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Does the computer helpdesk vocational training course change attitude about customer service?

Anthony Wethereld
Edith Cowan University

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**DOES THE COMPUTER HELPDESK VOCATIONAL TRAINING
COURSE CHANGE ATTITUDE ABOUT CUSTOMER SERVICE?**

by

Anthony Wethereld

**A Thesis Submitted in Fulfilment of the requirements for the
Award of Master in Education**

**Faculty of Community Services, Education and Social Sciences,
Edith Cowan University, Mt. Lawley Campus.**

April, 2003

ABSTRACT

The purpose of this research was to determine whether The Computer Helpdesk vocational computing course, in conjunction with The Virtual Workplace simulation computer program, changed attitude about customer service. Thirty-seven adult female students at Fujairah Women's College of the Higher Colleges of Technology in the United Arab Emirates took part in the study. To assess possible attitude change, a combination of observation, interview and survey techniques were used. The Likert scale customer service attitude survey, which measured beliefs and perceptions about customer service, formed the primary data gathering instrument. Qualitative and quantitative data were triangulated, and quantitative results were analysed using MANOVA. Results suggest strongly that the combination of the Computer Helpdesk course and the Virtual Workplace simulation program generally did not change attitude about customer service, however some degree or amount of attitude change in some subjects was detected.

DECLARATION

I certify that this thesis does not, to the best of my knowledge and belief:

- (i) incorporate without acknowledgment any material previously submitted for a degree or diploma in any institution of higher education;
- (ii) contain any material previously published or written by another person except where due reference is made in the text; or
- (iii) contain any defamatory material.

Signature

Date 19th April 2013

ACKNOWLEDGMENTS

This thesis would not have eventuated without the demonstrable support of work colleagues, students, friends and family members. It is to these people that I gratefully and sincerely acknowledge their contribution to my effort.

Because the study was completed in a working college, special thanks go to Mr. Rana Chakma and Mr. Mukhlesur Rahman for letting me use their students in the study, to Mrs. Valerie Lyons for interviewing the study subjects, to Mr. Brian Harvey for his professional advice, and to Dr. Bill Lex (Director of Fujairah Women's College) for his encouragement. Thanks also go to the Year Two students in group 7C1 and group 7C2 in the CIP program of 2002, without whom this study could not have been completed.

Thanks also go to my family members for their support, and especially to my wife Kathrine for her understanding and patience during what must have been a difficult period of time. Their support for me never wavered.

My sincerest thanks also go to my thesis supervisor Dr. Tony Fetherston who, without exception, has been helpful and responsive to my academic needs during the whole study and has helped me through the tough times.

Finally, this thesis is dedicated to the hard working academic staff of Fujairah Women's College, in the Higher Colleges of Technology in the UAE.

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CHAPTER ONE

INTRODUCTION

Background to the study

This study was set within a college in The Higher Colleges of Technology (HCT), a national system of eleven Federal Government funded vocational colleges located in the United Arab Emirates (UAE). The UAE is located in the Middle East region as shown in Figure 1. The colleges are distributed throughout the Emirates as shown in Figure 2. Over twelve thousand UAE men and women attend the HCT colleges. The college in which this study takes place is Fujairah Women's College (FWC), located in the Eastern UAE emirate of Fujairah and in the coastal city of Fujairah. Six hundred UAE women attend full-time academic programs at FWC.



Figure 1 The UAE in the world context



Figure 2 HCT College locations within the UAE

The HCT's Charter

Established in 1988, the HCT's charter is to develop graduates who demonstrate effective skills and attitudes about work in the local as well as the international context. The HCT's Mission Statement is:

Graduates of the colleges will have the linguistic ability to function effectively in an international environment; the technical skills to operate in an increasingly complex technological world; the intellectual capacity to adapt to constant change; and the leadership potential to make the fullest possible contribution to the development of the community for the good of all its people (<http://www.hct.ac.ae/about/mission.html>).

The Chancellor of the HCT, His Excellency Sheikh Nahayan (HESN), has publicly stated his view of the overarching aims of the HCT in his welcome message (http://www.hct.ac.ae/about/chancellors_welcome.html) on the HCT Web site, some of which appears in Figure 3 on page 13.



“ We strive to develop graduates who are prepared for the future, ready for the changing needs of the workplace, and trained for a life of ongoing learning and professional success. ”

HIS EXCELLENCY, SHEIKH NAHYAN MUBARAK AL NAHYAN

Figure 3 Welcome Message from HESN

Key elements in the HCT Mission Statement, as well as views publicly expressed by HESN, are that graduates of the HCT should be able to handle the changing demands of the workplace and be able to work effectively with others. This clearly implies that HCT graduates must be able to interact effectively with others. Such elements assume importance in most if not all vocational learning programs undertaken at the HCT.

The Colleges and their students

Entrants to the HCT comprise UAE national high school graduates whom have successfully completed high school and have also attained a minimum age of seventeen years. Separate colleges exist for male and female students as segregation of the sexes is an important social norm in the context of both the UAE and the Middle East Arab countries in general. The language of instruction used in the HCT is English, which for most students is their second language behind native Arabic.

Each college is physically well resourced and has numerous multimedia teaching laboratories, and FWC is no exception. In the context of this study it should be noted that the term *multimedia* refers not only to the use of still photos, movie segments or audio voice segments, but also to the purposeful design and application of educational computer-based multimedia applied so that students experience aspects of their course content that they would otherwise not be able to experience. This type of education technology supports a cornerstone of the HCT efforts, namely to assist students to develop effective ethics, practices, and attitudes toward work and working with others, and is being progressively integrated into all of the programs.

Academic programs

The academic program areas encompass Business, Information Technology and Engineering Technology, and most programs comprise Certificate, Diploma, Higher-Diploma and Bachelor qualification. FWC offers most HCT programs in common with all other HCT colleges with the exception of those in the Engineering area as these programs are offered only to male students.

Significance of the study

Given that most Arab states in the region appear to exhibit cultural norms and attitudes similar to those exhibited in the UAE, it is reasonable to extrapolate the local education need at least to other places or areas in the Middle East Gulf region. The popular press in the UAE, such as the Gulf

News and the Khaleej Times, constantly provide articles and editorials that espouse the need for education institutions such as the Government funded UAE University, Zayed University and the HCT, to prepare graduates for work in the international arena. Wherever there exists a need to educate students about attitudes different from theirs, there also exists a need for research into how this may be accomplished effectively. We also need to know the role of computer technology in bringing about this change because this technology is being deployed within the classrooms at a prodigious rate.

Preparing students for work

Since its inception in 1988, and at the insistence of HESN, the HCT has striven to prepare its graduates for entry into international work. A key concern is that each and every student must develop a set of effective, Western style work related attitudes. In some HCT programs there exist specific subjects that attempt to meet this concern by developing attitudes such as: coming to work on time every time; working well with people from other cultures and backgrounds; accepting orders; and effectively interacting and communicating with customers.

The Computer Information Processing program

One particularly popular and well subscribed vocational program is the Computer Information Processing (CIP) Certificate program that produces computer technicians or technical assistants.

Figure 4 shows the structure of the CIP program. A second year component of this three year program is the Computer Helpdesk course which was designed and developed in 1997 by the author. This course provides students with an opportunity to develop effective customer-service attitudes and behaviour and has multiple aims including developing work-based language and communication skills, fostering teamwork in a vocational context, developing team-based problem-solving skills and involving students in monitoring their performance.

In the CIP program however, the focus is heavily weighted toward what one could describe as pure IT skill development where students are trained to become skilled and effective IT end-user support persons, albeit at junior levels.

Curriculum		Credits	Periods per Week*	Total Periods
Year 1 - Semester 1				
BLIS 1100	Basic Learning and Information Skills	2	2	32
CARE 1100	Career Orientation I	2	2	32
COMP 1100	Basic Computer Skills	4	4	64
ENGL 1116	English Skills I	12	12	192
MATH 1100	Basic Numeracy	5	5	80
		25		
Year 1 - Semester 2				
COMP 1200	Computer Literacy Skills	4	4	60 to 64
ENGL 1216	English Skills II	9	10	150 to 160
MATH 1200	Practical Mathematics	3	3	45 to 48
PROJ 1200	Project	1		
		And 2 of the following:		
BUSI 1200	Introduction to Work Skills	4	4	60 to 64
BUSI 1210	Business Basics	4	4	60 to 64
GENS 1200	General Skills I: English	4	4	60 to 64
GENS 1210	General Skills II: Mathematics/Computer	4	4	60 to 64
HLTH 1200	Introduction to Human Life Science	4	4	60 to 64
HLTH 1210	Introduction to Health	4	4	60 to 64
		25		
Year 2 - Semester 3				
CIPR 2102	Software Applications	7	7	112
CIPR 2104	Hardware and PC Configuration	5	5	80
CIPR 2106	Introduction to the Internet	3	3	48
ENGL 2116	English Skills III	10	10	160
		25		
Year 2 - Semester 4				
CIPR 2202	Introduction to Networking (12 weeks)	3	4	48
CIPR 2204	Information Technology Support (12 weeks)	3	4	48
CIPR 2206	Database Applications (12 weeks)	5	7	84
ENGL 2212	English Skills IV (12 weeks)	7.5	10	120
WORK 2208	Work Experience (Information Processing) (4 full weeks)	4		

Figure 4 Structure of the CIP Certificate program

The need for effective customer service training

In the CIP program there appears to be little content that provides a definite model of effective customer interaction, yet it is in the CIP program that the author considers a real need exists to develop effective customer service attitude and practices. If there was ever a profession that relied upon effective interpersonal communication then it is that of the computer service person.

The Computer Helpdesk course

The one subject within the CIP Certificate program that addresses affective elements is the Computer Helpdesk course. The attitudinal elements of empathy and effective interpersonal communication, for example, were deliberately included in this course based upon the author's experience of the typical role of the computer service technician. Interestingly, the CIP Program team, a body which determines the aims and structure of the program and the courses within it, has been pursuing the reduction or even elimination of all overt affective elements in favor of competency-based technical elements.

The most important issue for the CIP Program Team however, given its charter of structuring the program, is that it needs concrete data upon which to base future decisions about the structure of the Computer Helpdesk course, and this study is designed to provide specific data that can be used.

HCT support for The Computer Helpdesk course

The HCT funded the development of the Computer Helpdesk course in 1996. The author designed and developed the course into a working form that was taught throughout the HCT system wherever the CIP program was active. During 1996 the type of courses developed for the system almost invariably constituted a 'traditional' paper-based format so this author created a student workbook, a teacher resource kit and assessment exercises and tasks in paper-based form. One departure from this traditional format of learning resource

however, was the subsequent development in 1997 of an accompanying computer simulation program for Computer Helpdesk students. During 1997 the HCT decided to move its course material and teaching methods into a predominantly computer-based medium, and part of the institutional commitment to this encompassed the skilling of teachers in computer technology and the development of computer-based and online learning material. A CD-ROM based learning aid designed for The Computer Helpdesk course was the result of this HCT support.

The HCT funded the design and development of the Virtual Workplace learning simulation program under its ongoing professional development (PD) program for HCT teachers. The funding in reality served two purposes, namely to enable the project participants to develop skills in multimedia material design and development and to produce a multimedia product that could aid CIP students, especially female students, to develop effective customer service attitudes by experiencing customer service interaction in a non-threatening face-to-face simulation. The cost of the development of The Computer Helpdesk course was \$3,000AUD whilst the cost of development of the Virtual Workplace simulation was \$8,000AUD which indicates that multimedia material is more expensive to develop than paper-based academic courses. These sums are significant in the context of tight HCT budgets and indicate the degree of importance that was placed upon development of both the course, the learning aid and the skill of teachers in the area of technology.

It is important for the CIP Program Team to know whether the Computer Helpdesk course develops effective attitudes, as this knowledge will inform the further refinement of the academic structure of the program and may even justify retaining or indeed strengthening the teaching of affective domain elements. It may also indicate whether the overarching aims of the HCT, as set down in its Mission Statement and in public statements by HESN are being met.

Purpose of the study

This study sought to determine whether undertaking the Computer Helpdesk course results in a change of attitude about customer service in thirty-four female students undertaking the CIP Certificate program at FWC.

Research question

The primary question is *does the HCT Computer Helpdesk course change the customer service attitude of UAE female subjects?* A secondary question is *does the Virtual Workplace simulation program assist this change?*

Conclusion

This study sought to determine if a change in customer service attitude occurs as a result of undertaking the Computer Helpdesk Course.

The data obtained from the study may inform future refinement of the CIP vocational program by the CIP Program Team, and may also determine whether the Computer Helpdesk course should retain its affective domain elements.

CHAPTER TWO

THE COMPUTER HELPDESK COURSE

Introduction

In this chapter the historical background of the Computer Helpdesk course is discussed. The different versions or iterations of the course are presented along with their timeframes, and the structure of the course in its present form is shown. The historical account is important for it explains why the Computer Helpdesk course exists in its current form.

Initial development of the course

In 1995, the HCT requested the author to develop the Computer Helpdesk vocational training course. The paper-based course content, learning aids, teachers notes and student workbook were all developed by the author and represented a traditional form of vocational course material and sequencing. Emphasis was placed on incorporating affective-domain enabling content and student activities as a result of the author's twenty years of professional experience in the field of computer servicing. The course was implemented throughout the HCT male and female colleges in 1996.

Versions of the Computer Helpdesk course

In its first incarnation, the Computer Helpdesk course formed an 8-week, 5 x 45-minute periods-per-week course comprising six chapters or units. The first four chapters laid the theoretical foundation of problem identification, analysis and solving leading up to the final two chapters that covered the handling of helpdesk calls. Numerous opportunities for role-playing exercises were provided throughout the course so that students could develop affective domain aspects and practice effective customer service techniques. Table 1 shows the chapters within the course at that time.

Table 1

Chapter structure of the original Computer Helpdesk course

Chapter	Title
1	Functions of a Computer Help Desk Operation
2	The Problem-Solving Cycle
3	Problem Solving Techniques and Tools
4	Resolving Software and Hardware Problems
5	Handling Customer Problem Calls (A)
6	Handling Customer Problem Calls (B)

The 1996, 1997 and (early) 1998 offerings of the course were given the course code of COMP2445, and was always offered in year 2 - final term of the CIP program. The course, at the author's insistence, was scheduled to complete just before students went out into the workforce on their workplace experience course as it was believed that the skills learned and the practices developed could potentially assist students during their work placement experience.

Table 2 shows how the 1998 revised version of the Computer Helpdesk course integrated within the CIP Certificate structure at that time. It is worth noting that this version of the course was rescheduled to be undertaken by subjects after they completed their workplace experience.

Table 2

1998 CIP Program Matrix - year 2, term 8

Timeframe	Course Code	Course Name
Year 2 - Term 8	COMP 2442	Help Desk I
	COMP 2444	Help Desk II
	COMP 2446	Business Software Project
	ENGL 2404	English for Computing IV
	ENGL 2406	General English Skills IV
	WORK 2464	Work Placement: CIPR

The content of the course remained the same between 1996 and 1998, however in 1998 the emphasis on the affective domain aspects and exercises decreased as a result of decisions made by the CIP Program Team. The single course was split into two halves, each half being given a separate course code and name resulting in the designations COMP2442 , COMP2444, and Help Desk I, Help Desk II respectively. Table 3 shows the learning outcomes or objectives of this two-course set. It is interesting that the HCT course catalogue for 1998 stated "The two help desk courses run in conjunction with each other over a 4 to 5 week period (10 hours per week). The course content is best taught as one course and it is highly recommended that the same instructor teach both courses" (HCT, 1998).

Table 3

Computer Helpdesk dual-course objectives

Help Desk I goals	Help Desk II goals
Describe the function of a computer help desk operation	Develop help desk skills
Develop problem solving techniques	Produce documented solutions to simple problems
Respond to problems as a help desk operator	Practice solving simple problems

In 2001 the 1998 version of the Helpdesk course was changed back to a single course with a new course code and name of CIPR2204 and Information Technology Support respectively. Table 4 shows how this course was integrated within the current CIP Certificate structure.

The emphasis of the course once again changed due to the wishes of the CIP Program Team and this time most of the affective domain aspects and exercises were removed in favor of competency-based style technical tasks. The timing of conduct of the course remained the same as that from 1998, but in 2001 the academic year for CIP changed from four terms to two semesters.

Table 4

2001 CIP Program Matrix - year 2, semester 4

Timeframe	Course Code	Course name
Year 2 - Semester 4	CIPR 2202	Introduction to Networking
	CIPR 2204	Information Technology Support
	CIPR 2206	Database Applications
	ENGL 2212	English Skills IV
	WORK 2208	Work Experience

The single, constant element in all versions of the course from 1998 is the availability of an associated course multimedia simulation learning aid called The Virtual Workplace. Developed by this author, the learning aid integrates with the chapters and goals of the course and emphasizes the affective domain aspect of interpersonal communication required when solving customer problems.

Use of The Virtual Workplace learning aid, however, is the choice of the individual course teacher, and few Computer Helpdesk teachers have appeared to use the learning aid.

Conclusion

In this chapter we have seen that The Computer Helpdesk course was developed by the author for use in the CIP program. Initially, numerous opportunities for development of customer service attitude were embedded within the course, however modification to the structure and content of the course between 1998 and the present has resulted in many opportunities being replaced with exercises designed to develop competency in computing.

In 1997, a computer based multimedia program called The Virtual Workplace was developed for use with The Computer Helpdesk course. This computer program models effective customer service and attitude, and provides many opportunities for learners to practice customer service interaction.

CHAPTER THREE

THE VIRTUAL WORKPLACE LEARNING AID

Introduction

This chapter describes the design philosophy and the structure of The Virtual Workplace simulation computer program, and addresses the usage of the product that is designed to support The Computer Helpdesk course.

Design

Integration of the content sections of the simulation with the chapters and themes of the vocational course is necessary so that the simulation program is a beneficial and rewarding learning experience for students. The themes and menu selections in the simulation were designed to match the Computer Helpdesk course chapters as they appeared between 1996 and 1998 and are:

- Functions of a Computer Help Desk operation;
- The Problem Solving Cycle;
- Problem Solving Techniques and Tools;
- Resolving Software and Hardware Problems;
- Handling Standard Customer Problem Calls; and
- Handling Difficult Customer Problem Calls.

Using the simulation

Subjects undertake the simulation mainly in conjunction with Chapter Five and Chapter Six of the Computer Helpdesk course. However material and exercises for the other chapters were also embedded. When the simulation starts, the title screen appears and is followed almost immediately by an accompanying voiceover which briefly explains the purpose of the program. When the voiceover finishes, the main menu screen appears. Figure 5 shows the main menu screen, which provides multiple content areas that can be selected and undertaken in any order that the student desires.



Figure 5 The Virtual Workplace menu screen

Students select from seven menu items, with each menu item using text, as well as a graphic, to indicate what it represents. The menu items are titled *introduction*, *communication*, *videophone call*, *teamwork*, *problem solving*, *helpdesk* and *internet*.

The menu item or selection titled *videophone call* forms the core of the learning experience, the other six sections function as support material to concepts covered in chapters one through four of The Computer Helpdesk course. The *videophone call* section encompasses all the content and objectives in Chapter Five and Chapter Six of the course.

Setting the scene

In support of the Computer Helpdesk course objectives, the simulation attempts to provide a realistic and vivid simulation of work typically required by that of a computer help desk operator. When students start the simulation they enter a microworld (refer to the Literature Review section of this thesis for details about microworlds, pp. 56-59) of a customer service helpdesk where they assume the role of the helpdesk operator.

Six specific pedagogical principles informed the design of the simulation:

- Collaborative Learning;
- Adaptive Learning;
- Complexity;
- Ludic Learning (left and right brain function);
- Flexible Learning; and
- Formative and Summative Assessment.

Notwithstanding that students using the simulation need careful guidance and support from teachers, a significant element of learner control is incorporated or embedded within the simulation. Reeves (1997) proffered that whilst conventional wisdom suggests that learner control makes Computer-Based Education (CBE) more effective through individualising instruction and making it more motivating, numerous studies have not determined this. An important difference between conventional computer-assisted instruction (CAI) and multimedia is the sequencing of the instruction and information (Oliver, 1994), and it is believed that learners have greater control with multimedia materials, and that their choices are typically non-linear in fashion. These elements combine to result in greater user motivation. Whilst this non-linear control may result in a haphazard approach by learners, this type of control is one of multimedia's key characteristics and strengths if it is designed appropriately, and The Virtual Workplace design incorporates this view.

The simulation presents a videophone based computer problem call from a computer helpdesk customer. The customer's face appears full-screen and his voice comes through the attached computer speakers requesting help and providing feedback as and when appropriate. The customer's feedback couples with the responses from the subject's "manager", a person previously identified to the student during the simulation. This feedback takes the form of audio, visual, and combined audio-visual responses. With some feedback there is deliberate exaggeration of the caller's facial expressions and voice intonation in order to provide an element of humour to promote

the level of student enjoyment. This feedback provides a means of modelling desired student behaviour, as well as reinforcing appropriate affective-domain attributes. This supports the view that “student attention during the repetitive use of modelling could be enhanced by using teaching aids and methods which stimulates a variety of senses” (Field, 1991).

