Chapter 5

INTERPRETATION OF RESULTS

The Eye altering alters all.

William Blake, "*The Mental Traveler*" [1800-10]

Introduction

In this chapter the results of the five case studies, dealt with in Chapter 4, will be viewed and interpreted from three different perspectives. These perspectives include:

- the use of Habermas' knowledge interests from his critical social theory;
- hermeneutics; and
- Giddens' "*consequences of contemporary modernity*".

By viewing the problem from various perspectives, it is felt that emergent themes will come to light and that this can lead to the creation of a theoretical framework for group constitution for small group learning in the field of information technology. As was pointed out previously, SSM (with both quantitative and qualitative instruments of measurement) was the encompassing research methodology used in the five case studies. Lee [1991] showed that the traditional positivist approach can be integrated with - and supported by - the interpretive approach. Thus an additional layer of research is now added to see if the results could benefit the study.

Throughout this "viewing" process, the three basic elements of grounded theory, namely, concepts, categories and propositions, are kept in mind. Corbin and Strauss [1990] contend that it is from conceptualisation of data

that theory is developed. Categories, a higher level and more abstract than concepts, *"are the 'cornerstones' of developing theory"*.

And then finally, propositions are developed that generalise relationships between – *"a category and its concepts and between discrete categories. One begins with an area of study and what is relevant to that area is allowed to emerge"* [Strauss and Corbin, 1990: 23].

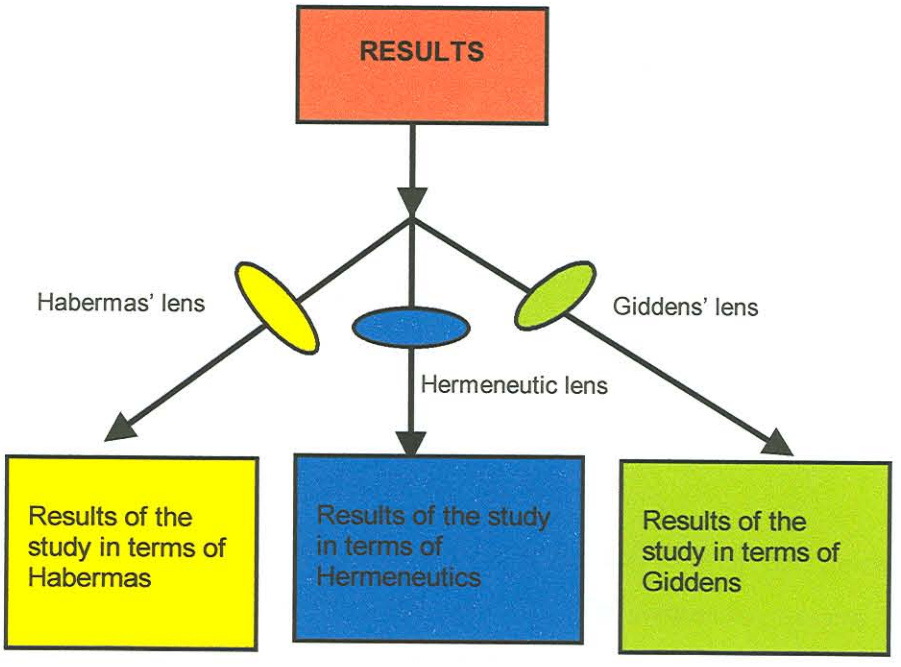

FIGURE 27: Viewing the research results through various "lenses"

Research methodologies used in this thesis were both positivist and nonpositivist. This was done with the intention to view the research *problem* from as many different vantage points as possible. The various facets of the problem will now be *interpreted* using a variety of perspectives. These interpretations will be used to create a theoretical framework for group constitution for small group learning in the field of information technology.

Sketching the background to Habermas' perspective

Critical social theory [Habermas, 1981] falls within the neo-humanist paradigm in that its primary objective is the improvement of the human condition. It takes into account the human construction of social forms of life. It is grounded in five fundamental assumptions [Ngwenyama, 1991: 269]:

1. People create their social world and can thus change it if they wish.

2. All scientific knowledge about the social world is value laden.

3. Reason is the ability to understand the social world as it is, to criticise it, and to search for alternatives. Therefore, reason and critique are inseparable.

