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THINKING ON THEIR FEET: THE ROLE OF KNOWLEDGE IN THE WORK OF PERSONAL TRAINING

A research report submitted to the Faculty of Humanities, School of Education, University of the Witwatersrand, Johannesburg, in partial fulfillment of the Degree Master of Education.

2012

Amanda Jane Watermeyer

DECLARATION

I declare that this Research Report is my own unaided work. It is being submitted for the Degree of Master of Education at the University of Witwatersrand, Johannesburg. It has not been submitted before for any other degree or examination in any other university.

_____
Amanda Jane Watermeyer

_____
Date

DEDICATION

For my first teacher, my Dad, Shane Leisegang

(10 October 1948—22 July 2010)

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My sincere appreciation to:

- The personal trainers and clients that made this study possible.
- My supervisor, Lynne Slonimsky, who spent many hours challenging me to think about knowledge in new ways and write better than I could possibly imagine.
- Rowley, for his invaluable support throughout this research.

ABSTRACT

Personal training is an occupation which requires service and knowledge work. There have been some studies of personal training that have focused on the service dimension of the work of personal trainers but few on the knowledge work entailed in workplace competence. This study focused on "knowledgeable labour" in the field of personal training. A small sample of apprenticed, trained and educated personal trainers was observed at work with their clients in order to investigate whether different learning pathways lead to differences in the forms of knowledge and ways of knowing they use in their workplace practices. A first level of analysis focused on whether there were noticeable differences in the "practical competence" of the trainers -as manifest in their observable practices with their clients. A second level of analysis, explored whether there were more subtle differences in their practices by focusing on the form and content of their exchanges with their clients, and of their reflections in and on their practice. This level of analysis focused on what the South African National Qualifications framework has referred to as "applied competence' which is grounded in foundational and reflexive competence and is not reducible to what is manifestly or visible in practical activities. It sought to establish whether there were differences in the applied competence of trainers who have qualified through the different learning pathways. The study found that access to a formal knowledge base, and a related ability to reflect explicitly made a difference to the quality of the knowledge that trainers imparted to their clients, to their decision making in practice, and to the quality of explanations and justifications they offered to their clients. These differences point to the need for vocational qualifications that develop reflective practitioners who are able to build bridges work between the science and the client in their situated practices in their workplaces and therefore think on their feet.

KEY WORDS: Personal training; Competence; Knowledge Structure; Knowledge work; SAQA

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DEFINITION OF TERMS

Accounts	Explanations of the work and/or programme design given to either the clients or the researcher.
Adaptations	Changes made to exercises or programmes in the sessions and throughout the observation period.
Apprenticed	Personal trainer who had completed short courses in exercise related topics, but had not obtained an NQF aligned qualification.
Client	A person who paid for the services of a personal trainer.
Complications	A condition or specificity, be it a medical problem or special need, that requires the "selection of solutions" in order to address the needs of the client within the session or training programme.
Educated	Personal trainer that has completed a Bachelor's degree in exercise science or related field which prepares the personal trainer to deal with and solve a broad range of problems and to choose which problems are important and which are not.
Frequency	The number of training sessions performed in a given period of time (e.g. day or week)
Intensity	The effort with which a repetition is executed together with the cumulative repetitions and sets completed within a session.
Personal trainer	A person who offers one-on-one exercise training to clients.
Private gym	A gym which does not operate under a franchise operation (standardised conditions) in which personal trainers are able to work flexibly and without operational constraints.
Programme	A series of exercises and or sessions/workouts designed by the personal trainer to meet the client's needs, interests and responses to various activities and protocols.
Qualification	The formal recognition of the achievement of the required number and range of credits and such other requirements at specific levels of the National Qualifications Framework as may be determined by the relevant bodies registered for such purpose by the South African Qualifications Act.
Repetition	The execution of a specific work load assignment or movement technique.
Sets	A group of repetitions and relief intervals.
Trained	A personal trainer who has completed a narrowly focused NQF aligned diploma in exercise science or fitness that leads to competency in a specific skill or job.

ABBREVIATIONS AND ACRONYMS

FIKA©	Fitness Instructors Knowledge Assessment
NQF	National Qualifications Framework
REPSSA	Register for Exercise Professionals South Africa
SAQA	South African Qualifications Authority
SRSA	Sports and Recreation South Africa

CHAPTER 1

GENERAL INTRODUCTION

1.1 Introduction

In the 10 years I have been involved in tutoring, curriculum development and writing of course material for the Diploma in Exercise Science (Id number: 36194) I have often questioned whether, on completion of this qualification, these graduate personal trainers, i.e. persons who offer one-on-one exercise training to clients, are indeed ready for the world of work. As a tutor with a background in education and physiology, who has never worked as a personal trainer, but instead experienced the world of personal training vicariously through a colleague, my own understanding of this work is limited. When tutoring personal training students, my colleague emphasises the importance of practical knowledge and I highlight the theoretical knowledge, both with the goal of preparing a personal trainer who will be competent in the workplace. My colleague often poses the question: "Why do we need theory to ensure that personal trainers are competent?"

1.2 Context of the study and problem statement

The 21st century has witnessed a demand for skillful, individualised care and this has resulted in the growth of new professions or expert services (George, 2008). Personal training is an expert service found in sport, fitness and recreational facilities that provides supervised exercise assistance to clients pursuing health, fitness and sports specific goals. Clients are thus defined as persons who pay for the services of a personal trainer.

The so-called first personal trainer, Jack Lalanne, opened the first health club in Oakland, California in 1936. He walked the streets looking for clients promising them a "new way of life" which involved exercise and nutritional lifestyle changes. He gradually developed an exercise instruction method using Henry Gray's *Anatomy of the Human Body*, his chiropractic knowledge and his own experience as a bodybuilder. He designed some of the first exercise machines, e.g. the cable pulley system[1] and leg extension machine and then trained instructors to instruct clients to use machines and impart information on nutrition and rest (http://www.jacklalanne.com).

This new occupation of personal training was transmitted from one person to the next through an apprenticeship in a community of practice. It became an occupation that a person could

[1] A series of pulleys and cables which allow movements to be performed against resistance.

pursue by completing a qualification in the United States of America in 1954. Since then personal training qualifications have proliferated, firstly in the United States and more recently[2] in South Africa. Despite this proliferation of qualifications there are still many personal trainers who have pursued a more informal pathway of learning.

Both the informal and formal pathways of learning internationally and in South Africa incorporate the knowledge of gym equipment and exercise techniques as well as nutrition. The informal or apprenticeship route occurs via modeling with some short courses and is learnt within the fitness environment, whereas formal routes, i.e. diplomas in exercise science and fitness and degrees in exercise science and human movement sciences, focus on the underpinning knowledge of the discipline of exercise science and are learned outside the context of practice within formal educational institutions.

George (2008) explained that expert service work is characterised by the "performance of knowledgeable, customized, interactive labor" (p.115). In this statement she identifies some very important characteristics of expert service work. Firstly, the need for a knowledge base and secondly, an understanding of client behaviour which ensures the production of a "made to order" exchange that relies on the personal trainers' "ability to use their knowledge and skills creatively and autonomously" (George, 2008, p.109). Due to the unstandardised and unregulated nature of the fitness industry (George, 2008) these "made to order" exchanges are not always premised on knowledge which has been subject to standards and regulations.

Governmental organisations in the United Kingdom and France (Viallon, Camy & Collins, 2003) and private providers of education in South Africa have attempted to standardise the industry by the formation of regulating bodies (United Kingdom and France) and the development of qualifications (South Africa - http://satrader.com/personal-training/personal-training-courses/personal-training-courses-south-africa). More recently (2009 to the present) the draft Fitness Industry of South Africa Regulations, 2011 formulated b Sports and Recreation South Africa (SRSA) has focused its attention on the grading of facilities, as well as the formation of a Fitness Board and stipulated a Certificate in Exercise Science or Fitness as a pre-requisite to work as a fitness instructor/personal trainer (http://www.srsa.gov.za).