Structure of the simulation

The structure of the videophone call experience is a multi-path, multi-level, multi-choice schema as shown in Figure 6. Students' answers at each level of the discourse determines the path that will be followed. The paths are *appropriate*, *ambiguous* and *inappropriate*. When the student proceeds far enough down a particular pathway, they are effectively locked in and cannot alter the outcome. The problem can only be resolved by exiting the call via the *appropriate* pathway. Any other exit will result in no problem resolution and varying degrees of approval or disapproval.

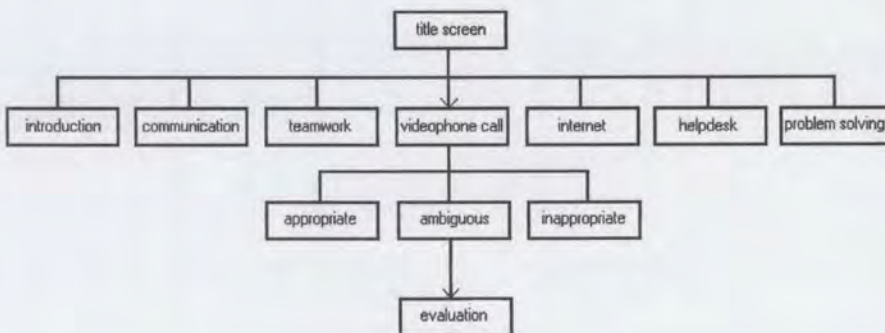


Figure 6 Basic design structure of The Virtual Workplace

Conclusion

In this chapter it was seen that a computer multimedia software program called The Virtual Workplace was designed to integrate with the content and sequencing of The Computer Helpdesk course. The program emphasised two of the six chapters in the course, however material for the other four chapters in the course was also included.

The program primarily simulates a customer making a service request via a videophone call, and the learner must respond accordingly. The videophone call section of the program is designed with three pathways which learners can proceed along. Only one of the pathways is appropriate and provides for a successful outcome to the learner.

CHAPTER FOUR

REVIEW OF LITERATURE

Introduction

This chapter discusses the literature relevant to attitude in general, customer service attitude specifically, attitude and constructivism, aptology, and the use of computer-based simulation programs. Methods for determining attitude, including the use of computers are discussed and previous studies that determined attitude are overviewed. The chapter concludes with a summary of the chapter's findings.

The purpose of the study was to determine if attitude about customer service changed when female CIP students interacted with a purpose designed vocational training course augmented by a purpose designed computer-based simulation program.

The use of a course purposely designed to prepare subjects for working in a computer customer service role, called The Computer Helpdesk, with a computer program purposely designed to influence attitude in the specific area of customer service, called The Virtual Workplace, is core to this study.

Aspects about attitude, the determination of attitude, and educational constructivism are integral to both the vocational course and the learning aid.

Attitude

To study any change in attitude one must first gain an appreciation of what constitutes attitude, and then decide how one might determine attitude. One definition states that an attitude is defined as a "combination of concepts and information combined with a judgment that results in an emotional response that affects behaviour" (Wlodkowski, 1985). Concepts and information don't just simply appear in the minds of people, they must go through some form of cognitive process of both recognition and assimilation. Another definition states that attitude is a predisposition to classify objects and events and to react to them with consistency (Encyclopaedia Britannica, 2000).

The classification of objects and events, and the subsequent reaction also suggest a degree of cognitive process within a person. If one accepts that attitudes are a developed predisposition resulting in a consistent response to specific situations (Fishbein and Ajzen, 1975), they can potentially then be modified or changed.

Attitude and Social Interaction

There are numerous theories on how attitudes are formed or changed, some of these include, but are not limited, to cognitive dissonance, attribution,

expectancy-value and consistency (Fishbein et al, 1975). But a valid attitude of any sort about customer service, whether it is either positive or negative, demands a social experience base with which to work since customer service is a form of social interaction. This is perhaps a reasonable premise because of the human interaction and communication demanded by the process of interpersonal communication that takes place. Logically, one's experience must inform attitude, because attitude is a composite comprising internal beliefs, pre-dispositions and learned behaviour, things which equate to and are heavily influenced or informed by personal experience.

The use of Bandura's Social Learning theory (Bandura, 1993) may be appropriate when learning about attitude, as too might Hull's Drive Reduction theory (Hull, 1943). Social Learning theory for example encompasses situational influences that influence behaviour and attitude. Attitude has traditionally been considered difficult to assess directly and research suggests that assessing behaviour, which is most likely the indirect outcome of attitude, is easier.

The Social Learning theory (Bandura, 1993) relies heavily on the observing and modelling of behaviour and spans both cognitive and behavioural frameworks but the connection between attitude and behaviour is a challenging area of research. Even though definitions of attitude commonly refer to behaviour or the intention to behave, the proof of such a connection is considered tenuous.

Fishbein and Ajzen (1975) discussed the link between attitudes, intent and behaviour, but also claimed that attitudes alone are not good predictors of behaviour. With a relationship between personal interaction and a person's beliefs and behaviour, and consequences of behaviour or attitude, it could be stated that rewarding consequences affects personal attitude (Zimbardo, Ebbeson, & Maslach, 1977). A positive experience of customer service therefore should inform or shape a person's attitude differently than a negative experience would. The concept of rewarding appropriate attitude or behaviour appears also in Hull's Drive Reduction theory (Hull, 1943) where the end-result of a positive reward for an appropriate behaviour reinforces the appropriate behaviour - the stimulus (S) operates on the organism (O) causing a resulting action or outcome (R) which is rewarded and subsequently reinforced. Hull's Drive Theory conforms to a behaviourist view of attitude.

Attitude and Cognition

One could also suggest that a study assessing subject's attitude requires those subjects to be cognisant of their own attitudes and how their attitudes align with those required for the world of international work. This alignment with international work accords with the Mission Statement of the HCT, and a cognitive element of attitude appears in most definitions of attitude where attitudes are seen to be the result of learning from a variety of sources (Hergert, 1997). This cognitive, as opposed to behaviourist view, appears to demand that students must demonstrate metacognition, or higher-order thinking, therefore it is logical to suggest that whichever multimedia

education tool or aid is used it should engage subjects cognitively and enhance their higher order thinking.

This possible need for metacognition within students supports the core or underlying basis of the Cognitive Response Theory (Greenwald, 1968), a model which describes how one acquires and then changes attitude about something through a persuasion scenario. It has been used by researchers in the field of social psychology, but is cognition really related to attitude? Some consider the two to be highly related; Miller (1981) believes that cognitive responses mediate attitude change. This strongly suggests that cognition and cognitive responses affect final attitudes. The model assumes that learning takes place or in other words that learning plays a role in determining attitude change. But the development of higher-order thinking and learning that might enable the modification of attitude, may demand a sophistication of non-sequential and adaptive learning. To this end computer-based simulation programs of the microworld type offer potential for attitude change. The act of immersing students within a scenario or set of well-designed and controlled experiences may facilitate effective learning to a greater degree.

Determining attitude

To assess attitudes, researchers have used combinations of both quantitative and qualitative research methods (Draper et al 1996, Reed and Palumbo 1992). Attitudes, however, cannot be directly perceived but must be inferred.

This means that one must obtain data from either the observation of behaviour, or obtain data from what is verbalized or written. The elements involved in the composition or affectation of attitude are shown in Figure 7, which shows a diagram adapted from Underwood (2002, p.1). This diagram demonstrates the somewhat nebulous aspects that assessment of attitude entails. Elements such as emotion, cognitive responses, and overt actions are open to interpretation when used to infer attitude.

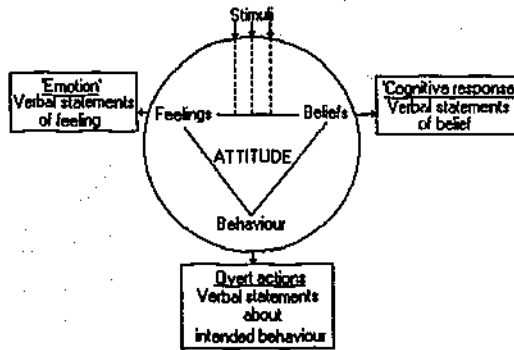


Figure 7 Elements that comprise attitude

The connection between attitude and behaviour is somewhat tenuous however, one must elicit a communicative response to infer the attitude. But as a researcher, does one get what is valid or does one get only what is acceptable to be divulged by the subject? To this end, researchers assume the responsibility for creating reliable instruments or tools that accurately gather valid data (Hergert, 1997). These instruments can comprise questionnaires or surveys, therefore when obtaining data via expression or assessment of attitudes, effective communication becomes critical (Hergert, 1997).

The written form of such tools usually comprise Thurstone or Likert scales (Burns, 1992) with an essential difference between the two being the complexity or number of the questions or the statements used. The main issue is that any instrument used must communicate effectively for it to be valid.

Previous studies about attitude change

An example of a previous study of measuring attitude change that involved computer technology, in this case in the form of a computer-based software multimedia program similar to that of the combination of the Computer Helpdesk course and The Virtual Workplace learning aid, is a research project developed at the Missouri Institute of Mental Health (Epstein, Sage, and Wedding, 1995). Researchers at the Institute created a multimedia exhibit, comprising both a fixed display of still photographs, and an interactive multimedia computer program for public education on mental and addictive disorders. Using two different samples they were able to show significant improvement in knowledge about the disorders and significant positive increases in attitudes towards persons with mental illness, using a 27-item Likert type pretest/posttest questionnaire. Their study included a no-treatment control group and controlled for pretest sensitisation via a posttest-only group.

A second example, a study by Chait & Stires (1979) undertaken at the Indiana University of Pennsylvania, used a pretest/posttest assessment format, and employed what could be considered as an unusual variable in its

attempt to look at "the relationship between attitude change, recall of previous attitudes and dissonance between these two perceptions" (Chait & Stires, 1979, p2). Seventy-two female, university undergraduate students were randomly assigned to one of three treatment groups, and each group underwent a different sequence of pretest, recall survey and posttest using the same assessment instruments. Chait & Stires (1979) state that:

Goethals and Reckman administered a pretest which included a measure of attitudes toward bussing. Within two weeks, subjects participated in a discussion in which a confederate argued against their original position. A posttest showed that the confederate was effective in changing their attitude. (p. 2)

The unusual variable was the use of the confederate whom argued against the attitudinal position taken by subjects in their pretest. An important and perhaps relevant finding which may impact upon the study found that "the act of telling someone one's attitude is a salient cue that we use when inferring what our attitude must be" (Chait & Stires, 1979, p2). This reflects probably on the issue of subjects being cognisant of their own attitude in this author's study so it informs the study design. Another interesting aspect of the Indiana study was the use of a 30-item pretest questionnaire using a 31-point scale for each question. This number of points on the scale appears quite large and would most likely be inappropriate with subjects for whom English is a second language. It is also worth noting that the posttest questionnaire differed from the pretest questionnaire in that it provided a 4-point scale.

How the posttest questionnaire could affect the study is explained by Chaitt & Stires (1979):

A posttest can (a) make the experiment more reactive, or (b) become a source of genuine attitude change by causing subjects to reflect on the meaning of the communication, something they might not otherwise have done. (p. 5)

Point (b) above suggests that the need for metacognition within subjects desired or perhaps even a pre-requisite for achieving attitudinal change.

A third study had the aim or purpose of developing a viable survey questionnaire for assessing prospective teachers' attitudes and perceptions about multicultural education issues, and also tested the efficacy of the instrument for identifying attitude differences among those prospective teachers. (Allain & Pettus, 1999). The primary instrument initially contained fifty positive and negative statements based upon issues and themes of diversity, but then developed into a Likert scale format instrument. The questionnaire was used as both a pretest and also as a posttest with sixty-two subjects. To verify its validity, the instrument was sent to four expert judges who were asked to rate each item on its potential for assessing attitude accurately, and then identify the most appropriate response to each item to reflect the most positive attitude toward the issue being addressed. This use of expert judges appears to hold merit as it assists in producing content validity when a new instrument is being developed and/or tested and this element was incorporated into in the author's study.

A fourth study, by Kay (1989), explored differences in computer attitudes and between 384 male and female tertiary education students in a university in the United States. All measures used were based upon a seven point Likert scale which formed the primary instrument. A secondary Semantic Differential scale instrument was also included in the study. The scale had one sub-scale comprising fourteen questions for measuring cognitive attitude and one comprising twenty questions for measuring affective attitude.

A fifth study into attitude about computers, by Turnispeed and Burns (1991), sampled 232 college students and 300 non-student working adults in the United States, with the attitude instrument comprising a slightly updated version of an existing and reliable twenty item Likert scale instrument first developed in 1963. The instrument used was unfortunately too general for use in the author's study at Fujairah Women's College.

The commonality between each of these studies is the use of a Likert-scale questionnaire as the primary assessment instrument. The questionnaires assigned numerical weighting to selections made by participants. All but one of the studies used Likert scales that were developed within the particular study. If issues of validity and reliability can be properly addressed then the use of a newly developed Likert-scale assessment instrument should not present insurmountable problems in this study, as shown in the examples given previously.

The issue of validity of assessment instruments is alluded to in the abstract of one paper when it states "The results suggest that attitude researchers should, at the very least, devote more attention to the empirical response characteristics of items on a Likert attitude questionnaire" (Laughlin, Robberts, & Wedell, 1999, p211). The paper also suggests that Likert attitude scores exhibit either higher composite reliability or higher test-retest reliability as compared to Thurstone attitude scores, and that the Likert technique is easier to use and more efficient time-wise than the Thurstone technique. With respect to the design or structure of a typical Likert scale, the paper indicates that a number of preliminary items should be developed that express a clearly negative or a clearly positive opinion, and that neutral items should not be used. Responses to negatively worded items should be reversed scored. In the words of the paper's authors "the final scale is limited to a reasonably small set (generally 20 or fewer) consisting of items that appear optimal with regard to one or more of these criteria" (Laughlin et al, 1999).

Given the limited English language competency of subjects in the author's study at Fujairah Women's College, a small number of items may be better. Three aspects specifically informed the design of the questionnaire: the type of data that were to be collected; the English language competency of the typical subject in the study; and the real-world life experience level of the study sample that will use the instrument. Each aspect therefore encompassed multiple variables that made the selection or design of the primary data collection instrument important.

Some of these variables were:

- Culture (of the sample);
- Life experience;
- Gender role beliefs;
- Identification of specific attitude; and
- English-as-a-second-language competency

The imperative for a simple-to-use and understand instrument, coupled with the use of simple English language text suggested the use of a Likert type rating scale of the type(s) as described in this section of the thesis.

The possible alternative of using Thurstone type differential scales for testing attitude was, in the study, rejected due to the language complexity inherent in such scales. The Thurstone scale requires a large number of subjective evaluative statements about a particular topic (Burns, 1998), and ensuring a full and accurate translation of an English language version questionnaire of some bulk or complexity into an Arabic version, if so required, would have proven problematic in the context of the study. Too many items or statements could also have posed problems as far as subject participation was concerned, raising doubts about the validity of data obtained as a result and potentially even placing the successful completion of the study into doubt.

Using a computer to measure attitude

Computers have been used to gather data about attitudes. Hertger (1997), for example, explored assessing and analyzing attitude change through the use of a purpose-made multimedia survey instrument. Using multimedia authoring software Hertger designed an on-screen presentation and selection survey instrument. A short video clip or still image appeared, accompanied by verbal dialogue, and subjects entered textual responses into a freeform text area, selected pre-defined selections, or moved a slider along a scale that then effectively chose a number. Data triangulation occurred by means of identifying subjects' attitudes at various points throughout the exercise, examination of the freeform textual areas and pre-defined items, and finally by analysis of the slider numerical selections. Key concerns for Hertger were whether the multimedia instrument affected or interfered with the selection process employed by subjects, and whether study subjects were sensitised to the topics presented.

The use of a computer-based attitude assessment and recording tool, like the one designed by Hertger (1997), could provide automatic statistical analysis of recorded data, as well as force subjects to answer all items or questions presented. By programming the computer so that progress cannot occur unless a selection is made, subjects could be forced to make responses. Production of such a computer based instrument was not possible given the time constraints in the study at Fujairah Women's College.

When assessing attitude, qualitative data collection as opposed to quantitative data from Likert scales has commonly taken the forms of: note gathering during interview or review sessions; recording of discussions with teaching staff; student-completed questionnaires; and/or the use of participant completed logs (Gunn, 1997). Interviewing also could form part of an effective attitude assessment combination. The elements of interview and note-taking are both present in this study to accomplish triangulation of data.

Importance of effective customer service attitude

Of particular relevance in this study is whether effective customer service attitude is actually of importance in a global sense and not just because this curriculum writer, as a teacher in the HCT, believes it to be. An examination of business related articles in the public domain suggests that effective customer service attitude is deemed important and yields data that adds a "human" dimension to the study.

One business writer argues that it is not what people think that matters but how they react that matters. There are always choices in how one can react, and a positive attitude about customer service is "more important than anything learned in customer service training" (Thackston, 2001, p1).

It is perhaps no coincidence that Swindoll (in Thackston, 2001) states:

The longer I live the more I realize the impact of attitude on life. Attitude, to me is more important than the facts. It is more important than the past, than education, than money, than circumstances, than failures, than successes, than what other people think or say or do. It is more important than appearance, giftedness or skill. It will make or break a company...a church...a home. The remarkable thing is we have a choice every day regarding the attitude we will embrace for the day. We cannot change our past...we cannot change the fact that people will act in a certain way. We cannot change the inevitable. The only thing we can do is play on the one string we have, and that is attitude. I am convinced that life is 10% what happens to me and 90 percent how I react to it. And so it is with you...we are in charge of our attitudes! (p. 2)

Thackston (2001) links Swindoll's general view of attitude with that of customer service, as do others. Carbonara (1996) explores similar ground when he describes the ongoing search for quality prospective employees by a recruiter for Southwest Airlines in the USA. The recruiter looks for the 'right attitude' to match that needed by Southwest Airlines, a no-holds barred 'can-do' form of customer service commitment. He looks for "an attitude...a genuineness -- a sense of what it takes to be one of us" (Carbonara, 1996, p73). His overarching view is that what you know changes, but that who you are doesn't change. It is this premise that adheres with that which is espoused by others when they refer to customer service attitude.

Other business journal authors concur with these views, but bring forth their views from different directions or perceptions. One article from a financial business institution for example has as its main theme the retention of employees, however it does also suggest that high quality customer service

stems from appropriate customer service attitude within customer service providers. In a somewhat circular argument, the same article states that customers respond that they receive better service, or are more satisfied with the service they receive when the employee providing that service is a long-term employee. Another article echoes similar themes when it states that the treatment of customers by staff is the number one customer turn-off factor. The inculcation of a good customer service attitude, one in which real empathy for the customer is shown by staff, is critical. When the customers are happy, the staff are generally happy too.

Determining customer service attitude

Numerous methods have been used to determine the attitude about customer service, particularly from the viewpoint of the person receiving the service, the customer. Few studies though have looked at customer service from the viewpoint of the service provider. To determine customer service attitude one must use procedures and processes similar to those employed to determine attitude in general.

Although some customer surveys use interviews, most tend to comprise a questionnaire. Shippmann, McLellan, & Hartmann (1996), when reporting on the results of the customer service questionnaire they used, indicated that it had four sections, with respondents asked to show their degree of interest in the particular topic by using a five-point Likert scale weighting. Each of the four sections had an average of 37 statements about service workshops.

Other studies into customer service attitude have also used a Likert scale questionnaire.

One questionnaire presented nine statements, with each statement providing a scale from 1 to 5 representing, respectively, Strongly Disagree to Strongly Agree. The concept was extracted from another source, which presented a larger number of statements covering broader aspects of customer service, however in a somewhat simplified solution it is suggested that a score above 40 proves indicates an excellent attitude toward your job whilst a score below 25 indicates a non customer-relations job would probably be best for you.

Such simplistic determination raises concern in the author's mind for the use of the limited number of 9 statements raises doubt about the potential validity of results derived from them. This issue of validity is considered more fully in the Data Collection section of this thesis.

A final example comes from an online article titled *What is an Employee Attitude Survey?* (HR-Survey.com, 2001).

This article provides examples of typical rating scales used in attitude surveys or questionnaires. Such scales include 1 = "Strongly Agree" and 5 = "Strongly Disagree" to 1 = "Very Satisfied" and 5 = "Very Dissatisfied". In its view "a questionnaire used for Attitude/Opinion Surveys typically contains items that are rated on a 5 point scale" (HR-Survey.com, 2001, p1).

The article further suggests that whatever instrument is developed it should be pre-tested to gather feedback on various aspects such as its content, relevance, length and comprehensiveness of the item set, as well as the overall experience of completing the instrument.

It appears, from the literature, that determining customer service attitude is usually accomplished by using instruments similar to those used in determining attitude in general, namely a Likert scale questionnaire or survey. Whilst item or statement banks that can be used in general attitude assessment are readily available, relatively few if any pertaining specifically to the area of customer service attitude from the perspective of the service provider appear to exist.