4. The task of critical social theory is reconciling knowledge with the human need for self-improvement. Theory and practice must thus be interconnected.

5. Researchers must collaborate with those affected by the research, thus opening it up to public debate. To summarise, reason and critique must be reflexive in practice.

In line with the above assumptions Habermas [1971, 1974] identifies three types of "*knowledge interests*" which he believes drive all human inquiry:

1. **Technical**: Its concern is the human need for prediction and control of the natural and social world.

2. **Practical**: It has to do with the quest for understanding social forms of life, traditions, social behaviour and relations, and in so doing improving social consciousness and humanity.

3. **Emancipatory**: This knowledge interest is related to the concern for freedom from physical and mental restrictions and social distortions.

Habermas identified two classes of criteria for analysing and validating discussions on research conducted, namely: content and relationship. He is of the opinion that in scientific discourse, jargon must not be used, as it mystifies the content and in so doing violates the principle of ideal discourse.

Habermas constructed the following conceptual framework upon which critical social theory research could be based:

KNOWLEDGE INTEREST	OBJECT OF INTEREST	ORIENTATION	KNOWLEDGE PRODUCTS
TECHNICAL	Natural World	Prediction	Scientific Knowledge Technology
PRACTICAL	Social Structures Social Relations Tradition	Mutual Understanding	Social Consciousness Humanity
EMANCIPATORY	Technology Social Relations	Social Criticism	Norms for Justice Freedom

TABLE 12: Fundamental Human Knowledge Interests [Ngwenyama, 1991: 270]

The aim of critical social theory is to integrate the three basic knowledge interests into an encompassing approach to inquiry and change. (Active participation, observation, and analysis of the situation and intervention accomplish change.) Critical social theory acknowledges the difference between observing nature and observing people while doing scientific research, since people under observation might adopt different behaviours. Finally, critical social theory accepts that science is NOT value free but that the value of science is the improvement of the human condition (*See* HUMAN CONDITION in Glossary).

Using Habermas' perspective

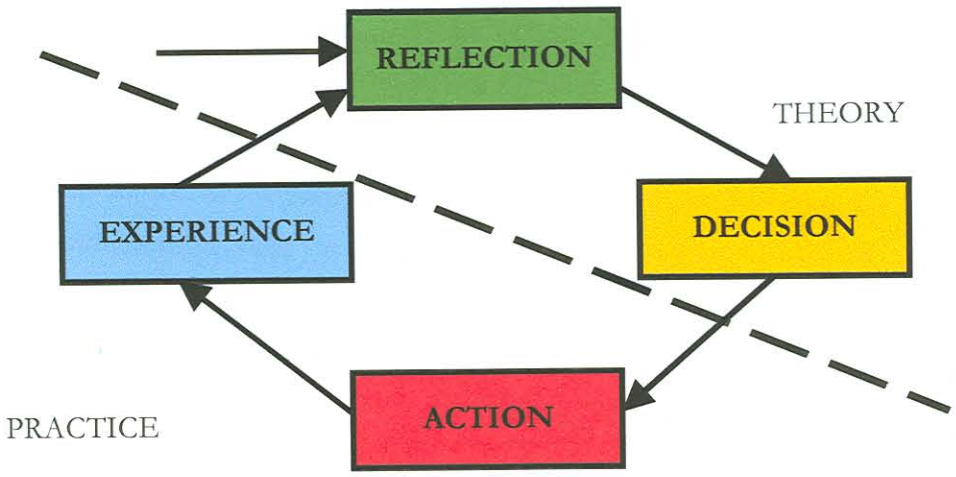

FIGURE 28: The Critical Social Theory Inquiry-Change Process [Ngwenyama, 1991: 272]

EXPERIENCE (see *Figure 28*) showed that there were several situations of concern:

- Historically underprepared students;
- The language barrier;
- Verbatim studying;
- Conventional ("dated") lecturing methods; and
- The fact that the half-life of knowledge in the computer field is diminishing at an alarming rate!