A study of fitness facilities in South Africa conducted in 2006 by Draper, Grobler, Killian, Micklesfield, Lambert and Noakes included an exploration of the level of education and training of fitness related staff currently employed in these facilities. The research found that

[2] Courses have existed in South Africa since about 1990 but more rigorous processes of registration and accreditation with SAQA were initiated in about 1994 or 1995.

only 21% of fitness-related staff held university associated qualifications[3]. It also pointed out that there were more instructors (82%) of various types that held National Qualifications Framework (hereinafter NQF) aligned diplomas, than non-NQF aligned qualifications.

In 2010 when I first began to think about my own research, there were (and still are) many personal trainers working in gyms who have taken the non-formal learning pathway of apprenticeship. These trainers have become "experts" in the course of extensive training, for example, dedicated body builders or high achieving athletes. I shall hereinafter refer to trainers who have come through this kind of pathway as "apprenticed" trainers. Most of what such apprenticed trainers know has been developed through an apprenticeship pathway, mainly from their own experience in the gym and modeled on the practices of their mentors in the gym. During the course of their working careers they may indeed complete some short courses run by industry and educational institutions and thus some non-NQF aligned certification is accumulated over extended periods of time. However, participation in short courses is usually very intermittent and short courses tend to highlight isolated aspects of exercise science, which suggests a more segmental approach to learning or knowledge acquisition.

In their study on fitness facilities in South Africa Draper *et al.* identified a general acceptance across large facilities that employ instructors, that a qualification is necessary in the South African fitness industry, together with an "emphasis on people skills and the personality aspects of employees" (Draper *et al*., 2006, p.99).

The requirement for a qualification was further supported when the Register of Exercise Professionals for South Africa (hereinafter REPSSA) was established by the Fitness Industry in South Africa in March 2011 [4]. REPSSA is a register of qualified personal trainers, with one of the minimum pre-requisites for registration being a Certificate in Exercise Science or Fitness. It must be noted that REPSSA is not a regulating body and has itself appealed to the government not to over-regulate the industry. Further discussions on the Fitness Regulations and establishment of a Fitness Board were planned for September 2011 with the promulgation of the SRSA fitness regulation anticipated for 2013. (http://www.pilatesinfo.co.za/index.php?pg=fitness-regulation-news).

[3] The university qualifications identified in this study were either in biokinetics (11%) or exercise, sports or human movement science (10%).

[4] Members of the board are predominately representative of syndicated fitness clubs.

However, a letter was sent to all stakeholders on 30 August 2011 advising them that the state law advisers had found that the proposed draft fitness regulations could not be promulgated in its current format[5] and suggested that a "separate and new piece of primary legislation in the form of an Act of Parliament (e. g. the Fitness Industry Act) instead of secondary legislation such as the current draft FITNESS REGULATIONS" (M. Mashabane[6], personal communication, August 30, 2011) be developed. The SRSA has drafted the first Fitness Industry Bill which will be available for comment at a stakeholder workshop.

As things currently stand, in the absence of a regulating or professional body, education and training institutions offering personal training qualifications are tasked with ensuring that their graduates are competent. The move to regulate the fitness industry and to promote competence and knowledge development in the field is in line with increased regulation of education and training in South Africa through the NQF.

1.2.1 The NQF and applied competence

The South African NQF introduced in 1995 has, as one of its objectives, "facilitating access to and mobility and progression within education, training and career paths" (South African Qualifications Act 58 of 1995, Section 2) and another of promoting and developing competence in the workplace. At the time during which this research was conceived[7], the NQF seemed to be torn between the projects of improving competence in the workplace and promoting access, portability of knowledge and recognition of prior learning on the one hand, and promoting depth of knowledge and knowledge development and thus the development of competence through the development of higher cognitive skills (rationality) on the other hand. It is therefore important to consider how the NQF construes competence.

The NQF emphasises "applied competence or the ability to put into practice in the relevant context the learning outcomes acquired in obtaining a qualification". Applied competence is further described as an overarching term for practical competence, foundational competence

[5] Due to the lack of various empowering provisions in the principal Act, namely the NATIONAL SPORT AND RECREATION ACT, 1998 (Act No. 110 of 1998 as amended).
[6] Chamber Manager: Sport, Recreation & Fitness.
[7] Note that the South African NQF has been amended and restructured since 2010 when this research study was first conceived, and that this process of restructuring the NQF is ongoing. Since the NQF emphasis on applied competence was *one* starting point for thinking about personal trainers' qualifications, knowledge and competence it is an important *context* of the research problem. However, the NQF itself is not the object of investigation or analysis in this research project and therefore more recent changes introduced into the NQF are beyond the scope of this research, but may be useful in examining competence (through level descriptors) at a deeper level.

and reflexive[8] competence and thus "resonates with more contemporary descriptions of what is meant by higher cognitive skills" (Gamble, 2009, p.3). This recognises that competence is not simply about doing and knowing, but requires those with applied competence to be able to reflect on and account for what they know and do. More specifically each of the competences is described as follows:

> Practical competence is the 'ability to perform a set of tasks and actions in authentic contexts'; foundational competence is the demonstration of 'an understanding of what we are doing and why we are doing it'; and reflexive competence is 'the demonstrated ability to integrate our performances with our understanding so that we are able to adapt to changed circumstances and explain the reason behind these adaptations' (SAQA**,** 2001, p.11).

A key assumption of the qualifications framework is that all three types of competence are necessary for applied competence, but that qualifications at different levels of the NQF are oriented to different purposes and therefore the different forms of competence that make up applied competence should have different weightings in curricula designed for different levels. For example, a curriculum for a level 7 qualification (a degree) would have a strong emphasis on developing principled, flexible thinking, and would therefore be weighted towards the development of reflexive competence. A curriculum level 5 qualification (a diploma) would have a stronger weighting on the development of foundational competence, i.e developing an understanding of the knowledge and thinking which underpins actions to be taken.

At the time this research was proposed, the NQF regulations required that in developing a qualification, exit level outcomes should have a defined purpose or purposes that provide qualifying learners with applied competence and a basis for further learning (SAQA, 2000) appropriate for the level as "may be determined by relevant bodies registered for that purpose by the SAQA" (p.4). For example, the stipulated exit outcomes of the Diploma in Exercise Science (Id number: 36194) are found in Appendix A. The Diploma in Exercise Science (level 5) consists of 2800 notational hours (280 credits) which is made up of: Theory (90 credits), CPR (1 credit), Practical assessments (2 credits), Theoretical assessments (2 credits), Tutorials and workshops (25 credits), Practice (30 credits), Assignments (25 credits),

[8] Reflexive and reflective competence are used interchangeably in some NQF documents, however, the majority of SAQA documents accessed (SAQA, 2000; SAQA 2001 and Government Gazette Vol. 24 No. 21679) use the term reflexive competence and thus this study keeps to the term reflexive competence.

Experiential learning (25 credits), Research (45 credits), Programme design (30 credits) and self study assessments (5 credits).

The Diploma in Exercise Science is particular in nature as its prime purpose is for the learner to design, implement and manage a physical activity or fitness programme including the screening and assessment of the client prior to exercise, i.e. to prepare the learner for what George (2008) describes as the "standard tasks" of personal trainers. The purpose of the diploma, however, also states that the learner will be able to further his or her career within the fitness industry. Considering the purpose and Gamble's (2006) definition of vocational curriculum, i.e. "prepare for employability as well as for further study" (p.94), the diploma in exercise science is a vocational curriculum which contains both general (theory) and particular (practice) knowledge. Keeping in mind that the "relationship between the general and particular is complex" (Gamble, 2006, p.94) a background to how the theory and practice are contained in the diploma in exercise science is described below.

