work for programming courses, but that it could work for other courses.

Lecturer J mentioned that Facebook was popular and new and thus “students will engage in it because it is interesting, not really better”. She provided an example: “I have an article in the library and on Facebook. Thus, obviously students will go to Facebook to view my article!” Lecturer K supportively stated that Facebook was new, but added that lecturers would have to manage Facebook well. “It can easily fall into social and non-academic activities.” He said the following: “Facebook cannot make traditional classes obsolete but it will become very stronger as time passes.”

The negative aspects of Facebook:

Lecturer E contended that Facebook was a good tool, but was worried about the security issues. He said that because he was a technical person, he tended to focus on

security issues and was actively aware of those. He highlighted another concern related to skills and access: “A low level of technical and computer skills and access to technology makes the usage of Facebook a problem as well. It will work well for those who have access and skills.”

Learning styles:

Lecturer C focused on learning styles and stated as follows: “In all four learning styles, the individuals are sensitive to others’ views.” All four learning styles could be accommodated and “need to be supported by the lecturer’s approach.”

The importance of face-to-face discussions:

Lecturer H said the following: “We are in a developing country. Children grow up in big extended families and need to communicate face-to-face. Other children grow up in isolation so it is easier for them to work online. If you want to develop people, face-to-face communication and interaction is crucial.” He stated that “if you have a mobile phone with internet connection, you have access to a large community of people and it is good for the development of communication”.

4.5 Facebook questionnaire – Student

A questionnaire link was distributed via the University of Pretoria’s Learning Management System (ClickUP) to second-year students in the Department of Informatics at the University of Pretoria in South Africa. These students were enrolled for a Systems Analysis and Design course called, “Informatics 271” (INF271). This link was also sent via email to third-year students from CTI, a private educational institution in Bloemfontein, South Africa, who were enrolled for the course, BSc (Hons) Information Technology (a course from the University of Greenwich in London, UK).

20 anonymously completed questionnaires were received. The number of responses received from each institution is listed in Table 4.31 below:

INSTITUTION	RESPONSES	%
University of Pretoria (UP)	9	45%
CTI	11	55%
TOTAL	**20**	**100%**

Table 4.31 Responses per institution and total responses

The researcher found it valuable to compare participation in the academic groups on Facebook with completion of the questionnaire (The Facebook group administration is discussed in detail in Paragraph 4.7):

- nine of the 26 students who participated in the academic group on Facebook called, “INFORMATICS 271”, completed the questionnaire.
- eight of the 13 students who participated in the academic group on Facebook called, “CTI 3rd year IT students – 2009”, completed the questionnaire.
- three of the five students who participated in the academic group on Facebook called, “CTI 3rd year IT students – 2010”, completed the questionnaire.

The questionnaire consisted of 26 questions. The questionnaire is presented as Appendix C. The questions posed in the questionnaire and the findings assembled from the respondents will now be discussed.

4.5.1 Question 1: Gender

Students were asked to specify their gender.

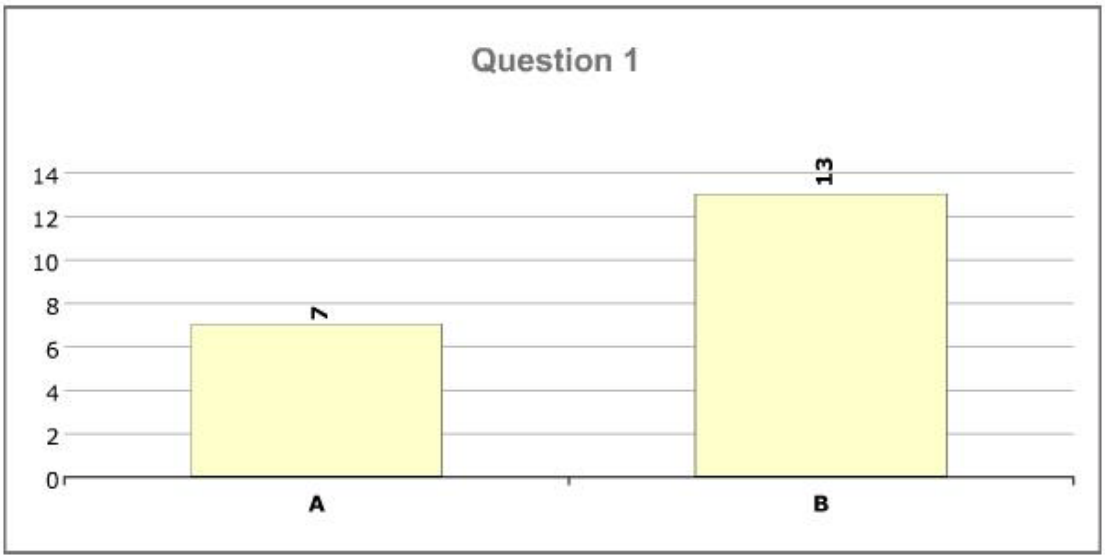


Figure 4.9 Gender

All students answered this question. From Figure 4.9 it is clear that the gender distribution was 35% female to 65% male students.

4.5.2 Question 2: Age

Students were asked to choose their age group. The age distribution is presented in Table 4.32 below:

AGE	%
18–24	95%
25–31	5%
>31	0%

Table 4.32 Age

All students answered this question. From Table 4.5.2 it is clear that the largest number of students were within the 18–24 age group (95%) followed by the 25–31 age group (5%). No students were older than 31 years (0%).

4.5.3 Question 3: Ethnicity

Students were asked to specify their ethnicity. The ethnicity distribution is presented in Table 4.33 below:

ETHNICITY	%
White	50%
Black	45%
Coloured	5%
Asian	0%
Indian	0%
Other	0%

Table 4.33 Ethnicity

All students answered this question. From Table 4.33 it is clear that most students were White (50%) followed by Black (45%) and Coloured (5%) students. None of the respondents were from the Asian, Indian or Other groups (0%).

4.5.4 Question 4: Degree or diploma course

Students were asked to indicate the courses they were enrolled for. The second-year students from the University of Pretoria, who were enrolled for the Informatics 271 course, could either be enrolled for the BCom Informatics course (a three-year course) or another degree from the University. The third-year students from CTI were all enrolled for the BSc (Honours) Information Technology course (a three-year course from the University of Greenwich in London, UK).

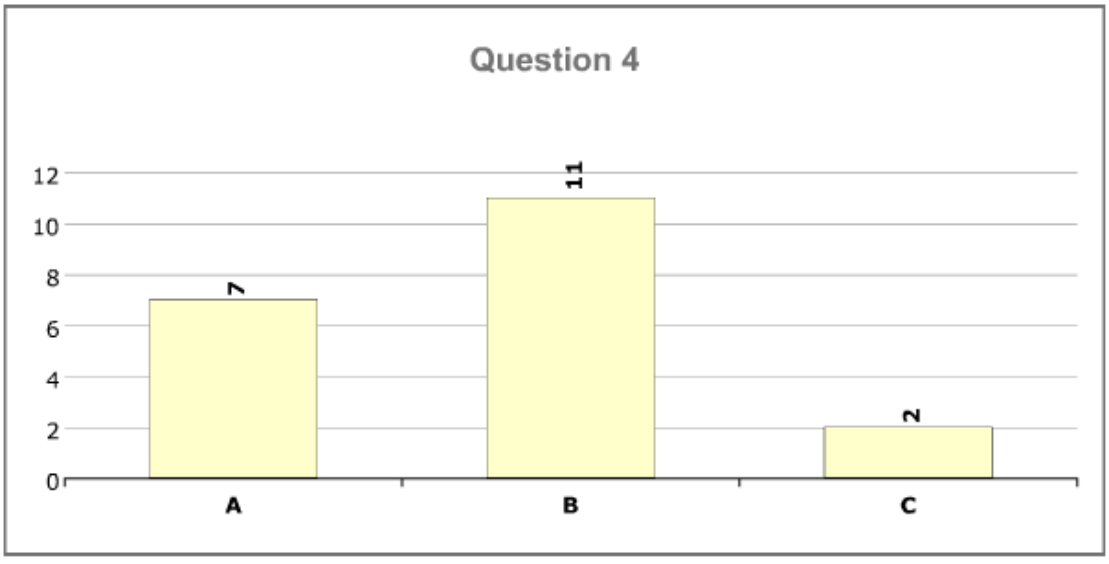


Figure 4.10 Degree or diploma course

All students answered this question. As can be seen in Figure 4.10, 35% students were enrolled for the BCom Informatics course, 55% for the BSc (Hons) Information Technology course and 10% for an 'Other' course, which is associated with any other BCom course at the University of Pretoria where students have chosen INF271 as part of their course.

4.5.5 Question 5: I prefer to complete assignments

Students were asked whether they preferred to complete assignments individually or in a group. This question was asked in order to capture students' learning preferences related to the completion of assignments.

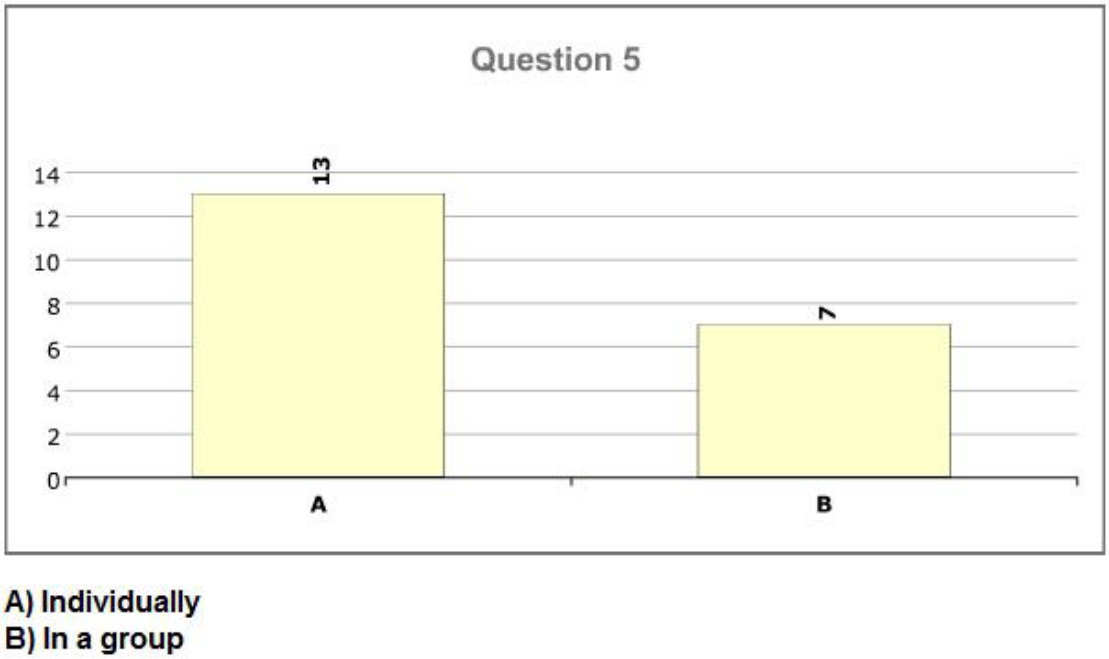


Figure 4.11 Preference for completing assignments

All students answered this question. As is clear from Figure 4.11, 65% of students preferred to work individually while 35% of students preferred group work when completing assignments. A possible reason why students prefer to work alone might be that they feel that working in a group may have a negative effect on their marks. A student's personality type might also contribute to his/her choice. A possible reason why students prefer group work might be that they are in need of peer learning as the content of their courses are complex and thus they rely on their peers for guidance and assistance during the course of their studies.

4.5.6 Question 6: I have a Facebook account

Students were asked whether they had Facebook accounts at that stage. All students answered this question. 100% of students indicated that they had Facebook accounts. The possible reasons why students have Facebook accounts might be that they enjoy the website and because many of their friends are active members of Facebook.

4.5.7 Question 7: If you answered "No" to Question 6, please choose the most appropriate reason why you do not have a Facebook account

This question was asked to determine the possible reasons why students do not have Facebook accounts. No students answered this question as all of them had Facebook accounts as stated in Paragraph 4.5.6.

4.5.8 Question 8: If you answered "Yes" to Question 6, please answer Question 8. For which purposes do you interact with lecturers on Facebook?

Students were asked to indicate for which purposes they interacted with lecturers on Facebook (those who had Facebook accounts).

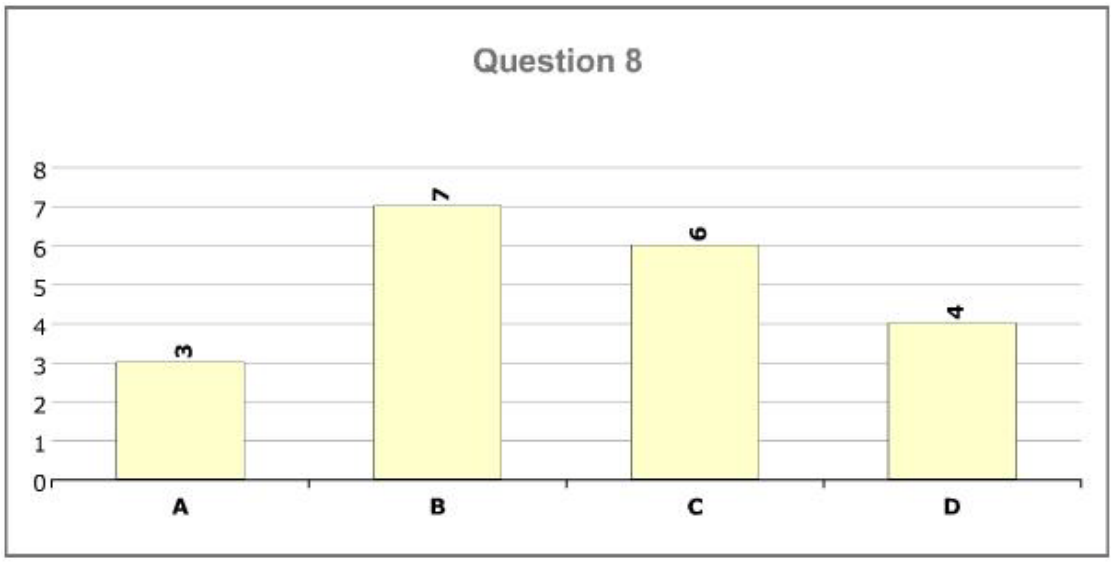


Figure 4.12 Purposes for interacting with lecturers on Facebook

All students answered this question. It is clear from Figure 4.12 that 15% of students interacted with lecturers on Facebook for social reasons and 35% for academic reasons. 30% of students interacted with lecturers on Facebook for both social and academic reasons; while 20% stated that they had no interaction with any lecturers on Facebook. It is interesting to note that few students have no interaction with their lecturers on Facebook. The researcher expected that more students would prefer to not have interaction with their lecturers on Facebook because of Facebook's strong social component and the possible online exposure of one's personal information to a lecturer.

4.5.9 Question 9: Are you aware of the potential academic benefits of online social networking (Facebook) for group work and online discussions?

The researcher asked this question in order to test students' awareness of the use of online social networking, especially Facebook, as an academic tool for group work and online discussions. All students answered this question. 85% of students were aware of the academic benefits of Facebook while 15% were unaware. This accounts for a high level of awareness probably due to self-exploration of Facebook by the students or of an awareness created by the lecturer. This statement supports the next question (Question 10).

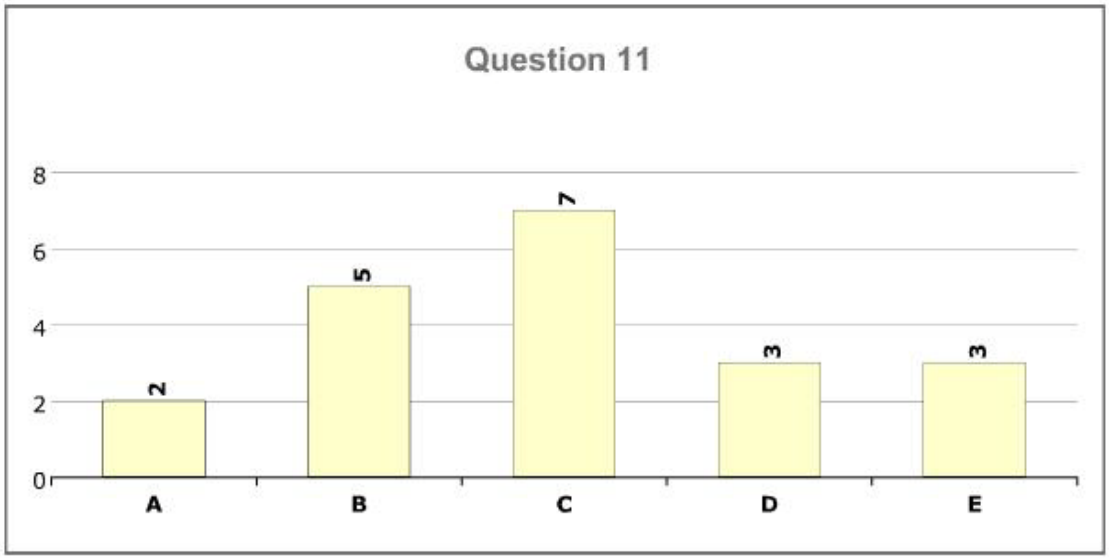
4.5.10 Question 10: Has any lecturer informed and/or educated you on the use of online social networking in an academic environment?