After **REFLECTION** it was **DECIDED** (after some qualitative and quantitative analysis of data was done) that the language of instruction, English, which is a second or third language for most of the students, was one of the reasons that students resorted to verbatim studying. Similarly the other areas of concern, namely verbatim studying etc., were identified. The **ACTION** that was taken to address these concerns, was to introduce cooperative learning, small group learning and mind mapping. This allowed students to communicate in the language of the subject and in so doing improve their communication skills in English, and enabled them to see the work holistically, to develop interpersonal skills and to work productively in teams. Thus **PRACTICE**, namely, experience and action, was alternated with **THEORY**, namely, reflection and decision. This cyclical process was followed and during each cycle some adjustments were made (see *Figure 13*).

According to Habermas the primary objective of critical social theory is the improvement of the human condition. It is also the objective of this study.

In the following table the results of this study are summarised, using Habermas' knowledge interests perspectives.

KNOWLEDGE INTEREST	KNOWLEDGE PRODUCTS	RESULTS OF THE RESEARCH
TECHNICAL	Scientific Knowledge Technology	Students acquired scientific knowledge – they learnt about Operating Systems and Networks. *I used to memorise everthing – I did not try to understand it. Now I find that if you understand it, it makes it less work* [Venter & Blignaut, 1998: 6]. They improved their academic achievement [Blignaut & Venter 1998b: 5]. They applied their knowledge using available technology.
PRACTICAL	Social Consciousness Humanity	Students learnt to respect and value diversity within their teams. *You learn from each other, we discuss and you get different ideas and different views…* *… where I did get the sense of camaraderie was in the practical. You really get to know each other … you get a sense of their character and their weaknesses* [Venter & Blignaut, 1998: 6]. They learnt social skills and communication. *Getting a pace and getting a sense of where you all are coming from because we had all different ideas about things and how to do things. Ja and that was the biggest struggle, but being together as a group, that was fine* [*op.cit.*: 7].
EMANCIPATORY	Norms for Justice Freedom	Furthermore, they were released from the "shackles" of their educationally disadvantaged background. It is an emancipatory experience as mentioned in the qualitative analysis, namely, the unstructured interviews. *I never thought I could be a leader* [*op.cit.*: 7].

TABLE 13: The results of the study in terms of Habermas' Knowledge Interests [Ngwenyama, 1991: 270]

Sketching the background to the hermeneutic perspective

Hermes, the wing-footed messenger-god from ancient Greek mythology, is associated with the task of interpreting that which is beyond human understanding into a form that human intelligence can grasp. The word hermeneutics is derived from this messenger-god's name (Hermes). Although this may be an oversimplification, hermeneutics can be described as a theory of interpretation and understanding. According to Introna, hermeneutic theory, which has been to some degree, especially in the field of Information Systems, been developed by Boland, could be considered *"the absent component that would address the notions of understanding and meaningfulness that are to be part of more recent definitions of information."* Although hermeneutic interpretation was originally used to interpret the Bible it has since evolved and is currently being acknowledged as a method to gain insight into the nature of information [Introna, 1997: 55].

The following five concepts are central to the hermeneutic discipline [Lee, 1993: 14]:

1. **Distanciation**: the separation that occurs between the author and his work. After the passage of time it is removed from its original intended audience and also from its author's culture and society.

2. **Autonomisation**: Separated from the author, the author's work (the text) *"takes on a life of its own"*.

3. **Social Construction**: The text of the author is not restricted to the meaning he had intended. The reader can interpret the work from his own *"socially constructed"* perspective. To explain what is meant by *"social construction"*: man is the product of his social environment and thus sees *"life"* from that perspective. However, he is not the slave of his organisational world but can modify it, by adding or changing some of the existing values of his society.

4. **Appropriation**: The reader of the text interprets it, and makes the meaning of the text "*his or her own*". Thus the meaning of the text is actualised for the reader. Once again, this meaning may differ from the meaning the author had intended.