The design of the curriculum of the Diploma in Exercise includes both general principles (context independent) and particular procedures (context dependent) but the selection is informed by an intention to prepare learners for George's (2008) standard tasks. A critique of the curriculum design often heard from stakeholders in the industry is that the diploma course is too theoretical (80%) despite the practical (20%) experiential hours included in its design. These stakeholders are concerned with trained personal trainers' (i.e. those who have attained diplomas) ability to get the standard tasks of personal training done in the workplace.

Personal trainers that have degrees (hereinafter referred to as "educated" personal trainers) have followed a general academic form of tuition or curriculum mode which Gamble (2006) sets out as containing general principled, context independent knowledge that enables the creation of "very general propositions and theories, which integrate knowledge at lower levels and cover the maximum number of empirical phenomena with the smallest number of axioms" (Maton, 2009, p.45). Gamble (2006) proposes that the "general academic curriculum has induction into formal principled knowledge as its prime purpose in order to prepare students for progression to higher order reasoning" (pp.93-94).

Both these qualifications (diplomas and degrees) transmit principled and procedural knowledge and exposure to the work environment via compulsory experiential hours and thus align with the NQF understanding of competence, but what competencies are required in the workplace?

If one attempts to find an answer to this question in the current academic literature, two views prevail. The first is a preference for personality and appearance and the second is for certification and/or regulation.

Maguire (2001) states that "personal trainers depend on their personalities and appearances regardless of their certifications and technical skills" (p.386) and Lloyd (2008) states that qualifications are merely seen by employers as "proxy for technical skills and proxy for learning capability" (p.191) and thus customer service or motivation is seen as the primary role of the personal trainer, rather than the "educational or curative" (Maguire, 2001, p.393) role that the personal trainer may play. Maguire's (2001) views are well supported in the fitness industry (Lloyd, 2008; Vallion *et al*., 2003) but there are also a number of authors (Malek, Nalbone, Berger & Coburn, 2002; Melton, Katula & Mustian, 2008; Rupp, Campbell, Thompson & Terbizan, 1999) who call for a more "professional preparation of personal trainers" (Rupp *et al*., 1999, p.54) and stipulate a "4 year degree in an exercise science-related field" as a requirement to qualify as an "optimal trainer" (Melton *et al*., 2008, p.889). Malek *et al*. (2002) further notes that "extensive training experience in the health and fitness profession does not necessarily translate into a knowledgeable and capable professional" (p.19) and argues that experience is not a good predictor of expertise among personal trainers and certain knowledge, i.e. principled knowledge, cannot be gained via an apprenticeship and that extended experience also does not necessarily develop it.

The two sets of opposing views seem to suggest that personal trainer competence in the workplace is predominantly about body image, personality and emotional labour on one hand and to emphasise the importance of a professional response to the clients they work with and thus, by implication, an emphasis on the significance of knowledge on the other hand. Therefore, there seems to be a wide disparity of views amongst authors with respect to the preparation of personal trainers for the world of work. Perhaps there is also something about the underpinning knowledge base or, as Rose (2004) puts it, something about the "intelligence of the work, the thought that makes it possible" (p.2) that "…is so embedded in social interaction, routines of service and emotional dynamics that it goes unacknowledged" (p.2) or is "rendered invisible" (Cobble, cited in Rose, 2004, p.2).

A document entitled Ways of Seeing the NQF (HSRC, 1995) offered an iceberg metaphor of competence[9]. It pointed to "the importance of seeing performed competence as being underpinned by a much larger foundation of knowledge and understanding" (Kraak, 1999, p.52). Gamble (2009) reiterates this with the statement that "a person is assumed to have adequate 'underpinning' knowledge to be assessed as performing competently" (p.6) but explains that a vocational or professional qualification needs to turn "its face both ways" (p.3) (i.e. to both context independent knowledge and more context-specific knowledge) and therefore needs to incorporate a mix of context dependent and context independent knowledge in the curriculum to enable "both knowledge and occupational progression" (p.3).

Therefore, in order to understand the work of personal training, a more in-depth study of "knowledgeable labour" (George, 2008, p.155) in the workplace is required.

1.3 Research question

In the previous section I highlighted the current NQF aligned training and education learning pathways personal trainers undertake before entering the labour market and the fact that there are still many personal trainers who have taken the non-formal learning pathway of apprenticeship.

The reference to "knowledgeable" labour at the end of the previous section indicates that some form of knowledge (context dependent and context independent) is implicated in practice, but what does this knowledge look like - how is it realised in performed practice? And if, following Kraak, performed competence is simply the tip of the iceberg, can one get any sense of the underpinning "invisible" competences (premised on both context dependent and context independent knowledge) from a description *and deeper analysis* of performed competence in the workplace?

This research investigates whether the different learning pathways, i.e. apprenticeship, training and education, lead to differences in the forms and types of knowledge used by personal trainers in their workplace practices. Are there noticeable or manifest differences in the applied competence of personal trainers who have developed their knowledge and practice through different educational pathways? Are there significant differences in their

[9] The iceberg metaphor observes human action as only seeing the tip of the iceberg, i.e. "the myriad of conscious and unconscious mental and emotional judgements and decisions that inform a particular action (or sequence of actions) are under the surface" (HSRC, 1995, p.43).

practices, which are less manifest, and are there differences in the ways in which they reflect in and on their practice?

AIM

The aim of research is then to enquire into applied competence. Some applied competence has to be inferred because it is invisible so the logic of the proposed research method is aimed at enabling a move from the most manifest performed competence (hereinafter referred to as manifest practice) towards an understanding of whether there are more subtle differences in the practice of personal trainers which may be related to their qualification pathways.

CHAPTER 2

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1 Introduction

In keeping with a field that has *not been* traditionally taught in universities and therefore has not historically been oriented towards research and knowledge development in the field as a whole, academic literature pertaining to personal training is very rare. Further investigations into other related fields such as exercise science and sports management also yielded very little research on the education, knowledge and practices of personal trainers. This chapter will therefore firstly examine the literature that is available on the work of personal training, its hybrid nature and the knowledge dimension of this work and then secondly, explore other relevant literature on the forms and kinds of knowledge, as well as other studies considered to be applicable, so as to develop a conceptual framework for this study.

2.2 The work of the personal trainer

George (2008) offers the following description of the work of personal trainers. It involves:

> …an intake assessment, where the trainer reviews the client's medical and exercise history… designs a workout program focused on the specific goals and abilities of the client. Implementing the program consists of the trainer instructing the client on how to properly use exercise equipment and to work out effectively. As a regimen progresses…modify the type, frequency and intensity of the program. In addition to setting fees and determining a schedule, these standard tasks remain at the core of personal training services (pp.115-116).

In other words, in the above declaration George proposes that the standard tasks of personal training are: 1) an intake and needs assessment; 2) a workout design phase; 3) the implementation of the workout or programme; and 4) adaptation of the programme principles of frequency, intensity, time and type.

In consideration of the first task, namely the intake assessment, the personal trainer is required to perform a number of procedures correctly, which inform him or her about an aspect of the client's health or fitness. For example, one of the procedures performed is the taking of blood pressure using a sphygmometer and stethoscope. The personal trainer[10] needs

[10] Whether all personal trainers are able to perform and interpret procedures will be discussed later.

to be able to use the equipment to obtain two readings, namely the systolic and diastolic pressure readings. By means of these readings the personal trainer decides if the client is ready for exercise, e.g. if the client is classified with hypertension[11] he or she should be advised to see a physician before commencing with an exercise programme. At a deeper level these readings are indices of the "health" of the cardiovascular system which is imperative for movement of the body, specifically the transport of oxygen and glucose needed for muscle contraction.