This question was raised in order to determine whether students have been educated or informed by their lecturer(s) on the academic use of online social networking. The answers to this question highlighted lecturers' awareness or non-awareness regarding the pedagogical potential of online social networking as part of their teaching strategy. It is most likely that lecturers, who are not active members of any online social networking site, who are unaware of the pedagogical potential thereof, will not have educated their students on the academic use of online social networking.

All students answered this question. A high percentage (75%) of students have been educated or informed about the academic use of online social networking sites by their lecturer(s), while 25% of students have not been educated or informed.

4.5.11 Question 11: I often make use of Facebook for academic purposes

Students were asked whether they often used Facebook for academic purposes. The researcher was aware of Facebook's high level of social utilisation, but needed to understand the use of Facebook by students for academic purposes.



A) Strongly Agree
B) Agree
C) Disagree
D) Strongly Disagree
E) Im not sure

Figure 4.13 I often make use of Facebook for academic purposes

All students answered this question. It is clear from Figure 4.13 that half of the students (50%) strongly disagreed and disagreed with the statement that they often used Facebook for academic purposes. 25% of students agreed that they did often use Facebook for academic purposes, while 10% of students strongly agreed to this statement. 15% of students mentioned that they were unsure. A possible reason for the number of students disagreeing with this statement might be that students prefer to use Facebook for social purposes and do not regard it as an environment for academic activities, or an unawareness of Facebook's pedagogical potential.

4.5.12 Question 12: Have you ever participated in group work and/or online discussions on any online social networking site?

This question covers students' past participation on any online social networking sites related to group work and/or online discussions. The reason why the researcher referred to "any online social networking site" was because some students might be members of MySpace or Twitter or any other online social networking site. All students answered this question. 60% of students indicated that they have participated and 40% of students indicated that they have not previously participated in group work and/or online discussions on any online social networking sites.

4.5.13 Question 13: Do you think that Facebook can be applied as a tool for academic learning?

This question was posed in order to gather the students' opinions on Facebook's applicability as an academic tool. All students answered this question. 80% of students thought that Facebook could be applied while 20% did not think that it could be applied as a tool for academic learning. Possible reasons why students do not believe in its application might be that they value Facebook as a social and not as an academic tool, or that they are not aware of Facebook's pedagogical potential either because of a lack of knowledge or because no educator has informed them of Facebook's potential in the academic environment.

4.5.14 Question 14: I want to engage in group work and/or online discussions related to my courses with other students on Facebook

This question was posed to determine whether there was a need for students to use Facebook as an environment for academic purposes related to group work and/or online discussions. All students answered this question. 75% of students wanted to engage while 25% of students did not have a need to engage in group work and/or online discussions regarding their courses on Facebook. A possible reason why students would want to engage in group work and/or online discussions may be that they are in need of peer learning because of the complexity of their courses. A possible reason why students do not want to engage may be because they prefer face-to-face group work and discussions via other online methods like the discussion

facility of the Learning Management System. Possible reasons for both options will be covered in the next two questions (Questions 15 and 16).

4.5.15 Question 15: If you answered "Yes" to Question 14, please provide a reason why you would use it

Students were asked to provide reasons for wanting to engage with other students in group work and/or online discussions related to their courses on Facebook. 70% of students answered this question. The reasons are described below:

- Facebook provides an easy way for students to connect and as one student stated: "Facebook is easy to use."
- Students are able "to get fast answers from their fellow students". One student mentioned: "We can help each other out", one student stated as follows: "I can access my fellow students even at night" and another student said: "In some cases other students may know more about a certain topic than you and they will be able to help you online."
- More insight can be gained regarding the courses.
- Facebook is an informal and relaxed environment: "I can ask questions relating to all courses without distracting other students, and getting other people's points of view will broaden my understanding of the work."
- Three students mentioned that engaging in group work on Facebook helps them understand the work better.
- It helps with the development of online communication skills.
- One student mentioned: "I can learn new things that have been researched by other students."
- Another student explained that it was "easier to communicate with a wide audience".
- Other students' concerns and answers to questions can be viewed, and it allows for the sharing of information and tips.
- Facebook is a good resource to access information from.

4.5.16 Question 16: If you answered "No" to Question 14, please provide a reason why you would not use it

Students were asked to provide reasons for not wanting to engage with other students in group work and/or online discussions related to their courses on Facebook. 25% of students answered this question. The reasons are described below:

Facebook as a social tool was highlighted by one student: "Facebook is a place for me to get away from the books and interact with my friends on a social level." The student stated that doing academic work on Facebook would be fun, but also mentioned: "I need a place to be free online where I don't have to think about school for a little while. It's a good idea, but not for me."

Another student viewed Facebook as being too cluttered to be pleasant for discussions. The student explained that it would be utilised "if an application specifically made for academic purposes is created on Facebook".

Another student emphasised "free-riding" and the fact that some group members depend on others in a group, thus not contributing enough to the group. This student preferred to work individually.

A lack of internet access was highlighted by one student: "I'm currently without internet access and, therefore, unable to participate in the discussions."

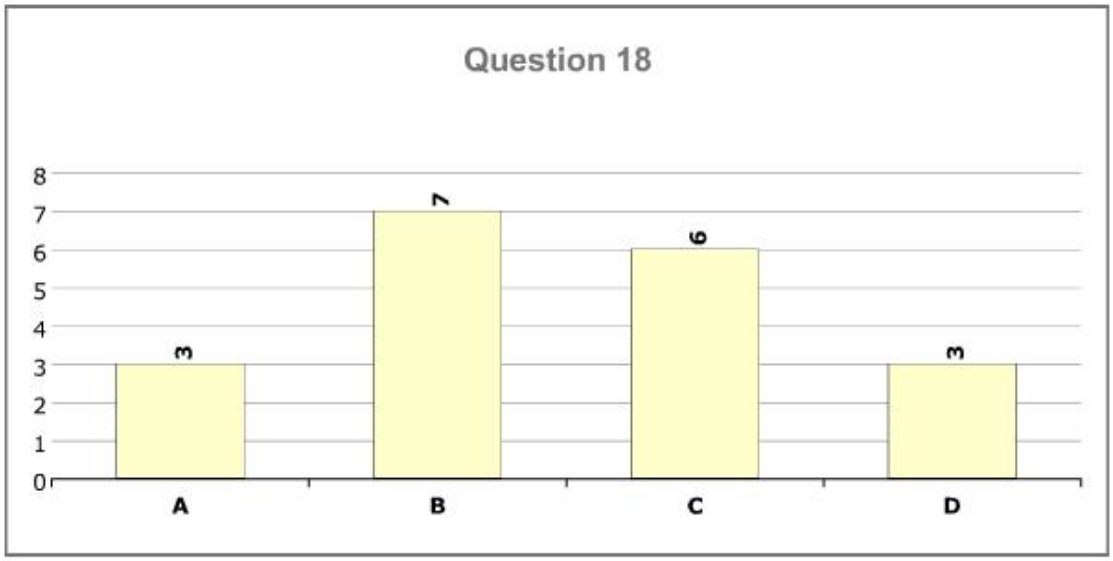
Lastly, one student explained that the University's Learning Management System is good enough: "ClickUP is sufficient in providing students with academic information and input from other students and lecturers."

4.5.17 Question 17: I am aware of my preferred learning style

This question was raised in order to determine whether students were aware of their preferred learning style. All students answered this question. The majority of students (95%) were aware while 5% were unaware of their preferred learning style.

4.5.18 Question 18: If you answered "Yes" to Question 17, please choose your preferred learning style

Students were asked to choose their preferred learning style based on Kolb's four learning styles: Accommodator, Diverger, Assimilator, and Converger. The researcher needed to specify some characteristics under each learning style as not all students were aware of Kolb's learning styles.



A) Accommodator (I am a leader; I go with my intuition; I prefer active experimentation and group work, not lectures; I rely heavily on other people for information; I carry out plans and experiments; Im a risk-taker)
B) Diverger (I can adopt many points of view; I have a good imagination and Im emotional; Im sensitive to other peoples emotions; Im a good listener; Im open-minded; Im interested in people; Im good at group sessions and brainstorming)
C) Assimilator (Im organized, logical, and precise; I have good thinking skills; I like to learn from lectures; Im less interested in people; I prefer learning from 'paper and resist computer-based learning the most; I have the ability to create theoretical models; I find it hard to make decisions or to take action)
D) Converger (I can easily transform ideas and theories into practical applications; I learn through experimentation; I prefer to deal with things rather than people; I have the strongest preference for computer-based learning; Im relatively unemotional; I make decisions easily)

Figure 4.14 Preferred learning style

95% of students answered this question. As can be seen in Figure 4.14, 15.8% of students chose the Accommodator learning style, 36.8% the Diverger, 31.6% the Assimilator and 15.8% chose the Converger. It can thus be said that most students chose the Diverger as their preferred learning style.

4.5.19 Question 19: Which teaching strategy would be most suited for your course, related to group work and discussions?

Students were asked to choose between three teaching strategies in order to determine to what degree they would prefer Facebook for group work and online discussions related to their course.

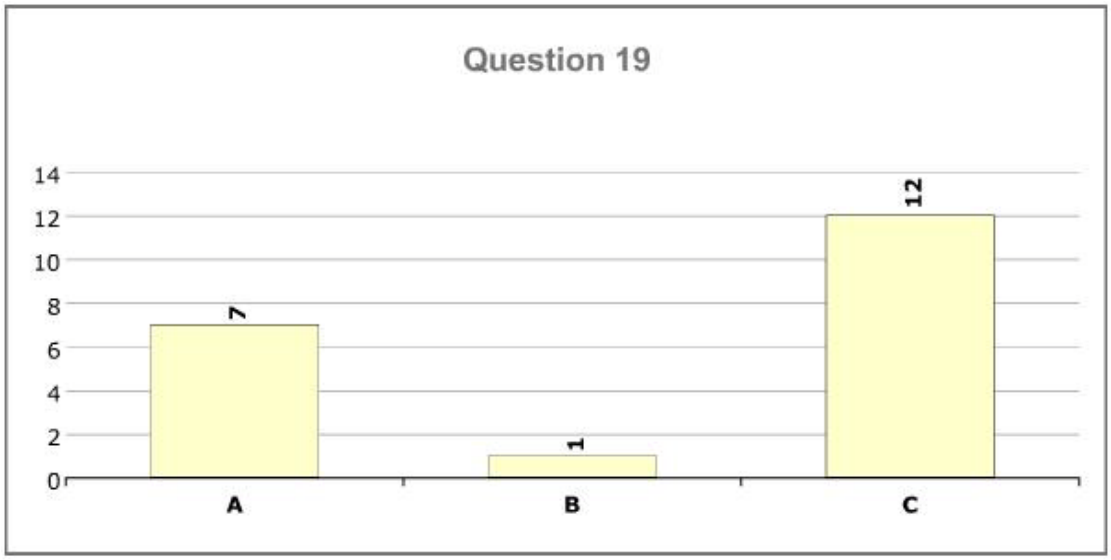


Figure 4.15 Most suited teaching strategy aside from normal lectures

All students answered this question. It is evident from Figure 4.15 that most students (60%) thought that a blended teaching strategy (face-to-face and Facebook) would be most suited for group work and online discussions in their courses. 35% of students focussed on the face-to-face teaching strategy (tutorials) as best suited, while 5% thought that Facebook alone would be suited. It is interesting to note how the academic potential of Facebook is realised by students.

4.5.20 Question 20: If you didn't participate in the "INFORMATICS 271", "CTI 3rd year IT students - 2009" or "CTI 3rd year IT students - 2010" groups on Facebook, please provide a reason why you chose not to participate.

The researcher administered three academic groups on Facebook (discussed in more detail in Paragraph 4.7). This question was posed in order to gain an understanding of why some students chose not to participate.

25% of students answered this question. The following reasons emerged:

- "I didn't know about it."
- "I didn't have the time but you'll see me there soon."
- "I wasn't particularly interested. Too much was happening at the time."
- "I was unavailable for some time on Facebook."
- "I didn't join immediately and later forgot to join."

It seems, from the reasons provided above, that these students would have actually preferred to be part of the academic groups. The students were then asked the following before answering the next set of questions: "Only answer Questions 21–26 if you were a member of one of the academic groups on Facebook called, 'INFORMATICS 271', 'CTI 3rd year IT students – 2009' or 'CTI 3rd year IT students – 2010'."

4.5.21 Question 21: Participating in the group work and/or online discussions on Facebook enhanced my learning experience

The researcher asked this question in order to determine whether the students felt that their participation on Facebook enhanced their learning experience. 65% of students answered this question. 53.8% of students agreed that Facebook didn't enhance their learning experience while 46.2% of students agreed that Facebook did enhance their learning experience. A possible reason for this result might be that the students did not actively participate in these online academic groups on Facebook, thus resulting in a low level experience of enhanced learning. If students utilised the academic groups more, this result might have shown a different distribution.

4.5.22 Question 22: The following environment creates better opportunities for knowledge sharing

This question was raised in order to capture students' viewpoints on the best environment for knowledge sharing related to academic work.

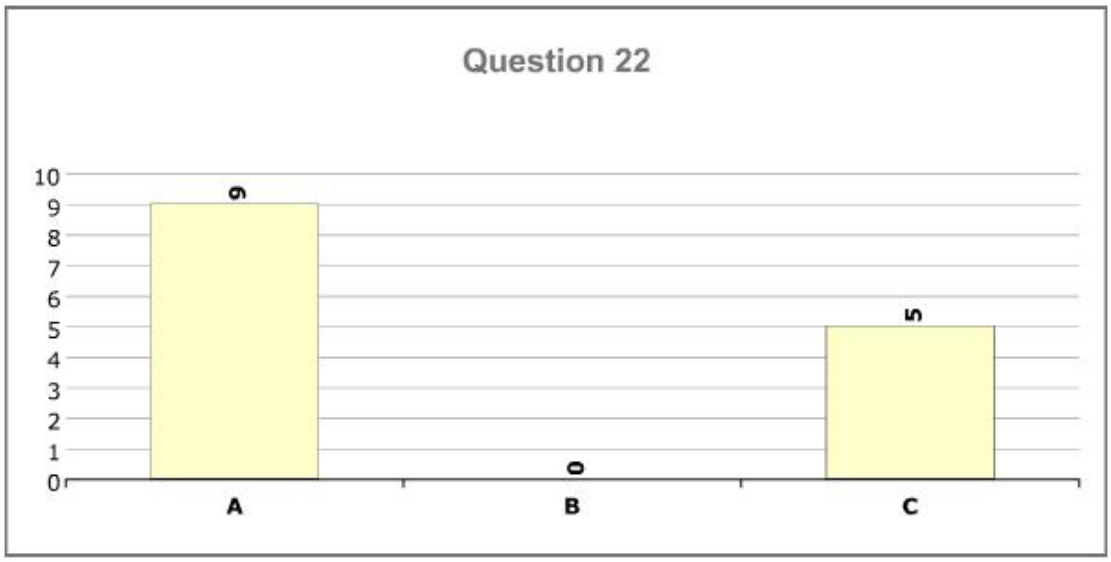


Figure 4.16 Better opportunities for knowledge sharing

70% of students answered this question. From Figure 4.16 it is evident that 64.3% of students chose a face-to-face environment for knowledge sharing while 0% students chose Facebook only and 35.7% students agreed to both a face-to-face environment and Facebook. It is interesting to note that the majority of students emphasised the value of face-to-face interaction. A possible reason for the students' responses might be that they didn't utilise the academic groups on Facebook as was expected by the researcher, thus accounting for these results. If there was a higher level of participation on Facebook, the value of Facebook might have been recognised more.

4.5.23 Question 23: I understand the course content better after group work or discussions in

The researcher wanted to determine in which environment students understood the course content better – while carrying out group work or engaging in online discussions with their peers.