5. **Enactment**. Once the reader has appropriated the text he or she can now enact the meaning of it. As Lee explains [1993: 15] –

An important point is that ***enactment*** *does not allow me, the reader --, to imagine anything I wish. I do not exercise total free will; rather, as a result of the* ***appropriation****, I am transformed into an agent of the socially constructed world of the organisation.*

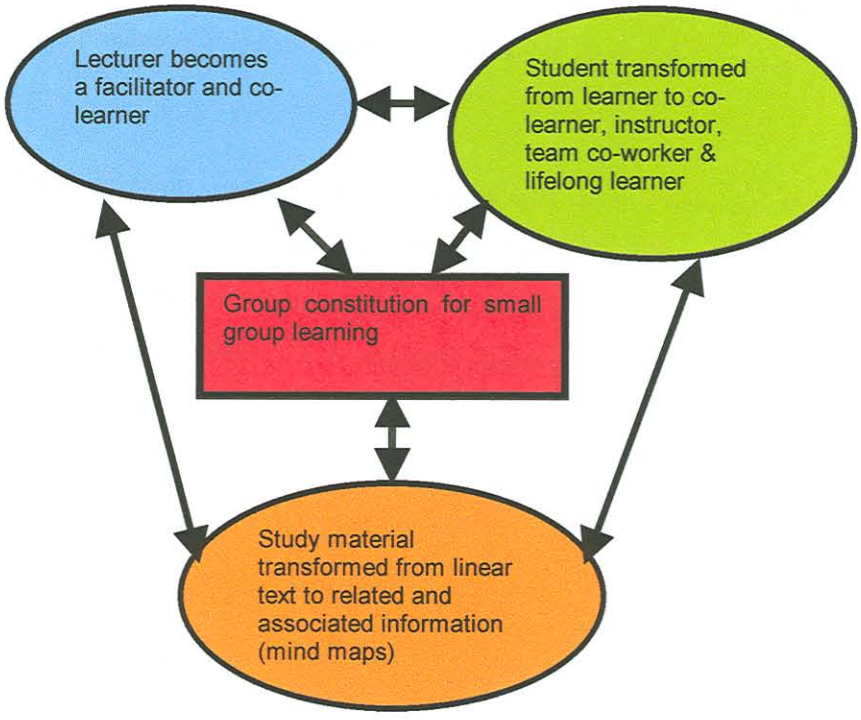

FIGURE 29: The complex whole of the problem researched

Using the hermeneutic perspective

Hermeneutics allows us to understand a complex whole divorced from preconceived conceptions about the meaning of its parts and their interrelationships.

In *Figure 29* the complex whole with its constituent parts, and the interrelationships between these parts, are depicted. As can be seen from the figure, the context of the *"learning environment"* has changed: the lecturer is now a co-learner and a facilitator of learning. The material that is to be learnt has been transformed from linear text to comprehensible, ordered and associated information; and the learner is a team member and lifelong learner. If we interpret the group constitution of the small group learning teams, by using the hermeneutic concepts (as described by Lee), we see that –

1. **Distanciation**, namely, the separation that occurs between the author and his work, has occurred between the intended use of the Belbin team roles and the actual application of them. (Belbin intended the use of his methodology for managerial teams.) The concept of lecturer becomes distanciated from the preconceived perception of what it means to be a lecturer. The lecturer now becomes a facilitator and co-learner and not someone who presents lectures in a "chalk-and-talk" fashion.

1. **Autonomisation**: Separated from the "originator", the Belbin methodology "*takes on a life of its own*" in that it is now used to develop skills needed for lifelong learning rather than constituting effective managerial teams. Similarly, tasks assigned to the teams are separated from their "author" (the lecturer) and *"takes on a life of their own"* in that students create their own understanding of the assignment.

2. **Social Construction**: The "receiver" of the psychometric profile (as compiled by the Belbin software) can interpret his/her function within a team from his own "*socially constructed*" perspective.

   The first role that everybody gave me on my list was a Shaper and I thought of myself as an Implementer because I know like eventually I have to get this thing done and so then I will do it. So I don't know - [Venter & Blignaut, 1998: 23].