Constructivism and attitude

Constructivism proffers a view of learning as a process of provisional, adaptive modelling of the world. One explanation given of constructivism is "Constructivism (in my opinion) is about putting a learner in a suitable learning environment where they can interact with the environment and develop their own understanding of that environment, or "construct" their own understanding of the learning situation" (Doherty, 1998, p1). What is emerging from educational applications of the new media worldwide is a view of the learning-process that is consistent with this position.

Constructivism and The Computer Helpdesk course

Constructivist learning theory assumes that knowledge is not a passive imprint from the world outside but an active construct. Ideally, educational technology multimedia-based simulations like The Virtual Workplace and vocational courses like the Computer Helpdesk course provide an exploratory learning environment in which data is accessed according to perceived need, in line with the constructivist concept. The Virtual Workplace helps the learner to build up, test and revise models of a given situation until internal adequacy or satisfaction reached, although that adequacy is never, by definition, final.

The Computer Helpdesk course presents subjects with a graduated series of knowledge steps with which to develop their knowledge base about customer service. It provides ample opportunities for developing, elaborating and then practicing knowledge and skill by the use of paper-based exercises, quizzes, role-playing scenarios and problems to solve either as an individual or as a member of a team. The steps provide a learning scaffold, through which students see models of effective customer service and then have chances to emulate or replicate such customer service.

Constructivism and The Virtual Workplace simulation program

It appears reasonable to suggest that since attitude is a predisposition to Respond consistently (Fishbein and Ajzen, 1975), the theory of constructivism, as espoused by Piaget in his Theory of Cognitive

Development (McInerney and McInerney, 1998), establishes the possibility of a link between attitude and constructivism. Piaget for example argued that children construct their own understanding through interaction with their environment – in other words they use constructivism (McInerney and McInerney, 1998). The Virtual Workplace seeks to cocoon learners within a customer service microworld in which appropriate customer service behaviour is modelled and practiced.

Captology

A literature search uncovered the relatively new field of *captology* (computers as persuasive technology), a field combining the areas of psychology and computer technology. Captology is new, therefore there is only a modest amount of literature in the public domain about it, and what does exist is invariably in on-line journal article form. No reference texts were identified, however this is most likely because captology is such a relatively recent concept and is possibly even considered an esoteric subject, being proffered first in 1997 (Fogg, 1998). The only definition available publicly is that captology constitutes computing technology that is intentionally designed to change a person's attitudes or behaviour in a pre-determined way (Fogg, 1998).

It is important to define what captology really comprises so that one can determine whether specific products can be described as a form of captology, or whether captology is a useful or productive construct in its own right.

Captology comprises multiple elements such as computer hardware, computer software, persuasion, and finally the human aspect or people.

Traditional views about computers in education tend to categorize their usage into fairly simplistic modes such as *tutor*, *trainer* and *mentor* as given by Field (1991), or similarly as *tutor*, *tool* and *tutee* as discussed by Newhouse and Oliver (1992). But these definitions appear simplistic, so can one honestly or even logically consider any field that purports to understand human beings and their feelings or attitudes as simple? I suspect not.

The technology aspects are reasonably well defined, however examples of the psychological aspects of motivation and persuasion through the application of technology are generally difficult to find. Whilst research has occurred separately in the area of educational technology as well as in the area of attitude, there has been little that combines the two.

The marriage of the two areas of computers and persuasion, is pointed out by Anthes (1999):

Computers can persuade - intentionally alter users' attitudes or behaviours - through a variety of means, including flattery, seduction, fantasy, competition, humor, positive reinforcement and appeals to conscience. In doing so they can make significant contributions in fields such as health, safety and education. (p. 1)

The combining of computing hardware with purpose designed software provides an environment with which to potentially change attitude or persuade users. Anthes further suggests that for the most part neither

the persuasion philosophies nor the hardware employed are new, rather it is the combination of the two that is relatively new (Anthes, 1999). It is prudent to clarify what is meant by the term *computer* in Anthes (1999) article. He states that the computer hardware is the vehicle or platform upon which the necessary software will operate. The software or programmed instructions provide the education elements and outcomes, and also provide the elements of branching, adaptation and discourse as are, for example, programmed within The Virtual Workplace simulation program.

Captology is not core to this study, however if one is examining just how effective The Virtual Workplace simulation program or microworld is when used in conjunction with The Computer Helpdesk course, then captology could assume considerable significance. In this study it is sufficient to be aware of captology and what it may mean because in the author's view The Virtual Workplace simulation program clearly matches the definition of captology given by Fogg (1998). If one accepts this then captology is entwined within the study and automatically becomes important. The Virtual Workplace was designed to: engage learners; motivate them to proceed through all sections and complete it; and to model appropriate customer service behaviour. An important aspect of the design therefore was ludic, or playful learning.

Knowledge and play within The Virtual Workplace

The Virtual Workplace simulation program conflates two polarities which rationalism has kept apart: knowledge and play. However, as Sperry's (1968) research into brain-function may suggest the wider the range of brain functions involved the greater the overall impact on learning and the greater the degree of psychological integration by the learner. Other researchers address this issue by suggesting that teachers should employ multi-sensory avenues within their teaching so as to reach their students' effectively and consistently.

A key feature of many multimedia simulations like The Virtual Workplace, is the combination of words and pictures, and this area spawned research which resulted in The Dual Coding Theory (Paivio, 1986). Dual Coding Theory attempts to give equal weighting to both verbal and non-verbal processing of data, to pictorial representation and language text or words.

The dual functionality embedded within a multimedia simulation accommodates the theory espoused by Paivio (1986) that:

Human cognition is unique in that it has become specialized for dealing simultaneously with language and with nonverbal objects and events. Moreover, the language system is peculiar in that it deals directly with linguistic input and output (in the form of speech or writing) while at the same time serving a symbolic function with nonverbal objects, events and Behaviours. Any representational theory must accommodate this dual functionality. (p. 52)

The Dual Coding Theory assumes that two cognitive systems exist, one for the processing of non-verbal or pictorial events, and another for dealing with language, simultaneously. The Dual Coding Theory is also cited in studies of animation to explain learning through multimedia (Rieber, 1996).

The design of The Virtual Workplace takes into account that Dual Coding Theory has been applied to numerous areas such as problem solving, concept learning and language and attempts to utilise this feature. It is this integration within the learner that potentially holds the prospect of modifying attitudes. Saddy (1996) makes the argument that users of a computer screen, especially one displaying graphics, may use their brain in a way different than when using say, a book. This suggests that one must be careful when demanding that users of The Virtual Workplace read screen based text as their main data input.

Left and Right Brain Hemisphere

Saddy (1996) attributes a biopsychologist, who studies brain laterality and its effects on information processing, as stating that whilst the left hemisphere of the brain does most of the language processing the right processes images. Since multimedia tends to deliver its message via imagery, with text almost an incidental element, this may have profound effect on not only what is delivered via multimedia but why, because the biopsychologist suggests that the hemisphere of the brain that processes images does not filter messages, or in other words apply judgment as stringently as the hemisphere that processes

text (Saddy, 1996). This characteristic might assume significance in the design, let alone the purpose of multimedia material being used to attempt change in attitude. It assumed some relevance in the design and usage of The Virtual Workplace.

The simulation incorporates knowledge and play, however as Sperry's (1968) research into brain-function may suggest, the wider the range of separate brain functions involved the greater the overall impact on learning, and the greater the degree of psychological integration by the learner, it is this psychological integration that may hold an important place with respect to the development of effective attitude in the area of customer service.

Studies of other simulation computer programs

A study by Stoney and Oliver (1999) reported the results of the application of a learning microworld, such as is The Virtual Workplace, which effectively immersed students in a business situation by extensively using digital metaphors such as a reception desk and stock exchange. The use of a metaphor is also employed in The Virtual Workplace whereby subjects are effectively immersed within a customer service interaction scenario. It appears that this product developed self-awareness in students and this may be valid, for "multimedia applications can provide a rich environment for stimulating user thought processes..., eliciting user reactions, and aggregating and analyzing data" (Hergert, 1995, p23). From the results of the study undertaken by Stoney and Oliver (1999), the authors were convinced

that the use of interactive microworlds leads to learner cognitive engagement. A microworld will drive learners towards greater levels of higher order thinking. In their study Stoney and Oliver (1999) attempted to provide a multimedia experience that didn't follow the traditional teaching methodologies such as linear sequencing of activities and lock stepping of content, and to a great degree The Virtual Workplace also avoids these pedagogical pitfalls. It is reasonable to perhaps suggest that higher-order thinking, or metacognition, may make reflection about one's attitude more achievable than if one did not possess such cognitive capacity.

The Virtual Workplace provides subjects with an interesting, easy-to-use and reuse, way of experiencing at least in a pseudo fashion, a typical computer helpdesk customer service interaction. In effect, it models appropriate behaviour and responses and pseudo rewards subjects for successful completion by providing positive verbal and graphical feedback from a pseudo manager.

Thomas and Hooper (1991) performed a review of simulation studies and came up with a system of classifying simulation programs as either *experiencing*, *reinforcing*, *informing* or *integrating* functions. Higher-order thinking is in their opinion apparently more effectively attained through the use of *experiencing* simulations, a classification to which The Virtual Workplace conforms.

It is generalized that "(a) pure simulations are most useful for experiencing and integrating functions, (b) the effects of simulations are not revealed by tests of knowledge but are revealed by tests of transfer and application, and (c) impure simulations are most frequently used for informing and reinforcing" (Thomas and Hooper, 1991, p499). It is clear that the modelling of a scenario or a set of scenarios is a virtual prerequisite to enabling students to become engaged with and immersed within a simulation, and that by undertaking a simulation students are required to adapt and respond dynamically. The Virtual Workplace provides a clear model.

Previous research and limitations

A literature search revealed an abundance of research in the area of attitude change in general and also in the area of assessing customer satisfaction, however this author was unable to source specific data in the area of assessing attitude change about customer service in service providers.

Virtually all the studies into customer service concentrated on assessing the attitude that customers held about the customer service they received - an opposite or 180 degree view which assesses the attitude of the service provider was required.

Assessment instruments

A review of the field of psychology revealed numerous studies that assessed subject's attitudes, however none of these studies looked at customer service from the perspective of the individual providing the service. This meant that

no reliable customer service attitude assessment instrument could be found and necessitated the development of a custom-made instrument for use in the study. Given that attitude cannot be determined but must be observed and/or inferred, a custom-developed Likert style survey was applied in a pretest and posttest procedure. These data were used in conjunction with in-class observation of subjects and pre and post-course interviews with a subset of subjects because:

Attitudes held by others are not directly observable; they must be inferred from behaviour ..investigators heavily depend on behavioural indexes of attitude --e.g., on what people say, on how they respond to questionnaires, or on such physiological signs as changes in heart rate. (Encyclopaedia Britannica, 2000, p. 1)

The combination of survey questionnaire, observation and interview provided multiple forms of response from subjects which could be used to infer attitude.

Interviews with a subset of subjects were recorded by using an interview form. Video and audio recordings of the interviews were inappropriate given the Arab cultural norms exhibited in the context so the interviewer carefully recorded and transcribed subject responses. The answers to all questions posed (including ad-hoc or supplementary questions) were noted, along with any additional comments by the interviewee, and the interviewer assigned a weighting or professional judgment of the subject's attitude by marking a point along an attitude rating line.

Conclusion

This chapter has examined attitude, in general, attitude as a social interaction and attitude and cognition, and also how to determine attitude and how previous research studies have determined attitude change.

The core elements that make up attitude are a held belief or predisposition, and internal value judgment that results in a reaction. Some researchers consider that cognition is related to attitude, however this is not proven. The determination of attitude also proves difficult because it requires indirect assessment through methods such as survey, interview and observation rather than direct assessment. If attitude really is a learned predisposition about particular objects or subjects then the theory of constructivism, with its inherent reliance on interaction with the real world could be validly linked to how attitude is developed. An important consideration is that metacognition, or the understanding or self-awareness of what subject's know about their attitudes, may be an important element of note in determining, and ultimately shaping attitude.

Determining attitude presents problems given that attitude can only be inferred and not directly observed. Whilst many studies have used only qualitative research methods, combining qualitative and quantitative methods may be more effective. One instrument used in many studies reviewed is the Likert scale, and variations of it have been used in many ways with data often triangulated by interviews, observations and surveys.

The Likert scale method was chosen, not only because it enables the effective production of simply worded statements and avoids the complexity and excessive wordiness of the Thurstone scales, but also because it provides:

- greater ease of preparation;
- the fact that this method is based entirely on empirical data regarding subject's responses rather than subjective opinions of judges; and
- the fact that this method produces more homogenous scales and increases the probability that a unitary attitude is being measured, and therefore that validity (construct and concurrent) are reasonably high (Burns, 1998).

It is further suggested that most attitude researchers have used some version of the more efficient Likert scaling procedure to measure attitudes (Burns, 1998), so one may prudently have confidence with this type of assessment instrument.

The Computer Helpdesk course and The Virtual Workplace simulation learning aid utilize constructivism in their design and methodology in an attempt to develop both practical customer service skill and effective customer service attitude. The learning aid or simulation also may conform to that which can be described as a form of computer technology as a persuasive product within the relatively new field of captology. Such products may be effective with developing new attitude or may be effective in modifying existing attitude.

CHAPTER FIVE

METHODOLOGY

Introduction

In this chapter the structure and implementation of the study is presented, and the pilot trial of the primary assessment instrument is discussed.

Study Sample

The Computer Helpdesk Operations course was undertaken by 34 female subjects at FWC. The average age of the female subjects in the course was 19.5 years. Subjects were not streamed in any way but were randomly allocated into two class groups by student administrators at the start of the academic year. All had initially undertaken a set of English language and mathematics diagnostic tests when entering the college in year one of their CD full time program and after completing year one of their certificate program and transitioning or graduating into year two.

With a total of 34 from 37 subjects electing to take part in the study the percentage of involvement equated to 92% of the possible maximum number of subjects undertaking the course at FWC. Two subjects suffered medical

problems throughout the semester and were absent from significant parts of the study so their involvement was minimal, and one subject declined to participate in the study. The number of female subjects taking the course throughout the HCT was 170 which is a ratio of 34:170 or nearly 20%.

Study Design

Subsumed within a positivistic approach, the design or structure of the study was informed by a combination of elements including practices of past research studies of a nature similar to this study as identified in the Literature Review section of this thesis; adherence with current or appropriate research methodology as identified in research methodology texts; and with the reality of the working college context within which the research took place.

The study sought to quantify any change in subject's attitude about customer service, the attitude being the dependent variable in the experiment. The difficulties involved in achieving this task are considerable given that attitude cannot be directly ascertained but rather must be inferred through observation of actions, words and responses to questionnaires. This suggests that mixed methods would be required in this study.

The final design was a pragmatic one suited for use within the context of a working college because two existing student academic groups formed the sample. The following forms of data collection were used: pre-treatment and post-treatment attitude assessment survey of all subjects; observation of

all subjects during the course; and pre and post interviews of some subjects. Each form of data collection is discussed in the Data Collection chapter. The three forms of data formed the basis of triangulation of data from which answers were developed to the primary research question. With respect to validity of the research process used, because both subject groups take the same pre-tests and post-tests and the experiment happens over occupies the same length of time, the testing, instrumentation, maturation and mortality can be considered to not be issues of internal validity (Burns, 1998). The research process employed throughout the study is shown in Figure 8.

R -- GP -- O -- T -- O

where: R = randomization of subjects
GP = grouping of subjects (no set pattern)
O = observation / assessment
T = treatment (exposure to the course and multimedia aid)

Figure 8 Research process used

The grouping of subjects upon entry into the study essentially occurred the previous semester when college academic administrators randomly assigned students into two academic groups. No streaming or use of any academic or other criteria was used in this process. Given that the study was undertaken within a working college, the degree to which this author could modify things such as the alteration of assessment items, their sequence and timing was severely restricted. Table 5 demonstrates how the experiment conformed with, and used elements of, both experimental and the qualitative design.

Table 5**Common research designs, purposes and data collection methods**

Design	Purpose	Data collection
Experimental	Testing theories and predictions	Always quantitative Physical measures, questionnaires, structured interviews, structured observations
Survey	Description and exploration frequency, distribution, relationships between variables	Generally quantitative, may include some qualitative data Physical measures, questionnaires, structured interviews, structured observation, documents and records
Qualitative	Description and exploration In-depth accounts situations/experiences	Non-quantitative Un/semi-structured interviews Un/semi-structured observation Textual analysis

Reproduced from Payne (2000, page 6)

Study Sequencing

The sequence and timing for both the presentation of course content as well as the collection of quantitative and qualitative data during the 12-week course was dictated by the timing of the Help Desk course within FWC. All subjects undertook their work-placement work experience training during the five weeks prior to starting the Help Desk course, and upon returning immediately started the vocational course at the college. All subjects undertook final summative subject assessment in the latter part of week 12 of their vocational course, so a high degree of acceptance and understanding from the course teachers was necessary to ensure that the study succeeded.

Throughout the twelve week Help Desk course the subjects undertook the HCT-prescribed lectures, exercises and formative and summative assessments. Interwoven amongst these HCT prescribed assessments were the study's qualitative assessment methods of observation and interviews, and the quantitative assessment method of survey questionnaire. The timing of these is discussed in the Data Collection section of this thesis.

Initially a second quantitative assessment item was to be used in the study. A formative course assessment item, focussing on an aspect of interpersonal communication in customer service, was scheduled for use within the course, however the Help Desk course structure was changed by the HCT CIP Program Team after the author submitted the original research proposal document. The emphasis on affective domain elements of customer service was dropped in favor of the use of more competency-based assessment of specific customer-service activities. This resulted in the deletion of the second quantitative assessment item which was to be used in the study.

An impact of this deletion that proved significant was the imperative for the now primary quantitative assessment instrument to be valid and reliable, and these aspects consumed considerable time and effort as a result, with substantial effort being made to find an existing valid and reliable assessment instrument or, failing to find one the development such an instrument.

The use of a pilot or trial of the overall study is considered sound practice in research terms (Burns, 1998) because it provides an opportunity to refine or improve a study or an assessment instrument before it is used to collect live data. The running of an initial trial of the complete study however, was considered, but subsequently rejected because it was not feasible given the lead-time of six months between each Helpdesk course offering at FWC.

To assess the workability of the mechanics of the primary data collection instrument - the questionnaire - an initial short-form version of it, identical to the full version but containing a subset of six core statements, was trailed with Term 6 non-CIP full first-time Certificate/Diploma students. A current Term 6 CIP group could have been used at the time but since these students would later form the subject base for the study this exposure could have sensitised them (Burns, 1998) to the questionnaire before they encountered it during the study itself. After feedback from the trial of the limited version of the questionnaire was obtained, the complete version of the instrument was piloted with 18 subjects from a similar academic level but another program at the college.

Feedback from this partial pilot study allowed refinement and subsequent piloting again with a group of 35 subjects which enabled use of the instrument within this study by providing data about its internal reliability or consistency.

Support for this approach also comes from Fetherston (1999):

Your instrument should be piloted in order to confirm validity and reliability. Ideally you need about thirty or more respondents in order to calculate reliability indices. A smaller sample can provide valuable feedback about the wording of questions and can highlight any areas of understanding. (On-line, p. 1)

Issues of validity and reliability assumed significance given the fact that no existing suitable and therefore proven valid and reliable instrument was found before the study commenced. This resulted in the need to develop a suitable valid and reliable instrument.

The pre-treatment survey ascertained a baseline with respect to attitude whilst the post-treatment survey enabled a comparison of attitude to be made between pre-course and post course. Whilst subject attitude is the dependant variable (*DV*), the exposure to the Computer Helpdesk course and the concomitant exposure to The Virtual Workplace simulation program, which is a key multimedia learning aid used in the Helpdesk course, is the independent variable (*IV*). The controlled variable (*CV*) is the teaching consistency to both groups from separate teachers and considerable effort was expended by this author to minimise treatment differences between subject groups. Multiple meetings between this author and the teachers of the Helpdesk course were held to ensure that as much as possible course teaching was consistent between the subject groups.

CHAPTER SIX

DATA COLLECTION

Introduction

This chapter looked briefly at the pre-treatment and post-treatment instruments and the application of the assessment instruments. Data were collected by the use of: a pre-treatment and a post-treatment survey completed by all subjects; observation of all subjects in class; and semi-structured pre-treatment and post-treatment interviews with a subset of subjects. The design and development of the data collection instruments, and identification of the facilitator for their use are examined. Discussion about instrument validity and reliability as well as practical issues encountered during the data collection phase also occurs.

Pre-treatment and Post-treatment assessment instruments

The study employed plural data collection instruments: an attitude survey; an observation; and an interview. The attitude survey collected quantitative data whilst both the observation sheet as well as the interview sheet collected qualitative data. Table 6 shows the structure of the assessments used.