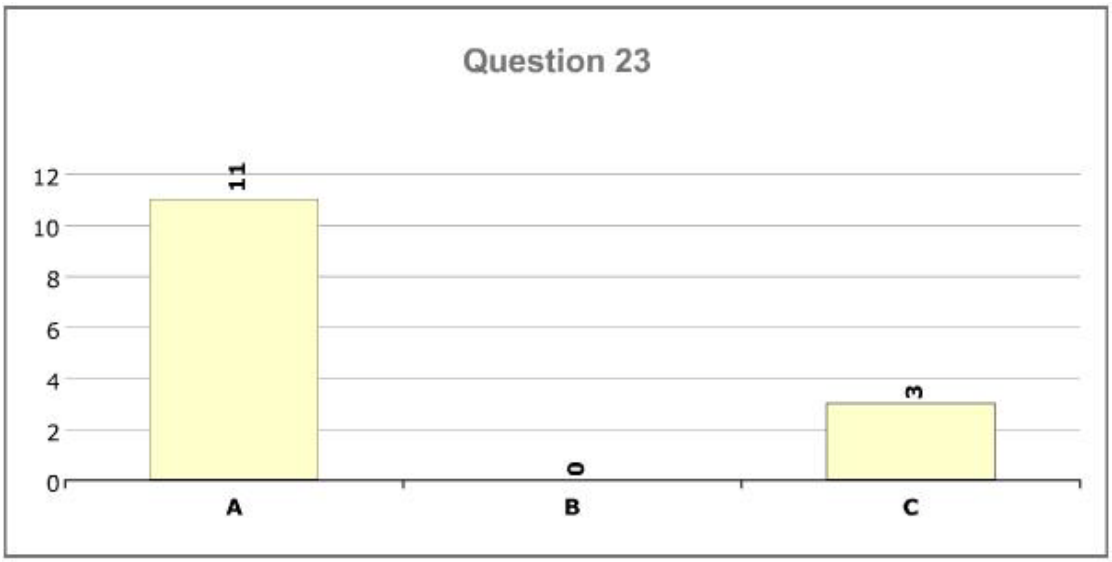


Figure 4.17 Better understanding of content

70% of students answered this question. From Figure 4.17 it is clear that 78.6% of students chose the face-to-face environment as the best option for an increased understanding of the course content while 0% of students chose Facebook only and 21.4% of students chose both the face-to-face environment and Facebook. The value of face-to-face discussions was once again highlighted by most students. As mentioned in the previous question, a possible reason for the students' responses may be that they didn't fully engage in group work or discussions in the academic groups on Facebook as was expected by the researcher, thus accounting for these results.

4.5.24 Question 24: What are the advantages and disadvantages of participating in group work and online discussions on Facebook?

It was important for the researcher to capture students' viewpoints regarding possible advantages and disadvantages of the application of Facebook as an academic tool, where students can conduct group work or engage in online discussions.

65% of students answered this question. The advantages of participating in group work and online discussions on Facebook are discussed first. One student mentioned that students could be shy or feel intimidated by his/her lecturer in class, but that students could ask questions freely on Facebook and it was also mentioned that

Facebook was available twenty-four seven. Another student added that one could find solutions to problems quicker on Facebook and three students emphasised that they could gain a better understanding of a problem, question or the work in general. One student supportively stated as follows: “You can get fast answers from other students” and another supportively mentioned that “Facebook will be able to help learners understand a problem easier”. Another student stated that information could be clarified on a more personal level unlike when the lecturer provides information. A student stated: “You can get many different viewpoints on a specific topic, enabling you to make a reasonable conclusion.” Another student agreed to the benefit of different viewpoints. In support of the above statements, one student said the following: “Facebook is fast-paced and you can access information and ask questions at any given time. It’s flexible and it gives one an opportunity to capture what other people think, especially people who don’t feel comfortable speaking up in class.”

The disadvantages of participating in group work and online discussions on Facebook will now be discussed. A student stated that people may give untruthful opinions on Facebook and that not all people had internet access at all times. A second student also agreed with the problem of not all students having internet access and added that the discussions would not be successful if all students didn’t have internet access. A third student also explained as follows: “Not everyone has access to online facilities” and students may become too dependent on each other. In support of untruthful opinions, another student added the following: “If your fellow students don't understand the work, then all of you can be led on the wrong path.” Another student said: “You don't learn people skills on Facebook.” One student stated that “sometimes you may need an immediate reply and you find that there is nobody to help you”. A student mentioned that Facebook is “very impersonal”. One student mentioned that one didn’t receive instant feedback, that it was time-consuming to work on Facebook and that communication was distant. Another student mentioned that questions might be misinterpreted and some students feared asking simple questions.

4.5.25 Question 25: Do you think you adopt a different learning style in a face-to-face environment than in the Facebook environment?

Students were asked whether they thought that they adopted different learning styles in the different environments: face-to-face and Facebook.

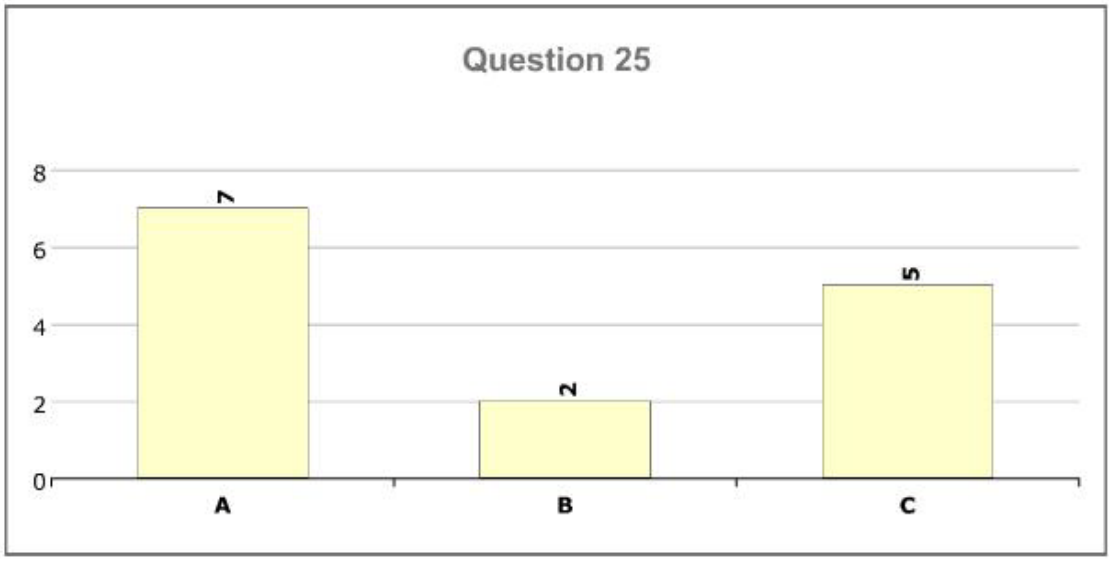


Figure 4.18 Adoption of different learning styles

70% of students answered this question. As is clear from Figure 4.18, 50% of students felt that they adopted a different learning style in a face-to-face environment than in the Facebook environment; 14.3% of students disagreed and 35.7% of students stated that they were unsure.

4.5.26 Question 26: How does your learning style affect your success in the Facebook environment?

Students were asked how their success in the Facebook environment might be affected by their lerarning style. 45% of students answered this question.

Two students contended that they were unsure. Another two students said that their learning style did not affect their success. One student stated the following: “My learning style helps me to ask more questions and to help my fellow class mates to gain a better understanding of the work.” Another explained as follows: “I like the face-to-face environment. The Facebook environment helps you to interact with other

students and get their opinion on different things." Another student said: "My learning style changes in that I get to hear other people's thoughts and that steers me in a better direction." One student explained: "I spend less time on Facebook for academic purposes", thus not really providing an answer to this question.

4.6 Facebook questionnaire – Student: Additional questions and findings

The following additional findings draw comparisons between various questions from the student questionnaire and demographic data, as well as other relevant questions which delivered interesting results.

GENDER:

4.6.1 I prefer to complete assignments

GENDER	INDIVIDUALLY	IN A GROUP
Male	61.5%	38.5%
Female	71.4%	28.6%

Table 4.34 Preference for completing assignments compared to gender

It is clear from Table 4.34 that the female students highly favoured the completion of assignments on an individual level (71.4%) compared to in a group (28.6%). It is clear that male students also preferred completing assigments individually (61.5%) to in a group (38.5%).

4.6.2 Are you aware of the potential academic benefits of online social networking (Facebook) for group work and online discussions?

GENDER	YES	NO
Male	92.3%	7.7%
Female	71.4%	28.6%

Table 4.35 Awareness of Facebook's potential academic benefits compared to gender

Table 4.35 illustrates that a large number of male students (92.3%) were aware of the academic benefits of online social networking sites like Facebook for group work and online discussions, while fewer female students (71.4%) were aware of this.

4.6.3 Have you ever participated in group work and/or online discussions on any online social networking site?

GENDER	YES	NO
Male	61.5%	38.5%
Female	57.1%	42.9%

Table 4.36 Past academic participation of online social networks compared to gender

As can be seen in Table 4.36, slightly more male students (61.5%) have participated in an online social networking site for the conduction of group work and/or online discussions than the female group (57.1%).

4.6.4 The following environment creates better opportunities for knowledge sharing

GENDER	FACE-TO-FACE	FACEBOOK	FACE-TO-FACE & FACEBOOK
Male	77.8%	0%	22.2%
Female	40%	0%	60%

Table 4.37 Better opportunities for knowledge sharing compared to gender

It is clear from Table 4.37 that the value of face-to-face discussions for knowledge sharing was highlighted more by the male students (77.8%) than by female students (40%). The female students found a good level of knowledge sharing in both the face-to-face and Facebook environments (60%), which was more than the male students (22.2%).

4.6.5 I understand the course content better after group work or discussions in

GENDER	FACE-TO-FACE	FACEBOOK	FACE-TO-FACE & FACEBOOK
Male	77.8%	0%	22.2%
Female	80%	0%	20%

Table 4.38 Better understanding of content compared to gender

The researcher found it valuable to compare female students' responses in Paragraph 4.6.4 to the findings from this question. Although only 40% of female students highlighted that the face-to-face environment was good for knowledge sharing (see Paragraph 4.6.4), the majority of female students (80%) felt that they understood the content better after working in a face-to-face environment (see Table 4.38). It is interesting to note the value placed on the face-to-face environment by the female group, when comparing Paragraphs 4.6.4 and 4.6.5 involving knowledge sharing and a better understanding of the content of the course. It is also interesting to note the equal value (77.8%) placed on the face-to-face environment by the male group, when comparing Paragraphs 4.6.4 and 4.6.5.

ETHNICITY:

The researcher analysed and discovered interesting findings when numerous questions were compared with regard to White and Black ethnic groups. The ethnicity distribution, as described in Paragraph 4.5.3, is 50% White, 45% Black and 5% Coloured students. None of the students were from the Asian, Indian or Other groups. For this reason, the researcher found it adequate to make some interesting comparisons between the White and Black ethnic groups. When the researcher refers to ethnicity in the following sections, it only refers to the White and Black ethnic groups.

4.6.6 I prefer to complete assignments

ETHNICITY	INDIVIDUALLY	IN A GROUP
White	40%	60%
Black	88.9%	11.1%

Table 4.39 Preference for completing assignments compared to ethnicity

It is interesting to note from Table 4.39 that the White group preferred more group work for the completion of assignments (60%) while the Black group highly favoured working on assignments individually (88.9%).

4.6.7 For which purposes do you interact with lecturers on Facebook?

ETHNICITY	SOCIAL	ACADEMIC	SOCIAL & ACADEMIC	NO INTERACTION
White	20%	30%	20%	30%
Black	11.1%	44.4%	33.3%	11.1%

Table 4.40 Purposes for interacting with lecturers on Facebook compared to ethnicity

From studying Table 4.40 the researcher discovered that more White students (30%) preferred not to interact with their lecturers on Facebook than Black students (11.1%). The Black group showed a strong tendency towards academic interaction with their lecturers on Facebook (44.4%). It is thus clear that academic interaction with lecturers is more valued by Black than White students.

4.6.8 I often make use of Facebook for academic purposes

ETHNICITY	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	I'M NOT SURE
White	10%	10%	40%	30%	10%
Black	11.1%	33.3%	33.3%	0%	22.2%

Table 4.41 I often make use of Facebook for academic purposes compared to ethnicity

Table 4.41 shows that more Black students (33.3%) agreed to using Facebook for academic purposes than White students (10%). It is also clear that the White group strongly disagreed with this statement (30%) while none of the Black students

strongly disagreed with this statement (0%). It seems that the Black group is more in favour of utilising Facebook for academic purposes than the White group.

4.6.9 Have you ever participated in group work and/or online discussions on any online social networking site?

ETHNICITY	YES	NO
White	50%	50%
Black	66.7%	33.3%

Table 4.42 Past academic participation of online social networks compared to ethnicity

Paragraph 4.6.9 supports the findings from the previous Paragraph (Paragraph 4.6.8). As can be seen from Table 4.42, more Black (66.7%) than White students (50%) have participated in group work and/or online discussions on an online social networking site in the past. This finding also highlights a higher level of utilisation of online social networking sites by the Black group.

4.6.10 Please choose your preferred learning style

ETHNICITY	ACCOMMODATOR	DIVERGER	ASSIMILATOR	CONVERGER
White	20%	10%	60%	10%
Black	12.5%	62.5%	0%	25%

Table 4.43 Preferred learning style compared to ethnicity

The researcher found it valuable to compare ethnicity to learning styles adopted by students. Table 4.43 shows that the White group mostly chose the Assimilator learning style (60%) while the Black group was highly in favour of the Diverger learning style (62.5%) and they did not associate with the Assimilator learning style at all (0%).

4.6.11 Participating in the group work and/or online discussions on Facebook enhanced my learning experience

ETHNICITY	YES	NO
White	28.6%	71.4%
Black	80%	20%

Table 4.44 Participating on Facebook enhanced my learning experience compared to ethnicity

Table 4.44 supports the findings from Paragraph 4.6.8. A high percentage of the Black group (80%) believed that group work and/or online discussions on Facebook enhanced their learning experience, while a high percentage of the White group (71.4%) did not support this statement. The value of Facebook was once again emphasised by the Black group.

4.6.12 Do you think you adopt a different learning style in a face-to-face environment than in the Facebook environment?

ETHNICITY	YES	NO	I'M NOT SURE
White	25%	25%	50%
Black	80%	0%	20%

Table 4.45 Adoption of different learning styles compared to ethnicity

Table 4.45 illustrates that 80% of the Black group felt that they adopted a different learning style in a face-to-face environment than in the Facebook environment, while only 25% of the White group supported this statement.

DEGREE OR DIPLOMA COURSE:

The researcher analysed and discovered interesting findings when numerous questions were compared to the degree or diploma courses students were enrolled for. This also highlighted the differences in public (University of Pretoria) and private (CTI) institutions. The degree or diploma course distribution as described in Paragraph 4.5.4 is as follows: 35% of students were enrolled for the BCom Informatics course; 55% for the BSc (Hons) Information Technology course and 10% for an Other course. For

this reason, the researcher found it adequate to compare the BCom Informatics and BSc (Hons) Information Technology groups because of the close distribution percentages.

It is important to note that this statement is not solely linked to the Facebook academic groups created and administered by the researcher, but to all academic activity by the students on Facebook.

4.6.13 For which purposes do you interact with lecturers on Facebook?

DEGREE OR DIPLOMA COURSE	SOCIAL	ACADEMIC	SOCIAL & ACADEMIC	NO INTERACTION
BCom Informatics	14.3%	14.3%	28.6%	42.9%
BSc (Hons) IT	9.1%	54.5%	36.4%	0%

Table 4.46 Purposes for interacting with lecturers on Facebook compared to degree or diploma course

As is clear from Table 4.46, there was a high level of interaction (54.5%) with a lecturer/lecturers on an academic level by the BSc (Hons) IT students. A high percentage (42.9%) of BCom Informatics students chose not to have interaction with any lecturers on Facebook, while 0% BSc (Hons) IT students chose this option.

4.6.14 Has any lecturer informed and/or educated you on the use of online social networking in an academic environment?

DEGREE OR DIPLOMA COURSE	LECTURER HAS INFORMED	LECTURER HAS NOT INFORMED
BCom Informatics	42.9%	57.1%
BSc (Hons) IT	90.9%	9.1%

Table 4.47 Informed by a lecturer on the academic use of online social networks compared to degree or diploma course

Table 4.47 illustrates that 90.9% of BSc (Hons) IT students were more informed about online social networking in an academic environment compared to only 42.9% of BCom Informatics students. A reason for this might be that the researcher, who is also the lecturer of the BSc (Hons) IT students, made the students aware of the academic potential of online social networking sites.