   This means that the student does not simply find facts or regurgitate facts found for the assignment but indeed plays a specific role in contributing to the team's collective understanding of the given task.

   So, what we did now, we just told each other, we (are) just going to do the research on this thing –maybe go to the library or the Internet. And then we found out it is too much, to look at everything. It is too much to look at everything, so we divided the work. So we can get input from each other …so we actually learnt that from group work [Venter & Blignaut, 1998: Appendix I, 3].

3. **Appropriation**: This Belbin profile becomes "*his or her own*". Thus the meaning of the Belbin profile is actualised for the "*receiver*". Furthermore, the mind map that is created for the material that is to be learnt is also a transformation of the original text and is thus appropriated by the learner.

   There is a structured approach to it. So the mind map shows you exactly this comes from this section – [Venter & Blignaut, 1998: Appendix I, 2].

4. **Enactment**. The student, after appropriating the meaning of the material to be mastered as well as his or her role within a team, can now enact the meaning of it: thus use the material that is to be mastered and apply it while contributing effectively to the team.

The course goes beyond teaching theory and subject matter. The group work helped me to assess my communication skills and weaknesses [Blignaut & Venter, 1999: Appendix G(i), 4)].

HERMENEUTIC CONCEPTS	RESULTS OF THE RESEARCH
DISTANCIATION	Belbin roles – the intended use is different from the actual use in this research effort Lecturer becomes the facilitator – his/her role is distanciated from the traditional role *I mean it brought the whole class like together. I think that is nice about group work where formal lectures is, you just sit down and listen to the lecturer...*[Venter & Blignaut, 1998: Appendix I, 6].
AUTONOMISATION	Task takes on a *life of its own.* Belbin is now applied to develop lifelong skills instead of constituting effective managerial teams. *Ja, usually I can gather information and then give it to my group and then could work it out (Ja, I am a Resource Investigator)* [Venter & Blignaut, 1998: Appendix I, 1].
SOCIAL CONSTRUCTION	Team member socially constructs team role. Material to be mastered is not verbatimly studied but *understood.*
APPROPRIATION	Belbin role is appropriated by team member. Mind map allows appropriation of study material. *There is a structured approach to it. So the mind map shows you exactly this comes from this section* – [Venter & Blignaut, 1998: Appendix I, 2].
ENACTMENT	Student uses and applies material mastered in order to contribute effectively to team. *...you can't gauge a person's worth from what they study in a book. You know ...* [Venter & Blignaut, 1998: Appendix I, 10].

TABLE 14: The results of the study in terms of the hermeneutic perspective

Sketching the background to Giddens' "*consequences of contemporary modernity*"

Communities are being transformed by modern society with its globalising tendencies driven by the transformation in IT (Information Technology). The reorganisation of social relations and structures has had a profound effect on the individual.

According to Giddens [Giddens, 1990], time and space play a central role in the structuring of social practices [Barrett *et al.*, 1996: 43]. Modern practices allow for the *separation of time and space* in social relations, as they allow relations to exist between "*people present in time and space and between those absent in time and space*".

This separation of time and space "*disembeds*" or "*lifts out*" the local context of the interaction of social relations. An example of this *disembedding mechanism* is the use of the Automatic Teller Machine (ATM) which has necessitated the development of trust in the use of ATMs and has *disembedded* the social relations between banker and clients.

In late modernity social activities need to be revised continuously as new knowledge comes to light. Social life is thus propelled away from the certainty of pre-established rules and practices, giving rise to the concept of *institutional reflexivity.*

The notion of the *separation of time and space* in social relations, which *disembeds* social practices as these were previously known, and the notion of *institutional reflexivity,* are directly connected to the psychological security of the individual and groups.

> *The self may become a reflexive project being continuously explored, constructed, and revised as part of a reflexive process* [Barrett et al., 1996: 44].

Barrett, Sahay and Walsham proposed the scheme (depicted in *Figure 30*) for understanding IT and social transformations from the perspective of Giddens' ideas on the consequences of modernity.