On the basis of the intake assessment, the personal trainer designs a workout programme (the second task). A programme is described by Brooks (1998) as "a series of exercises and or sessions or workouts designed by the personal trainer to meet the client's need, interests and responses to various activities and protocols" (p.11). The personal trainer uses the workout programme designed to instruct the client (task three). The client listens and watches as the personal trainer describes and/or demonstrates each of the exercises. As the client attempts and performs each of the chosen exercises for the allocated time period or number of repetitions, the personal trainer corrects posture, technique and pace. In this way the client is guided through each exercise contained in the workout programme.

When the client "masters" the technique, the personal trainer modifies the exercises (task four) in order to challenge the client's body to progress in terms of becoming fitter or stronger, etc. The modifications made may be in the type of exercise, the frequency[12] or the intensity[13] thereof, together with the cumulative repetitions and sets[14] completed within a session or number of sets or repetitions the client performs and the heaviness of the weights that the client lifts.

In addition to the standard tasks described above, the personal trainer also needs to organise the days and times at which the client should attend sessions. The personal trainer must also negotiate fees and collect money each month from all his or her clients, therefore being "paid to design and facilitate individual fitness programs on a one-on-one basis" (Maguire, 2001, p.379-380).

If personal training consists merely of four standard simple, routine tasks then one could conclude that personal training is merely service work. George (2008) found, however, that

[11] High blood pressure.
[12] Frequency is "the number of training sessions performed in a given period of time (e.g. day or week)" (Baechle & Earle, 2008, p.476).
[13] "…the effort with which the repetition is executed" (Baechle & Earle, 2008, p.476).
[14] "A group of repetitions and relief intervals" (Baechle & Earle, 2008, p.476).

"in contrast to that of frontline service work most interactions are unpredictable, the service is partly intangible and workers are largely self-supervised, making routinization of the consumer exchange or worker's behaviours impossible" (George, 2008, p.115) and thus there is a need to consider knowledge.

2.3 Hybrid work

Personal training is a "hybrid" (George, 2008, p.108) type of work that crosses "the boundaries of service and knowledge work" (p.108). According to George (2008), personal trainers therefore need "to employ different strategies to meet the demands of their occupation" (p.108).

Maguire (2001) argued that the prevalence of personal trainers in many health clubs is merely a strategy in which the industry uses personal trainers to attract and retain members. Attracting and retaining members requires the modeling of the "ideal body image" to serve as inspiration or motivation to clients, but personal trainers are also expected to "manage their own feelings in order to create a specific bodily display (such as a welcoming, smiling persona) that will then evoke an appropriate emotional response in another person (specifically the member)" (Maguire, 2001, p.386). There is no doubt that personal trainers play a significant role in organising the space, time and atmosphere "essential to create a milieu where individuals are able to concentrate on training and forget their normal and everyday social roles" (Sassatelli, 1999, p.233) and that they "perform a purposive and relatively serious social action that generates meanings which are exclusive to it" (Sassatelli, 1999, p.233). Keeping in mind George's (2008) hybrid notion it seems that Maguire's (2001) emotional labour, i.e. inspiration and motivation, may be part of what is required of personal trainers in the workplace, but there is more to the work than meets the eye.

On the basis of her ethnographic study of the service interactions of personal trainers, George (2008) proposed three types of trainer-client exchanges, namely instrumental, motivational and authoritative. She argues that instrumental exchanges enable trainers to impart their knowledge to a client, whereas motivational relationships are classified as moments when personal trainers encourage clients and give them attentive and highly personalised training and authoritative consultations are when trainers use their "professional status to establish authority and control over their clients in service interactions" (George, 2008, p.121).

In both studies (George, 2008 & Maguire, 2001) the motivational relationship and *issue of authority* is identified and explored, however, the question of underpinning *knowledge* and

how it is used is not pursued - and therefore not elaborated - in either study. For example, although George points to knowledge, she does not say anything about the nature and quality of knowledge which is imparted. I therefore now turn the focus away from the social aspects of the work towards the other part of the "hybrid" that George (2008) refers to as "knowledge work" (p.108).

2.4 Knowledge work

Despite a systematic search for research that examines the knowledge of personal trainers, the only studies specifically on personal trainers that were identified, were conducted by Malek *et al.* (2002) and Kravitz (2010).

Malek *et al.* (2002) investigated the knowledge of fitness instructors with diverse training and education backgrounds, in the five areas of nutrition, health screening, testing protocols, exercise prescription and training knowledge for special populations. They conducted a study that required 115 personal trainers to complete a Fitness Instructors Knowledge assessment (FIKA©) which covered the above mentioned five areas. These areas were also "identified to be of critical importance in developing an optimal fitness programme for the client and for avoiding unnecessary injury" (Malek *et al*., 2002, p.19). Using the results obtained from the FIKA©, they explored the relationship that these results had with general indicators of knowledge, i.e. education, training and experience. From this study the following was concluded: 1) Fitness professionals with five or more years experience had no greater or deeper knowledge than those with fewer years experience; and 2) Individuals with at least a bachelor's degree in exercise science scored higher on the FIKA© scales and overall than individuals who did not hold a bachelor's degree in exercise science[15].

Kravitz (2010) examined the personal trainer-client interaction in terms of Hattie's (cited in Kravitz, 2010) five dimensions[16] of teaching and then developed a taxonomy which listed "seven essential evidence-based fundamentals" that contributed to "personal training excellence" (p.88). His fundamentals include: professional values; professional knowledge; professional development; content of teaching; practice of personal training; management; instruction; and consideration of individual needs. He thus concluded that "personal training

[15] Malek *et al*. (2002) do not offer details on the substantive content of the FIKA test and despite numerous attempts, I was unable to obtain a copy of the test. Had I been able to access it I may have included it as a *part* of my method.

[16] "(a) identifying the essential representations of their subject, (b) guiding learning through classroom interactions, (c) monitoring learning and providing feedback, (d) attending to affective attributes, and (e) influencing client outcomes" (Kravitz, 2010, p.87).

involves a tremendous knowledge base of several vast topics, an enthusiasm towards teaching, a caring attitude, an ability to motivate others, a love for learning, and a desire to make a difference in the lives of others" and thus a "highly effective personal trainer" (p.89) can be defined as a "master of their subject area and exhibiting their expertise through the success of their clients" (p.89). From these conclusions he too, like the authors supporting the service hybrid, identifies motivation and authority, but also stipulated that this "effectiveness" (p.89) is through expertise and a "tremendous knowledge base" (p.89).

Malek *et al.* (2002) and Kravitz (2010) support the knowledge work side of the debate by highlighting the importance of a wide, underpinning knowledge base; lifelong learning and some kind of professionalism for the work of personal training. The inclusion of these ideas seems to suggest that a more structured form of knowledge or learning pathway is required and thus moves the debate from the question of whether knowledge is required, to what form of knowledge is needed.

2.5 Forms of knowledge

Basil Bernstein's (1999) distinction between everyday or common sense knowledge on the one hand, and coherent, explicit and systematically recontextualised knowledge which is transmitted through formal education transmissions on the other hand, is generative for conceptualizing forms of knowledge customarily acquired in the different learning pathways, This section will firstly explore Bernstein's distinction between the structures of knowledge which constitute informal educational transmissions, and those developed in formal educational settings horizontal and vertical knowledge discourse , secondly examine forms of knowledge, underpinning and the degree of semantic gravity and these different pathways; thirdly highlight the concept of "gaze"; and fourthly examine how the South African National Qualifications Framework (NQF) could incorporate these concepts into its definition of applied competence[17].