4.6.15 I often make use of Facebook for academic purposes

DEGREE OR DIPLOMA COURSE	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	I'M NOT SURE
BCom Informatics	0%	0%	57.1%	28.6%	14.3%
BSc (Hons) IT	18.2%	36.4%	27.3%	0%	18.2%

Table 4.48 I often make use of Facebook for academic purposes compared to degree or diploma course

It is clear from Table 4.48 that only the BSc (Hons) IT students strongly agreed (18.2%) and agreed (36.4%) to often using Facebook for academic purposes, while most of the BCom Informatics students (57.1%) disagreed with this statement.

4.6.16 Participating in the group work and/or online discussions on Facebook enhanced my learning experience

DEGREE OR DIPLOMA COURSE	YES	NO
BCom Informatics	0%	100%
BSc (Hons) IT	66.7%	33.3%

Table 4.49 Participating on Facebook enhanced my learning experience compared to degree or diploma course

Table 4.49 shows that 100% of the BCom Informatics students felt that group work and/or online discussions on Facebook didn't enhance their learning experience, while 66.7% of the BSc (Hons) IT students felt that Facebook did enhance their learning experience. A possible reason for this finding might be that a low level of

participation on the academic group on Facebook can be linked to the BCom Informatics students.

INDIVIDUAL OR GROUP PREFERENCE:

4.6.17 I want to engage in group work and/or online discussions related to my courses with other students on Facebook

PREFERENCE FOR COMPLETING ASSIGNMENTS	YES	NO
Individually	69.2%	30.8%
In a group	85.7%	14.3%

Table 4.50 I want to engage in academic activities on Facebook compared to preference for completing assignments

It is interesting to note from Table 4.50 that so many students (69.2%) who preferred to complete their assignments individually did want to engage in group work and/or online discussions related to their courses with other students on Facebook.

4.6.18 Please choose your preferred learning style

PREFERENCE FOR COMPLETING ASSIGNMENTS	ACCOMODATOR	DIVERGER	ASSIMILATOR	CONVERGER
Individually	16.7%	58.3%	16.7%	8.3%
In a group	14.3%	0%	57.1%	28.6%

Table 4.51 Preferred learning style compared to preference for completing assignments

An interesting finding was made regarding the learning styles adopted by students and their preferred method for the completion of assignments. One of the characteristics of the Diverger learning style is being “good at group sessions and brainstorming” (Loo, 2004). Table 4.51 shows that 58.3% of students who preferred to complete their assignments individually chose the Diverger learning style (which is associated with being good at group work). This is somewhat contradictory when focusing on the

characteristics of the Diverger learning style. One of the characteristics of the Assimilator learning style is that people like to learn from lectures (Schaller *et al.*, n.d.). 57.1% of students, who preferred to complete their assignments in a group, chose the Assimilator learning style.

4.6.19 Participating in the group work and/or online discussions on Facebook enhanced my learning experience

PREFERENCE FOR COMPLETING ASSIGNMENTS	YES	NO
Individually	55.6%	44.4%
In a group	25%	75%

Table 4.52 Participating on Facebook enhanced my learning experience compared to preference for completing assignments

Table 4.52 illustrates another contradiction, indicating that students who preferred to complete assignments individually, felt that group work and/or online discussions on Facebook enhanced their learning experience (55.6%), while 75% of students who preferred group work for completing assignments, did not experience enhanced learning via group work and/or online discussions via Facebook.

4.7 Facebook group administration

Küçük *et al.* (2010) claim that the level of online learning can be affected by various factors, but that the most important success factor is the participation of students. If students do not participate, one can say that the application may not be compatible with the specific tasks at hand. The support offered by departments will also impact the participation levels of students, because students can sometimes feel detached in online environments.

The researcher created and administered three student academic groups on the Facebook website:

1. The first group, INFORMATICS 271, was created in 2009 for second-year students from the Department of Informatics at the University of Pretoria

enrolled for the course Informatics 271 – Systems Analysis and Design. The purpose of this group was to create an online location where students could discuss their weekly tutorial group work sessions. The group logo screenshot is presented in Figure 4.19 below:

Figure 4.19 INFORMATICS 271 group logo screenshot

2. The second group, CTI 3rd year IT students – 2009, was created in 2009 for third-year Information Systems students from CTI enrolled for the course, BSc (Hons) Information Technology. It was created for three of their courses: Information Systems Engineering; IT Project Management and E-Commerce. The purpose of this group was to create an online location where students could conduct group work and discuss any lecture topics. The group logo screenshot is presented in Figure 4.20 below:

Figure 4.20 CTI 3rd year IT students – 2009 group logo screenshot

3. The third group, CTI 3rd year IT students – 2010, was created in 2010 for third-year Information Systems students from CTI enrolled for the course, BSc (Hons) Information Technology. It was created for all of their courses: Information Systems Management; Database Design; Rapid Application Development; Practical Project; Information Systems Engineering; IT Project Management and E-Commerce. The purpose of this group was to create an online location where students could conduct group work and discuss any lecture topics. The group logo screenshot is presented in Figure 4.21 below:

Figure 4.21 CTI 3rd year IT students – 2010 group logo screenshot

Table 4.53 below provides a detailed description of the three Facebook academic groups (Facebook 2010):

GROUP NAME:	INFORMATICS 271	CTI 3rd year IT students – 2009	CTI 3rd year IT students – 2010
DATE CREATED:	20 July 2009	31 August 2009	20 February 2010
CATEGORY:	Student Groups – Academic Groups	Student Groups – Academic Groups	Student Groups – Academic Groups
DESCRIPTION:	This group is for Informatics 271 students to discuss weekly tutorial content.	This group is for CTI 3rd year IT students to discuss various topics related to the following courses: E-Commerce; Information Systems Engineering; IT Project Management; and Project.	This group is for CTI 3rd year IT students to discuss various topics related to all of their courses.
PRIVACY TYPE:	Closed: Limited public content. Members can see all content.	Closed: Limited public content. Members can see all content.	Closed: Limited public content. Members can see all content.
NUMBER OF MEMBERS:	26	13	5

Table 4.53 Three Facebook academic groups

The researcher administered the groups without interfering with the students' interaction and discussions. The researcher answered some questions posted by students. The researcher explained the purpose of the environment and explained that it was for academic purposes (online group work and/or online discussions) and not specifically for social purposes.

A brief discussion of each group, based on the participation observed on Facebook, is provided below. Lecturer and student names are not mentioned in order to protect the identities of participating parties.

4.7.1 GROUP 1: INFORMATICS 271

The students involved in this course attended weekly tutorials in designated classrooms where they discussed the topic for the week and conducted extra exercises in the form of group work. For each week, the researcher created a new discussion topic related to the topic of the specific tutorial for that week. Students then had the opportunity to post messages under the topic on the discussion board and engage in group work and/or online discussions.

Little participation was noticed on the wall. Some general questions and comments were posted. A sample of the wall is presented in Figure 4.22 below:

Figure 4.22 INFORMATICS 271 sample wall screenshot

Figure 4.23 below is a screenshot of the discussion board displaying all topics. As can be seen in the figure below, there was a low level of participation. Where it shows “1 post”, it is linked to the researcher’s first post to introduce the topic. An indication of student participation is apparent where it shows any number more than 1 post. This applies to the remainder of Paragraph 4.7.

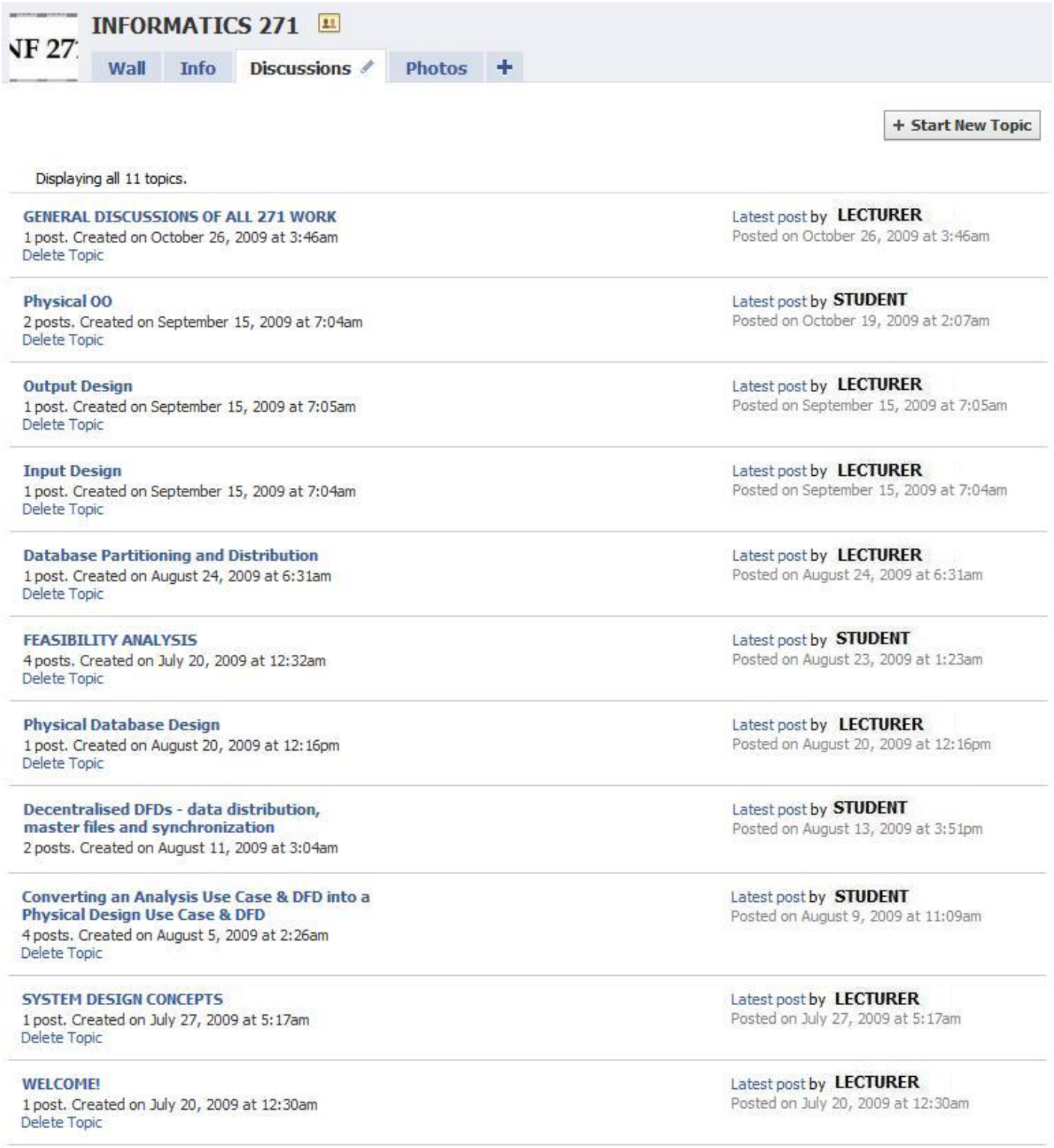


Figure 4.23 INFORMATICS 271 sample discussion board screenshot

4.7.2 GROUP 2: CTI 3rd year IT students – 2009

These students had the opportunity to discuss various topics on all their second semester courses. Little participation was noticed on the wall. Some questions were asked about assignments and the lecturer also posted a comment regarding examination preparation. A sample of the wall is presented in Figure 4.24 below:

Figure 4.24 CTI 3rd year IT students – 2009 sample wall screenshot

The researcher created topics on the discussion board for the corresponding lectures of each course. Figure 4.25 below is a screenshot of the discussion board displaying a sample of topics where participation was noted. Again, a low level of participation was apparent on the discussion board.

Figure 4.25 CTI 3rd year IT students – 2009 sample discussion board screenshot

The researcher noted that some students created their own discussion board topics (see the first two topics in Figure 4.25) and thus realised that the environment should rather not be controlled by the group administrator, but the control of the environment should rather be left to the students. The researcher thus applied this concept of "more freedom" in Group 3 and allowed the students to manage and take control of the discussion board and wall.

4.7.3 GROUP 3: CTI 3rd year IT students – 2010

These students had the opportunity to discuss various topics on all their courses. More control over the site was awarded to the students who participated in this group. The

researcher didn't create topics under the discussion board, but rather left the environment for the students to guide their own learning experience.

When compared to the other two groups, a much higher level of interaction and participation was noticed on the wall. Some general questions, comments and links were posted. A sample of the wall is presented in Figure 4.26 below:

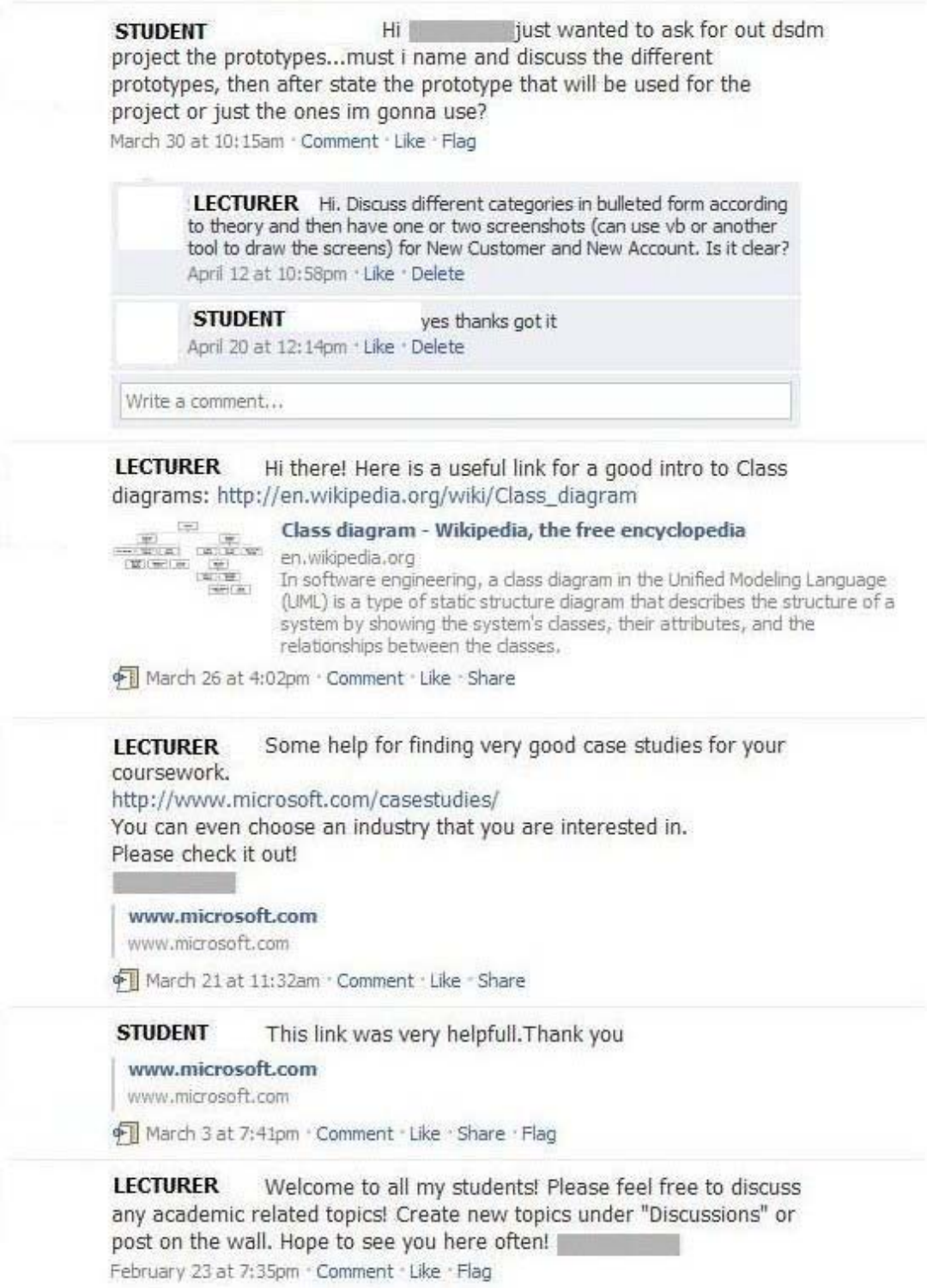


Figure 4.26 CTI 3rd year IT students – 2010 sample wall screenshot

Figure 4.27 below is a screenshot of the discussion board displaying the only topic posted by the lecturer. No student participation on the discussion board was apparent.

Figure 4.27 CTI 3rd year IT students – 2010 sample discussion board screenshot

It is clear that the level of participation was higher when the lecturer empowered the students to take control of the group page, specifically the wall. The last group consisted of only five students, but the traditional class was also small and consisted of only six students. It seems as though an increased level of participation was noted with a lower number of group participants.