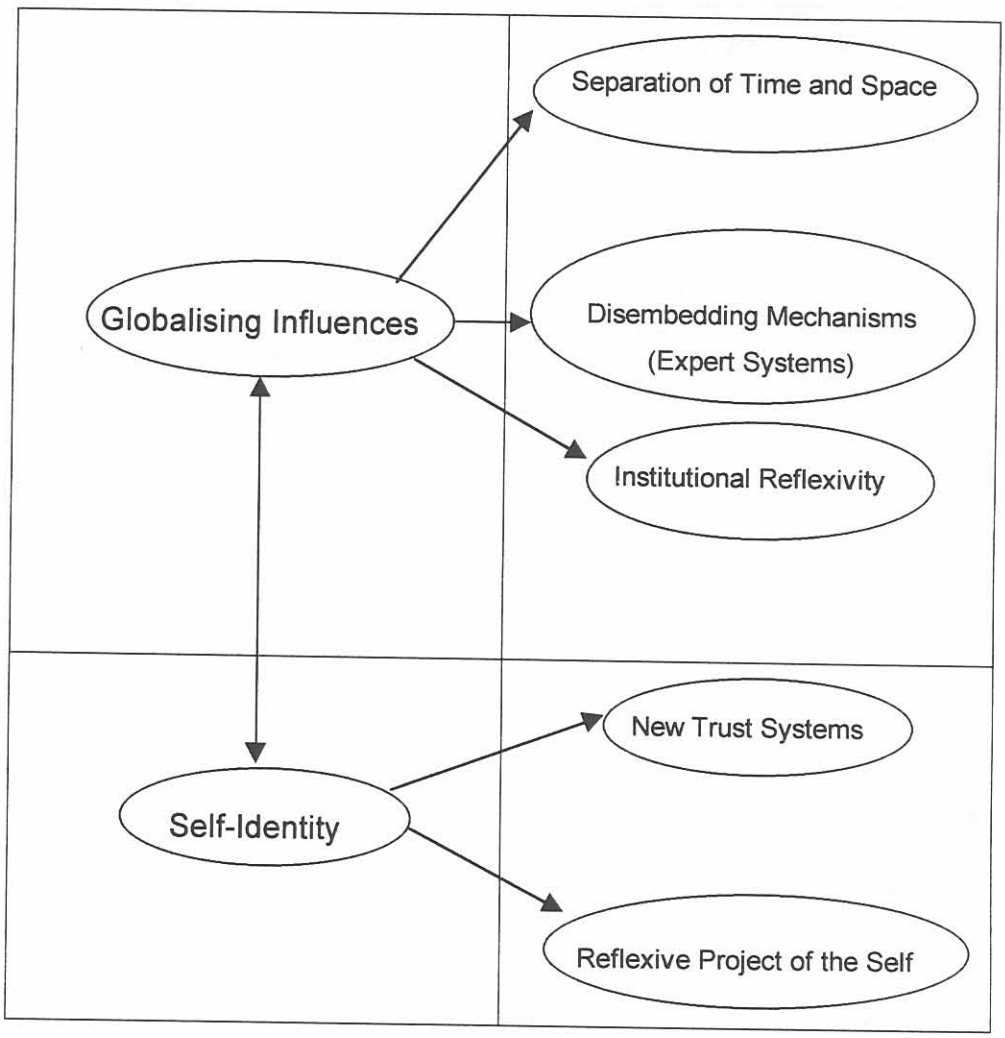

FIGURE 30: Transformation in modernity: Globilisation and self-identity [Barrett, Sahay and Walsham, 1996: 44]

GIDDENS' CONSEQUENCES OF MODERNITY	**TRANSFORMATION**	**RESULTS OF THE RESEARCH**
"GLOBALISATION"	Separation of Time and Space	Students '*meet*' lecturer and team colleagues virtually Learning is removed from the classroom – thus it is separated in time and space
	Disembedding Mechanisms	Traditional student/lecturer relationship changed
	Institutional Reflexivity	Chronic revision of the teaching process Roles of both lecturer and learner revised
INDIVIDUAL TRANSFORMATION	New Trust Systems	Students need to trust new approach And trust their colleagues *...it taught me the importance of punctuality, communication, delegation (and) to trust others and most importantly to be a person others can trust* [Blignaut & Venter, 1998b: Appendix H(i), 2].
	Reflexive Project of the Self	Individual becomes team member Student needs to be reflexive about contribution he/she can make to team