In his work on the sociology of education, and the sociology of knowledge Bernstein (1999) distinguishes between horizontal and vertical knowledge discourses. The former are discourses which are produced and acquired in the course of everyday life practices and are

[17] It is noted that the definition contained in the recent SAQA (2012) document on Level descriptors differs from the definition on which this study was conceptualised. "Applied competence has three constituent elements: Foundational competence embraces the intellectual/academic skills of knowledge together with analysis, synthesis and evaluation, which includes information processing and problem solving; Practical competence includes the concept of operational context; and Reflexive competence incorporates learner autonomy" (SAQA, 2012, p.1)

customarily transmitted through face to face interactions and communications in joint activities. The latter are explicitly structured and systematised bodies of knowledge which are produced and reproduced in formal educational which are sequestered from everyday life practices.

Bernstein explains that a horizontal discourse is a *context dependent* form of knowledge characterised by "oral, local, specific, tacit, multi layered and contradictory across but not within contexts" (Bernstein, 1999, p.159). This form of knowledge is "segmental" as the acquisition of the discourse varies, depending on the way "the culture segments and specializes the activities and discourse" (p.159). Apprenticeship into a practice, has "no formal organization or institutionalization of pedagogy" (Dowling, 1998, p.162) but is instead "directed towards specific…goals" and continues until "a particular competence is acquired" (Bernstein, 1999, p.161). There is thus little explicit integration of competencies, but each is acquired separately as and when the contingencies of practice demand and "students learn a series of ideas or skills that are strongly tied to their contexts of acquisition" (Maton, 2009, p.46). If these are the characteristics of the context dependent form of knowledge, to what extent are they identifiable in the work of apprenticed personal trainers? To what extent do sets of strategies developed through the apprenticeship pathway promote the maximisation of encounters with other personal trainers (models), clients or the gym (experience) and to what extent is knowledge tacitly transmitted by modeling or informal training?

In contrast to everyday knowledge, vertical discourse is comprised of specialized symbolic structures or explicit knowledge (Bernstein, 1999, p.161.) which are integrated 'at the level of meanings' (ibid.). Here knowledge takes the "form of coherent, explicit, systematically principled structures that are hierarchically organized" (Bernstein, 1999, p.159). These hierarchically organized principles and concepts enable the development of context independent knowledge. Since this systematization rests on symbolic relations which are decontextualised from their customary contexts, and empirical referents, principles and concepts therefore acquire their meanings from their relationships with other concepts. Dowling (1997 in Bernstein 1999, p.170) proposes that "vertical discourses are characterised by high levels of discursive saturation whereas horizontal discourses have low levels of discursive saturation".

Formal education and training (i.e. degrees and diplomas) designed to prepare personal trainers for the demands of the occupation, are contained within qualifications on the NQF. In these qualifications there is thus a shift from the apprentice type personal training (horizontal

discourse) initiated by Lalanne to the acquisition of more systematic, hierarchical and therefore cumulative knowledge.

Drawing on Bernstein's distinction between horizontal and vertical discourses and their respective structures, Maton (2009) focuses on conditions of possibility for the development of cumulative knowledge necessary for knowledge transfer. Maton (2009) proposes that different discourses, as well as curriculum structures can be understood as realizations of different degrees of "semantic gravity" that is, the "degree to which meaning is development on its contexts" (p.46). Horizontal forms of knowledge or discourses have stronger semantic gravity than knowledge or discourses which are systematically and more formally acquired outside of the contexts of practice because "meanings are more closely related to the context" (p.46). Maton proposes that when knowledge is transmitted segmentally and is strongly context bound, the conditions of possibility for acquisition of knowledge depends more on who you are, or what your experiences are. In other words, from his perspective what is learned and how it is learned is contingent on who the knower (learner) is and their own personal experiences. For this reason he proposes that situated learning, or apprenticeships rests on and are legitimated by what he calls "knower codes" because they emphasize "attitudes, aptitudes and dispositions". (p.46). In contrast, he suggests that curricula which emphasize principles, skills and procedures as the grounds for legitimate knowledge and forms of knowing are underpinned by a "knowledge code" and have weaker semantic gravity which enables knowers to acquire specialized ways of knowing necessary to impose new orders of meaning and possibility on a context.

Maton (2009) links the vertical discourse or hierarchical knowledge structures to what he describes as cumulative learning, i.e. the "capacity to continually build knowledge, add new skills and give new meanings to existing abilities" (p.43). The vertical discourse or hierarchical knowledge structure is underpinned by knowledge codes and has weaker semantic gravity and thus allows for the decontextualisation or the "process" of viewing "objects" (or events) by lifting them out of the communicative contexts in which they are otherwise used (Wertsch & Minick, 1990, p.74) and making the objects or events themselves, or communication about them, objects of reflection. This decontextualisation is often seen as a major component or objective of formal training and is implicated in both curriculum development and in the subsequent competence of those who go through such courses.

The formal training or education of personal trainers is constructed over time and space and evaluated and distributed by using the principles of recontextualisation. These regulating,

recontextualising principles transform actual situated practices (context dependent) "to a virtual or imaginary practice" (Dowling, 1998, p.120) that is context independent. In order to think about and work with the "transformation" between context dependent and context independent knowledge, it is helpful to consider the concept of rationalisation (Wertsch & Minick, 1990).

Rationalisation is defined as "the extension of the areas of society subject to the criteria of rational decision" (Habermas, 1970, cited in Wertsch & Minick, 1990, p.72) i.e. a shift from horizontal to vertical discourse. This extension or shift to the criteria of rational decision making is grounded in "…context-free language and problem-solving orientation" (Wertsch & Minick, 1990, p.72). In order to understand this context independent and highly explicit orientation (Adlam, 1977) or rationality, it is helpful to consider Bernstein's distinction between elaborated code and restricted codes[18] (Cook-Gumperz, 1973).

Bernstein (cited in Cook-Gumperz, p.134) proposed that:

> Elaborated codes are media for the realization of universalistic orders of meaning in which principles and operations are made verbally *explicit;* whereas restricted codes are media for the realization of particularistic orders of meaning in which principles and operations are *less verbally explicit.* Thus elaborated codes are relatively *less tied* to a particular social structure or subculture and they contain *potentially within themselves changes* in principles and operations. Whereas in the case of restricted codes, the meaning system to which it gives rise is relatively *closely tied* to a particular social structure or sub-culture. In this case the code does not contain within itself the potential of change in principles. Here change is likely to come from the outside.

Here, Bernstein deepens and extends the concepts of context dependent and context independent to include degrees of elaboration and restriction and thus orders of meaning that are either universalistic or particularistic. The more universalistic or general orders of meaning enable the introduction of "possible" or "other worlds", i.e. enable the imposition of a "gaze" or virtual world on particular practices, whereas particularistic orders of meaning tie communication to the context.

[18] Note that these concepts have been subject to much criticism, however, to my mind they enable a deeper understanding of context dependent and context independent knowledge and their expression through different forms of communication.

Adlam (1977) points out that different groups[19] have "different orientations to the setting as a whole" and therefore "*spontaneously and consistently* offer different orders of meaning and different linguistic realisations" (Adlam, 1977, p.39) in their accounts in and of practice[20]. Thus it will be of interest to see whether personal trainers who have come through different educational pathways spontaneously and consistently offer different orders of meaning in their accounts of practice in the course of practice. Wertsch and Minick (1990) also explain that "there is little need for the explication of sense relations in the conduct of everyday communication" whereas the rational discourse pays a great deal of attention to decontextualised semiotic relations or the analysis of sense[21].

In the previous chapter I discussed the NQF and pointed to the fact that the South African NQF stipulates that any learning activity, be it training or education (and apprenticeship), should be aimed at making the learner competent (HSRC, 1995). It states that "the litmus test should be 'Can you perform to the required standard?' rather than 'Where did you learn?'" (HSRC, 1995, p.12).

I also pointed to the NQF's contradictory emphasis on equal manifest competence[22] in the workplace on the one hand and depth of knowledge or increase in expertise through the development of principled knowledge and higher cognitive skills (foundational and reflexive competence) on the other hand.