4.8 Summary of findings

A summary of the findings based on the lecturer and student questionnaires, the lecturer interviews and the Facebook group administration follows below.

4.8.1 Interaction on Facebook

Regarding the interaction between lecturers and students on Facebook, the majority of lecturers from all five countries had no interaction with any students on Facebook, mostly because they did not want students to become involved in their personal lives. The highest level of social and academic interaction was found in the USA. Students had different preferences relating to their interaction with lecturers on Facebook. From a cultural perspective, it was interesting to note that mostly Black students and students from the private institution preferred academic interaction with lecturers on Facebook.

Having social interaction with students on Facebook can be dangerous for a lecturer's credibility and the level of respect earned from students. If students are able to view personal information about their lecturer, their view of the lecturer might become negative. Social interaction between lecturers and students on Facebook carry a high risk for the image and credibility of the lecturer. However, academic interaction

between lecturers and students on Facebook could be rewarding for both parties. Lecturers and students could invest more time in academic work. If a lecturer has time on hand to respond to students' questions and queries, Facebook can be a very helpful tool. This can also negatively affect a lecturer's workload, as lecturers do not always have time to respond to every student's question or query.

Having no interaction with students can have both advantages and disadvantages. An advantage is that lecturers have more time available for other teaching and research related tasks. A disadvantage is that there is less contact time between lecturers and students and between students. Students might possibly utilise their time on Facebook purely for socialising purposes and as a result less time will be spent on academic work.

4.8.2 The application of Facebook by lecturers

Regarding the application of Facebook as an academic tool, only a third of lecturers from all five countries have applied online social networks for its pedagogical potential before, with more application associated with the USA. Many reasons surfaced, like no need for its application and lecturers being satisfied with their current Learning Management Systems. Most students believed in Facebook's academic application. The majority of lecturers from all five countries also believed in Facebook's application as an academic tool but over half of them would not consider Facebook's application as part of their teaching strategy. The reasons mentioned were mostly that the current Learning Management Systems served their needs, and that the use of Facebook involved security and privacy issues. The younger the lecturers, the more Facebook would be considered as an academic tool. All the lecturers who would consider Facebook highlighted the familiarity of Facebook among students and their dissatisfaction with the current Learning Management System. The strongest consideration of Facebook as an academic tool came from the lecturers from South Africa while the lowest level of consideration was linked to lecturers in the UK.

4.8.3 Learning styles

Most students were aware of their preferred learning style and many students classified themselves under the Diverger learning style. From a cultural perspective, the White group was mostly associated with the Assimilator learning style while the

Black group highly favoured the Diverger learning style and did not associate with the Assimilator learning style at all. This highlighted a strong difference between the two ethnic groups in terms of learning style adoption. Only a few lecturers from the five countries were aware of Kolb's learning styles. Lecturers from South Africa were asked to choose the best teaching strategy (face-to-face, Facebook, both, or lectures) to fit a student with a particular learning style. Facebook was matched with the Accommodator and Converger learning styles. The majority of lecturers from all five countries were unsure whether students' learning styles changed in the offline and online environments. The majority of South African lecturers and students held the opinion that students adopted a different learning style in the face-to-face and Facebook environments.

4.8.4 Advantages and disadvantages of Facebook for group work and/or online discussions

The lecturers from all five countries contributed to an extensive list of advantages and disadvantages of group work and online discussions for students using Facebook. The popularity of Facebook, student familiarity with the tool, its ease of use and the opportunities for collaboration and interaction were highlighted as advantages. Facebook also aids in the development of various skills among students and the use of Facebook over mobile devices is a growing trend. Disadvantages such as the distractions on Facebook, privacy and security issues, the lack of non-verbal cues and the lack of technological skills and access among students emerged. From a student perspective advantages include that Facebook can be good for students who are shy in face-to-face environments, solutions or answers can be found quicker on Facebook and many viewpoints can be gathered. Disadvantages include a lack of internet access among some students, Facebook being impersonal and lacking non-verbal cues and the misinterpretation of questions posted by students.

4.8.5 Learning Management System (ClickUP)

South African lecturers highlighted positive and negative aspects regarding the adequacy of the University of Pretoria's Learning Management System, ClickUP. ClickUP links well with many academic tasks and also supports academic work very well, but concerns like downtime and limited functionalities were highlighted. Facebook has many applications, its popularity is growing and it has less technical

problems than ClickUP. However, Facebook is not regarded as a purely academic tool, but more for its socialising capabilities. Many lecturers believe in Facebook's application as a supplement tool to ClickUP and believe that this combination can work well. The majority of lecturers from all five countries and the majority of South African students felt that a blended teaching strategy, consisting of the face-to-face and Facebook environments, would be best suited for their courses.

4.8.6 Student experiences

The majority of students were aware of the academic benefits of Facebook but most of them did not often use Facebook for academic purposes. This high level of awareness is probably due to student self-exploration of Facebook or an awareness created by the lecturer. A possible reason for the low level of utilisation might be that students prefer to utilise Facebook for social rather than academic activities. The majority of students, who do prefer to complete their assignments individually, want to engage in group work and/or online discussions related to their courses with other students on Facebook because of improved and more convenient communication, the development of various skills and increased peer support. Thus, regardless of students' preferences for the completion of assignments, group work and/or online discussions are valued on Facebook. Some students do not wish to engage on Facebook for academic purposes, but rather for social purposes. The majority of students who participated in the academic groups, did not feel that Facebook enhanced their learning experience, and most of them felt that a face-to-face environment was best suited for knowledge sharing (especially male students) and a better understanding of the content. It should also be mentioned that the majority of students from the private institution as well as students from the Black ethnic group did experience enhanced learning. The Black group was also associated with a higher level of Facebook utilisation.

4.8.7 Academic group administration on Facebook

The academic group administration on Facebook showed that the participation levels were low for the INFORMATICS 271 and CTI 3rd year IT students – 2009 groups. An increased level of participation was noted for the CTI 3rd year IT students – 2010 group. It seems like more participation was linked to the private institution (CTI) than the public institution (University of Pretoria), especially when the student number was

small (as in the case of the third group). It was found that too much interference with the group's administration should be avoided and the responsibility and control (in terms of content management of the group page) should be left to the students. It was found that the lecturer should be present or else utilisation would be negatively affected. The researcher found that increased levels of utilisation and performance were linked to students from the private institution where no Learning Management System was in place, as well as for the Black ethnic group. Participation on the Facebook groups should not be compulsory for students, but lecturers should rather educate their students on the academic potential of Facebook.

4.9 Conclusion

The research findings were explained in detail in Chapter 4. These findings were related to a lecturer questionnaire; lecturer interviews; student questionnaire and a detailed explanation of the Facebook group administration performed by the researcher. The chapter concluded with a summary of the findings. Chapter 5 contains the conclusion of this study.

CHAPTER 5: Conclusion

The thesis concludes with Chapter 5, where the researcher answers the research questions, offers an evaluation of the conducted research by focusing on the research approach and the application of the theories, explains the research contribution, offers future research suggestions, and provides a final conclusion of the study.

5.1 Answering of research questions

The research questions will now be discussed by comparing the literature and the findings derived from the data collection.

5.1.1 What is group work?

The value of group work for university students enrolled for Information Systems courses is highlighted throughout the literature. It equips students with various skills that they will need when they enter the workplace. Group work is regarded as an important component of undergraduate studies and group work allows for extensive knowledge sharing and peer learning to take place while students are involved in group work activities (Paragraph 3.2).

5.1.2 What is the value of face-to-face group work?

As discussed in Paragraph 3.3, group work equips students with various required skills. Lecturers in higher education have become increasingly aware of the importance of group work skills for their students to be competent group work participants in their future careers in order to meet the demands of the employment market. Students also need exposure to group diversity and to interact with people from different cultural backgrounds. The value of face-to-face interaction was continuously highlighted by lecturers (Paragraphs 4.2.21 and 4.4). Any other tool is regarded as a supplement to face-to-face interaction and it is clear that face-to-face methods will not become obsolete. Students also emphasised the importance of face-to-face interaction for a better understanding of the content as well as improved opportunities for knowledge sharing (Paragraphs 4.5.22 and 4.5.23).

5.1.3 What is online social networking?

Online social networking has become increasingly popular over the past couple of years. Facebook, MySpace and Bebo are just some examples of online social networking sites. Online social networking is part of the set of Web 2.0 tools that offer users opportunities to create profiles and to interact with other members online. A network of connections can be created between people (Paragraph 3.4).

5.1.4 What is the value of group work and/or online discussions via online social networking?

Paragraph 3.5 highlights that students are already familiar with some online social networking sites and most utilise these sites on a daily basis. Online interaction enhances active learning and many students favour online tools like email, discussion boards, blogs and online social networking sites. Students enjoy active participation rather than just being passive receivers of information and they enjoy taking ownership of their learning. The free time students have between classes might as well be utilised for academic purposes and if online social networking sites can encourage this, it should be considered and not ignored.

The findings show that lecturers highlighted reasons why they would consider applying Facebook as an academic tool (Paragraph 4.2.14.1). These included opportunities for group work and interaction; students' familiarity and interest in Facebook; skills development and information sharing capabilities. It was also mentioned that some students were more enthusiastic about Facebook than Learning Management Systems. In Paragraph 4.5.13 it is said that the majority of students thought that Facebook could be applied as an academic tool and in Paragraph 4.5.15 reasons why students would consider using Facebook are mentioned. These include Facebook's ease of use; twenty-four seven access and other students' viewpoints. It was also said that Facebook was a good resource for additional information. The development of online communication skills and opportunities for information sharing were also mentioned.

5.1.5 What is Facebook?

This question is discussed in Paragraph 3.6. Facebook is an online social network that helps you connect and share with the people in your life. It was created in 2004 and as

of July 2010, Facebook had more than 400 million active users and more than 100 million active users accessing Facebook through their mobile devices. The popularity of Facebook is growing by the day, with an increasing number of applications being added for the benefit of the users.

5.1.6 What are the differences between face-to-face and online interaction?

Online campuses have evolved at a high rate and have been considered as an alternative to face-to-face education, even though face-to-face interaction is greatly valued. Online interaction lacks non-verbal cues and is sometimes seen as being impersonal, however the benefits of online interaction, related to ease of access (twenty-four seven) and geographical arrangements are also highlighted (Paragraph 3.7). The findings support this and show a strong preference among lecturers and students for face-to-face interaction (Paragraphs 4.2.21, 4.4, 4.5.22 and 4.5.23) as well as an acknowledgement of the value of online interaction (Paragraphs 4.2.14.1 and 4.5.15).

5.1.7 What are Kolb's learning styles?

Kolb describes four learning styles: The Accommodator, Diverger, Assimilator and Converger. This model is well-known and applied in a wide range of study fields (Paragraph 3.8). It is important for lecturers to understand various learning styles in order to adapt their teaching strategies to the needs of their students. The findings highlighted that the majority of lecturers were unaware of Kolb's learning styles and indicated how students could possibly adopt different learning styles in different situations (Paragraphs 4.2.16 and 4.2.17). The majority of students mentioned that they were aware of their preferred learning styles and most students chose the Diverger as their preferred learning style (Paragraphs 4.5.17 and 4.5.18).

5.1.8 What is lecturers' and students' awareness of the pedagogical potential of online social networking sites?

The literature (Paragraph 3.10.1) highlights that some lecturers are creating Facebook accounts to connect with their students. The literature further highlights that few lecturers are aware of Facebook's pedagogical potential. The findings show that the majority of lecturers felt that an online social network, such as Facebook, could be applied as an academic tool. Of those lecturers who did have Facebook accounts, the

majority were not actively participating in any academic groups on Facebook (Paragraphs 4.2.9 and 4.2.12).

According to the literature discussed in Paragraph 3.11.1, students create and share knowledge through online social networks and this can be used to their advantage. A limited amount of literature supports student awareness about the pedagogical potential of online social networking sites. From the findings it is clear that all student respondents had Facebook accounts and that some interacted with their lecturers on Facebook for social and academic purposes (Paragraphs 4.5.6 and 4.5.8). The findings further highlight that the majority of students were aware of online social networking sites, especially Facebook's academic potential, and felt that Facebook could be applied as a tool for academic learning (Paragraphs 4.5.9 and 4.5.13). Also, most students thought that a blended teaching strategy (face-to-face and Facebook) would be most suited to their studies (Paragraph 4.5.19).

5.1.9 How do lecturers consider and apply online social networking as part of their teaching strategy?

From the literature and findings it is clear that the majority of lecturers have not applied online social networking sites as academic tools before, but believe in its pedagogical application (Paragraphs 3.10.1 and 4.2.11).

5.1.10 How do lecturers consider using Facebook as a supplement to their teaching strategy?

The literature mentions that the majority of lecturers would not consider the application of Facebook, mostly because they already use other tools (Paragraph 3.10.1). The findings support this by showing that just over half of lecturers would also not consider the academic use of Facebook where students or students and lecturers can engage in group work or online discussions related to the course content (Paragraph 4.2.13).

5.1.11 What are the possible differences that are apparent in students' learning styles when interacting in an online social networking versus a face-to-face environment?

The literature (Paragraph 3.9) emphasises that there are differences in learning styles when comparing face-to-face and online students. It was said that Convergers and Assimilators favoured online learning more than the others and Convergers participated most on discussion boards. It is, however, still unclear whether there is a substantial difference between the lecturing environments and learning style preferences of students. The findings emphasise that most lecturers are not aware of Kolb's learning styles and are unaware of whether students' learning styles change when they do group work via an online social networking site such as Facebook, compared to the learning styles adopted in a face-to-face group work environment (Paragraph 4.2.17). Half of the students stated that they adopted a different learning style in a face-to-face environment than in the Facebook environment. Some students mentioned that they were unsure about possible changes in the adoption of learning styles (Paragraph 4.5.25). From a cultural perspective, the findings also show that the White group is mostly associated with the Assimilator learning style and the Black group with the Diverger learning style (Paragraph 4.6.10). This is somewhat contradictory as Assimilators (White group) enjoy online learning, but the Divergers (Black group) experience more enhanced learning from the utilisation of Facebook for academic purposes (Paragraph 4.6.11).

5.1.12 What are the advantages and disadvantages of students participating in face-to-face and online social networking group work/discussion environments from a lecturer and student perspective?

According to the literature, some advantages of face-to-face group work from a lecturer perspective are peer learning, development of skills related to group diversity, development of communication and conflict management, and simulation of the Information Systems work environment through group work. Disadvantages mentioned are, among others, time management and students being unavailable for contact sessions, students dominating the group sessions and "free-riding" or "social loafing". The literature further highlights advantages related to group work and/or online discussions via online social networking: the promotion of critical thinking, twenty-four seven access to resources and greater flexibility in geographical

arrangements and the ability to reach diverse audiences, to name a few. Some disadvantages are the absence of non-verbal cues, aggressive behaviour and technology being a distraction (Paragraph 3.10.2).

The findings continuously refer back to the value of face-to-face interaction. Many lecturers feel that online methods, such as Facebook, cannot replace face-to-face communications, nor can they provide the necessary skills needed by students when entering the workplace. For this reason, some regard Facebook as a possible supplementary tool and not a replacement for face-to-face methods. In the findings and from a lecturer perspective, an extensive list of advantages of group work and/or online discussions via Facebook emerged and these support the literature. The following themes are highlighted: the popularity of Facebook, student familiarity with the tool, its ease of use and the opportunities for collaboration and interaction. Facebook also aids in the development of various skills among students and the use of Facebook over mobile devices is a growing trend. An extensive list of disadvantages emerged with themes such as the distractions on Facebook, privacy and security issues, the lack of non-verbal cues and the lack of technological skills and access among students (Paragraph 4.2.18).

According to the literature, some advantages of face-to-face group work from a student perspective are better problem-solving opportunities, increased motivation and support of students, generation of innovative ideas and sharing different views and the improvement of the quality of learning. Disadvantages like “free-riding” or unequal contributions, the complex task of scheduling meeting times that suit all members, and differing values among students were mentioned. The literature further highlights advantages related to group work and/or online discussions via online social networking: students get to know their lecturers, they have more and easier access to information, display more confidence and are already familiar with sites like Facebook. Some disadvantages are that the online environment is impersonal and isolated, “flaming” (aggressive behaviour that can occur online), and students sometimes lack technological and other soft skills (Paragraph 3.11.2).

Regarding the advantages of group work and/or online discussions via Facebook from a student perspective, the findings mention twenty-four seven availability of Facebook

and the fact that shy students can also participate. In online environments students can freely ask questions, information sharing is catered for and many viewpoints are expressed. Disadvantages, like a lack of internet access, a lack of people skills development and the impersonal nature of Facebook as an online tool, emerged from the findings (Paragraph 4.5.24).