Table 6

Assessment methods used

Instrument	Subject Numbers	Facilitator
Survey	35 subjects	Group Teacher
Observation	35 subjects	Thesis Author
Interview	4 subjects	Female Colleague

Sequence and timing of assessment

The two male teachers of the subject groups were informed about the study's aims and data collection methods in week two of the course, and were given, at the appropriate times, the survey handouts for subjects to complete. The teachers were given preliminary information about the study before the semester started in any case. The female teacher assigned to interview the subset of subjects, but not directly involved with the groups, was apprised of the study's aims and data collection methods in week three of the course and also was given the interview recording sheets as well as an instruction sheet for each set of interviews. The Arabian Gulf cultural realities of the subject's context dictated that an interview scenario, which by necessity required a one-on-one close quarters interaction with relatively young Muslim female subjects, was inappropriate for a male interviewer to participate in. All material to be used by the teachers as part of the study - comprising the survey forms, interview forms, associated instruction sheets and video material and video equipment - was prepared by this author and personally handed to each teacher just before the material was needed.

The study occurred two weeks after the second piloting and refining of the survey form. CIP students were entering the third week of their twelve week course when the pre-treatment survey was completed. The post-treatment survey was completed in the eleventh (second-last) week of the course. A total of 37 subjects from two groups completed the pre-treatment survey and the post-treatment survey using the same sequence and timing as that used for the pilot of the survey.

Due to wastage factors, some subjects forgetting their assigned unique survey ID code and some subjects not completing all survey item responses, 34 useable pre-treatment and post-treatment survey sets were obtained.

In the third and fourth weeks of the course four subjects completed the pre-treatment interview, with data recorded then on an interview form. In the eleventh week these same subjects completed the post-treatment interview, with data recorded again. Data from these interview sets were recorded on interview sheets for subsequent analysis.

In week six both subject groups were observed in class as they discussed aspects of customer service whilst responding to a customer service scenario shown on video. The data from these observations were recorded on the observation sheets for subsequent analysis.

The method, sequence and timing used to collect both quantitative and qualitative data during the 12-week course were dictated by the timing of the Computer Helpdesk Operation vocational course, as shown in Table 7.

Table 7

Method and timing of data collection

Item	Undertaken by	Time Frame
Pre-treatment survey	35 subjects	Week 3
Pre-treatment interview	4 subjects	Week 4
In-class observation	35 subjects	Week 6
Post-treatment survey	35 subjects	Week 11
Post-treatment interview	4 subjects	Week 12

Survey Instrument design

The survey comprised a 40-statement Likert scale on a single sheet of A4 paper. Both sides of the sheet were used. The author's experience with the subjects, and peers of those subjects emphasised that they consistently demonstrate an unwillingness to evaluate written English language text when such text covers multiple pages or sheets.

Notwithstanding that the reliability of a Likert scale instrument may be improved, by using either a greater number of items or greater number of choices for each item or by using a combination of both (Burns, 1992), the

instrument was designed with the knowledge that subjects in the study's context typically decline to respond to questionnaires that contain a large number of items. The final version of the survey was contained within a single double-sided survey sheet with an accompanying separate cover-sheet that included instructions. A copy of the survey is in appendix A1, page 139.

Survey scenario

The questionnaire presents a two-paragraph customer service scenario with a total of forty statements which subjects individually rate in relation to the content of the scenario. Each statement has an associated five-point scale representing respectively *disagree strongly*, *disagree*, *unsure*, *agree* and *agree strongly*. *Disagree strongly* equates to 1 and is indicated by a negative (-) sign, whilst *agree strongly* equates to 5 and is indicated by a positive (+) sign. Part of the final survey instrument is shown in Figure 9 which displays what the subjects actually saw of the grading scale when using the survey form.

Question	-					+
	Scale					
1. Mr. Jose should attend to his telephone client.	1	2	3	4	5	

Figure 9 Part of the survey form

Survey operation

The instrument was used in a pre-treatment/post-treatment sequence, the pre-treatment measure ascertained an attitudinal 'baseline' with respect to attitude whilst the post-treatment enabled a comparison of attitude to be made between pre course-exposure and post course-exposure. The pre-treatment and the post-treatment questionnaire are identical. Because the subjects were homogenous in the cultural sense, had very limited real-world experience, and limited English language competency, the assessment instrument was developed by this author and specifically took into account the limited social and consumer business experience of the subjects as well as limited English language competency.

The customer service scenario given in the survey instrument presented a situation which most of the subjects should have had reason to understand by reason of listening to their father or brother. The scenario presents a motor vehicle customer service situation between a UAE male customer and an Indian subcontinent male service manager, a scenario quite commonplace in the UAE. Discreet questioning of peers of the subjects about this possibility elicited the response that indicated that the assumption could be considered valid. Presenting a customer service scenario that subjects had at least some prior, if limited, general knowledge about may also improve the validity and reliability of the instrument, for it gives subjects the ability to make sense of the context of the scenario. The same instrument, in conjunction with the same motor vehicle customer service scenario, was used for the pre-treatment as well as the post-treatment survey because using the same instrument

reduced issues of reliability potentially encountered when using multiple instruments. The instrument produced numerical data for statistical analysis.

The instrument was initially designed and developed by this author based upon 15 years of working experience in the customer service area of the Australian computing industry. The instrument was then reviewed by a work colleague deemed to be an 'expert' in the area of customer service, and whom had in excess of 20 years work experience in the field of customer service. In this way the instruments' face validity, in other words whether the instrument at least on the surface assessed relevant aspects of customer service, and content validity were defined.

The survey instrument was reviewed by English language instructors, and feedback as to the appropriateness both of language structure as well as the difficulty level was obtained. The use of an Arabic version of the scale was rejected because the HCT as an institution places great emphasis upon the learning of English it was considered politically correct to employ only an English language version.

Feedback obtained from teaching colleagues and supervisors informed the refinement of the pilot instrument before the study formally commenced, as did valuable feedback obtained from this authors' academic research supervisor. Figure 10 shows the process used when developing and testing the attitude survey Likert scale instrument.

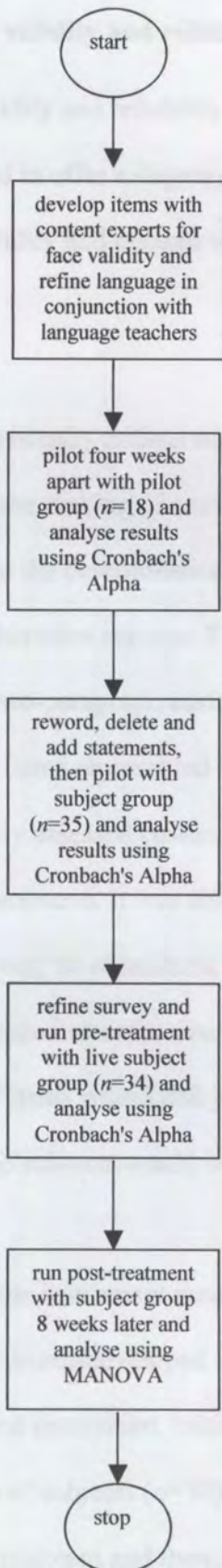


Figure 10 Survey development and analysis process

Likert scale instrument validity and reliability

Issues such as validity and reliability clearly assumed importance and measures designed to offer a degree of confidence in these areas were required. Face validity and content validity were the key issues that were addressed.

Likert scales are basically ordinal scales but this fact did not negatively impact the study, the ranking of answers between subjects being considered less important than the determination as to whether a significant change of attitude occurred between surveys. Twenty-four statements or items pertaining to the two-paragraph customer service scenario were initially developed. These items represented what the author and his colleagues believed adequately assessed customer service attitude with respect to the customer service scenario. It was also felt that this number of items represented what may be considered an upper limit under which CIP students would still be prepared to make a serious effort to evaluate all items. A greater number of items would risk jeopardizing the instruments validity simply because the subjects would be hesitant to complete the survey.

The reliability of the instrument assumed significant importance given the fact that it was a custom-developed instrument and not a readily available, tested and validated instrument. Initially the instrument was used with a test or pilot group of subjects ($n=30$) from another program within the college. The pre-treatment and then post-treatment method was used to pilot

the instrument in conjunction with an internal consistency check using Cronbach's Alpha Coefficient to determine its internal reliability. The sequence and time duration of the pre-treatment survey appears in Table 8.

Table 8

Timing and steps of survey

Step	Action	Duration
1	Verbally outline the need for the survey	8 minutes
2	Hand out cover sheet	2 minutes
3	Read verbally twice the scenario	2 minutes
4	Advise subjects to remember their ID #	2 minutes
5	Show example of how to fill out survey form	4 minutes
6	Hand out survey form	2 minutes
7	Subjects complete survey form	16 minutes
8	Collect all forms	2 minutes
Total time taken		40 minutes

The post-treatment survey timing was identical to the pre-treatment survey timing with the exception of the deletion of qualitative questions from the end of the post-treatment survey. This resulted in a faster survey completion time. These qualitative questions were designed to provide feedback and guidance with respect to how subjects reacted to the aim, format of the survey, and implementation of the survey in practice and were primarily important during the pre-treatment or first survey undertaken. The deleted questions were considered less important when used with the post-treatment survey than when used with the pre-treatment given that the subjects already had some familiarity with the survey format and aim(s) by the time that they undertook the post-treatment survey.

The sequence and timing of the post-treatment survey differed only in that steps 1 and 4 were not required, so the duration was 30 minutes in total.

A potentially significant problem that appeared immediately during the pilot of the pre-treatment survey was that the rating descriptions for each of the 5 scale values were considered ambiguous by study subjects. The scale originally went from the number 1 which equated to *not important at all* to the number 5 which equated to *very important*, and these descriptors proved confusing or unclear to subjects. As a result, the descriptors were altered so that the number 1 equated to *disagree strongly* and the number 5 equated to *agree strongly* in the refined final survey form. The pilot post-treatment survey remained identical to the original pre-treatment survey with the exception of the deletion of the qualitative questions at the end. It was considered important that the pilot pre-treatment survey and post-treatment survey remain almost identical even though issues became apparent during the pre-treatment survey application. The overarching issue was one of consistency, for if the forms had differed significantly then the validity of data would have been in doubt.

The twenty-four item pilot was analysed to produce a measure of reliability. The application of the statistical analysis resulted in a Cronbach's Alpha Coefficient was 0.19, and the average inter-item Correlation was 0.007. Therefore the instrument, at least in its first form, was deemed very unreliable. Refinement of the instrument resulted in the rewording of most items, the deletion of items that were suspected as being inappropriate or

confusing and had in fact scored very poorly as shown in the full statistical analysis, and the addition of new items resulting in a refined pilot survey comprising 40 items. This second iteration of the instrument was piloted with a group of 18 other HCT students of similar academic level and cultural background to the study sample, and the pre-treatment and post-treatment survey results analysed using Cronbach's Alpha Coefficient. The results proved also inadequate, but with an alpha of 0.42 this was a significant improvement on the first iteration and set the trend for improvement. It was suspected that the modest number of subjects may have resulted in the low reliability figure.

Practical issues

Two practical issues became apparent during the running of the pilot: given that each survey set had a unique number assigned to it, for anonymity sake as well as subject survey pair-tracking, some subjects forgot what their unique survey number was; and three subjects accidentally left some item answers blank which negated their particular survey set. Since the relatively modest number of eighteen subjects were initially involved the loss of three subjects equated to or represented a loss of 17% which is a potentially significant number. The number of complete survey sets was fifteen. To reduce these particular issues each subject in the final study received a slip of paper with their unique survey ID number which they were told to use with their next survey too, and clearer verbal instructions about making sure that they should respond to each and every item or statement on the survey.

Teaching colleagues facilitating both surveys were specifically asked to pay careful attention to both of these issues.

Survey instrument reliability results

Given the timing constraints imposed with working within a functioning college it was decided to proceed with the instrument in live operation even though the second trial indicated a somewhat lower than desired Cronbach's Alpha Coefficient of 0.42. The necessity to conduct two previous pilots of the survey to accomplish refinement of it to produce an internally reliable instrument resulted in no available time left to run a third, final pilot, so the pre-treatment survey was conducted live with thirty-five subjects and Cronbach's Alpha analysis was undertaken on the data to assess the reliability of the instrument.

The live data collection resulted in 34 subjects completing the 40-item pre-treatment survey form. One subject did not complete her form so her data was discarded from the study. Cronbach's Alpha Coefficient was 0.62 and this is considered acceptable because if a scale has an alpha above 0.50, it is usually considered to be internally consistent (Mitchell & Jolley, 2000).

The pre-treatment surveys, post-treatment surveys and interviews were conducted by teaching colleagues, and the observations were undertaken by this author during the subjects course. These sources of data formed the basis of triangulation of data with which answers were developed to the research questions. The relatively short duration of the study, eight weeks between

the pre-treatment survey and the post-treatment survey, was also thought to have reduced any significant maturation effect (Burns, 1998).

Observation

An in-class written recording sheet comprising three columns titled *positive*, *negative* and *comments* formed the structure of the attitude observation and recording instrument. The completed observation sheets are shown in Appendix A6-A9.

During an in-class period during which the teacher facilitated discussion about a customer service scenario, and after subjects had viewed a video about that scenario, the positive or the negative responses from subjects were tabulated along with any verbal comments that appeared to be common to all. Each column was aggregated with no correlation or link made between specific statements or stances and specific subjects. The results formed an overall stance or position of the subject group. The number for the negative column was subtracted from the number for the positive column, the resultant number being recorded along a rating line found at the bottom of the back of the observation form as shown in Figure 11.

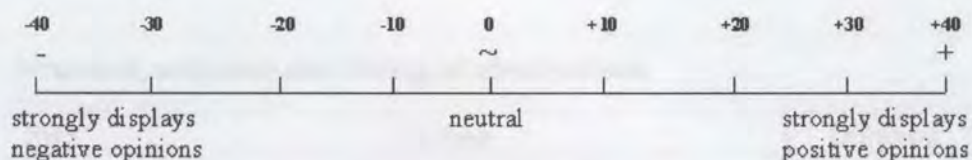


Figure 11 Observation Form rating scale - without numbers

The initial structure of the observation sheet, as well as numerical markings or range were loosely defined in anticipation of the data that were likely to be obtained, and this design was flexible in as much as data obtained could have resulted in modification to the sheet structure used.

There was no way to pre-determine the quantum of negative or positive comments that might result from the observation so a reasonable range between -40 and +40 was chosen. The 2.5-minute video segment shown during the observation session showed how two hotel front-desk staff, one a Western male and one an Asian female, handled a difficult, in this case irate, UAE male customer.

Each of the two subject groups were observed and had almost equal subject numbers of 19 and 18 respectively attending when the observation occurred. During the observation of each group the author tried as much as was possible to be a non participant observer. The timings of the observations are provided in Table 9.

Table 9**Structure, sequence and timing of observations**

Step	Action	Duration
1	Advise subjects that they are undertaking a discussion session as part of the study - then introduce the topic of customer service.	2 minutes
2	Hand out a 1 blank sheet of paper to each subject and ask them to write on one side of the sheet what they think that 'customer service' really means - when they have finished writing ask them to turn over their sheet to the blank side.	8 minutes
3	Advise subjects that they will now see two times a short video segment which shows a hotel front desk customer service scenario - no questions can be asked or answered during the showing of these segments - and subjects will be asked six questions at the end about what they saw.	1 minute
4	Write the six questions (in step 5) on the whiteboard.	3 minutes
5	Play video segment one time without pause, then point and ask: a. How better might the staff have handled the problem? b. How better might the customer have handled the problem? c. What were the important points about the interaction? d. How reasonable was it for housekeeping to clean the customer's room at 7:30am? e. How professional is it for staff to talk about customers? f. Could this discussion change the type of service given?	15 minutes
6	Advise subjects to look and listen carefully - then repeat step 5.	10 minutes
7	Ask subjects once again write on the blank side of their sheet of paper what they think that 'customer service' really means - when they have finished writing collect all papers.	5 minutes
8	Thank all subjects for helping with the study.	1 minute

It was considered important to ensure that the observation, which relied upon in-class discussion about a specific customer service scenario, did not take longer to complete than a single class period. The teachers of both groups of subjects were under pressure to ensure that all academic course content was covered before the exams were due and they had expressed the common concern that the 'loss' of multiple class periods at that time may pose a serious problem. With the cooperation of the teachers the observation of each subject group was contained within a single 45 minute class period.

Interview

A set of two semi-structured interviews, based around specific customer service scenarios, were used with two subjects from each of the two class groups, giving a total of 4 subjects interviewed. The four subjects had responded to a general request for volunteers to participate in the interviews.

With a total of 34 subjects completing all study assessment items, the ratio of subjects interviewed to study population was 4:34 and represented approximately 12% of the study population. The pre-treatment interview was conducted in week 4 and the post-treatment interview was conducted in week 12. At the start of each interview, a 2.5 minute duration video segment about a customer service related scenario was shown to each subject. The purpose of the video segment was twofold; to focus the interviewees to the area of customer service and to guide the interviewees to watch and listen for specific aspects related to what they would be asked.

The video segments differed in content between the pre-treatment interview and the post-treatment interview, but all subjects saw the same set of video segments.

Given the cultural sensitivities in this geographical region the interviews could not be video or audio-taped, and a female teacher interviewed each subject as opposed to the author, whom the subjects also knew.

The interviewer carefully recorded verbal comments. The data from each interview were used to establish data themes, and results were summarised in a separate interview sheet for each pre-treatment and post-treatment interview. The interview was semi-structured in the sense that no specific interview schedule or script was 'cast in concrete', instead broader concepts and areas to be touched upon were developed, and a set of 5 'enabling' questions were used around which the interview was structured. The content focused on the area core to the study, namely customer-service as it pertained to the video segment being shown.

At the end of each interview, the interviewer rated the subject's inclination toward or against customer service, as expressed verbally within their comments, by placing a mark along a rating line as shown in Figure 12. The rating line had nine grading points. The rating was visible to the subject but no discussion about it was entered into unless the subject raised the issue. Grade point 1 at the left hand end of the continuum corresponded with the subject exhibiting a strong overall opinion *against* effective customer

service whilst point 9 at the right hand end of the continuum corresponded with the interviewee in the interviewer's opinion exhibiting a strong overall opinion for customer service. The mid-point grade of 5 represented a neutral opinion. Since no preconceptions were held about how many negative or positive comments would be verbalized by interviewees, the scale went between -20 and +20, with 0 equating to a neutral mid-point. It was felt that subjects lack of English language fluency would tend to minimize the overall number of comments so this range seemed appropriate to start with.

Interviewer's rating of overall stance of interviewee:

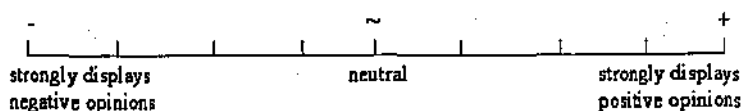


Figure 12 Interview Form rating scale - without numbers

A set or pair of interviews with each subject was undertaken, resulting in a total of 8 interviews being conducted, four pre-treatment interviews and four post-treatment interviews.

A unique ID code was used for each subject's interview form, and the subject group ID (equating to the subject's class ID) was recorded so that the first and then the second interview responses could be compared, and so that additional data could be available which reflected upon the group that the subject came from.

Conclusion

This chapter showed that three forms of data collection were used during the study: a survey, an observation and an interview. Each form of instrument was applied at specific points of time throughout the academic course.

Qualitative data were collected through interview and observation of subjects, whilst quantitative data were collected through pre-treatment survey and a post-treatment survey of subjects. These methods formed the basis upon which data triangulated would occur.

The primary instrument employed was a Likert scale survey. This was used in preference to a Thurstone scale because a Thurstone scale would have proven more complex and time consuming to apply. The survey went through multiple stages of pilot and refinement until an acceptable internal reliability, or Alpha figure, was obtained.

CHAPTER SEVEN

ANALYSIS AND RESULTS

Introduction

In this chapter, the results of data collected from the observations, interviews and surveys are presented and initially analysed.

Observation results

Data from the observations comprised transcribed verbal responses from a majority of subjects to six specific questions raised by the class teacher, and general notes made by the observer during the observation. The numerical weighting assigned to the response to each question defined how many subjects actually took either a negative stance or a positive stance about customer service for that question. For each group the aggregated number of comments was then marked along a rating line, as shown in Figure 13.

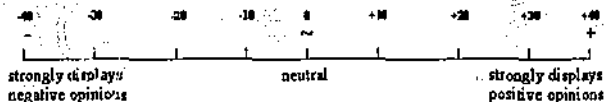


Figure 13 Observation Form rating scale - with numbers

One observation occurred for each subject group. These groups had 19 and 18 subjects respectively. The numerical weighting for the questions are shown in this section. A record of all the observation data are shown in Appendix A6 - A9. Results for group 7C1, otherwise referred to as group 1, appear in Table 10. The results for group 7C2, otherwise referred to as group 2, appear in Table 11.