If discourses differ and if Vygotsky's claim that "certain fundamental aspects of thinking are shaped through the internalization of speech" (cited in Wertsch & Minick, 1990, p.74) and consequently "there is a close tie between the ways of speaking and the ways of thinking" (Wertsch & Minick, 1990, p.74), then questions arise as to whether all personal trainers, despite their learning pathway, are equally competent in the workplace, i.e. is their manifest practice the same and do they account for their practice in the same way?

[19] Adlam was focused on class differences; here I am focusing on the different groups of trainers who have come through different qualification pathways.
[20] Significantly, Adlam goes on to say in her studies of school children's codes "it is not supposed that children whose tacit understanding leads to the production of a restricted code" but "the assumption is that that such children would require very explicit instructions in order to produce an elaborated variant" (ibid.). It is questionable whether personal trainers who have not been strongly socialised into vertical discourses could produce highly principled and hence elaborated codes even with very explicit instructions to do so.
[21] Lyons (cited in Wertsch *et al.*, 1990, p.76) uses the word "sense" to describe cognitive or descriptive meaning i.e. speech is internalised or decontextualised.
[22] Equal manifest competence has seemingly been addressed with the publication of level descriptors. The level descriptors are designed to serve as a "broad indication of the outcomes (according to 10 competences) appropriate to a qualification at that level" (SAQA, 2012, p.3).

2.6 Forms of knowing

In the previous section vertical and horizontal discourses were examined in order to set the scene for the two major forms of knowledge dealt with in this research, namely context dependent and context independent knowledge. In this section the concepts of principled, factual, conceptual, procedural and metacognitive[23] knowledge are included in order to delve deeper into the complexity and interelatedness of the context dependent and context independent knowledge which allow for the competency seen in manifest practice.

Gamble's (2006) conceptual model of forms of knowledge maintains a distinction between "meanings generated in the context of thought" (context independent) (p.89) and "meanings generated in the context of human action" (context dependent) (p.89) but she argues that both these forms of knowing can encompass principled and procedural ways of knowing. Principled ways of knowing are characterised by explicit declarative knowledge (knowing that) which is vertically and horizontally systematised and generalized. These enable the knower to interrelate, order and draw inferences and implications about the objects of activity and his/her activity in action (procedural knowledge)

Gamble (2006) however, does not merely create another division between categories, but instead explains that principled knowledge can be grounded in procedures and thus the procedures are constitutive parts that contribute to the principled ways of knowing. She therefore extends knowledge from the dichotomous notions of abstract and concrete to a notion that procedures can be "a necessary step towards understanding an abstract concept through use" (p.90), however ultimately procedural knowledge must be explicable in declarative forms.

The iceberg metaphor in *Ways of Seeing the NQF* discussed in the previous chapter intended to acknowledge an "indivisible link between competence and the invisible conceptual, problem solving, interactive and context bound abilities which underpin (but which are invisible in) the performance of "competence" (Kraak, 1999, p.52). This suggests that there is a dialectical or reflexive relationship within and between the context independent knowledge acquired in courses and/or qualifications and the context dependent knowledge specific to the social context in which the personal trainer works. These dialectical or reflexive relationships point to underlying processes and logics and it is thus a necessity to identify these aspects in the standard tasks of persons engaged in work.

[23] Metacognitive knowledge is only used in the context of Schon's concepts of reflection.

Scribner (1986), in an analysis of the cognitive processes underlying the standard tasks of persons engaged in "practical work", used "the role of thought within a system of activity" (Scribner, 1986, p.16) by examining identified aspects of work and then analysing the thinking and cognitive processing which occurred. In this way she was able to provide a cognitive explanation of work in the form of tasks that are accomplished via the "selection and retention of information, accumulation of knowledge, mastery of new symbol systems and on-line problem solving all in the service of getting other things done" (p.355).

Another way of thinking about forms of knowing and the cognitive demands of the work was initially differentiated by Bloom in 1956 and then later through the *Revised Taxonomy of Educational Objectives* (Krathwohl, 2002) which provides a description of intended learning outcomes that are framed in terms of "subject matter content" and "a description of what is to be done with or to that content" (p.213). In this way each objective can be divided into a knowledge dimension and a cognitive process dimension. The knowledge dimension describes forms of subject matter content and the cognitive process dimension describes the required student behaviour in terms of cognitive processes (Gamble, 2009, p.26).

In Krathwohl (2002) the four forms of subject matter or knowledge dimensions are stated as factual, conceptual, procedural and metacognitive. Factual knowledge is defined as the basic elements that must be known to be acquainted with a discipline or solve problems in it. Conceptual knowledge is the interrelationships among the basic elements within a larger structure that enable them to function together. Procedural knowledge is described as how to do something, methods of inquiry and criteria for using skills, algorisms, techniques and methods and metacognitive knowledge is the awareness and knowledge of one's own cognition (Krathwohl, 2002).

The cognitive process dimension of Krathwohl (2002) begins at the lowest level of "remember" and "progresses" to the highest level of create. These cognitive dimensions are defined in the following way: remember as retrieving knowledge from long term memory; understand or determine the meaning of instructional messages; apply or carry out a procedure in a given situation; analyse or break material into constitutive parts and detect how parts are related to one another and the whole; evaluate or make judgements based on criteria and standards; and create or put elements together to form a novel, coherent whole (Krathwohl, 2002).

Gamble (2009) argues that in Krathwohl's *Revised Taxonomy of Educational Objectives*, cognitive progression is still hierarchical, but not necessarily learned sequentially. The higher levels of "analyse", "evaluate" and "create" are still seen to be more complex and abstract than remember, understand and apply, but the "emphasis is placed on different kinds of knowing so that students who learn through apprenticeship or through a combination of workplace learning and more formal learning might for instance apply procedural knowledge without this being preceded by understanding conceptual knowledge i.e. knowledge of how to do or make something can operate independently, without being grounded in a conceptual knowledge base" (p.27).

Krathwohl's (2002) taxonomy and Gamble's (2009) argument therefore enable one to categorise knowing in terms of a knowledge base (a knowledge dimension) and knowing (cognitive dimension). This means that in the absence of another tool, the two dimensional taxonomy could be used to further categorise the knowledge contained in George's (2008) three types of trainer-client exchanges, i.e. instrumental, motivational and authoritative.

De Jong and Ferguson-Hessler (1996) also bring the two dimensions of knowledge and cognitive process together by describing "*knowledge-in-use"* (p.105) as certain types and qualities of knowledge that are used during task performance and Schon (cited in Wainwright Shepard, Harman & Stephens, 2010) refers to the "knowledge and skills that an expert possesses and uses within a given context" (p.76) or "*knowledge-in-action"*[24] (p.76) when he discusses professionals at work.

Schon (cited in Gilbert and Trudel, 1999) proposes that "*knowledge-in-action"* or practice requires that knowledge is specifically recruited on the basis of what knowledge is viewed as most important at the time, i.e. in terms of contextualised conditions and also determines what type of knowledge is constructed.

The use of knowledge in contextualised conditions can be manifest in two ways. The first is when the practitioner sees one situation as another and therefore does in this situation as in the other (Schon, 1991) with the result that the whole process of "seeing-as and doing-as may proceed without conscious articulation" (p.139). This routinisation of some of the personal trainer's work, i.e. he or she knows what to do but does not have to focus, may result in a deeply internalised "feeling for the stuff of action" (Schon, cited in Scott, 2008, p.116). The second is that the knowledge that underpins the action is socially embedded (Scott, 2008,

[24] Knowledge in action is defined as having a "feel for the theory" implicit in his behaviour, with or without an ability to conceptualise explicitly on what he is doing and why (Schon, 1991, p.59).

p.116). In both cases persons are usually unable to describe the knowing which the action revealed, i.e. tacit[25].