TABLE 15: The results of the study in terms of Giddens' "consequences of contemporary modernity"

Using Giddens' perspective

"Globalising" tendencies

The separation of time and space

E-mail allowed students to "meet" virtually as a team and also to meet virtually with the lecturer. They were able to discuss problems about the study material but also problems experienced with team functioning. All these discussions were "separated by time and space". What is meant is that students could "converse" with the lecturer and their peers without having to be present at the same place, at the same time. This obviously relieves the student from finding the lecturer to discuss something with her. It also allows the student to air problems without the added stress of approaching a superior – this obviously is very emancipating. The learning experience, furthermore, was separated in time and space, as the learning happened in class but also at other "times" and in other "places".

Disembedding mechanisms

The traditional lecturer-student relationship has changed. The lecturer is no longer the "holder" of all the knowledge – in some instances the student may be the expert and the lecturer the learner. In such cases the lecturer thus becomes the co-learner and facilitator whereas the student becomes the expert. This is especially true of new software available on the Internet. It is not uncommon to have students explain new concepts (such as downloading music from the Internet as MP3-files) to the lecturer. The lecturer needs to become emancipated herself to be able to acknowledge her ignorance every now and then.

Institutional reflexivity

These new roles need to be re-examined by both learner and lecturer. The ratio of lectures versus discussion groups needs to be re-evaluated and the roles of the learner and lecturer are constantly revised. Thus it is *"the chronic revision (of social activity) in the light of new knowledge"* [Barrett, 1996: 44].

Individual transformations

This new perspective necessitates a new approach to learning.

New trust systems

Students need to "trust" the new approach also to achieve their personal objectives. They need to accept that verbatim studying is inferior to understanding and that it is impossible to memorise all material as this is changing continuously.

> *Yes they (the mind maps) help a lot. Sometimes when you see a diagram you remember most of the things, now to remember every single thing in the textbook – that is totally* - [Venter & Blignaut, 1998: Appendix I, 2].

Furthermore they need to learn to trust each other (within their teams) and to trust that they will learn from each other.

> *I found the new concept of group work a roaring success. It encouraged students to work since everyone's performance depends on theirs. It taught me the importance of punctuality, communication, delegation to trust others and most importantly to be a person others can trust.*

> *For me … there are advantages and disadvantages to this. But I think this way of working in a group, getting a lecturer in the group, then you focus on specific problems because sometimes everybody doesn't have the same problems. With smaller groups the lecturer can give its direct attention to that specific problem in stead of covering all the work* [Blignaut & Venter, 1998b: Appendix H(i), 2-3].

Reflexive project of the self

The changing nature of the class situation, from being an individual to being a member of a team, pressurises the individual into being reflexive about his or her strengths within a team and the contributions he or she can make to the team function. And to acknowledge the roles which are

low on his or her profile, which need a concerted effort to develop and apply.

> *You really get to know each other – the character come through under stress – true to type and those who are committed and those who are not committed. You can get a sense of character and their strengths and weaknesses.*
>
> *Yes, working in groups you meet different people and you learn from them.*
>
> *...group work has been quite helpful in encouraging a person to appreciate what you are studying* [Venter & Blignaut, 1998: 6].

Conclusion

In this chapter the results of the case studies of Chapter 4 were reviewed and interpreted from three perspectives. The perspectives used in this inductive interpretation were Habermas' knowledge interests, hermeneutics, and Giddens' "*consequences of contemporary modernity*". Without this additional interpretive layer of research it would not have been possible to make sense of the abundance of quantitative results that were collected. With each perspective, certain concepts (relevant to the research) emerged as being more important than others. Thus the additional layer of research indeed proved to be beneficial for the study. In the next chapter these identified concepts are used to develop a conceptual framework for group constitution for small group learning in the field of information technology.