Table 10

Observation data for subject group 1

Question	-n	+n
How better may the staff have handled the customer?	2	9
How better may the customer have handled the staff?	3	7
How reasonable was it for housekeeping to clean the room at 7:30am?	5	8
What were the important points about the customer service?	1	10
How professional was it for staff to talk about the 'problem' customer?	2	9
How could this talk have changed the way staff then handled the customer?	3	5
Total	16	48

Table 10 data indicate that the subjects in group 1 verbalised 16 negative comments and 48 positive comments about customer service, giving a total of 64 comments about customer service in the context of the scenario.

Aggregating the two numbers gives an overall attitude position of the group, subtracting the negative comments from the positive comments and gives an overall attitude result of +32. This rating was recorded by the interviewer along an observer's rating line on the observation sheet.

This resulting number I call an "opinion index", and this index represents an overall observed attitude position with respect to the customer service scenario being discussed. The opinion index for group 1 was +32.

Table 11

Observation data for subject group 2

Question	-n	+n
How better may the staff have handled the customer?	4	7
How better may the customer have handled the staff?	6	4
How reasonable was it for housekeeping to clean the room at 7:30am?	3	4
What were the important points about the customer service?	2	8
How professional was it for staff to talk about the 'problem' customer?	3	10
How could this talk have changed the way staff then handled the customer?	3	5
Total	21	38

Table 11 data indicate that the subjects in group 2 verbalised 21 negative comments and 38 positive comments about customer service, giving a total of 59 comments about customer service in the context of the observation scenario. Aggregating the two numbers gives an overall attitude position number of +17. This figure or rating, was recorded along an observer's rating line on the observation sheet. The opinion index for group 2 was +17.

The data in Table 10 and the data in Table 11 were analyzed using the Wilcoxon signed-rank, non-parametric test to compare the results from the two groups. This test was used because it "is appropriate for a two-condition within-subject design" (Burns, 1998).

Given that the two subject groups were thought to be relatively homogenous, it was anticipated that both groups would exhibit similar Wilcoxon results, however a difference appeared between them. The fact that a difference between the two groups appeared did not affect findings for subjects as a corpus in the pre and post-treatment analysis, but it is worth noting for possible future research and investigation.

During both observations many subjects either asked for clarification about the final question or demonstrated confusion about the question whilst they discussed it amongst each other. These actions indicated that subjects did not understand the question. The clarification given by the teachers of the groups appeared to exacerbate the issue because they too appeared to not understand the question. The problem with the question may have been a result of a

second language issue for both the subjects and the teachers. Both class teachers, as well as the subjects, used English as their second language. This confusion led to the use of the opinion index because of the limited language competency exhibited by both sets of parties. A somewhat coarser analysis is employed rather than a finer type of analysis in an effort to discern differences between the groups.

Answering the fundamental research question posed in this thesis, *does the HCT Computer Helpdesk course change the customer service attitude of UAE female subjects*, does not rely solely upon between-group observation data, for this provides supportive data mainly. Answering the primary question lies in subject data collected in total, before and after treatment. To this end, the interview, observation and survey data form the basis upon which an answer will be determined. The observation data given above indicates an attitudinal position that either confirms or confounds the overall result.

Interview results

Two subjects from group 7C1 and two subjects from group 7C2 volunteered, in response to a general request for interviewees, to complete semi-structured interviews to be facilitated by a female teacher. The interviewer transcribed responses by subjects to specific questions, then at the end of the interview rated each subject's attitude about the customer service scenario or context of the interview.

During each interview, subjects were asked five questions specifically relating to the customer service in the context of the interview and its preceding video segment. The two different short duration video segments, one for the pre-treatment interview and the other for the post-treatment interview, showed an example of poor customer service and the associated customer response.

The interviewer rated each interviewee's overall attitude about customer service in the context of the interview by assigning a place point along an attitude continuum on the interview form. The scale on this form spanned -20 to +20 for a range of 40 with 9 intervals, for example -20, -15, -10, -5, 0, +5, +10, +15 and +20. The rationale behind the selection of scale range is discussed in the *Data Collection* chapter of the thesis.

The ratings for each of the four subjects is shown in Table 12, and this table shows the pre-treatment interview rating alongside the post-treatment interview rating, as well as the differential between them, and enables comparisons. Reliability of this scale is enhanced by the fact that the same person interviewed all four subjects, tabulated the responses and then assigned the ratings.

Table 12

Pre-treatment and Post-treatment subject interview ratings

Subject	Pre rating	Post rating	Difference
1	+11	+10	-1
2	+7	+12	+5
3	+18	+20	+2
4	+8	+7	-1

The pre-treatment and post-treatment interview ratings for each subject show that subjects 1, 3 and 4 exhibited only small differences of -1, +2 and -1 respectively, whilst subject 2 exhibited a somewhat larger, but still modest, difference of +5.

Table 13 shows the answers from each subject to the pre-treatment interview questions, whilst Table 14 shows the answers from each subject to the post-treatment interview questions.

Pre-treatment interview questions were:

- How do you feel about the type of customer service that the hotel customer received?
- What might you have done if you were the customer?
- What might you have done if you were the waiter?
- What do you think about the waiter's answer of "I just deliver"?
- Why did the customer make the strange comment about the flowers at the end?

Post-treatment interview questions were:

- What do you think about the type of customer service that the customer received?
- How might you have acted if you were the customer and you were told that the promise shown on the sign would not be done?
- Describe the best customer service that you have received - why was it the best?
- Was the lower cost and extra services more important to the customer than the promise of a 2 hour cleaning time shown on the door?
- Describe the worst customer service that you have received - why was it the worst?

Table 13

Pre-treatment interview responses

Question	Subject 1	Subject 2	Subject 3	Subject 4
1	I think he is angry because of the delivery - the room service said "I just deliver".	Too late and they not give the customer what the customer wants.	Bad service - his face is so sad because he gets different food than he wanted and they were late.	Very late and wrong from what he chose from the menu. Very bad for the customer.
2	I call again for room service and ask why give me the wrong delivery.	If I really hungry I will not shout but tell customer service (not the waiter) about the problem.	I would return the food and I will call the customer service and I will tell them about the service and I will never come again to this hotel	Would call the customer service and tell them about the customer service that you received.
3	The same as the waiter did because he didn't do anything wrong because he doesn't know he just gives the food.	Say the same as they - sorry but I am just delivery or I will change you for you make the customer feel better.	I will do nothing. I will tell the customer I am only here to give you this food.	I'm sorry I was busy. Sorry about the wrong food - don't worry it won't happen again.
4	Fine. If I want to say anything must say it to room service not the waiter.	He can say that cause he haven't anything in his hand. Take his answer from another one.	He is right because he only just delivered.	Didn't tell the customer a clear answer. Didn't say sorry.
5	Don't need the flowers.	He talk with himself. The customer made a good point maybe no time maybe he wants to sleep.	Because he don't have any word to say about the service it means that he is angry.	Because maybe the table isn't clear and maybe he ordered something bigger. Maybe he is very angry.

Table 14

Post-treatment interview responses

Question	Subject 1	Subject 2	Subject 3	Subject 4
1	Customer wanted cleaning and she said she can't because she is too busy. Should have been able to do quick cleaning.	Fast receive, he is busy so he wants quick service. Did not get it as quick as he wanted. It was the customer's problem. Staff was okay. His mistake.	Bad customer service, because he wanted the suit quickly and she didn't do anything for him. She must try to finish.	I think the customer service is good not bad. She was polite and good.
2	I would like this now to wear. Please try to clean it now because I really need it now. I take my clothes and go somewhere else.	I would do it for him in two hours so we must. If they can't do it in two hours I would go to another one and not shout with them.	I would take my suit and try to find another laundry.	I wouldn't say anything and I would wait for my clothes.
3	Hotels are the best service because the hotel is organized everything. Service tries to be better and get more customers with good service.	One time in Abu Dhabi bank as a new customer my husband's salary came late. He gave me a cheque and I go to deposit it. I stayed and the bank solved the cheque problem.	2 months ago I went to the flower shop to get present. The lady helped me to make a good present. She suggested a nearby shop to get some perfume.	Last holiday I went to Sharjah for 2 days where they welcomed me and they were very polite and gave me all the things I asked for.
4	More important to the customer to get the cleaning done in 2 hours.	More important that they clean it in 2 hours than the other services.	Most important that he get it done in 2 hours.	More important for 2 hours.
5	Shouting at me could have explained why instead of shouting at me. They should have been polite.	One time travel to Salalah we wanted a flat but it was too expensive but we took it because we were tired. Went in and it was dirty and no service. Told them they did nothing. No TV either - solved that.	Went to a dress shop to buy a blouse and I asked for a discount and she wouldn't give one. She just said pay full price or don't take it. Bad service.	Because maybe the table isn't clear and maybe he ordered something bigger. Maybe he is very angry.

Difference between pre and post-treatment Interview data

The numerical opinion index figure indicated generally that little difference existed between pre-treatment and post-treatment interviews for 3 of the 4 subjects, however one subject did exhibit a somewhat larger differential between the two interviews than did the other subjects. The quantum of the differential, +5, appears relatively large in comparison with the other subject's differentials that showed figures of +2 and -1 respectively.

Examination of the pre-treatment interview verbal responses from each subject indicate that all the subjects made similar comments about the customer service scenario that they had witnessed, with subject number 3 making what could be considered the most forceful and unambiguous comments which resulted in her being allocated a higher opinion index rating by the interviewer. Responses to question 1 for example showed a consensus amongst subject number 1, 2 and 4 who stated that they would call room service and discuss the problem. Subject number 3, however, responded with "I would return the food and I will call the customer service and I will tell them about the service and I will never come again to this hotel!" and this comment exhibits a stronger degree of opinion than the others.

Examination of the post-treatment interview verbal responses from each subject indicate that all subjects made similar comments about the customer service scenario that they had witnessed, with subject number 3 again appearing to make the strongest responses.

Responses to question 1, for example, showed a consensus amongst subjects numbered 1, 2 and 4 who stated either that the service received was okay or that it was the customer's fault. Subject number 3 however, responded that it was "Bad customer service" and that the service provider "...must try to finish".

Subject number 2 exhibited comments that could be considered stronger than the comments that she made during her previous interview, and whilst this could suggest that a degree of change in her attitude may have occurred between the interviews, the relatively modest quantum of the difference between her pre-treatment and post-treatment interview opinion index figures cannot support these assertions.

The interview results indicate that for the majority of those interviewed, 3/4 of the subjects, very little attitude change was determined between pre and post interviews. This suggests that no change in attitude occurred overall.

Survey analysis and results

A total of thirty-four subjects completed the pre-treatment and post-treatment survey, and these data were analyzed using Statistical Package for the Social Sciences (SPSS, 2002) version 10 statistical analysis computer software.

MANOVA, or multivariate analysis of variance, was used to test for significant difference between pre and post responses to items.

The MANOVA Wilks' Lambda results showed that generally no significant difference existed between the pre-treatment survey and the post-treatment survey responses, with $F = 1.625$, $df = 40$, $p = 0.293$. A level of 0.05 was the threshold for determining significance.

Results shown with an asterix (*) within Table 15 indicate that, for these particular items, a significant difference between the pre-treatment survey responses and the post-treatment survey responses exists. In particular, item 31 showed $p = .001$ which suggests a highly significant difference. Survey items 19, 31 and 37 showed Scheffe step-down test (Scheffe, 1959) results of $p = 0.033$, $p = 0.001$, and $p = 0.041$ respectively.

Overall, thirty-seven survey items did not display a significant difference between the pre-treatment survey and the post-treatment survey. Table 16 shows the mean and standard deviation (sd) figures for survey items 1-18 and item 20, whilst Table 17 shows the mean and sd figures for survey items 21-30, 32-36 and 38-40.

In both tables the post-treatment survey p figure is also shown and it was this figure that was used to identify survey responses that appeared significantly different. This figure was generated post-hoc using the Scheffe step-down test.

Table 15**Probability results from analysis of post-treatment Survey responses**

Item	P	Item	P
1	0.812	21	0.280
2	0.656	22	0.697
3	0.137	23	0.493
4	0.733	24	0.857
5	0.317	25	0.564
6	0.083	26	0.117
7	0.923	27	0.297
8	0.639	28	0.750
9	0.695	29	0.067
10	0.085	30	0.726
11	0.151	31	0.001*
12	0.680	32	0.623
13	1.000	33	0.288
14	0.145	34	0.113
15	0.924	35	0.510
16	0.217	36	0.210
17	0.295	37	0.041*
18	0.257	38	0.194
19	0.033*	39	1.000
20	0.554	40	0.057

Note: * denotes $p < .05$ level.

Table 16**Mean and standard deviation figures for survey items 1-20**

Item 1-20	Mean before	SD before	Mean after	SD after
1	4.05	0.92	4.00	1.10
2	4.29	1.42	4.44	1.28
3	1.64	1.04	2.08	1.36
4	3.17	1.47	3.05	1.37
5	1.68	1.12	1.94	1.04
6	3.41	1.50	2.79	1.39
7	3.44	1.37	3.41	1.10
8	3.76	1.10	3.64	0.95
9	3.11	1.66	2.97	1.40
10	2.85	1.13	3.35	1.23
11	3.67	1.47	4.14	1.18
12	3.64	1.25	3.53	1.08
13	2.14	1.51	2.41	1.23
14	1.91	1.35	2.41	1.43
15	3.47	1.18	3.50	1.33
16	3.79	1.06	3.44	1.26
17	2.73	1.50	3.14	1.47
18	3.55	1.37	3.91	1.16
20	3.55	1.50	3.76	1.35

Survey item 19 is not included because $p < 0.05$

Table 17**Mean and standard deviation figures for survey items 21-40**

Item 1-20	Mean before	SD before	Mean after	SD after
21	3.08	1.33	3.41	1.10
22	2.88	1.53	3.303	1.56
23	3.94	1.37	4.14	1.07
24	4.11	1.38	4.17	1.29
25	2.20	1.47	2.41	1.45
26	4.44	1.56	4.00	1.12
27	2.76	1.53	3.14	1.46
28	3.35	1.55	3.23	1.47
29	3.38	1.20	2.79	1.38
30	4.08	0.99	4.00	1.07
32	2.82	1.54	3.00	1.39
33	3.64	0.95	3.91	1.08
34	4.53	0.99	4.14	1.07
35	2.35	1.30	2.55	1.26
36	2.20	1.50	2.67	1.57
38	2.80	1.77	3.29	1.33
39	2.53	1.35	2.53	1.26
40	4.08	1.13	3.50	1.35

Survey items 31 and 37 are not included because their $p < 0.05$ level.

Survey items that show no significant difference

Survey items for which there was no significant difference before and after treatment are summarised below. A mean figure < 2 indicates that subjects generally disagreed with the item statement, a mean figure of 3 indicates that subjects generally neither agreed nor disagreed with the item statement, and a mean figure > 3 indicates that subjects generally agreed with the statement.

For survey item 1, "Mr. Jose should attend to his telephone client", the similar mean before and after (≈ 4) indicates that subjects generally agreed with the statement. Treatment has not altered responses to this statement.

For survey item 2, "Good service makes me feel happy", the similar mean before and after (≈ 4) indicates that subjects generally agreed with the statement. Treatment has not altered responses to this statement.

For survey item 3, "Saeed is happy with the service he received", the similar mean before and after (≈ 2) indicates that subjects generally disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 4, "When a customer like Saeed walks in, Mr. Jose should stop talking on the telephone", the similar mean before and after (≈ 3) indicates that subjects generally neither agreed or disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 5, "Saeed was happy with the way he was treated by Mr. Jose", the similar mean before and after (≈ 2) indicates that subjects generally disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 6, "Saeed waited too little before leaving", the similar mean before and after (≈ 3) indicates that subjects generally neither agreed nor disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 7, "Mr. Jose did not show respect for Mr. Saeed", the similar mean before and after (≈ 3.5) indicates that subjects generally agreed with the statement. Treatment has not altered responses to this statement.

For survey item 8, "Saeed should have complained about the service", the similar mean before and after (≈ 3.7) indicates that subjects generally agreed with the statement. Treatment has not altered responses to this statement.

For survey item 9, "Mr. Jose thinks that customers on the telephone are more important than customers in his office", the similar mean before and after (≈ 3) indicates that subjects generally neither agreed nor disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 10, "Saeed does not expect better service next time", the similar mean before and after (≈ 3) indicates that subjects generally neither agreed nor disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 11, "If Mr. Jose could not help Saeed then someone else should", the similar mean before and after (≈ 4) indicates that subjects generally agreed with the statement. Treatment has not altered responses to this statement.

For survey item 12, "Seed should expect Mr. Jose to help him immediately", the similar mean before and after (≈ 3.5) indicates that subjects generally agreed with the statement. Treatment has not altered responses to this statement.

For survey item 13, "Saeed received good customer service from Mr. Jose", the similar mean before and after (≈ 2.4) indicates that subjects generally disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 14, "Mr. Jose thinks that customers who are in his office are more important than customers who are on the telephone", the similar mean before and after (≈ 2) indicates that subjects generally disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 15, "Saeed should demand help from Mr. Jose", the similar mean before and after (≈ 3.5) indicates that subjects generally agreed with the statement. Treatment has not altered responses to this statement.

For survey item 16, "Mr. Jose thinks that Saeed will return later", similar mean before and after (≈ 3.6) indicates that subjects generally agreed with the statement. Treatment has not altered responses to this statement.

For survey item 17, "Saeed should demand help before Mr. Jose finishes his telephone call", the similar mean before and after (≈ 3) indicates that subjects generally neither agreed nor disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 18, "Saeed should receive good customer service every time", the similar mean before and after (≈ 3.7) indicates that subjects generally agreed with the statement. Treatment has not altered responses to this statement.

For survey item 20, "Mr. Jose expects Saeed to wait till Mr. Jose has finished his telephone call", the similar mean before and after (≈ 3.6) indicates that subjects generally agreed with the statement. Treatment has not altered responses to this statement.

For survey item 21, "Saeed should receive service straight away even if there are others waiting ahead of him", the similar mean before and after (≈ 3) indicates that subjects generally neither agreed nor disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 22, "Mr. Jose should not stop his telephone call when Saeed comes into his office", the similar mean before and after (≈ 3) indicates that subjects generally neither agreed nor disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 23, "Mr. Jose should attend to Saeed's problem", similar mean before and after (≈ 4) indicates that subjects generally agreed with the statement. Treatment has not altered responses to this statement.

For survey item 24, "Saeed is unhappy with the service he received", the similar mean before and after (≈ 4) indicates that subjects generally agreed with the statement. Treatment has not altered responses to this statement.

For survey item 25, "Mr. Jose spoke badly with Saeed", the similar mean before and after (≈ 2.3) indicates that subjects generally disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 26, "Saeed should wait for others who are being served first", the similar mean before and after (≈ 4) indicates that subjects generally agreed with the statement. Treatment has not altered responses to this statement.

For survey item 27, "Mr. Jose should not answer the telephone when he is helping Saeed", the similar mean before and after (≈ 3) indicates that subjects generally neither agreed nor disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 28, "Mr. Jose should try to help many customers at one time", the similar mean before and after (≈ 3) indicates that subjects generally neither agreed nor disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 29, "Saeed will return to Al Anna later", the similar mean before and after (≈ 3) indicates that subjects generally neither agreed nor disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 30, "Mr. Jose thinks that every customer is equally important", the similar mean before and after (≈ 4) indicates that subjects generally agreed with the statement. Treatment has not altered responses to this statement.

For survey item 32, "Mr. Jose thinks that the telephone client is more important than Saeed", the similar mean before and after (≈ 3) indicates that subjects generally neither agreed nor disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 33, "Saeed expects better service next time", the similar mean before and after (≈ 4) indicates that subjects generally agreed with the statement. Treatment has not altered responses to this statement.

For survey item 34, "Customers must wait while others are helped", the similar mean before and after (≈ 4) indicates that subjects generally agreed with the statement. Treatment has not altered responses to this statement.

For survey item 35, "Saeed's time is more important than Mr. Jose's time", the similar mean before and after (≈ 2.4) indicates that subjects generally disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 36, "Customers must wait while others are helped", the similar mean before and after (≈ 2.4) indicates that subjects generally disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 38, "Saeed waited too long before leaving", the similar mean before and after (≈ 3) indicates that subjects generally neither agreed nor disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 39, "Mr. Jose's time is more important than Saeed's time", the similar mean before and after (≈ 2.5) indicates that subjects generally disagreed with the statement. Treatment has not altered responses to this statement.

For survey item 40, "Mr. Jose spent too much time on the telephone", the similar mean before and after (≈ 4) indicates that subjects generally agreed with the statement. Treatment has not altered responses to this statement.

Difference between pre and post-treatment Survey data

The pre-treatment survey and the post-treatment survey instruments were identical. Table 18 shows the mean figure for survey question 19, 31 and 37 because these responses indicate that a significant difference between surveys existed for these particular survey item statements.

Table 18

Mean figures for Survey items 19, 31 and 37

Survey	Q19	Q31	Q37
Pre-treatment	2.41	1.58	2.79
Post-treatment	3.20	3.50	3.44

In survey item 19, before treatment the subjects generally disagreed with "Mr. Jose should try to help only one customer at a time" but after treatment they generally agreed. In survey item 31, before treatment the subjects generally disagreed with "Saeed is more important than other customers", but after treatment they generally agreed. In survey item 37, before treatment the subjects generally disagreed with "Mr. Jose should pay all of his attention to Saeed", but after treatment they generally agreed.