5.1.13 How should lecturers inform and educate students on the use of online social networking in an academic environment?

According to the literature, lecturers should become aware of and familiarise themselves with Web 2.0 technologies, especially online social networking sites and the pedagogical potential thereof. Lecturers and students should discuss the effects of online social networking sites in terms of its social and academic applications. It was mentioned that lecturers should be present in the online environment and adequate support services should be in place for the effective management of the online environment (Paragraph 3.10.3). The findings show that students, who participated in the academic groups on Facebook, have been informed and/or educated by their lecturer on the use of online social networking in an academic environment (Paragraph 4.5.10). The students were, however, not informed on such a deep level as the literature suggests.

5.1.14 How do students utilise online social networking for academic purposes?

The findings highlight that most students do not utilise Facebook for academic purposes (Paragraph 4.5.11), but that the vast majority of students want to engage in group work and/or online discussions related to their courses with other students on Facebook (Paragraph 4.5.14). Moderate differences were, however, noticed in utilisation levels when public and private institutions were compared with regard to the Facebook group administration. It was found that there might be a possible link between the existence of a Learning Management System and the utilisation of Facebook. Students from the private institution, where no Learning Management System was in place, showed an increased interest in the academic use of Facebook and increased utilisation levels were noticed – especially where the number of students was small and students were allowed to control and manage the content on the Facebook group page (Paragraph 4.7). From a cultural perspective, the Black group also showed a higher level of Facebook utilisation (Paragraph 4.6.8).

5.1.15 How do students feel about knowledge sharing and their understanding of the content when participating in face-to-face group work and group work via online social networking?

The literature mentions that students are aware of the value of face-to-face group work and that they share their own understanding of the content with other students. They also ask questions in the group in order to solve problems and make sense of their own understanding, thus increasing their knowledge. Students create and share knowledge in online social networks and experience higher-order thinking capabilities and higher-order processing of information when they reflect on their peers' contributions in online discussions (Paragraph 3.11.1). Both environments have different advantages for the way knowledge acquisition takes place and the understanding of content develops. However, the findings emphasise that most students mentioned that Facebook didn't enhance their learning experience (related to the Facebook group participation) and the majority of students emphasised the value of face-to-face interaction for knowledge sharing and a better understanding of the course content (Paragraphs 4.5.22 and 4.5.23). However, the majority of students from the private institution as well as students from the Black group said that Facebook did contribute to an enhancement of their learning experience (Paragraphs 4.6.11 and 4.6.16).

5.1.16 How do learning styles affect students' success in an online social networking environment?

The literature shows varying findings on learning styles in online environments. It seems like Convergers and Assimilators favour online learning more than the other styles and Convergers participate most on discussion boards. It is, however, unclear whether there is a substantial difference between the lecturing environments and learning style preferred by students (Paragraph 3.9). The findings show that the majority of students were aware of their preferred learning style. The students were given an opportunity to identify the learning style, based on Kolb's model, that best suited them (Paragraphs 4.5.17 and 4.5.18). The majority of students felt that they did adopt a different learning style in a face-to-face environment than in the Facebook environment. There was some uncertainty among students relating to the affect of learning styles on their success. However, some students explained that their adopted learning style assisted them in participating in an online or a face-to-face

environment. This could possibly be related to the non-awareness of learning style theory among students (Paragraphs 4.5.25 and 4.5.26).

5.1.17 Why is online social networking important for academic purposes?

According to the literature (Paragraph 3.5) online social networking is a phenomenon which cannot be ignored and students learn in different ways than most lecturers did in the past. Online social networking can support active learning and most students prefer online tools. Students use various Web 2.0 technologies for social and academic purposes. The development of various online skills can also be enhanced by students using online social networking sites and these skills are crucial for when they enter the workplace, as they will have to work in online (sometimes global) teams. Paragraph 3.6 emphasises the growth of online social networking over mobile devices. According to the findings, lecturers feel that most students are already users of Facebook, familiar with it and interested in it. Facebook also caters for peer learning and increased collaboration and can also be incorporated into assignments as students tend to be more motivated to use Facebook (Paragraph 4.2.18.1). Facebook can teach students technological skills (Paragraph 4.4.12). Most students wanted to engage in group work and/or online discussions related to their courses on Facebook, for reasons such as ease of use, the development of online communication skills and information sharing (Paragraphs 4.5.14 and 4.5.15).

5.2 Limitations of this study

A limitation related to the findings is that the student questionnaire was only distributed among students from South Africa and not from other countries like in the case of the lecturer questionnaire. It would have been valuable to capture the viewpoints of students from other countries as well.

Another limitation was the lecturer interviews which were only conducted with lecturers from the Department of Informatics at the University of Pretoria. It would have been extremely valuable to elaborate on some questions in the lecturer questionnaire if the viewpoints of the lecturers from the other countries could have been captured. Skype could have been applied to conduct global interviews. This was

not done due to a lack of information on the lecturers who completed the questionnaire as well as geographical restrictions.

Kolb's Learning Style Inventory (LSI) could have been applied for determining students' learning styles and this would have accrued more accurate results related to the learning styles adopted in both the face-to-face and Facebook environments. The application of the LSI would have provided a stronger foundation for studying different learning styles. This was not done due to geographical constraints. This is, however, included in the suggestions for future research.

5.3 Research evaluation

5.3.1 Research approach

The interpretivist approach worked well in this study as the researcher needed to understand the phenomenon of online social networking and its pedagogical potential from both lecturer and student perspectives. This was a great achievement as a high level of understanding was achieved.

The fact that the lecturer questionnaire was used to determine the views of lecturers from five countries added value to the study. It was valuable to compare the various findings to the different countries. It was also valuable to capture student perspectives from both public and private institutions. Valuable comparisons could be made and this yielded interesting results. The Facebook group administration offered great support and real-time evidence for the findings of student utilisation of Facebook as an academic tool, especially the different utilisation and performance levels associated with the public and private institutions.

5.3.2 Application of theory

The two theories chosen as part of the research methodology were the Task-Technology Fit (TTF) theory and the Social Software Performance Model as was discussed in Paragraph 2.3. The theories will now be discussed and applied to the study.

TASK-TECHNOLOGY FIT (TTF)

Goodhue & Thompson (1995) developed a combined model called the Technology-to-Performance Chain (TPC) which focuses both on task-technology fit and utilisation as described in Paragraph 2.3.1. Figure 5.1 below illustrates the TPC:

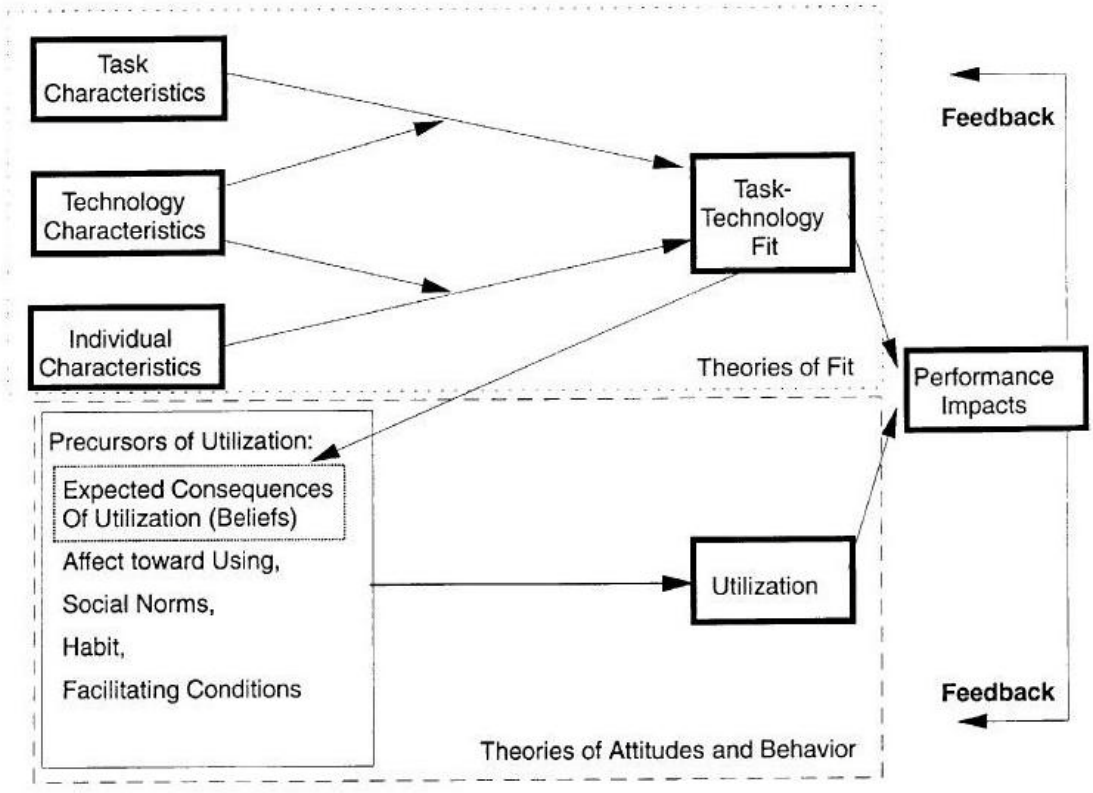


Figure 5.1 Technology-to-Performance Chain (TPC) (Goodhue & Thompson, 1995)

Each section of this diagram will now be discussed and applied to the study:

Task characteristics:

The researcher chose the task for the students and provided students with an opportunity to conduct group work and/or engage in online discussions on the wall and discussion board on the Facebook academic group page.

The following research questions support the task characteristics:

- What is group work (Paragraph 5.1.1)?
- What is the value of group work and/or online discussions via online social networking (Paragraph 5.1.4)?

Technology characteristics:

This can be related to the academic capabilities and functionalities of Facebook, where academic groups can be created. Students have access to a wall, discussion board and other functionalities such as uploading photos, videos, et cetera.

The following research questions support the technology characteristics:

- What is online social networking (Paragraph 5.1.3)?
- What is Facebook (Paragraph 5.1.5)?

Individual characteristics:

This can be related to the type of institution (public or private), the level of the students (first, second or third-year students), their cultural backgrounds and their preferred learning styles. Second-year students from a public institution and third-year students from a private institution were involved.

The following questions were asked as part of the student data collection in order to link the findings to the theory:

- Please choose your gender, age, ethnicity, degree or diploma course and preferences for the completion of assignments (Paragraphs 4.5.1; 4.5.2; 4.5.3; 4.5.4; 4.5.5).
- Are you aware of your preferred learning style (Paragraph 4.5.17)?
- If you are aware of your preferred learning style, please choose your preferred learning style (Paragraph 4.5.18).

The following research question supports the individual characteristics:

- What are Kolb's learning styles (Paragraph 5.1.7)?

Task-Technology Fit:

It is important for lecturers to be aware of how specific technologies fit the tasks that students perform during their studies. The TTF theory links with the decision on whether to apply Facebook as an academic tool. If the task and individual characteristics fit the technology, the chances for higher utilisation levels and increased performance improve. Lecturers can ask whether the functionalities of Facebook support the academic task. Students' social requirements can also be taken

into account, for example, most students are familiar with Facebook and they enjoy using the tool. If lecturers want to create an academic group on Facebook for their students to interact with their peers on academic work, the technology (Facebook) can work well for the task. However, lecturers will need to first determine the task to decide whether Facebook's academic groups will fit the task. Lecturers will also need to determine whether they are competent in the use of and understand Facebook's academic application, before taking it into consideration.

The following research question supports Task-Technology Fit:

- Why is online social networking important for academic purposes (Paragraph 5.1.17)?

Precursors of utilisation:

Based on their current knowledge and experience, lecturers should decide whether they want to include Facebook in their teaching strategy and whether they feel comfortable in doing so. If lecturers do not believe in or consider Facebook, it will not be utilised. Whether lecturers do or don't have Facebook accounts, is also a precursor for the academic utilisation of Facebook.

The following questions were asked as part of the lecturer data collection in order to link the findings to the theory:

- Do you have a Facebook account (Paragraph 4.2.6)?
- For which purposes do you interact with students on Facebook (Paragraph 4.2.8)?
- Do you think that an online social networking site, such as Facebook, can be applied as a tool for academic learning as part of your teaching strategy (Paragraph 4.2.12)?
- Would you consider using Facebook as an academic tool where students or students and lecturers can engage in group work or online discussions related to the course content (Paragraph 4.2.13)?
- Provide reasons why you would or wouldn't use Facebook as an academic tool (Paragraphs 4.2.14; 4.2.15).
- What are the advantages and disadvantages of students engaging in group work via Facebook (Paragraphs 4.2.18; 4.2.19)?

If lecturers are not satisfied with their current Learning Management System, they might be more inclined to consider Facebook as a supplement than lecturers who are satisfied with the Learning Management System. Some lecturers highlighted negative aspects about ClickUP (the Learning Management System of the University of Pretoria) and others highlighted positive aspects. The following question was thus important to include:

- Do you find the University's LMS, ClickUP, to be adequate for your work requirements (Paragraph 4.4.11)?

Students' social norms, their cultural backgrounds, their awareness of the academic application of online social networking sites and their habits regarding the use of, attitudes towards and beliefs in the academic application of Facebook are some precursors of whether students will use Facebook for academic purposes. The type of learning style preferred by students is also an indicator of whether students will use an online environment for group work and/or discussions. Past application of an online social networking site for academic purposes will also predict future use of these sites. Utilisation might also depend on whether lecturers have made their students aware of the academic potential of online social networking sites. Finally, having a Facebook account is also a precursor for the academic use of Facebook.

The following questions were asked as part of the student data collection in order to link the findings to the theory:

- Do you have a Facebook account (Paragraph 4.5.6)?
- For which purposes do you interact with lecturers on Facebook (Paragraph 4.5.8)?
- Are you aware of the potential academic benefits of online social networking (e.g. Facebook) for group work and online discussions (Paragraph 4.5.9)?
- Has any lecturer informed and/or educated you on the use of online social networking in an academic environment (Paragraph 4.5.10)?
- Have you ever participated in group work and/or online discussions on any online social networking site (Paragraph 4.5.12)?
- Do you think that Facebook can be applied as a tool for academic learning (Paragraph 4.5.13)?

- Do you want to engage in group work and/or online discussions related to your courses with other students on Facebook (Paragraph 4.5.14)?
- Provide reasons why you would or wouldn't engage in group work and/or online discussions related to your courses with other students on Facebook (Paragraphs 4.5.15; 4.5.16)?
- Are you aware of your preferred learning style (Paragraph 4.5.17)?
- If you are aware of your preferred learning style, please choose you preferred learning style (Paragraph 4.5.18).
- What are the advantages and disadvantages of participating in group work and online discussions on Facebook (Paragraph 4.5.24)?
- Do you think you adopt a different learning style in a face-to-face environment than in the Facebook environment (Paragraph 4.5.25)?
- How does your learning style affect your success in the Facebook environment (Paragraph 4.5.26)?

The following research questions support the precursors of utilisation:

- What is lecturers' and students' awareness of the pedagogical potential of online social networking sites (Paragraph 5.1.8)?
- How do lecturers consider using Facebook as a supplement to their teaching strategy (Paragraph 5.1.10)?
- What are the possible differences that are apparent in students' learning styles when interacting in an online social networking versus a face-to-face environment (Paragraph 5.1.11)?
- What are the advantages and disadvantages of students participating in face-to-face and online social networking group work/discussion environments from a lecturer and student perspective (Paragraph 5.1.12)?
- How should lecturers inform and educate students on the use of online social networking in an academic environment (Paragraph 5.1.13)?
- How do learning styles affect students' success in an online social networking environment (Paragraph 5.1.16)?

Utilisation:

To test the level of utilisation by lecturers, the following question was asked as part of the lecturer data collection in order to link the findings to the theory:

- Have you ever applied any online social networking site as a tool for academic learning as part of your teaching strategy (Paragraph 4.2.11)?

The following question was asked as part of the student data collection in order to link the findings to the theory:

- Do you often make use of Facebook for academic purposes (Paragraph 4.5.11)?

The researcher also administered three academic groups on Facebook. From a cultural perspective, an increased level of utilisation was linked to students from the private institution, to groups of students with smaller numbers and to the Black ethnic group. The online presence of the lecturer as well as empowerment of students to take control of the Facebook page, also contributed to an increased level of utilisation.

The following research questions support utilisation:

- How do lecturers consider and apply online social networking as part of their teaching strategy (Paragraph 5.1.9)?
- How do students utilise online social networking for academic purposes (Paragraph 5.1.14)?