However, the realities of day to day life also throw up unexpected events or phenomena that make this kind of "routinization of (all)…behaviours" unlikely (George, 2008). Schon (cited in Scott, 2008) therefore identifies a class of meta-reflective actions. Faced with non-routinised tasks, the practitioner attempts to apply standard principled knowledge and/or procedural knowledge and to respond to the situation more consciously (Schon, 1991). If this still fails to solve the problem the practitioner may need to reframe the problem and "conduct experiments to discover what consequences and implications can be made to follow from it" (Schon, 1991, p.131). Experimentation involves "imposing a discipline" (Schon, 1991, p.131) and thus involves conceptual moves and decision making rather than trial and error. The practitioner thus engages in a process of reflection. In the process of reflection the practitioner's "conceptual moves" imposes new orders of meaning or a "virtual world" on existing conditions that produce changes that give situations new meanings (Schon, 1991, p.131). The "cognitive" process therefore spirals through stages of appreciation, action and re-appreciation and the "unique and uncertain situation comes to be understood through the attempt to change it and is changed through the attempt to *understand* it" (Schon, 1991, p.132). (Emphasis added). Through the "effects of action, the situation talks back" (Schon, 1991, p.135) and the practitioner is able to check for "coherence and congruence" (p.135).

Schon (1991) further distinguishes between reflection-in-action and reflection-on-action. Reflection-in-action is described simply as "thinking about what we are doing" (Schon, 1991, p.54) in the "action-present" (Schon, 1991, p.62) whereas reflection-on-action "occurs as the individual looks back on what occurred and thus broadens his decision making base" (Wainwright *et al*., 2010, p.75).

Schon (1991) thus offers some insight into manifest practice when he explains that the "capacity to see-as and do-as is what allows practitioners to have a feel for problems that do not fit existing rules" (p.140) by challenging the separation of means from ends, of research and practice and of knowing and doing. Dichotomies therefore do not hold in reflective conversations and knowing and doing cannot be framed independently (Schon, 1991). Schon thus acknowledges the context dependent knowledge acquired in the workplace and suggests that reciprocal enquiry into practice may allow context independent knowledge underlying

[25] On the recommendation of the External Examiner for my proposal I have not focused on literature on the concept of tacit knowledge, or on the concept of tacit knowledge itself in this research.

situated practice to become more explicit (Scott, 2008, p.123) and conversely the context independent knowledge used in practice through reflection may assist in a deeper understanding and ordering of non-routinised tasks.

2.7 Conclusion

If personal trainers need "to employ different strategies to meet the demands of their" (George, 2008, p.108) hybrid type work, then it seems that they may use a number of strategies or cognitive processes to "think on their feet" to respond to and/or to shape the contextualised demands of their work. If, following Bernstein's theoretical framework, different sites and processes of acquisition have implications for the realisation of different forms and orientations of knowledge (codes); and if Adlam's (1977) observation that different groups with different coding orientations "spontaneously and consistently offer different orders of meaning" in their accounts in and of practice, there should be implications for the applied competence in the workplace of personal trainers who have come through different qualification pathways. Are there, and if so, what are they?

In order to understand this applied competence in workplace practices one must return to the workplace practices, rather than to the outcome statements (Walter & Isaacs, 2009) of current qualifications, but the problem is how to get at not only what is visible, but also the invisible underlying competences. This will be explored in more detail in the second part of the next chapter on research design.

CHAPTER 3

RESEARCH DESIGN

3.1 Introduction

To understand personal training as "thinking on your feet", it seems imperative to approach the work of personal training with close observations of work together with close attention to accounts of the work by people who do it (Rose, 2004) in order to identify the "knowledge" used within the workplace. An important source of inspiration for my study was Mike Rose's (2004) ethnographies of the workplace of people involved in different occupations. He aimed to build a "richer appreciation of competence" (Rose, 2004, p.149) which recognises the "intermingling of procedural and principled knowledge" (Rose, 2004, p.151) and acknowledges that "learning is an integral part of generative social practice in the lived in world" (Lave & Wenger, 1991, p.35). However, it must be noted that this research does not replicate Rose's methods because, as I shall explain below, my observations and subsequent analysis of practice were informed by a coding framework.

The research pathway in this research study entailed the following activities: selection of research participants and setting; observation of personal trainers' manifest practices in situation and ongoing interviews with personal trainers; coding of information and analysis of data; selection of textured descriptions; and comparisons between apprenticed, trained and educated personal trainers. I shall discuss these in more detail in the following sections.

3.2 Participants

3.2.1 Selection criteria

Selection entails delineation of the relevant population for investigation by means of criteria based on theoretical or conceptual considerations, personal curiosity and empirical characteristics (LeCompte & Preissle, 1993). A sample of nine trainers was purposively selected through informal, face to face contact. This was initiated through personal networks[26] and in line with stipulated criteria of trainers who had come through different learning pathways working in private gym facilities and instructing clients with "complications". These stipulated criteria are further explained below:

[26] I shall discuss limitations of this selection strategy later in more detail.

3.2.1.1 Different learning pathways

Three trainers with university degree qualifications in Human Movement Sciences, Exercise Science and Sports Psychology, three trainers with exercise science diploma (Id Number: 36194) qualifications and three trainers with no formal qualifications (apprenticed) were selected. Hereinafter, the trainers with degrees shall be referred to as "educated", those with diplomas shall be referred to as "trained", and those with no formal qualifications shall be referred to as "apprenticed".

3.2.1.2 Private gym setting

Private gym facilities were selected as the research setting as they are less standardised than franchised gyms. As Maguire (2001) has pointed out, trainers in franchised gyms are subject to franchise patterns and standards and therefore may be required to play the role of "broker" or representative of the franchise. Trainers in private gyms tend to have more autonomy and are usually confronted with fewer obstacles to initiative and flexibility.

3.2.1.3 Clients with complications

In the previous chapter I explored Schon's conception of non-routinised events which provoke reflection. In order to ensure that each trainer would have to address some form of non-routinised conditions, I stipulated that clients included in the study must have some complications that have to be considered or addressed within the training programme. "Complications" are defined in this study as a condition, for instance a medical problem entailing an injury, hypertension, hypercholesterolemia, obesity or special need (sports specific), that requires the use of knowledge and reflection versus a more routinised approach to address the needs of the client within the session or training programme. I also assumed that this criterion would ensure that the personal trainers had "something" to account for, i.e. to give reasons for their choice of exercises, programme and adaptations and thereby make the grounds of their choices more explicit.

The criterion that the clients who were to be included in the study should have some form of complication was explained to the personal trainers and they then selected the clients using this criterion together with the clients' willingness and consent to participate in the study.

3.2.2 Sample

Personal trainers who met the above criteria were invited to participate in the study (Appendix B and Appendix C), once permission for access was obtained from the owner of the gym and after informal discussions with the trainers about the aims of the study.

Appendix D delineates the details of the personal trainers (A – apprenticed, T – trained and E – educated) and their clients who agreed to take part in the study.

3.2.3 Ethics

Informed consent and permission to observe and conduct interviews were obtained from the personal trainer, client and gym owner (Appendix C). The agreement was dependent on disclosure, i.e. revealing what is being studied, how it would be conducted, and the fact that there were no foreseen risks to trainers or clients. It was made clear to trainers that they would receive no monetary or any other compensation for participation and no direct personal benefits other than the knowledge that their participation in the study could make a contribution to the development of knowledge of the field of personal training and educational pathways in the field.

All potential participants were assured that confidentiality would be respected. Confidentiality is defined as withholding participants' real names and other identifying characteristics by using pseudonyms. Descriptions of any identifying personal characteristics were avoided to further protect participant identity (LeCompte & Preissle, 1993).