Conclusion

A consistent pattern emerged from analysis of the observation, interview and survey data; one indicating that, overall, no significant difference pre and post survey in customer service attitude was evident. The data that did show a significant difference pre and post survey were few in number and could be related to the structure or wording of the survey item or the context of the assessment item.

CHAPTER EIGHT

DISCUSSION OF RESULTS

Introduction

In this chapter, the results from Chapter 7 are compared with literature reviewed in Chapter 4. The importance of using technology based simulations and engaging learners are also discussed.

Observation results

Observation techniques have been used to gather data when attempting to determine subject attitude, as evidenced by Draper et al (1996), and Reed & Palumbo (1992), amongst other researchers. The observation results for subject group 1 differed markedly from those for subject group 2.

Both subject groups had virtually the same number of subjects attending the observation session, with group 1 comprising 19 subjects and group 2 comprising 18 subjects. The comments made by subjects in each group demonstrated significant commonality, however the markedly differing degree of discussion participation level, or learning engagement, between the groups could possibly account for the difference in results.

The attitude comment frequency or weighting figure, in which negative comments are subtracted from positive comments, for group 1 was +32 (32 positive comments overall), whilst for group 2 the figure was +17. The difference between the two groups was +15.

Wilcoxon (Schoonjans, 2003) statistical analysis of the responses for each group indicated that group 1 exhibited a significantly different sign rank order than would have been expected from pure chance. The significance level for this group was below the probability level of .05, and the result was markedly different to that for group 2 which showed a result well above the probability level. The author observed both groups, and had previously instructed the session teachers about the conduct of the in-class session to maximize consistency between the two in-class sessions. The reason for the differing Wilcoxon results most likely rests with the groups themselves, so examination of the additional observations made during the session provides possible answers. Appendix A7 displays the additional observation comments recorded for group 1, and Appendix A9 displays the additional observation comments recorded for group 2. During the observations, it became apparent that some subjects within group 2 were ill and this affected the results. It was also apparent that during the observation of group 2 there was a lot of distracting ambient noise both inside and outside the classroom. These issues most likely explain the difference between the groups which centered around group 1 appearing more involved, as given by the observer's comment that the "group appeared interested and animated".

Group 2, in contrast, appeared to be somewhat disinterested as evidenced by the observer's comments that "some subjects disinterested with 2 subjects almost asleep", and "many subjects talking amongst themselves a lot". It was assumed that both groups were homogenous, with respect to culture, experience and English language competency, and the results of observations were therefore anticipated to be similar. The observable difference between the groups was the level of participation or engagement, and this supports the potential importance of engaged learning in education settings. Relatively recently, researchers have begun to believe the importance of engaged learning in schools and classrooms (Jones, Valdez, Nowakowski, & Rasmussen, 1994), and the difference in level of learning engagement between the two study groups may account for the difference in results.

Interview results

Because attitude is inferred and not directly ascertained, researchers often use interview, sometimes in conjunction with observation, to determine subject attitude (Draper et al, 1996). The comparison between each subject's week 4 pre-treatment interview rating with their week 12 post-treatment interview rating formed the basis upon determining whether a change in attitude occurred for that subject.

From the modest mean differential figures of each of the four subjects for each interview, it can be concluded that no overall significant change in attitude occurred. In the case of one particular subject however, her rating by

the interviewer, to a point further along the rating line toward the positive end, coincided with her exhibiting the largest mean differential result pre and post-treatment. This particular subject did not exhibit a concomitant large differential in pre and post-treatment survey responses. One possible reason for the difference between interview ratings may have been a result of the structure of the interview itself. In a one-on-one, close-quarter interview with a female interviewer the subject may have reacted differently than in other more "distant" forms of assessment such as in-class observation and relatively anonymous surveys which were facilitated by multiple male staff.

The similar results pre and post-treatment for three of the four interview subjects accords with the data from the observations that indicated subjects already exhibited strong positive customer service attitude before treatment. In this respect it was reasonable to see little change in attitude.

Survey results

Because 37 of the 40 survey items resulted with subjects generally providing similar responses for both the pre-treatment survey as well as the post-treatment survey, one could conclude that the main instrument used to determine whether a change in attitude occurred has strongly indicated that no overall change in attitude occurred. A number of 37/40 equates to a figure of 92%. It could also be suggested that the survey instrument may not have been able to detect any change that may have occurred.

A possible explanation for the significant difference pre and post-treatment for each of the items may be speculated. Survey statement 19, "Mr. Jose should try to help only one customer at a time", actually opposes the on-the-ground reality in the local context where it is common practice, and expected, that a service person will help more than one customer at the same time. Survey statement 31, "Saeed is more important than other customers", requires a qualitative judgment on behalf of subjects, and may have been an inappropriate item in the first place given the cultural norms exhibited in the local context. It is a commonly exhibited attitude by UAE nationals that "they" are more important than all others in their country. Survey statement 37, "Mr. Jose should pay all of his attention to Saeed", may fall into the same category as statement 19.

Undertaking the Computer Helpdesk course may have had an effect on personal attitude about these three concepts. In particular, the embedded scenarios that provide exposure to handling difficult and multiple customers concurrently, and the paying of attention to a single customer at one time, may have had an effect. To test these hypotheses will require follow-up with study subjects, or with subjects similar to those in the study and in the UAE and HCT context specifically. This is now outside the author's domain because I am no longer employed by the HCT system.

Statistical analysis indicates that, with only three exceptions, no significant differences between the pre-treatment survey and the post-treatment survey existed.

Three questions require answering if the data obtained from this study are to be considered both appropriate and useful:

- Can attitude be quantified?
- Can attitude be changed?
- Can the use of computing technology effect attitude change?

The literature, reviewed in Chapter 4, provides answers to these questions. Before determining whether attitude is quantifiable, one must determine what constitutes attitude in the first place. Numerous researchers have identified common aspects or elements of attitude, Wlodkowski (1985) for example talks of a combination of concepts combined with a personal judgment that results in specific behaviour or response. Fishbein and Ajzen (1975) talk about a learned predisposition, which results in a specific response or manner. The similarities between numerous definitions are striking, for they proffer the view of a learned predisposition or personal judgment, both of which strongly imply that one's attitude can be learned or changed. This further suggests that attitude, and more importantly perhaps the changing of attitude, requires a degree of self-awareness or cognition on behalf of the person involved. Others also believe that a cognitive element appears in most definitions of attitude (Hergert, 1997). Since attitude is the tendency to respond in a specific way about a specific stance or position, it is reasonable to suggest that by presenting such positions, most often in the form of statements or questions, attitude can be determined. This study takes into account the apparent meta-cognition required of learners with respect to their attitude.

The assessment of attitude is in itself a difficult area. Most researchers now agree that attitude cannot be determined directly, rather it must be inferred, and this typically requires the use of observation, interview and questioning. Draper et al (1996), and Reed and Palumbo (1992) to name but a few, have indicated that combinations of quantitative and qualitative research methods have previously been used to determine attitude. Often, data triangulation of such combined data is used as a means of obtaining greater overall data or information and verification of outcome, and data triangulation of combined data, in the form of a quantitative survey, a quantitative interview and a qualitative observation are used in the study. Social psychologists and researchers have used different methods and instruments to determine attitude, however one of the most commonly used is the Likert scale. This scale proves simpler language-wise and more efficient time-wise to use than the Thurstone scale (Burns, 1998). A custom designed forty-item Likert scale is used as the primary attitude assessment instrument in the study.

To change attitude, theories such as cognitive dissonance, attribution, expectancy-value and consistency have been proffered (Fishbein et al, 1975). But to change attitude specifically about customer service, as is the case in the study, requires that one must delve into the theory of Social Learning (Bandura, 1993). This is because one's experience will inform one's attitude and will affect how one changes one's attitude. To engage subjects cognitively and enhance their higher-order thinking, things that meta-cognition demands, brings us to the Cognitive Response Model (Greenwald, 1968). This model describes how one acquires and then changes attitude

toward something in a persuasion scenario. This model leads us into the relatively new field of captology, which is the application of computing technology in a persuasion scenario. The use of computing technology in the pursuit of changing attitude requires that such technology engage learners, develop their higher-order thinking, and present realistic representations of life situations. To provide all these elements, the technology is frequently used to present a simulation or microworld for learners. Stoney and Oliver (1999) and Thomas and Hooper (1991) have discussed the effectiveness, or otherwise, of such microworlds and they believe that the act of immersing learners within a scenario or set of well-defined and controlled experiences may more effectively facilitate learning. A specific example of using computing technology to change attitude involved a multimedia program for public education on mental and addictive disorders (Epstein et al, 1995). Their study showed significant improvement in knowledge and significant positive increases in attitudes toward persons with mental illness. A microworld or simulation computer program, called The Virtual Workplace, is used in the study as a key aid in the process of developing positive attitude toward customer service. The literature appears to support the view that attitude can be changed, and that technology may play a part in this role.

The single aspect that ties all these elements together is the use of the constructivist theory (McInerney and McInerney, 1998). Constructivism proffers a view of learning as a process of provisional, adaptive modelling of the world. This view informed the design of both The Computer Helpdesk course, as well as The Virtual Workplace simulation program. Both the

course and the simulation program provide the learner with an exploratory learning environment. The use of scenarios provides opportunities to develop and then model appropriate attitude, however there may have been too few such opportunities embedded within the combination of course and program.

Using scenarios to change attitude

Contextualising any scenario provides a framework within which learners can make sense of what is required. The Cognitive Response Model (Greenwald, 1968) for example discusses purposely designed scenarios being used to persuade and change attitude and informed the design of the study. It is, though, perhaps the relatively new field of captology (Fogg, 1998), in conjunction with established theories such as the Cognitive Response Model, that holds promise for amalgamating the technology and persuasion elements that result in attitude change. This new look at how computer technology, often in the form of purposely designed simulations or microworlds, can effect attitude change also uses psychology theories as a base. This seems logical in the sense that changing attitude means that one is dealing with human beings, and psychology is integral to dealing with people.

Figure 14 shows how captology, acting as either a tool, medium or social actor, can be produced by a designer to effect attitude or behaviour change, and this model was taken into account when designing and using The Virtual Workplace simulation computer program within the study.

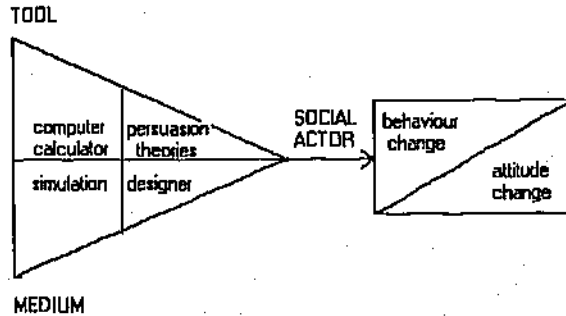


Figure 14 Captology as an agent of attitude change

Research about using simulations to change attitude has produced mixed results, however participants of The Virtual Workplace reported that they found it interesting and, in the context of their course, worthwhile. This perhaps supports the need for learner engagement when dealing with such learning aids. A key point however may be that simulations cannot be used in a vacuum, they "must be integrated into the content of the course and into the expectations of the students and faculty" (Marion and Niebuhr, 1995, p1). This strongly suggests that The Virtual Workplace simulation should be used in conjunction with The Computer Helpdesk course, a view that the HCT may need to accommodate by mandating the use of the simulation.

Conclusion

The data obtained from the combined assessment methodology of observation, interview and survey, designed to obtain data indirectly and enable these data to be triangulated, yielded results that indicated generally that no significant change in attitude occurred pre and post. Survey responses from all subjects showed only three responses that showed significant difference pre and post, and these differences may be attributed to the wording of the individual survey items. Interviews were conducted with four subjects, and results indicated that three of the four subjects, or 75% of the sample, showed no significant difference in attitude pre and post. The final assessment element, observation of subjects, occurred only once due to the timing constraints imposed by running the study in a working college. Data from the observation of each subject group indicated an attitude baseline or position which supported data from other results.

One could suspect from these data that the treatment had no effect, but exactly why there was no change in customer service attitude is unclear, with any one of a number of reasons resulting in the no-change outcome. One reason for the result may be the reduction in the number and depth of affective domain development opportunities within the Computer Helpdesk course between 1997 and 2001. Both the modelling of effective customer service, and the opportunity to practice service-provider to customer interaction may be critical to the development, and changing of attitude.

Another reason may be related to the subjects themselves. In some regards, the subjects in the study are conditioned by cultural means to attempt to give an authority figure whatever they think that he wants. The subjects may have determined, probably subconsciously, that exhibiting a leaning toward customer service may have been the outcome sought by the author. This is a likely assumption because these subjects, as well as peers of these subjects, have exhibited this trait in other courses at the HCT. Academic staff within the HCT actively attempt to moderate this trait wherever possible.

Another reason may be that the subjects already had a predisposition toward appropriate customer service. Data from both the observation and the first interview support this possibility and indicate a positive attitude about and toward customer service to begin with.

Yet another reason may be that the undertaking of the Customer Helpdesk course did not provide a sufficiently strong motivational force to effectively either change a negative opinion or accentuate a positive opinion predisposition. Whilst one of the four subjects interviewed did show an accentuation of opinion toward customer service, the other three subjects interviewed did not show any significant change in opinion. The Computer Helpdesk course has been effectively "watered down" with respect to affective domain aspects, and fewer opportunities are now provided to develop customer service attitude in comparison with an increase in competency-based skill exercises.

One could also suspect from these data that the survey instrument may not have been sufficiently "sensitive" to be able to detect change in attitude in this study. The survey was, admittedly, a somewhat "coarse" instrument, developed by the author in response to a lack of available instruments. No existing suitable survey instrument was available pre-study so the survey instrument was custom made for the study. Further refinement of this instrument may result in it being able to discern change more finely than is currently the case. This may increase the power of the survey instrument.

Another possible reason that no change in attitude was identified is because the range or structure of assessment methods were inadequate for the task. Although triangulation of data occurred, only two of the three data collection methods actually collected data in a before/after treatment process. The observation of subjects occurred only once, and the chance to collect more before/after treatment data was unavailable. The constraints of running the study in a working school with real students as subjects made additional observations difficult to arrange.

Finally, it is thought that contextualising scenarios in the computer based simulation used in the course may help subjects make greater sense of the content and the intent of the course. It also may enhance the constructivist approach embedded within both the course and the simulation, and suggests that such an integrated approach, using a custom designed simulation computer program within the course, may be a form of captology through which subjects are academically engaged and learn more effectively.

CHAPTER NINE

CONCLUSION

Analysis of the data from the observation of all subjects, and the pre-treatment and post-treatment interviews of four subjects, indicates that as a result of subjects undertaking The Computer Helpdesk course, little change about customer service attitude occurred. Statistical analysis of the pre-treatment and post-treatment survey data indicates also that little change about customer service attitude occurred. The null hypothesis that undertaking The Customer Helpdesk course changes attitude about customer service is therefore rejected.

Limitations of Study

Numerous issues negatively impacted the study. These issues can be grouped into three categories: previous research limitations; constraints with undertaking a study within a working college; and subject's culture and environment.

Previous research limitations

As discussed earlier in this thesis, much research and resulting literature exists in the fields of psychology and attitude change, however little exists in the combined area of attitude change and customer service attitude. This

results in the study drawing much of its theoretical basis from the mature areas of psychology and attitude change in general. Whilst this may be both prudent and appropriate, it means that no pre-existing assessment instruments, suitable for assessing attitude change in customer service attitude and assessing from the perspective of the service provider, are available. Significant effort and time was expended in developing such an instrument for the study, and the delay in applying the finished instrument meant that the timing of the study was affected.

The use of computing technology within The Computer Helpdesk course, in the form of a multimedia computing program learning aid called The Virtual Workplace, is an area that is discussed in literature fairly extensively. A relatively recent, and thus immature, area of literature called captology provided theoretical input into the study, and the author hesitated to let the limited literature in this new field form a greater theoretical platform which limited the theoretical base of the study to a degree.

Constraints of undertaking a study within a working college

Subjects were students undertaking their CIP academic program in a working college. As such, the study had to conform with the timing of their Computer Helpdesk course content and assessment, and indeed the study had to take into account the subject's assessment commitments in other courses. At no stage were subjects to be academically disadvantaged by participating in the study, and one immediate effect of this rule was that only one observation

could be undertaken for each of the two study groups. This meant that there could be no before and after-treatment observation data collected. Given that there were before and after-treatment interviews and surveys, this limitation represented an opportunity lost with respect to data that could quantifiably enhance those data triangulated in the study.

Subject's culture and environment

Customer service could be considered a "difficult" area to assess with respect to the Arabian Gulf region. After working in the region for seven years, the author realises that local perception about what constitutes appropriate customer service can differ markedly from Western beliefs. Even though the study, and the scenarios and instruments used within it, were designed with this in mind, it is possible that the attempt to inculcate a Western customer service belief system through the changing of attitude may be, at worst, doomed to failure. The consistent and apparent predisposition of students to provide authority figures with what those figures appear to desire may also make changing an assessing attitude problematic.

Instruments and methodology used to assess attitude change

The primary instrument used in the study was the Likert scale survey. Used in a pre and post-treatment sequence, this survey was custom made by the author because a suitable pre-existing survey was not found. The survey obtained quantitative data from subjects which were then triangulated with qualitative data from observation and interviews. Even though considerable

effort was expended in developing the survey, its delay impacted the study timeframe unduly, and the survey could be considered as a somewhat coarse customer service attitude assessment instrument. It is possible that refinement or redevelopment of the instrument could result in a survey that is able to discern smaller changes in attitude and be considered more effective.

Supporting data were obtained from observation and interviews. A potential weakness in the methodology was that there were no pre and post-treatment observations of the subjects. This was not possible due to constraints with using students in a working college. It meant that two of the three forms of data that were triangulated actually looked at before and after conditions, and may have resulted in the "loss" of possibly valuable supportive data.

Future research

If the HCT determines that the development of affective domain elements, such as a positive customer service attitude, are important for CIP students then a trial of two different versions of The Computer Helpdesk course should be undertaken. One version would contain significant affective domain content and exercises aimed at developing and reinforcing positive customer service attitude, and one would be the course in its current form. The study results from both versions of the course would then be compared, to determine which version was effective at developing or accentuating positive customer service attitude.

The attempt to change attitude also demands that further research be undertaken in the local context such that the predisposition of local students, to providing authority figures with whatever those figures want, should be assessed and quantified, and methods found to negate this predisposition.

The study has shown that a relative paucity of published research exists in the combined area of attitude change and computing technology. Because of this paucity there appear to be few assessment instruments suitable for study's such as this one. A custom-made survey instrument was developed and used for the study, however further research into refining this instrument with the aim of making it more efficient or sensitive should be undertaken as a matter of serious consideration, especially if the study is to be replicated. The HCT's emphasis on developing appropriate attitudinal qualities in graduates suggests that such an attitude assessment instrument may be useful.

A relatively new area that appears to combine attitude with computing technology is that of *captology*. This area perhaps holds promise for the HCT in its need for quantifying attitude and attitude change within a technologically driven environment. Research into whether captology is actually a real or bona fide area of academic research, and how captology may be used by the HCT to effect attitude change, should be considered.

Final comments

Throughout the stages of this study, I continually thought back to an email message that I had seen on the Internet. This message, a response to an article referring to "soulless universities", echoed my own thoughts. I reproduce the email message from Rieckhoff (2000), because I believe that it shows my thinking about attitude development in education.

In reading about "The New, Soulless University?" I was reminded of my lifelong concern about the neglected if not completely forgotten dimension of education: the transmission of attitudes. Whilst the educational literature about transmission of content is extensive, I rarely find mention of the importance on passing on attitudes, i.e. modes of behaviour related to the acquisition and use of knowledge.

Whilst it is easy to pass on content by various media, the only effective mechanisms for the transmission of attitudes in my experience is for better or worse through role models and that is where direct human contact is irreplaceable: parents, neighbours, peers, and, of course, teachers. They are the only "real" role models, whereas TV and other media only provide essentially "phony" role models that can nonetheless be also effective in moulding minds and characters, more often in undesirable ways rather than otherwise. The examples abound and everybody will be able to relate stories about good and bad cases from their own life experiences. Yet we rarely, if ever, discuss the importance of this dimension of learning and teaching. (on-line, p. 1)

Rieckhoff's comments sum things up in my view. The moulding of attitude is an area that is pursued rarely, and when attempting to develop learner attitude or affect learner behaviour the theories of psychology, cognition and experiential learning all combine and must be accommodated if success is to be achieved. The pursuit of attitude change demands concerted research and application effort, and I for one would like to be involved in this effort.

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APPENDICES

A1. Pre and post-treatment Survey - instruction page

Customer Service Attitude Survey

Please read the two paragraphs and then choose your answer to each statement.