Performance:

In order to determine the level of performance, the following questions were posed to students:

- Did participating in the group work and/or online discussions on Facebook enhance your learning experience (Paragraph 4.5.21)?
- Which environment creates better opportunities for knowledge sharing (face-to-face, Facebook or both) (Paragraph 4.5.22)?
- In which environment do you understand the course content better after group work or discussions (face-to-face, Facebook or both) (Paragraph 4.5.23)?

The Facebook group administration also assisted in identifying performance levels. From a cultural perspective, an increased level of performance was linked to students from the private institution with a small number of students as well as the Black ethnic group.

The following research question supports performance:

- How do students feel about knowledge sharing and their understanding of the content when participating in face-to-face group work and group work via online social networking (Paragraph 5.1.15)?

Feedback:

Students should be involved in the academic development of Facebook. The chances are higher that Facebook will fit the tasks if their inputs can be captured by lecturers and passed on to Facebook designers or via a direct feedback loop between students and designers. Users seem capable of evaluating the TTF of technologies, which is important for continuous systems development and improvements. In this study the researcher did not capture student feedback regarding Facebook's academic groups, however, this is included as a suggestion for future research.

General discussion:

Regarding the elements for the dimensions of Group Support Systems (GSS) technology as discussed in Paragraph 2.3.1, Facebook can be linked to communication support because some of the components are offered by Facebook, such as simultaneous input (e.g. more than one student posting a message on the wall); group display (e.g. the academic group display with different group pages); asynchronous characteristics (e.g. the lecturer can reply to a student's question that was posted the day before or the lecturer and student can be geographically separated).

In Paragraph 2.3.1 it was said that the type of task and the characteristics of a GSS technology should fit in such a way that the performance of the group is enhanced. Different types of tasks were explained, but it can be said that mostly simple tasks will be performed on an academic level on Facebook. Facebook has a high level of communication support and if students carry out simple tasks, Facebook would satisfy their task needs, e.g. for group work and/or online discussions. Group performance can also be enhanced if task complexity is managed by the lecturer.

It was also mentioned that the integration of tools could work well. Lecturers could, for example, place a link to a Facebook academic group page on the Learning

Management System. If students then visit the main page of a course via the Learning Management System, they will have easy access to the corresponding Facebook page for that course.

To conclude the discussion on TTF: if there is a good fit between group work and/or online discussions, Facebook's academic groups and student characteristics (taking the precursors of utilisation into account), there will be an impact on student performance. The level of utilisation will have an impact on performance regarding whether students experience enhanced learning by participating in the academic groups on Facebook. The integration of different online tools is important for the future. Tools that are flexible, available and which can be integrated will assist in finding a good fit between task and technology.

SOCIAL SOFTWARE PERFORMANCE MODEL

Dwyer *et al.* (2008) developed this model to make more accurate predictions regarding the structure and the use of online social networking sites. The Social Software Performance Model integrates three theories specifically for online social networking sites where the Fit Appropriation Model is based on TTF and extended to include a feedback loop which connects performance to the design processes.

The first theory included is the **TTF** theory. The level of satisfaction regarding the use of Facebook and the extent to which the task was carried out efficiently, relates to the performance of students. TTF was discussed in detail in Paragraphs 2.3.1 and 5.3.2.

The second theory included is the **Fit Appropriation Model**, which is regarded as an extension of TTF and used for its appropriation support. "Faithful appropriation" would indicate that students use Facebook for social, academic and other purposes, as intended by the designers of Facebook.

There are three ways in which to achieve appropriation support. The first is the importance of the lecturer's presence and support on the Facebook academic group, related to facilitation. The literature and Facebook group administration supported this as it was highlighted that a lecturer's presence on the Facebook academic group is very important in terms of student utilisation and performance.

Secondly, in terms of software restrictiveness, Facebook is limited, as many features cannot be blocked out while students work on academic groups. For example, a student might be busy posting an academic message on the discussion board or wall but can easily be distracted by the Chat application on Facebook and move his/her attention towards social interaction. The researcher asked students:

- For which purposes do you interact with lecturers on Facebook (Paragraph 4.5.8)?

Thirdly, regarding appropriation training, lecturers are responsible to educate their students on the appropriate use of online social networking sites, the academic potential of these sites as well as the importance of gaining various online skills. Students are also responsible to explore the functionalities of online social networking sites. Regarding appropriation training, the following question, related to the student perspective, is relevant:

- Has any lecturer informed and/or educated you on the use of online social networking in an academic environment (Paragraph 4.5.10)?

The following research question supports appropriation training:

- How should lecturers inform and educate students on the use of online social networking in an academic environment (Paragraph 5.1.13)?

Because of the importance of a feedback loop for improved design processes the third theory included is the **Socio-technical Systems theory**. Facebook's artefacts and components (applications, interface design, etc) undergo continuous improvements. This can be related to the importance of capturing students' feedback regarding their experiences with the academic application of Facebook in order for the lecturer to reconsider or restructure the task or to choose other tools if more applicable. The designers of Facebook welcome user feedback for ongoing evolution of the site. If students and/or lecturers could provide more feedback related to the academic use of Facebook to the designers, the academic functionalities of Facebook can be improved for an even better fit between Facebook and academic related tasks. This, however, will solely depend on the users and their willingness to contribute to the feedback cycle for improved design processes. The feedback cycle is critical in the support of effective evolution of any system. The feedback loop (dotted line) can be seen in Figure 5.2 below:

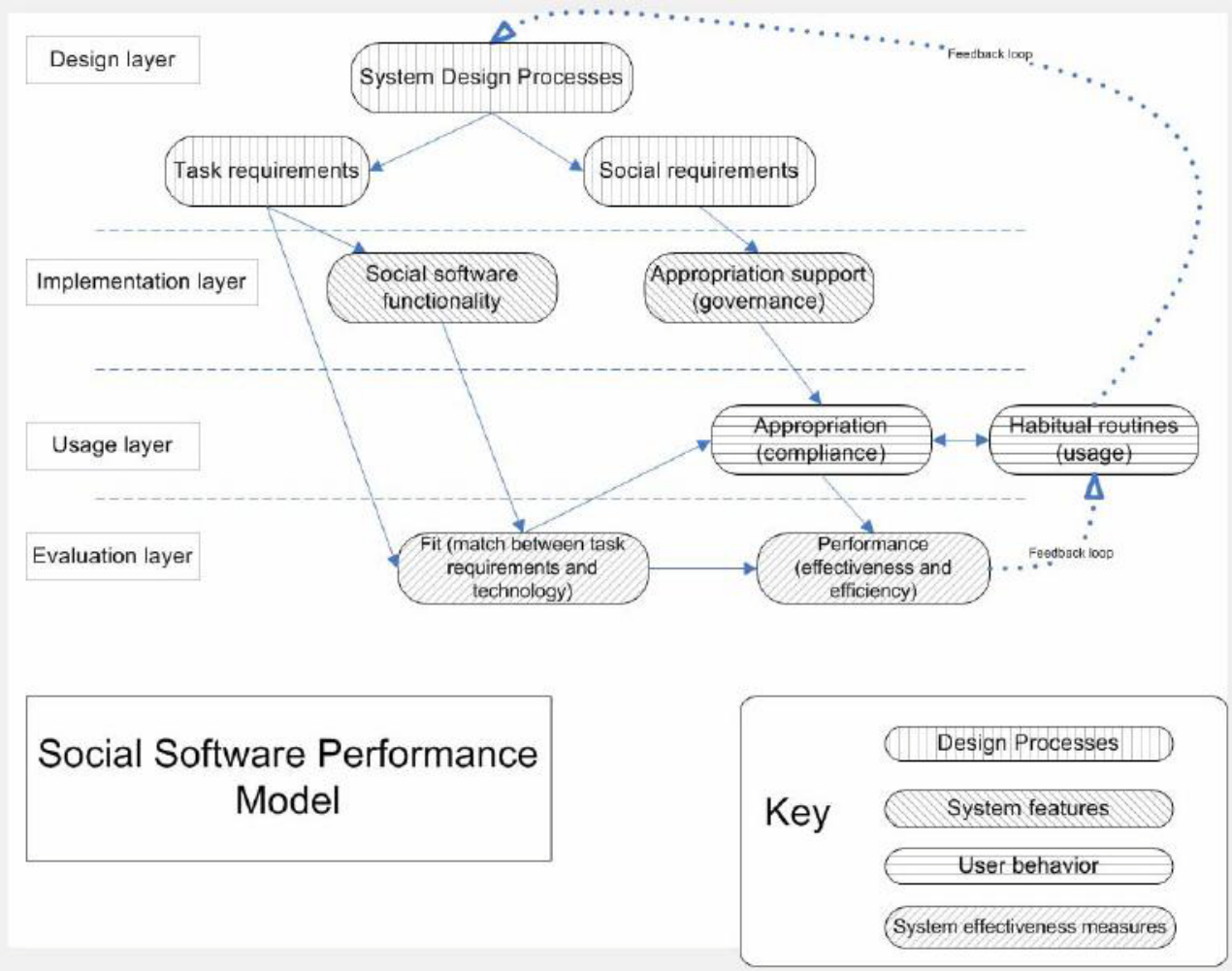


Figure 5.2 The Social Software Performance Model (Dwyer, Hiltz & Widmeyer, 2008)

Each layer of this diagram will now be discussed and applied to the study:

Design layer:

The technical functionalities of Facebook must be in place in order to support students' social requirements, which can include privacy and ethical behaviour. For example, Facebook users are able to report any unwanted behaviour, can block out other users and can change their security and privacy settings to suit their needs. Facebook academic groups cater for communication between group members. The task requirements are creating an online identity or Facebook profile, building relationships with other students on a social and/or academic level and maintaining those relationships. The lecturer should decide whether or not an academic group should be discontinued after completion of a course.

Implementation layer:

The social software functionalities can include the way in which students present themselves online via their profiles and the Facebook academic group application with its capabilities for communication and interaction between users. Appropriation support can be conducted through the functionalities of Facebook that support social and academic interaction. For example, as the design of certain functionalities is in place (as was discussed in the previous paragraph), Facebook users can customise their pages and privacy and security settings, and they can report unwanted actions.

Usage layer:

Through the administration of three academic groups on Facebook, the researcher determined utilisation levels. The utilisation of Facebook was more linked to students from the private institution (which had a small number of students) as well as to the Black ethnic group. Increased utilisation was also linked to the presence of the lecturer on the group page and the empowerment of students to take control of the discussion board and the wall. Please refer to the discussion of utilisation in Paragraph 5.3.2 under TTF.

Evaluation layer:

Facebook was seen as an effective supplement for students from the private institution and from the Black ethnic group. To evaluate whether Facebook's academic functionalities fitted the task of group work and/or online discussions, the researcher asked students the following questions:

- Do you think that Facebook can be applied as a tool for academic learning (Paragraph 4.5.13)?
- Which teaching strategy would be most suited for your course, related to group work and discussions (face-to-face, Facebook or both) (Paragraph 4.5.19)?

The majority of students believed in Facebook's academic application and most students chose both face-to-face and Facebook as a suitable teaching strategy.

Regarding performance, please refer to the discussion of performance in Paragraph 5.3.2 under TTF.

Feedback loop:

As mentioned in Paragraph 5.3.2 under TTF, the feedback loop is critical in the support of the continuous and effective evolution of a system. Facebook can be more effective as an academic tool, if student/lecturer feedback can be provided to the designers. Student input can be improved at Facebook's design processes. For example, users have resisted changes to the layout and design of Facebook's interface and acted upon it, e.g. creating Facebook groups that protested against the changes. This shows just how quickly Facebook users can become dissatisfied and trigger changes related to the functionalities of a system. Facebook is undergoing continuous enhancements based on global user feedback. The system is expanding and its complexity will grow over time.

THE RESEARCHER'S MODEL

Based on the TTF and Social Software Performance Model theories, with a strong focus on TTF, the researcher created a model describing the academic application of Facebook for Information Systems students. Some important findings are also added to the model depicted in Figure 5.3 below:

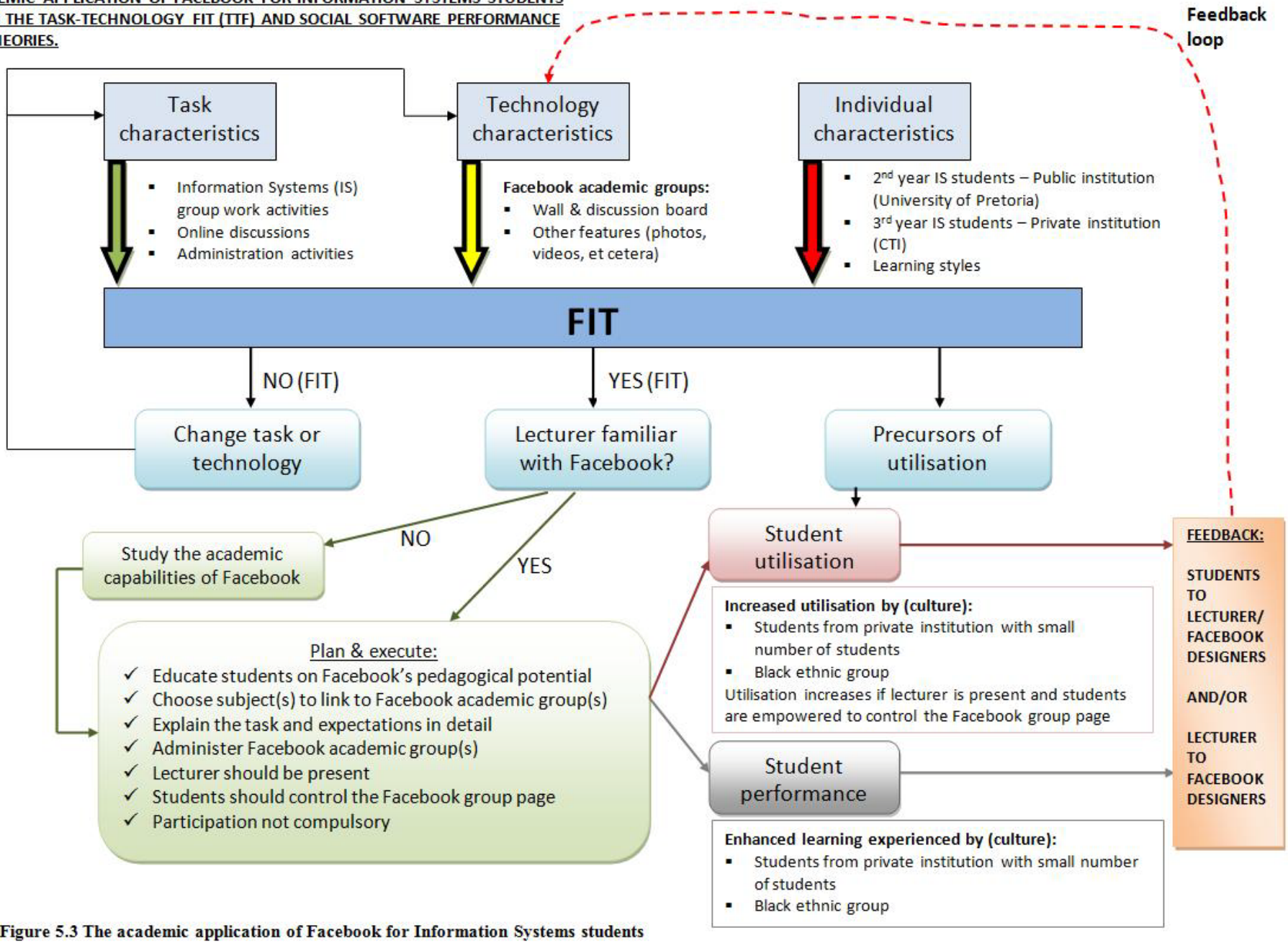


Figure 5.3 The academic application of Facebook for Information Systems students

This model describes the fit between task, technology and individual characteristics with the condition, should there be no fit. If the fit is not in place, the lecturer should either change the technology or the task. If the fit is in place, the lecturer should first focus on his/her knowledge and experience with Facebook as an academic tool. If the lecturer's knowledge and experience is not at an adequate level, the lecturer should take appropriate action by studying Facebook's academic capabilities. If his/her knowledge and experience is at an acceptable level, the lecturer should start the planning and execution phase. The precursors of utilisation should also be studied and taken into account. Utilisation and performance, together with the appropriate findings, as well as the important feedback loop (dotted line) which flows back into the technology characteristics, focusing on the design processes of Facebook's academic functionalities, are described.

5.4 Research contribution

In this research both the lecturer and student perspectives were explored, which resulted in valuable findings. This included the past academic application and the future consideration of online social networking sites by lecturers from five countries as well as the level of student awareness about the pedagogical potential of online social networking sites.

