

**GROUP CONSTITUTION FOR SMALL
GROUP LEARNING IN THE FIELD
OF INFORMATION TECHNOLOGY**

by

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SYNOPSIS

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The research focuses on a different approach to the tertiary teaching and learning of certain subjects in computing in South Africa. It is a context in which the students are linguistically and culturally diverse, and where the prior educational backgrounds of many students have not provided them with a secure foundation for undergraduate-level study. Systems such as teamwork, cooperative learning and patterned note making, were developed in order to help students to learn more effectively.

This longitudinal research effort stretched over four years (1995 – 1998) and the data was from the same population - students at the University of the Western Cape (UWC). As part of the research approach to investigate the problem, Soft Systems Methodology (SSM) was adopted. Both qualitative and quantitative instruments of measurement were implemented.

The cultural diversity of the South African student population was acknowledged and the evolvement of the more dimensions of learning was promoted. Students were placed in groups using Belbin's team-role concept. Rather than presenting conventional lectures, students came prepared to class to discuss personal insights gained through individual learning in a group situation. Plenary discussion sessions as well as formal lectures were held at various points during the course. Access to the Internet allowed students to research topics for projects and communicate with team members.

The majority of the students indicated that working in teams contributed to their understanding of the subject, they gained on a personal and social level and learnt more in the group than they would have by learning individually. Most felt that the individual Belbin team-role profile provided them with insight into the contribution that they could make to a team. The more informal format of the lectures, and the presentation of mind maps were experienced positively by most students - they learnt new ways of ordering facts, which enhanced their understanding of the work.

SSM was an effective encompassing method to deal with the research process. A framework for group constitution for small group learning was developed using an inductive interpretation. The three perspectives used in this induction were Habermas' knowledge interests, hermeneutics, and Giddens' "*consequences of contemporary modernity*" theory.

The development of lifelong learning skills such as positive intergroup relations, the ability to write and communicate effectively and to work productively in teams, are needed to bridge the gap between tertiary education and the job market. It was found that students achieved academically significantly better when this method of teaching was implemented.

In the first chapter of this thesis the research problem is analysed and the "story" of the longitudinal research is told. The second chapter deals with literature on teamwork, cooperative learning, learning styles, mind maps and assessment. The research approach used in conducting this study is that of Checkland and Scholes and it, as well as the interpretive approach is presented in Chapter 3. In the fourth chapter each of the five study periods (case studies) will be discussed in more detail.

In Chapter 5 the results (of these case studies) are inductively interpreted. Chapter 6 contains the results of this induction in the form of a framework.

Finally, in the last chapter, the findings of this thesis are discussed and evaluated.

[Keywords: Computer Science, Information Technology, Education, Cooperative Learning, Teamwork, Team or Group Constitution, Lifelong Learning, Mind maps, Learning Styles, Conceptual Framework.]

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GLOSSARY (NOMENCLATURE)

COOPERATIVE LEARNING Learning in a group setting in order to maximize own learning and the learning of the group members. Hilke [1990] defines cooperative learning as an organisational structure where students can pursue academic goals through collaborative efforts creating opportunities to develop communication skills and higher-level thinking abilities. Johnson, Johnson and Holubec [1994] suggest that for the successful implementation of cooperative learning the following five elements should be implemented:

- **Positive interdependence** – if positive interdependence is lacking no cooperation can take place;
- **Individual and group accountability** – the group must be accountable for achieving its goals;
- **Promotive face-to-face interaction** – to promote each other's learning face-to-face;
- **Interpersonal and small group skills** – students must know how to provide effective leadership, decision-making and trust-building and how to communicate and manage conflict;
- **Group processing** – groups need to be able to describe which actions are helpful and which are unhelpful.

INFORMATION RICHNESS is defined as the ability of information to change understanding. It is, however, time dependent. A communication transaction that can overcome different frames of reference is considered rich. Similarly communications that clarify ambiguous issues, and in so doing change understanding over a certain period of time, are considered

rich. If the communication requires a long time to enable understanding or is such that it cannot overcome different perspectives, it is considered lower in richness. Richness is thus the learning capacity of a communication [Ngwenyama, 1997].

INTERNET A worldwide network that is a collection of many smaller networks linked by a vast array of network equipment and communication methods.

GROUNDING THEORY This is not a theory that is first generated and subsequently tested - it is *“inductively derived from the study of the phenomenon it represents. – Rather, one begins with an area of study and what is relevant to that area is allowed to emerge”* [Strauss & Corbin, 1990 :23].

HBU Historically Black Universities

THE HUMAN CONDITION

Ultimate structures	Society	Culture
	Personality	Behavioural system
Physico-chemical nature	Human organism	

The upper left square (ultimate structures) contains the general structures of world understanding that determine how participants can relate to something in a world with their communicative expressions. The lower left square (physicochemical nature) represents the objective world of possible relations of this sort, the lower right square (human organism) the

subjective world, and the upper right square (society, culture, personality, behavioural system) the social world [Habermas, 1987: 251].

KNOWLEDGE INTERESTS The three basic areas of interest of society and other social organisations are the concepts of work (*technical knowledge interest*), mutual understanding (*practical knowledge interest*), and emancipation (*emancipatory knowledge interest*). Specific types of knowledge need to be acquired for each of these domains. Habermas refers to these as “*knowledge interests*” [Habermas, 1971, 1974].

LSI Learning Style Inventory. An inventory to assess individual orientations toward learning. It is used as a means of discussing the learning process with those tested and giving them feedback on their own learning styles.

MIND MAP Non-linear or patterned note-making. Concept as described by Tony Buzan.

OBE Outcomes-Based Education. The approach aims to increase the general knowledge of learners and to develop their skills, critical thinking, attitudes and understanding.

OUTCOMES are results of learning processes and refers to knowledge, skills, attitudes and values within particular contexts. Learners should be able to demonstrate that they understand and can apply the desired outcomes within a certain context.

REFLECTIVE CONVERSATION PROTOCOL A methodology for interviewing proposed by Schön [1983]. The interviews are mostly unstructured and conversation-like so that it is possible to probe directions and topics which emerge during the conversation. These emergent themes are normally not the themes that the researcher planned to discuss or evaluate. As in a conversation, the discussion progresses naturally –

resulting in the emergence of themes which otherwise would have been overlooked.

SAQA South African Qualifications Authority

SSM Soft Systems Methodology. SSM (as described by Checkland and Scholes) is: “...an organized way of tackling messy situations in the real world. It is based on systems thinking, which enables it to be highly defined and described, but is flexible in use and broad in scope.”

TEAM-ROLE concept as described by Belbin. Each person has specific intrinsic personality traits (strengths) that can contribute to effective team functioning. Nine team roles have been identified and each person’s profile will be a combination of all of these roles. The dominant roles are those that are easily assumed by the person. The remaining roles can be assumed by the person but only with great effort.

TEAMWORK Working on a task as a team.

TCI METHOD (Theme-centred interaction method) This method has three constituent factors (each of equal importance), namely, “the ‘I’, the ‘we’ and the ‘it’”. For discussions to be productive the ‘I’ of individual interests must be balanced with the ‘we’ of group relatedness and the ‘it’ of the theme or topic” [Jaques, 1995:26].

UNSTRUCTURED INTERVIEWS Interviews where questions posed are just posed to start a discussion. The interview is more like a conversation, it progresses naturally and themes emerge unintentionally. It allows the researcher to probe directions and topics he or she did not set out to discuss or evaluate.

UWC University of the Western Cape

WORLDWIDE WEB A vast worldwide network of servers that provide access to voice, text, video and data files.