Saeed has a problem with his new car so he visits Mr. Jose who is the service manager at Al Amna Motors. When Saeed walks into Mr. Jose's office he finds Mr. Jose speaking on the phone with another customer who also has a problem with a new car. Saeed tries to get Mr. Jose's attention by waving his arm but Mr. Jose points for him to sit down in a chair. Mr. Jose then turns his back to Saeed and continues his phone conversation.

After many minutes Saeed tries to get Mr. Jose's attention again, but this time Mr. Jose points to the phone and says "Please wait a while or come back later, I'll gladly help you after I finish helping this client". Saeed looks at his watch and decides to go home. He leaves Al Amna Motors without having anyone hear about the problem that he has with his car.

1	Disagree very much
2	Disagree a little
3	Not sure
4	Agree a little
5	Agree very much

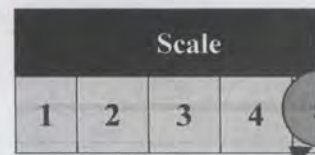
-

Here are the values or amount that you agree or disagree with the statement.

+

For each statement circle or color the number on the right that best fits how you feel about the issue.

Use the scale (above) to match your choice. In this example we have selected the number 5 which means *Agree very much* from the scale.



A2. Pre and post-treatment Survey - front page

Customer Service Attitude Survey		your code here				
		-				+
Question		Scale				
2.	Mr. Jose should attend to his telephone client.	1	2	3	4	5
3.	Good service makes me feel happy.	1	2	3	4	5
4.	Saeed is happy with the service he received.	1	2	3	4	5
5.	When a customer like Saeed walks in, Mr. Jose should stop talking on the telephone.	1	2	3	4	5
6.	Saeed was happy with the way he was treated by Mr. Jose.	1	2	3	4	5
7.	Saeed waited the correct length of time before leaving.	1	2	3	4	5
8.	Mr. Jose did not show respect for Mr. Saeed.	1	2	3	4	5
9.	Saeed should have complained about the service.	1	2	3	4	5
10.	Mr. Jose thinks that customers on the telephone are more important than customers in his office like Saeed.	1	2	3	4	5
11.	Saeed does not expect better service next time.	1	2	3	4	5
12.	If Mr. Jose could not help Saeed then someone else should have.	1	2	3	4	5
13.	Saeed should expect Mr. Jose to help him immediately.	1	2	3	4	5
14.	Saeed received good customer service from Mr. Jose.	1	2	3	4	5
15.	Mr. Jose thinks that customers who are in his office are more important than customers who are on the telephone.	1	2	3	4	5
16.	Saeed should demand help from Mr. Jose.	1	2	3	4	5
17.	Mr. Jose thinks that Saeed will return later.	1	2	3	4	5
18.	Saeed should demand help before Mr. Jose finishes his telephone call.	1	2	3	4	5
19.	Saeed should receive good service every time.	1	2	3	4	5
20.	Mr. Jose should try to help only one customer at a time.	1	2	3	4	5

A3. Pre and post-treatment Survey - back page

21. Mr. Jose expects Saeed to wait till Mr. Jose has finished his telephone call.	1	2	3	4	5
22. Saeed should receive service straight away even if there are others waiting ahead of him.	1	2	3	4	5
23. Mr. Jose should not stop his telephone call when Saeed comes into his office.	1	2	3	4	5
24. Mr. Jose should attend to Saeed.	1	2	3	4	5
25. Saeed is unhappy with the service he received.	1	2	3	4	5
26. Mr. Jose spoke badly to Saeed.	1	2	3	4	5
27. Saeed should wait for others who are being served first.	1	2	3	4	5
28. Mr. Jose should not answer the telephone when he is helping Saeed.	1	2	3	4	5
29. Mr. Jose should try to help many customers at one time.	1	2	3	4	5
30. Saeed will return to Al Amna later.	1	2	3	4	5
31. Mr. Jose thinks that every customer is equally important.	1	2	3	4	5
32. Saeed is more important than other customers.	1	2	3	4	5
33. Mr. Jose thinks that the telephone client is more important than Saeed.	1	2	3	4	5
34. Saeed expects better service next time.	1	2	3	4	5
35. Customers must wait while others are helped.	1	2	3	4	5
36. Saeed's time is more important than Mr. Jose's time.	1	2	3	4	5
37. Customers must not have to wait for help.	1	2	3	4	5
38. Mr. Jose should have paid all of his attention to Saeed because Saeed was already waiting in Mr. Jose's office.	1	2	3	4	5
39. Saeed is no more important than other customers.	1	2	3	4	5
40. Mr. Jose's time is more important than Saeed's time.	1	2	3	4	5
41. Saeed is as important as every other customer.	1	2	3	4	5

A4. Pilot Survey statistical analysis results

Wed, 3 Apr 2002

Page 1

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+-----+
|STATISTICA |Reliability Results
|RELIABILITY|
|STATS      |
+-----+
|
|           Number of items in scale: 40
|           Number of valid cases: 35
| Number of cases with missing data: 0
|           Missing data: casewise deleted
|
|           Summary Statistics for Scale
|           Mean: 126.40000000          Sum: 4424.0000000
| Standard Deviation: 13.484631775      Variance: 181.83529412
|           Skewness: .12804614669      Kurtosis: -.1775768670
|           Minimum: 96.000000000      Maximum: 157.00000000
|           Cronbach alpha: .62499526009 Standardized alpha: .62119743788
| Average inter-item Correlation: .04087607462
|
+-----+
```