The researcher anticipates that the findings will provide practical guidelines for lecturers on:

- how they can possibly utilise online social network sites such as Facebook to complement their teaching strategies related to group work and/or online discussions;
- how they can benefit from becoming aware of learning styles and the possible differences in students' adoption of different learning styles in face-to-face and online environments; and
- how they can develop an increased awareness of the pedagogical potential of online social networking sites such as Facebook among students.

The researcher anticipates that the findings will provide practical guidelines for students on:

- how they can utilise online social networking sites such as Facebook to enhance their learning experience related to group work and online discussions; and
- how they can benefit from becoming aware of their preferred learning style(s) and the possible differences in the adoption of learning styles in face-to-face and online environments.

The administration of the three academic Facebook groups over two years offered valuable contributions, including the empowerment of students to take control of the group page and the content. The lecturer should not be in control of the way students participate on the group page but should allow the students to post messages on the wall or discussion board. It can also be added that the lecturer should be present online. The literature and findings support this statement (Paragraphs 3.10.3 and 4.8.7). The lecturer's presence will have an effect on the level of utilisation by students. Students tend to utilise the academic group more if the lecturer is present.

The researcher contributed regarding the identification of a possible link between the existence of a Learning Management System and the utilisation level of Facebook. It seems as though an increased level of utilisation and an experience of enhanced learning can be linked to students from the private institution where there is no Learning Management System in place. However, the researcher wishes not to generalise on this finding and as a result, this area is included in the suggestions for future research.

With regard to cultural differences, it was found that the levels of utilisation of Facebook and students' performance were influenced by cultural differences. The Black ethnic group, as well as students from the private institution, where no Learning Management System was in place and where the number of students was smaller than at the public institution, showed increased levels of utilisation and performance (enhanced learning experiences).

The researcher was able to apply the TTF and Social Software Performance Model theories to this study to support the findings. TTF offered a strong foundation for the findings and the Social Software Performance Model by Dwyer *et al.* (2008) could also be confirmed, especially in terms of the feedback loop to enhance Facebook's academic functionalities.

The researcher contributed to the academic application of Facebook for Information Systems students with the creation of a model based on the TTF and Social Software Performance Model theories, with a strong focus on TTF, and the application of some important findings.

5.5 Future research

It will be interesting to conduct global research on the viewpoints of Information Systems students with regard to online social networking sites and the application thereof as an academic tool. A focus on the academic use of Facebook via mobile devices will also be an interesting topic.

The ways in which student feedback regarding the academic groups on Facebook can be captured, should also be explored. The feedback loop and the effectiveness thereof should be studied in order for the designers of Facebook to possibly enhance the academic functionalities of Facebook.

An in-depth study of Kolb's learning styles, especially the adoption of learning styles by Information Systems students in both face-to-face and online environments, (specifically online social networking sites like Facebook), will contribute to this research. It would be valuable to incorporate Kolb's Learning Style Inventory (LSI) to determine the learning styles for respondents more accurately.

A further avenue worth exploring is cultural differences in the academic application of Facebook related to utilisation and performance levels. It would also be valuable to explore the possible link between the existence of a Learning Management System in an academic institution, the utilisation of Facebook and the performance levels of Information Systems students.

Another topic worth exploring is the availability of too many channels and the effect this has on the learning process of Information Systems students. These channels refer to all Web 2.0 technologies, Learning Management Systems and mobile applications and the consideration of these tools for academic application.

Finally, it would be interesting to test the researcher's model in practice, specifically in an academic environment where online social networks are applied for its pedagogical capabilities. It would be valuable to determine whether generalisation is possible by applying this model in any educational environment for various study fields.

5.6 Conclusion

Group work is very important for Information Systems students as it equips them with various skills needed by them when they enter the workplace. Face-to-face group work and discussions are very valuable for students during their studies. Various Web 2.0 technologies are being considered for the pedagogical potential thereof and the researcher focused on online social networking sites, specifically on Facebook, for the purpose of students conducting group work and/or online discussions. Students will benefit if they are able to use online social networking sites effectively as these are applied in the workplace. Online social networking is not regarded as detrimental technology, but rather as enablers of social interaction with the possibilities for effective work collaboration and knowledge sharing. The awareness and consideration of online social networking sites for academic purposes by lecturers can aid in the development of competent students who are knowledgeable and able to collaborate virtually in the workplace. New and improved teaching techniques are important in the ever changing Information Systems field because of the rapid growth of newly emerging methods for improved teaching strategies.

The aim of the researcher was to determine whether Information Systems lecturers and students were aware of and applied Facebook for academic purposes. Both the perspectives of lecturers and students were captured in order to understand their viewpoints related to the academic application of Facebook. The researcher also

aimed at determining whether lecturers and students were aware of the possible changes in learning styles adopted in the face-to-face and Facebook environments.

The researcher found that most lecturers and students were aware of Facebook's pedagogical potential. The consideration and application of Facebook as an academic tool by lecturers and students were limited. A limited awareness among lecturers and students regarding the possible changes in learning styles in face-to-face and Facebook environments was evident. From a cultural perspective, it was found that students from a private institution, where no Learning Management System was implemented, as well as students from the Black ethnic group, showed increased levels of utilisation and performance, in terms of enhanced learning experienced, on the academic groups on Facebook.

Numerous online channels, of which lecturers should be aware, are available to students. Students in South Africa extensively use MixIT (an instant messaging program that can be downloaded by individuals and used via their mobile devices), online social networking sites like Facebook and YouTube, other Web 2.0 technologies such as blogs, wikis and podcasts, Short Messaging System (SMS), email messaging and Learning Management Systems. The academic application of Facebook, especially through the use of mobile devices, will remain a growing trend as long as students utilise a site such as Facebook. All these channels can easily overwhelm students and cause them to change channels, should their needs not be met. Lecturers are responsible for deciding which tools should be included in their teaching strategies. These channels should not be ignored by Information Systems lecturers.

If educators decide to apply Facebook as an academic tool, they need to be aware of the many factors to be considered prior to including Facebook in their teaching strategy. A proper understanding of Facebook and how the tool works will be necessary before incorporating it into one's teaching strategy. For example, the compulsory use of Facebook cannot be enforced as some students will not have internet access away from campus. Lecturers will also have to educate students on the use of Facebook and make them aware of the potential benefits it holds for the learning process.

The TTF and Social Software Performance Model theories were discussed in Paragraph 2.3 and confirmed and applied to this study in Paragraph 5.3.2. The researcher developed a model for the academic application of Facebook for Information Systems students in Paragraph 5.3.2.

In conclusion, it is crucial for lecturers from all over the world to become increasingly aware of the ongoing important role of online social networking in the lives of students, and of the pedagogical potential of these sites, especially Facebook. By using Facebook, students can benefit on an educational level. Lecturers should explore the pedagogical functionalities of online social networking sites. Furthermore it is important for them to find a good fit between designed tasks and educational technologies to enhance students' learning experiences.

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Appendix A: Facebook questionnaire – Lecturer

Facebook questionnaire – Lecturer

Please answer all of the questions honestly.

*1) Gender:

- ☐ Female
- ☐ Male

---

*2) Age:

- ☐ 21-30
- ☐ 31-40
- ☐ 41-50
- ☐ 51-60
- ☐ 61-70

---

*3) Ethnicity:

- ☐ White
- ☐ Black
- ☐ Coloured
- ☐ Asian
- ☐ Indian
- ☐ Other

---

*4) Country (where you work):

- ☐ SA
- ☐ USA
- ☐ Canada
- ☐ UK
- ☐ AU

☐ Other (Please Specify):

---

*5) I am a lecturer in:

☐ Informatics / Information Systems

☐ Computer science

☐ Other (Please Specify):

---

*6) I have a Facebook account.

☐ Yes

☐ No

---

7) If you answered "No" to Question 6, please choose the most appropriate reason why you do not have a Facebook account.

☐ I am a member of another social networking site

☐ I am too busy with other tasks

☐ I do not like Facebook

☐ Facebook is a waste of time

☐ Other (Please Specify):

---

8) If you answered "Yes" to Question 6, please answer the following: For which purposes do you interact with students on Facebook?

☐ Social

☐ Academic

☐ Social & Academic

☐ No interaction with any students

---

*9) Are you actively participating in any academic groups on Facebook, related to your work (teaching) or research interests?

☐ Yes

☐ No

10) If you answered "Yes" to Question 9, please choose which type of groups you are actively participating in:

- ☐ Research related
- ☐ Teaching related
- ☐ Research & teaching related

*11) Have you ever applied any online social networking site as a tool for academic learning as part of your teaching strategy?

- ☐ Yes
- ☐ No

*12) Do you think that an online social networking site, such as Facebook, can be applied as a tool for academic learning as part of your teaching strategy?

- ☐ Yes
- ☐ No

*13) Would you consider using Facebook as an academic tool where students or students and lecturers can engage in group work or online discussions related to the course content?

- ☐ Yes
- ☐ No

14) If you answered "Yes" to Question 13, please provide a reason why you would use it.

15) If you answered "No" to Question 13, please provide a reason why you would not use it.

*16) Are you familiar with the different learning styles of Kolb?

- ☐ Yes
- ☐ No

---

*17) Do you think students' learning styles change when they do group work via a social network site such as Facebook, if compared to their learning styles adopted in a face-to-face group work environment?

- ☐ Yes
- ☐ No
- ☐ I'm not sure

---

*18) What are the possible advantages of students engaging in group work via Facebook?

---

*19) What are the possible disadvantages of students engaging in group work via Facebook?

---

*20) Which teaching strategy (aside from normal lectures) would be most suited for your course, related to group work for students?

- ☐ Only face-to-face (tutorials)
- ☐ Only Facebook (academic group)
- ☐ Both face-to-face & Facebook (blended teaching strategy)

---

21) Additional comments:

Finish Survey

Appendix B: Facebook interview – Lecturer

Facebook interview - Lecturer

This interview is semi-structured.

1. Please elaborate on your reason(s) for not having a Facebook account.
2. If you have a Facebook account, explain why you don't want any interaction with students on Facebook.
3. Why haven't you ever applied any online social networking site as a tool for academic learning as part of your teaching strategy before?
4. If you have applied any online social networking site as a tool for academic learning as part of your teaching strategy before, what did it entail?
5. Why would you consider using Facebook as an academic tool where students or students and lecturers can engage in group work or online discussions related to the course content?
6. Why wouldn't you consider using Facebook as an academic tool where students or students and lecturers can engage in group work or online discussions related to the course content?
7. Choose the best teaching strategy (Face-to-face or Facebook or both, or Lectures) to fit a student with a particular learning style.
8. Do you think students can adopt different learning styles when they do group work via a social network site such as Facebook, if compared to a face-to-face group work environment?
9. Why is Facebook by itself not adequate enough as a teaching strategy (aside from normal lectures) for your course?
10. Do you find the University's LMS, ClickUP, to be adequate for your work requirements?
11. Additional comments.

Appendix C: Facebook questionnaire – Student

Facebook questionnaire - Student

Please complete this survey only once.
Please answer all of the questions honestly.
Choose only ONE option for each question.

*1) Gender:

- ☐ Female
- ☐ Male

---

*2) Age:

- ☐ 18-24
- ☐ 25-31
- ☐ > 31

---

*3) Ethnicity:

- ☐ White
- ☐ Black
- ☐ Coloured
- ☐ Asian
- ☐ Indian
- ☐ Other

---

*4) Degree or diploma course:

- ☐ BCom Informatics
- ☐ BSC(Hons) Information Technology
- ☐ Other (Please Specify):

---

*5) I prefer to complete assignments:

- ☐ Individually
- ☐ In a group

---

*6) I have a Facebook account.

- ☐ Yes
- ☐ No

---

7) If you answered "No" to Question 6, please choose the most appropriate reason why you do not have a Facebook account.

- ☐ I am a member of another social networking site
- ☐ I am too busy with other tasks
- ☐ I do not like Facebook
- ☐ Facebook is a waste of time
- ☐ Other (Please Specify):

---

8) If you answered "Yes" to Question 6, please answer Question 8. For which purposes do you interact with lecturers on Facebook?

- ☐ Social
- ☐ Academic
- ☐ Social & Academic
- ☐ No interaction with any lecturers

---

*9) Are you aware of the potential academic benefits of online social networking (e.g. Facebook) for group work and online discussions?

- ☐ Yes
- ☐ No

---

*10) Has any lecturer informed and/or educated you on the use of online social networking in an academic environment?

- ☐ Yes
- ☐ No

---

*11) I often make use of Facebook for academic purposes.

- ☐ Strongly Agree
- ☐ Agree
- ☐ Disagree
- ☐ Strongly Disagree
- ☐ I'm not sure

---

*12) Have you ever participated in group work and/or online discussions on any online social networking site?

- ☐ Yes
- ☐ No

---

*13) Do you think that Facebook can be applied as a tool for academic learning?

- ☐ Yes
- ☐ No

---

*14) I want to engage in group work and/or online discussions related to my courses with other students on Facebook.

- ☐ Yes
- ☐ No

---

15) If you answered "Yes" to Question 14, please provide a reason why you would use it.

---

16) If you answered "No" to Question 14, please provide a reason why you would not use it.

---

*17) I am aware of my preferred learning style.

- ☐ Yes

☐ No

---

18) If you answered "Yes" to Question 17, please choose your preferred learning style:

☐ Accommodator (I am a leader; I go with my intuition; I prefer active experimentation and group work, not lectures; I rely heavily on other people for information; I carry out plans and experiments; I'm a risk-taker)

☐ Diverger (I can adopt many points of view; I have a good imagination and I'm emotional; I'm sensitive to other people's emotions; I'm a good listener; I'm open-minded; I'm interested in people; I'm good at group sessions and brainstorming)

☐ Assimilator (I'm organized, logical, and precise; I have good thinking skills; I like to learn from lectures; I'm less interested in people; I prefer learning from 'paper' and resist computer-based learning the most; I have the ability to create theoretical models; I find it hard to make decisions or to take action)

☐ Converger (I can easily transform ideas and theories into practical applications; I learn through experimentation; I prefer to deal with things rather than people; I have the strongest preference for computer-based learning; I'm relatively unemotional; I make decisions easily)

---

*19) Which teaching strategy would be most suited for your course, related to group work and discussions?

☐ Face-to-face (tutorials)

☐ Facebook (academic group)

☐ Face-to-face & Facebook (blended teaching strategy)

---

20) If you didn't participate in the "INFORMATICS 271", "CTI 3rd year IT students - 2009" or "CTI 3rd year IT students - 2010" groups on Facebook, please provide a reason why you chose not to participate.

---

21) Only answer Questions 21-26 if you were a member of one of the academic groups on Facebook called, "INFORMATICS 271", "CTI 3rd year IT students - 2009" or "CTI 3rd year IT students - 2010".

Participating in the group work and/or online discussions on Facebook enhanced my learning experience.

☐ Yes

☐ No

---

22) The following environment creates better opportunities for knowledge sharing:

☐ a face-to-face environment

☐ Facebook

☐ both face-to-face environment and Facebook

---

23) I understand the course content better after group work or discussions in:

☐ a face-to-face environment

☐ Facebook

☐ both face-to-face environment and Facebook

---

24) What are the advantages and disadvantages of participating in group work and online discussions on Facebook?

---

25) Do you think you adopt a different learning style in a face-to-face environment than in the Facebook environment?

☐ Yes

☐ No

☐ I'm not sure

---

26) How does your learning style affect your success in the Facebook environment?

Finish Survey

Appendix D: Ethics form

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA
FACULTY OF ECONOMIC AND MANAGEMENT SCIENCES

RESEARCH ETHICS COMMITTEE

Tel: +27 12 420-2306
E-mail: anske.grobler@up.ac.za

30 August 2010

Prof C de Villiers
Department of Informatics

Dear Professor de Villiers

Project:	***Using an online social network environment for Information System group work***
Researcher:	**S Visagie**
Supervisor:	**Prof C de Villiers**
Department:	**Informatics**
Reference No:	**22097482**

Thank you for the application you submitted to the Committee for Research Ethics, Faculty of Economic and Management Sciences.

I have pleasure in informing you that the Committee for Research Ethics formally approved the above study on an *ad hoc* basis on 30 August 2010. The approval is subject to the candidate abiding by the principles and parameters set out in her application and research proposal in the actual execution of the research.

The Committee requests you to convey this approval to Mrs Visagie.

We wish you success with the project.

Sincerely

PROF AF GROBLER
CHAIR: COMMITTEE FOR RESEARCH ETHICS

Members:
Prof AF Grobler (Chair); Dr N Barkhuizen; Mr T Gerber; Prof D Gouws (Vice Chair); Prof B Lubbe; Ms K Plant; Prof M Stiglingh; Prof C Thornhill; Prof R van Eyden; Prof J van Vuuren
***Ex officio* members:**
Chair: Research Committee; Prof SR van Jaarsveld, Faculty of Law