```
+-----+
|STATISTICA |Split-Half Reliability
|RELIABILITY|
|STATS      |
+-----+
|
|           First Half          Second Half
| Number of Items:          20          20
|           Mean:            62.714285714      63.685714286
|           Sum:             2195.0000000      2229.0000000
| Standard Deviation:       7.6218394745      7.6226112114
|           Variance:        58.092436975      58.104201681
|           Cronbach's alpha: .41139881383      .40693107291
| Correlation between first and second half: .56489289671
|           Correlation corrected for attenuation: 0.000000000
|           Split half reliability: .72195726353
| Guttman split-half reliability: .72195726117
|
+-----+
```

Wed, 3 Apr 2002

File: LiveData
Include all cases

size: 35 * 41 MISS=-9999.

+-----+-----+-----+-----+-----+-----+						
STATISTICA	Summary for scale: Mean=126.400 Std.Dv.=13.4846 Valid N:35					
RELIABTY	Cronbach alpha: ---		Standardized alpha: .621197			
STATS	Average inter-item corr.: .040876					
+-----+-----+-----+-----+-----+-----+						
variable	Mean if deleted	Var. if deleted	StDv. if deleted	Itm-Totl Correl.	Alpha if deleted	
+-----+-----+-----+-----+-----+-----+						
Q1	122.3143	173.0727	13.15571	.115171	.6220128	
Q2	122.0857	178.9355	13.37668	-.113691	.6416183	
Q3	124.7143	173.1755	13.15962	.087746	.6237430	
Q4	123.1714	162.5992	12.75144	.321116	.6041631	
Q5	124.6857	174.3298	13.20340	.036754	.6273504	
Q6	122.9429	172.9682	13.15174	.038033	.6298963	
Q7	122.9714	171.7992	13.10722	.087105	.6247898	
Q8	122.6571	179.7110	13.40563	-.146451	.6388961	
Q9	123.2857	158.5469	12.59154	.380028	.5965863	
Q10	123.6000	169.6114	13.02349	.192586	.6166766	
Q11	122.6857	166.5584	12.90575	.214181	.6140168	
Q12	122.7429	165.6196	12.86933	.304354	.6079162	
Q13	123.9714	166.8849	12.91839	.198018	.6154260	
Q14	124.5143	179.0498	13.38095	-.117455	.6408812	
Q15	122.9429	172.4539	13.13217	.094029	.6236131	
Q16	122.5714	169.3878	13.01490	.223497	.6149882	
Q17	123.6571	156.9682	12.52869	.479136	.5891150	
Q18	122.8286	166.3134	12.89626	.247598	.6115458	
Q19	124.0286	164.7135	12.83407	.278558	.6085138	
Q20	122.9143	167.8498	12.95569	.164735	.6185168	
Q21	123.2857	162.2612	12.73818	.381520	.6006403	
Q22	123.5714	184.2449	13.57368	-.240204	.6548413	
Q23	122.4286	161.1592	12.69485	.401738	.5983533	
Q24	122.3143	167.7584	12.95216	.199588	.6154978	
Q25	124.2000	165.8171	12.87700	.238279	.6119010	
Q26	122.0000	169.4286	13.01647	.196359	.6163729	
Q27	123.6286	161.6620	12.71464	.335350	.6024415	
Q28	123.0000	180.2285	13.42492	-.144253	.6467955	
Q29	123.0857	183.4498	13.54436	-.248908	.6488470	
Q30	122.2857	178.4898	13.36001	-.107354	.6350719	
Q31	124.7714	171.8335	13.10853	.170131	.6189996	
Q32	123.6000	161.2686	12.69916	.341939	.6016670	
Q33	122.7143	168.8326	12.99356	.279937	.6123456	
Q34	121.8571	175.0367	13.23014	.026178	.6272100	
Q35	124.0286	166.2563	12.89404	.268715	.6102745	
Q36	124.2286	171.2620	13.08671	.084474	.6256536	
Q37	123.5714	161.3306	12.70160	.381218	.5995350	
Q38	123.6000	169.4400	13.01691	.094663	.6262997	
Q39	123.8571	165.6082	12.86888	.274352	.6094455	
Q40	122.2857	165.4041	12.86095	.348271	.6058920	
+-----+-----+-----+-----+-----+-----+						

A5. Observation - Wilcoxon test results

Ranks

		N	Mean Rank	Sum of Ranks
POS - NEG	Negative Ranks	0(a)	.00	.00
	Positive Ranks	6(b)	3.50	21.00
	Ties	0(c)		
	Total	6		
a POS < NEG				
b POS > NEG				
c NEG = POS				

Test Statistics(b)

	POS - NEG
Z	-2.207(a)
Asymp. Sig. (2-tailed)	.027
a Based on negative ranks.	
b Wilcoxon Signed Ranks Test	

Ranks

		N	Mean Rank	Sum of Ranks
POS2 - NEG2	Negative Ranks	1(a)	2.50	2.50
	Positive Ranks	5(b)	3.70	18.50
	Ties	0(c)		
	Total	6		
a POS2 < NEG2				
b POS2 > NEG2				
c NEG2 = POS2				

Test Statistics(b)

	POS2 - NEG2
Z	-1.682(a)
Asymp. Sig. (2-tailed)	.093
a Based on negative ranks.	
b Wilcoxon Signed Ranks Test	

A6. Observation Form front page - group 1

19 Subjects
Subject Group: 7C1

Observation Record Form

Comment or sentiment expressed by the a majority or all of the group	-	+
<p>How more effectively may the staff have handled the customer? was already excellent! Was very good customer service! Bad handling! Customer would feel 'not bad'. Staff should be more understanding.</p>	2	9
<p>How more effectively may the customer have handled the staff? He was already polite. He was okay, not bad. Friendly with staff. Kind with staff. Spoke a bit badly to staff!</p>	3	7
<p>How reasonable was it for housekeeping to clean the room at 7:30am? He was they were cleaning! Far too early, he was sleeping! Not reasonable at all. Could be better. Sometimes good.</p>	5	8
<p>What were the important points about this customer service interaction? To solve problem. To help customer. Keep customer happy! Dealing with customer!</p>	1	10
<p>How professional was it for the staff to talk about "problem" customers? Not important! Important! shouldn't talk about customers at all. should discuss so service is better next time. Should know what customer wants!</p>	2	9
<p>How could this talk have changed the way staff then handled the customer? Don't know! Customer gets better service!</p>	3	5

sample of comments

(16) (48)

* Subjects didn't understand and this question: a Semler (2nd-language) also didn't understand 'cause/effect' relationship.

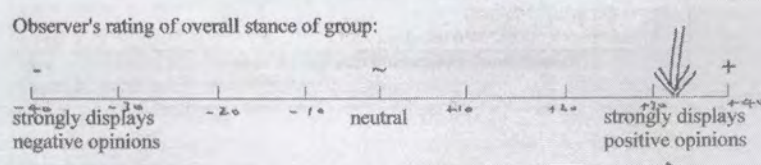
$$-16 + 48 = \underline{\underline{+32}}$$

A7. Observation Form back page - group 1

Additional Observations or Comments 19 subjects

- Group appeared interested and animated.
- Limited English language skills really hampered the effectiveness of the exercise.
- Subjects appeared more interested when the video clip was played the second time.
- Subject's ability to conceptualize (not unique in the context) proved limiting.
- Virtually non-existent writing skills proved a major impediment to parts of the exercise.

- Sequence:
1. Pre-focus of subjects to "customer service".
 2. Subjects to "predict" what video might be about.
 3. Write list of questions on white board.
 4. Play the video once, without pause or comment.
 5. Elicit discussion based upon questions.
 6. Play video again, no pause & no comment.
 7. Review questions.
 8. Have subjects write what they think cust. svc. is!



Observation date: 20th April 2002
 Observation duration: 45 minutes
 Observer's initials: AW *Ahl*

Group voting.
AW.

A8. Observation Form front page - group 2

18 subjects

Observation Record Form

Subject Group: 7C2

Comment or sentiment expressed by the a majority or all of the group	-	+
How more effectively may the staff have handled the customer? Not so much. Sometimes but not here. Ask other questions: "Why will he leave the room?" Should have asked first before ringing housekeeping. Service was okay! Service was not good!	4	7
How more effectively may the customer have handled the staff? He was angry! Customer was not nice! Customer had right to be bad! He should be polite, not angry. He should be angry - not the fault since he had problem! He acted okay.	6	4
How reasonable was it for housekeeping to clean the room at 7:30am? Not reasonable! Too early - customer maybe sleeping. Perhaps 30 am? Customer will be angry at 7:30 am!	3	4
What were the important points about this customer service interaction? Be patient. Receptionist smiled. Try to get solution quickly. Customer angry! Not be angry!	2	8
How professional was it for the staff to talk about "problem" customers? Okay! Not okay! It's okay - must prepare for customer. That's the way they talk! Will be okay!	3	10
How could this talk have changed the way staff then handled the customer? Service will get better. Will give better service later. No change. Don't know.	3	5

(Sample of comments)

(21) (38)

* Subjects misunderstood point of question. Teacher (2nd language), also misunderstood. (As an observer I couldn't interfere).

-21 + 38 = +17

A9. Observation Form back page - group 2

Additional Observations or Comments

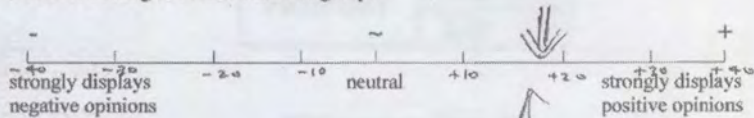
18 subjects

- Some subjects disinterested (2 almost asleep).
- Ambient room noise high & distracting.
- Some subjects had trouble hearing video dialogue.
- Other subjects quite animated & vociferous.
- 5 subjects talked among themselves a lot.

Sequence:

Same sequence as per group 7C1.

Observer's rating of overall stance of group:



Observation date: 23rd April 2002

Observation duration: 35 minutes

Observer's initials: AW

AW

Group rating:
AW

A10. Survey MANOVA test results

Notes

Output Created		19-SEP-2002 09:23:28
Comments		
Input	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	68
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data for all variables in the model.
Syntax		GLM s1 s2 s3 s4 s5 s6 s7 s8 s9 s10 s11 s12 s13 s14 s15 s16 s17 s18 s19 s20 s21 s22 s23 s24 s25 s26 s27 s28 s29 s30 s31 s32 s33 s34 s35 s36 s37 s38 s39 s40 BY prepost /METHOD = SSTYPE(3) /INTERCEPT = INCLUDE /CRITERIA = ALPHA(.05) /DESIGN = prepost .
Resources	Elapsed Time	0:00:00.00

Between-Subjects Factors

		N
PREPOST	1.00	34
	2.00	34

Multivariate Tests(b)

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Pillai's Trace	.996	157.285(a)	40.000	27.000	.000
	Wilks' Lambda	.004	157.285(a)	40.000	27.000	.000
	Hotelling's Trace	233.015	157.285(a)	40.000	27.000	.000
	Roy's Largest Root	233.015	157.285(a)	40.000	27.000	.000
PREPOST	Pillai's Trace	.707	1.625(a)	40.000	27.000	.094
	Wilks' Lambda	.293	1.625(a)	40.000	27.000	.094
	Hotelling's Trace	2.408	1.625(a)	40.000	27.000	.094
	Roy's Largest Root	2.408	1.625(a)	40.000	27.000	.094

a Exact statistic

b Design: Intercept+PREPOST

Tests of Between-Subjects Effects

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	S1	5.882E-02(a)	1	5.882E-02	.057	.812
	S2	.368(b)	1	.368	.200	.656
	S3	3.309(c)	1	3.309	2.263	.137
	S4	.235(d)	1	.235	.117	.733
	S5	1.191(e)	1	1.191	1.017	.317
	S6	6.485(f)	1	6.485	3.106	.083
	S7	1.471E-02(g)	1	1.471E-02	.009	.923
	S8	.235(b)	1	.235	.222	.639
	S9	.368(d)	1	.368	.155	.695
	S10	4.250(h)	1	4.250	3.048	.085
	S11	3.765(i)	1	3.765	2.111	.151
	S12	.235(j)	1	.235	.172	.680
	S13	2.842E-14(g)	1	2.842E-14	.000	1.000
	S14	4.250(k)	1	4.250	2.175	.145
	S15	1.471E-02(g)	1	1.471E-02	.009	.924
	S16	2.118(l)	1	2.118	1.554	.217
	S17	2.882(m)	1	2.882	1.295	.259
	S18	2.118(n)	1	2.118	1.305	.257
	S19	10.721(o)	1	10.721	4.724	.033
	S20	.721(p)	1	.721	.354	.554
	S21	1.779(q)	1	1.779	1.187	.280
	S22	.368(d)	1	.368	.153	.697
	S23	.721(r)	1	.721	.475	.493
	S24	5.882E-02(g)	1	5.882E-02	.033	.857
	S25	.721(p)	1	.721	.335	.564
	S26	3.309(s)	1	3.309	2.528	.117
	S27	2.485(t)	1	2.485	1.105	.297
	S28	.235(u)	1	.235	.102	.750
	S29	5.882(v)	1	5.882	3.479	.067
	S30	.132(d)	1	.132	.123	.726
	S31	14.132(w)	1	14.132	11.846	.001
	S32	.529(x)	1	.529	.244	.623
	S33	1.191(y)	1	1.191	1.148	.288
	S34	2.485(z)	1	2.485	2.319	.133
	S35	.721(r)	1	.721	.440	.510
	S36	3.765(aa)	1	3.765	1.603	.210
	S37	7.118(bb)	1	7.118	4.352	.041

	S38	4.250(cc)	1	4.250	1.725	.194
	S39	.000(g)	1	.000	.000	1.000
	S40	5.882(dd)	1	5.882	3.761	.057
Intercept	S1	1104.059	1	1104.059	1073.444	.000
	S2	1297.191	1	1297.191	704.988	.000
	S3	237.191	1	237.191	162.224	.000
	S4	660.941	1	660.941	328.422	.000
	S5	222.485	1	222.485	189.904	.000
	S6	654.721	1	654.721	313.595	.000
	S7	798.368	1	798.368	513.482	.000
	S8	933.882	1	933.882	882.000	.000
	S9	630.132	1	630.132	265.743	.000
	S10	654.721	1	654.721	469.541	.000
	S11	1040.529	1	1040.529	583.445	.000
	S12	875.529	1	875.529	640.381	.000
	S13	395.529	1	395.529	206.411	.000
	S14	317.779	1	317.779	162.622	.000
	S15	826.015	1	826.015	519.355	.000
	S16	889.941	1	889.941	653.050	.000
	S17	588.235	1	588.235	264.317	.000
	S18	948.765	1	948.765	584.577	.000
	S19	536.485	1	536.485	236.378	.000
	S20	911.779	1	911.779	447.416	.000
	S21	718.250	1	718.250	478.976	.000
	S22	594.132	1	594.132	247.399	.000
	S23	1112.132	1	1112.132	732.930	.000
	S24	1169.471	1	1169.471	651.512	.000
	S25	362.485	1	362.485	168.724	.000
	S26	1211.309	1	1211.309	925.494	.000
	S27	594.132	1	594.132	264.268	.000
	S28	737.882	1	737.882	320.644	.000
	S29	648.529	1	648.529	383.579	.000
	S30	1112.132	1	1112.132	1037.682	.000
	S31	284.132	1	284.132	238.174	.000
	S32	576.529	1	576.529	266.200	.000
	S33	971.309	1	971.309	935.860	.000
S34	1279.779	1	1279.779	1194.106	.000	
S35	410.132	1	410.132	250.296	.000	
S36	405.235	1	405.235	172.552	.000	
S37	660.941	1	660.941	404.129	.000	
S38	630.132	1	630.132	255.746	.000	
S39	435.059	1	435.059	254.237	.000	
S40	978.882	1	978.882	625.815	.000	
PREPOST	S1	5.882E-02	1	5.882E-02	.057	.812
	S2	.368	1	.368	.200	.656
	S3	3.309	1	3.309	2.263	.137

	S4	.235	1	.235	.117	.733
	S5	1.191	1	1.191	1.017	.317
	S6	6.485	1	6.485	3.106	.083
	S7	1.471E-02	1	1.471E-02	.009	.923
	S8	.235	1	.235	.222	.639
	S9	.368	1	.368	.155	.695
	S10	4.250	1	4.250	3.048	.085
	S11	3.765	1	3.765	2.111	.151
	S12	.235	1	.235	.172	.680
	S13	.000	1	.000	.000	1.000
	S14	4.250	1	4.250	2.175	.145
	S15	1.471E-02	1	1.471E-02	.009	.924
	S16	2.118	1	2.118	1.554	.217
	S17	2.882	1	2.882	1.295	.259
	S18	2.118	1	2.118	1.305	.257
	S19	10.721	1	10.721	4.724	.033
	S20	.721	1	.721	.354	.554
	S21	1.779	1	1.779	1.187	.280
	S22	.368	1	.368	.153	.697
	S23	.721	1	.721	.475	.493
	S24	5.882E-02	1	5.882E-02	.033	.857
	S25	.721	1	.721	.335	.564
	S26	3.309	1	3.309	2.528	.117
	S27	2.485	1	2.485	1.105	.297
	S28	.235	1	.235	.102	.750
	S29	5.882	1	5.882	3.479	.067
	S30	.132	1	.132	.123	.726
	S31	14.132	1	14.132	11.846	.001
	S32	.529	1	.529	.244	.623
	S33	1.191	1	1.191	1.148	.288
	S34	2.485	1	2.485	2.319	.133
	S35	.721	1	.721	.440	.510
	S36	3.765	1	3.765	1.603	.210
	S37	7.118	1	7.118	4.352	.041
	S38	4.250	1	4.250	1.725	.194
	S39	.000	1	.000	.000	1.000
	S40	5.882	1	5.882	3.761	.057
Error	S1	67.882	66	1.029		
	S2	121.441	66	1.840		
	S3	96.500	66	1.462		
	S4	132.824	66	2.012		

	S5	77.324	66	1.172		
	S6	137.794	66	2.088		
	S7	102.618	66	1.555		
	S8	69.882	66	1.059		
	S9	156.500	66	2.371		
	S10	92.029	66	1.394		
	S11	117.706	66	1.783		
	S12	90.235	66	1.367		
	S13	126.471	66	1.916		
	S14	128.971	66	1.954		
	S15	104.971	66	1.590		
	S16	89.941	66	1.363		
	S17	146.882	66	2.225		
	S18	107.118	66	1.623		
	S19	149.794	66	2.270		
	S20	134.500	66	2.038		
	S21	98.971	66	1.500		
	S22	158.500	66	2.402		
	S23	100.147	66	1.517		
	S24	118.471	66	1.795		
	S25	141.794	66	2.148		
	S26	86.382	66	1.309		
	S27	148.382	66	2.248		
	S28	151.882	66	2.301		
	S29	111.588	66	1.691		

	S30	70.735	66	1.072		
	S31	78.735	66	1.193		
	S32	142.941	66	2.166		
	S33	68.500	66	1.038		
	S34	70.735	66	1.072		
	S35	108.147	66	1.639		
	S36	155.000	66	2.348		
	S37	107.941	66	1.635		
	S38	162.618	66	2.464		
	S39	112.941	66	1.711		
	S40	103.235	66	1.564		
Total	S1	1172.000	68			
	S2	1419.000	68			
	S3	337.000	68			
	S4	794.000	68			
	S5	301.000	68			
	S6	799.000	68			
	S7	901.000	68			
	S8	1004.000	68			
	S9	787.000	68			
	S10	751.000	68			
	S11	1162.000	68			
	S12	966.000	68			
	S13	522.000	68			
	S14	451.000	68			

	S15	931.000	68			
	S16	982.000	68			
	S17	738.000	68			
	S18	1058.000	68			
	S19	697.000	68			
	S20	1047.000	68			
	S21	819.000	68			
	S22	753.000	68			
	S23	1213.000	68			
	S24	1288.000	68			
	S25	505.000	68			
	S26	1301.000	68			
	S27	745.000	68			
	S28	890.000	68			
	S29	766.000	68			
	S30	1183.000	68			
	S31	377.000	68			
	S32	720.000	68			
	S33	1041.000	68			
	S34	1353.000	68			
	S35	519.000	68			
	S36	564.000	68			
	S37	776.000	68			
	S38	797.000	68			
	S39	548.000	68			

	S40	1088.000	68			
Corrected Total	S1	67.941	67			
	S2	121.809	67			
	S3	99.809	67			
	S4	133.059	67			
	S5	78.515	67			
	S6	144.279	67			
	S7	102.632	67			
	S8	70.118	67			
	S9	156.868	67			
	S10	96.279	67			
	S11	121.471	67			
	S12	90.471	67			
	S13	126.471	67			
	S14	133.221	67			
	S15	104.985	67			
	S16	92.059	67			
	S17	149.765	67			
	S18	109.235	67			
	S19	160.515	67			
	S20	135.221	67			
	S21	100.750	67			
	S22	158.868	67			
	S23	100.868	67			
	S24	118.529	67			

	S25	142.515	67			
	S26	89.691	67			
	S27	150.868	67			
	S28	152.118	67			
	S29	117.471	67			
	S30	70.868	67			
	S31	92.868	67			
	S32	143.471	67			
	S33	69.691	67			
	S34	73.221	67			
	S35	108.868	67			
	S36	158.765	67			
	S37	115.059	67			
	S38	166.868	67			
	S39	112.941	67			
	S40	109.118	67			

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A11. Survey raw data - group 1

SUBJECT	PRE/POST	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31	S32	S33	S34	S35	S36	S37	S38	S39	S40	
A1	PRE	5	5	1	4	1	4	5	5	2	1	5	4	1	1	5	1	5	3	1	1	1	5	5	1	5	5	1	1	5	1	1	5	5	1	1	3	5	1	5		
A1	POST	5	5	1	3	1	1	2	3	3	5	5	3	1	1	3	5	3	3	5	3	2	4	1	4	5	1	5	4	1	1	5	2	1	5	3	1	1	5	5	1	5
A2	PRE	4	5	1	4	1	5	2	3	3	1	6	4	2	1	4	5	1	5	1	2	5	4	5	1	2	1	1	5	2	4	4	2	4	4	3	5	2	5	3	4	
A2	POST	4	5	1	3	2	3	2	4	3	3	1	3	2	2	1	3	3	6	2	4	3	2	3	3	1	4	1	5	2	4	3	3	5	4	3	5	3	3	3	4	
A3	PRE	5	1	1	1	1	5	5	5	1	3	1	3	1	3	1	3	1	1	1	1	4	3	5	1	5	5	1	1	5	5	1	1	3	3	1	1	1	5	5	4	
A3	POST	3	3	5	5	3	3	3	3	1	5	3	3	1	5	3	1	3	3	3	5	3	1	5	1	1	5	5	4	5	5	2	5	3	5	5	5	3	5	2	5	
A4	PRE	3	5	1	4	3	4	4	2	5	5	5	4	2	1	4	5	5	5	4	3	3	4	5	4	5	3	1	5	5	1	3	5	4	3	4	3	3	5	3	5	
A4	POST	3	5	2	3	3	4	3	5	4	5	5	5	1	2	5	5	5	5	4	5	3	1	5	5	1	3	5	4	2	2	5	1	3	3	3	3	5	3	5		
A5	PRE	3	5	2	5	3	2	1	5	3	3	2	4	3	2	3	4	4	3	5	5	3	3	4	2	3	5	2	2	3	5	2	2	4	3	1	1	4	5	3	3	
A5	POST	3	5	2	4	2	3	4	4	3	3	4	5	3	3	5	4	3	4	3	4	4	3	3	2	1	4	3	2	2	5	4	1	3	4	4	3	5	3	4		
A6	PRE	5	5	1	5	1	5	5	1	5	5	5	4	1	5	1	1	5	1	1	1	5	6	5	1	1	5	1	5	2	1	1	5	1	5	5	5	5	1	1	5	
A6	POST	5	6	1	6	1	5	5	5	1	5	6	3	1	3	5	1	1	5	1	1	5	1	5	5	1	5	3	1	4	1	5	4	3	5	5	3	1	5	5	3	
A7	PRE	5	2	3	5	1	4	4	4	5	3	3	4	4	2	5	4	4	1	5	5	5	2	6	5	1	5	4	1	3	4	1	5	3	5	1	1	4	6	5	5	
A7	POST	5	6	1	4	2	1	4	4	6	3	5	4	2	1	3	5	4	3	4	4	5	3	5	4	5	1	5	2	2	3	5	1	5	3	5	1	1	4	5	4	
A8	PRE	5	5	3	2	5	1	3	4	1	3	1	2	5	3	4	4	5	4	2	4	3	1	4	3	3	1	5	1	5	3	2	4	2	4	3	5	1	3	1	1	
A8	POST	4	5	5	2	4	2	3	4	4	5	3	4	5	4	4	3	2	4	5	2	4	5	6	4	4	2	4	5	5	4	3	4	5	4	3	4	4	2	4	1	
A10	PRE	5	5	1	4	1	3	4	4	1	1	4	4	1	5	4	3	4	4	2	4	2	1	4	5	1	5	3	2	3	5	1	1	4	5	1	4	3	2	3		
A10	POST	5	5	5	5	1	5	5	1	5	5	5	1	1	5	5	5	5	5	5	1	1	5	5	5	5	5	5	1	5	1	1	5	5	1	1	4	5	1	1	1	
A12	PRE	5	5	1	1	1	5	1	4	2	3	5	1	4	2	3	3	2	5	4	5	1	4	5	3	1	5	1	1	3	5	1	1	3	5	1	1	5	1	1	3	
A12	POST	5	5	1	1	3	3	3	2	2	5	3	4	2	1	5	4	1	5	5	5	1	3	5	4	1	5	4	1	3	5	1	2	5	5	1	1	5	2	1	2	
A13	PRE	4	1	1	4	2	1	3	4	5	3	1	5	4	1	2	4	1	2	3	5	4	6	5	2	1	4	4	3	2	3	5	2	3	5	5	1	4	1	3	4	
A13	POST	4	2	1	5	2	5	3	3	5	3	5	4	3	5	5	3	5	4	5	5	4	6	5	2	1	4	4	3	2	3	5	2	3	5	5	4	3	3	2	3	
A14	PRE	5	1	1	4	1	5	5	2	4	2	5	4	1	1	4	3	3	4	5	3	4	1	3	5	5	1	5	1	5	5	4	1	3	3	3	5	1	3	1	5	
A14	POST	5	5	3	3	3	1	2	3	3	3	5	4	1	1	4	3	3	4	5	3	4	1	5	3	5	3	5	3	4	3	2	2	5	1	2	1	2	1	5	5	
A15	PRE	5	5	3	5	2	5	2	4	5	5	5	4	3	1	2	4	3	5	5	5	4	2	5	5	4	5	3	4	1	5	5	5	5	5	1	4	5	3	5		
A15	POST	4	1	1	4	1	3	2	5	3	5	5	4	1	4	2	5	5	5	5	5	4	1	5	5	2	4	5	3	1	5	3	3	5	5	1	1	3	5	3	5	
A19	PRE	5	5	1	4	1	1	5	5	1	3	5	5	1	5	5	4	3	5	3	5	5	1	5	5	1	5	5	4	1	5	5	1	1	4	5	1	1	4	1	5	
A19	POST	5	5	4	1	1	1	3	5	2	2	5	3	2	1	5	4	1	5	5	5	1	3	5	4	1	5	4	1	5	1	3	5	1	2	5	5	1	1	5	2	
A19	PRE	5	5	5	1	1	1	1	1	1	1	5	5	1	5	5	1	1	1	5	5	1	5	5	1	1	5	1	5	5	5	1	1	5	5	1	1	1	1	1	6	
A19	POST	5	5	2	1	1	2	3	5	1	4	5	5	1	1	2	5	5	1	1	5	5	5	5	5	4	5	1	5	1	5	1	1	5	5	1	1	5	5	1	5	

A12. Survey raw data - group 2

SUBJECT	PRE/POST	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31	S32	S33	S34	S35	S36	S37	S38	S39	S40							
B1	PRE	4	5	1	4	1	4	4	3	5	2	3	5	1	1	1	5	1	3	4	1	3	4	4	5	1	4	1	1	3	3	1	3	3	5	1	1	1	3	3	4							
B1	POST	2	5	1	3	1	3	3	3	4	1	5	1	1	1	6	5	5	5	4	5	4	5	5	5	5	5	5	4	4	5	3	3	4	3	5	3	3	3	3	5							
B2	PRE	5	4	1	2	5	3	3	1	1	3	4	5	1	6	3	5	6	4	5	5	3	5	5	5	1	5	4	4	5	5	1	1	3	5	1	1	5	5	1	4	4						
B2	POST	5	5	4	5	3	4	5	4	1	2	4	3	4	5	3	2	2	5	5	5	5	5	4	3	5	2	5	2	4	3	5	5	2	2	4	3	3	2	2	4	3	2					
B3	PRE	4	5	2	2	5	4	4	5	4	2	5	5	1	1	3	3	3	4	1	1	4	5	5	5	4	5	2	5	3	4	1	3	4	5	2	2	1	3	2	5	5						
B3	POST	5	5	2	3	1	3	4	4	3	2	1	3	3	3	2	4	1	4	5	1	3	3	4	5	3	4	4	2	3	4	3	3	4	3	4	3	4	5	3	4	3	2					
B4	PRE	4	5	1	4	1	4	4	4	3	3	3	5	3	3	3	9	4	1	3	2	4	1	3	2	5	5	1	5	4	5	4	4	1	2	4	4	1	1	1	1	2	4					
B4	POST	4	5	1	3	1	3	4	3	3	3	3	3	4	3	4	3	3	2	4	3	2	4	3	2	4	4	1	4	4	5	4	4	5	4	3	3	4	4	2	1	3	2	1	2			
B5	PRE	4	5	1	4	1	4	5	4	3	4	2	3	2	1	5	5	4	3	2	5	3	1	4	5	2	5	5	4	2	3	4	2	4	4	3	5	3	5	3	5	3	5	5				
B5	POST	3	1	4	1	4	3	2	3	2	4	2	3	3	3	1	3	2	3	3	3	3	3	4	3	1	3	3	1	2	3	3	3	4	4	1	3	3	3	3	3	3	4	5				
B6	PRE	4	5	1	3	1	1	3	3	5	3	5	3	5	1	4	5	5	5	5	1	6	5	4	5	5	5	5	3	3	5	5	3	3	5	5	3	3	3	1	1	3	3	3				
B6	POST	5	6	4	5	3	6	4	5	5	3	5	3	3	3	4	5	5	4	5	5	4	5	5	4	5	5	3	3	4	5	2	5	4	4	5	5	5	4	3	5	3	5	3				
B7	PRE	3	5	3	4	3	5	3	2	1	2	3	4	4	3	3	4	2	3	5	5	6	3	3	3	3	3	2	5	4	1	3	4	2	3	4	4	2	3	2	2	4	5					
B7	POST	5	5	2	3	1	3	6	3	1	3	5	5	5	2	3	5	5	2	5	3	5	2	3	5	4	3	1	1	1	2	2	1	5	4	3	3	6	5	2	3	2	3	2				
B8	PRE	4	5	1	2	1	4	2	4	2	3	4	4	1	2	5	1	4	4	2	2	2	2	2	1	1	4	2	4	4	4	1	1	4	4	3	4	3	4	2	1	1	4	4				
B8	POST	4	5	2	2	2	2	3	4	4	5	4	2	2	4	2	2	4	1	2	3	4	2	4	4	2	4	4	4	4	4	4	4	2	2	4	4	2	2	1	4	2	1	4	4			
B9	PRE	3	5	2	4	1	1	3	4	4	3	3	4	1	1	3	4	1	4	1	1	3	2	5	5	1	4	3	4	3	5	1	4	3	5	1	1	1	1	1	1	3	3	3				
B9	POST	3	5	3	2	1	1	5	3	6	3	5	2	1	1	1	3	1	4	1	3	2	3	5	5	1	5	1	5	3	1	3	1	3	3	5	1	3	1	3	1	1	1	3	4			
B10	PRE	3	4	2	4	1	3	4	3	5	4	5	4	3	1	3	4	2	3	2	4	3	1	4	5	5	4	5	3	1	5	2	5	4	5	3	1	5	5	4	5	4	5	4	5			
B10	POST	3	5	1	4	3	1	4	2	5	4	3	2	3	4	3	4	4	5	3	3	3	3	1	5	5	1	2	5	3	1	3	3	5	3	4	3	4	3	4	1	4	4	1	4	4		
B11	PRE	5	5	2	2	1	4	5	3	2	6	5	3	1	2	3	4	4	3	2	4	3	2	3	2	3	5	3	4	2	2	3	4	2	3	5	2	4	1	2	3	4	1	2	3	4		
B11	POST	5	5	2	3	2	4	3	3	4	4	4	3	3	4	4	1	5	2	4	3	4	3	3	3	3	2	4	2	2	3	5	5	3	2	3	4	3	5	2	1	3	2	2	3	4		
B12	PRE	4	5	2	1	2	5	4	5	3	5	5	2	5	4	3	5	3	5	3	4	6	5	4	5	4	5	1	5	1	4	5	3	2	2	4	4	4	5	4	4	1	4	3	3	3		
B12	POST	5	5	2	3	3	4	4	3	2	2	3	3	3	2	2	4	1	1	1	4	1	4	5	5	5	5	4	5	1	5	1	5	3	2	4	4	4	4	3	1	4	4	3	3	3		
B13	PRE	4	5	1	5	1	4	5	4	5	3	3	2	1	1	4	1	1	1	1	4	1	4	4	5	5	4	5	1	5	3	2	2	4	4	4	4	4	3	1	4	1	4	3	3	3		
B13	POST	1	3	3	3	4	4	1	3	1	3	2	3	3	5	1	2	3	4	5	4	5	3	3	2	4	6	3	5	1	1	1	3	2	4	4	4	4	4	4	4	1	2	2	2	4	2	
B14	PRE	2	5	1	1	2	3	2	5	1	3	4	1	1	1	4	2	1	1	2	4	2	5	2	4	4	1	5	5	1	2	3	5	1	2	3	5	1	1	3	5	1	2	2	2	2		
B14	POST	4	5	1	1	1	1	2	5	1	3	4	2	1	1	3	2	1	3	4	4	4	4	2	5	2	4	4	1	5	5	1	1	3	4	1	4	4	4	1	1	2	3	4	1	2	3	4
B15	PRE	3	5	1	5	1	3	5	5	5	5	5	5	3	1	3	5	3	4	1	3	5	1	1	5	5	3	5	1	5	5	3	1	5	5	3	1	5	5	3	5	5	3	5	5	5		
B15	POST	3	5	1	5	1	3	5	5	5	5	5	5	3	5	1	3	5	3	5	1	5	5	1	5	5	3	5	1	3	5	5	5	5	5	5	3	5	5	3	5	5	3	5	5	5		
B16	PRE	4	5	1	4	1	5	3	2	4	1	3	5	4	1	1	3	3	2	5	1	4	3	1	4	5	4	4	2	4	4	4	4	4	4	5	3	3	5	5	3	2	3	1	1	1	1	
B16	POST	4	5	2	4	2	5	3	2	4	2	5	5	2	1	4	4	5	4	1	4	3	1	4	5	4	4	2	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	2	2
B17	PRE	3	5	1	1	3	1	3	3	2	2	4	1	1	5	3	4	4	4	2	4	1	4	2	3	4	4	4	4	4	2	2	4	4	4	4	4	4	3	2	4	4	4	4	4	4	4	
B17	POST	3	5	1	1	3	2	3	3	4	2	5	3	3	4	3	2	3	4	4	4	4	4	4	4	4	4	4	4	4	2	2	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
B18	PRE	2	1	2	1	3	2	5	3	3	4	1	3	3	4	4	2	4	2	4	1	1	1	5	1	4	1	5	3	4	3	5	2	3	4	5	1	1	3	5	5	1	1	3	5	3	5	
B18	POST	5	1	2	1	2	1	4	4	3	2	5	4	2	1	4	5	4	2	1	2	4	5	5	5	4	4	5	2	4	4	2	2	4	5	1	1	4	5	1	1	4	5	2	5	5		
B19	PRE	4	5	1	2	2	3	1	3	5	3	1	4	1	1	3	3	3	5	3	2	3	4	4	4	5	2	5	4	2	5	5	1	3	4	5	3	1	3	5	3	4	4	5	4			
B19	POST	2	5	1	2	1	1	4	3	4	4	4	4	2	1	5	3	4	4	3	4	3	4	4	5	4	3	5	3	2	5	2	5	3	4	3	2	3	4	3	2	3	4	5	4			