Ethics clearance from the University of the Witwatersrand was received for all research - Protocol number: 2010ECE94**C** (Appendix E).

3.3 Data collection and management

This study is a qualitative study in so far as it is concerned with participants' situated actions and accounts of their practices and is based on 108 hours of observation of nine trainers' activities in the workplace. The length of time spent observing activities in the workplace would suggest that this is an ethnographic study and that the researcher will develop what Geertz (1973) refers to as "thick descriptions" of practice. However, it is important to note that in this research report, I do not develop extended "thick descriptions" (Geertz, 1973) of each trainer's practice, but work instead with strongly conceptually framed descriptions of practice. I also employ some quantitative analysis.

Conceptually informed empirical research necessitates that the researcher link the conceptual framework/s employed in the research to observable manifestations of such concepts through adequate concept-indicator links (Gamble, 2004). Thus even researchers who adopt qualitative methods are faced with the problem of collecting information and translating it into data, in order to be in a position to make knowledge claims. Hammersley (1990) points out that there is a tendency amongst researchers to draw strong distinctions between qualitative and quantitative methods based on an assumption that "measurement is not…generally used by ethnographers" (p.114). He goes on to propose that in fact "the fundamental issue with which measurement is concerned is the linking of abstract concepts to particular data" (p.114) and thus measurement may facilitate the linking of abstract concepts to particular data and "quantitative data may have several advantages from the point of view of analysis" (p.113) even in ethnographic work. Following Brown and Dowling (1998, p.49), the concept of "data" in this study, refers to information "that has been read in terms of an explicitly available theoretical framework and/or collected via an explicitly available method".

In this section I discuss the process of information collection in this research. In the next section I shall explore the framework I developed to facilitate the reduction of information collected from 108 hours of observation to data.

Given that the research question required information about manifest practice, the information collection phase was based on observations of trainer/client interactions during training sessions, coupled with the trainers' accounts of their practices both in the ongoing flow of their activities and in semi-structured interviews or conversations with them after sessions. The aim was to capture what was said and done in sufficient detail and texture to be able to represent each trainer's practices.

3.3.1 Observations

Observation is described by Scott & Morrison (2007) as "an opportunity to listen, watch and record what informants say and do in specific educational settings and time frames" (p.167). The researcher observed each of the nine personal trainers for six hours with each of their two clients, resulting in a total of 108 hours of observation. During these observations the researcher attempted to capture interactions between the personal trainer and client (through a focus on actions, gestures and utterances) as accurately and in as much detail as possible. However, it is important to note that in order to respect the privacy of the clients *no* video or

audio recording of sessions were made and thus representation of practice was made on the basis of field notes. This meant that it was difficult to capture each and every utterance verbatim. Nevertheless, as I shall explain in more detail below, a coding framework was developed at the proposal stage of this research. The framework was developed on the basis of the research question and conceptual framework discussed in the previous chapter in order to set up concept-indicator links and enable data reduction. (I shall explain the logic behind the design of the coding framework in detail in section 3.4). Thus, observations and field notes were informed by *anticipatory* data reduction (Scott & Morrison, 2007) and enabled me to ensure that I recorded all information required to meet requisites of the coding framework.

All field notes and information collected were recorded on computer, as soon as possible after each observed session so as to create an emerging analysis which could serve as an empirical basis for the next observation and guide further conversations with the trainer. This information was converted to data (in the aforementioned sense) on the basis of coding framework.

At the information collection stage the researcher made no attempt to evaluate trainers' practices, but focused on describing what the personal trainers did[27], and on reporting their accounts of how they decided what to do and why, i.e. the emphasis was on description.

3.3.2 Accounts of practice in practice

One cannot begin to study the underlying, but invisible, logic of actions and activities without a focus on participants' accounts in and of practice. Wieder (1975) proposes that participants' accounts in and of practice "tell the code" (p.58) of their practices in so far as they reveal to those present what counts as that practice and what counts as appropriate forms of conduct and activities within it and thus offer a window on motives, reasons and criteria of conduct which may serve as a "guide to perception of the inner structure of reality" (p.59).

In this study "accounts" are defined as the explanations or narratives pertaining to facets or aspects of practice that are offered to either the clients or spontaneously (i.e. unelicited) to the researcher in the course of the ongoing flow of practice or, in informal conversations or semi-structured interviews conducted with the trainer after sessions. Semi-structured interviews

[27] It will be seen later that an evaluative stance was necessary during some stages of the analysis of the trainers' practices and the discussion of research findings because one cannot discuss competence without some reference to standards and qualities of practice.

were initiated by "asking questions about what people were doing and why, trying to understand their behavior and the thinking that directed it" (Rose, 2004, p.219). In these interviews which were, as far as possible, conducted as conversations more than as formal interviews, my aim was to create a space in which personal trainers felt comfortable enough to "think out loud" and thus render some of the logic of their work visible (Nardi & Engestrom, cited in Clancey, 2005). Each trainer's account of their practices provided the basis for any researcher claims in this report pertaining to trainers' motives, assumptions, intentions, knowledge, etc.

3.3.3 Artifacts

Artifacts are material manifestations of cultural beliefs and behaviours. Artifacts of practice requested from trainers included copies of personal trainers' curriculum vitae and the Personal History Questionnaire[28], PAR-Q[29] and assessment results of the client.

These artifacts were intended to assist in selecting the personal trainer sample by years of experience and qualifications and in identifying "complications" of the client sample.

However, access to some of the abovementioned artifacts varied from trainer to trainer because not all trainers kept written records. I shall return to this phenomenon later.

3.3.4 Final interviews: Accounts of practice on completion of observations

On completion of a total of twelve hours with each personal trainer, I sought additional clarifications in a final, semi-structured interview. This semi-structured interview (Appendix F) was conducted using prepared questions that probed for the reasons or logic of the practice, but allowed for open ended answers. (With the privilege of hindsight it is clear that I did not conceptualise this last phase of the research with sufficient clarity and therefore did not collect optimal information. I shall discuss this problem in more detail later).

This final interview data was then triangulated with artifact data, verbatim notes, semi-structured interviews and coded exchanges (see data reduction below), as accuracy is pinpointed "by triangulating with several sources" (LeCompte & Preissle, 1993, p.48).

[28] Personal History Questionnaire provides information about the client's age, gender, previous exercise experience and medical conditions.
[29] PAR-Q is a physical activity readiness questionnaire that determines whether a client is ready for exercise.

3.4 Data reduction and analysis

In the preceding sections I have pointed to the importance of adequate concept-indicator links in empirical research and also to the fact that I accumulated information from 108[30] hours of observation. It was therefore necessary to develop a coding framework which would enable concept-indicator links, and data reduction[31]. Data reduction is defined as "a process of selecting, focusing, abstracting, simplifying and transforming" that which appears in "written up notes or transcriptions" (Scott & Morrison, 2007, p.54). This process is "part of analysis" in that it "requires the researcher to make analytic choices" (Scott & Morrison, 2007, p.54).

3.4.1 The coding framework

In this section I describe the coding framework. The coding framework (Appendix G) looks extremely complicated, but has a clear logic. I begin with a brief review of the aim of the study, the concepts which inform the study, and the overall logic I followed to address this question.

The context of the study was the NQF focus on applied competence in the workplace and on different qualification pathways into personal training. The aim of the study was a) to investigate whether there are overt or manifest differences in the practical competence of personal trainers who have developed their knowledge and practice through different educational pathways; and b) to investigate whether there are more subtle differences in their practices which are less overt and which could tell us more about the quality of knowledge or competence underpinning their practices and thereby about their applied competence.

In the previous chapter I discussed George's characterisation of the "standard task" of personal training and the fact that trainer-client relations are interactional, and marked by three different types of exchanges (i.e. authoritative, motivational and instrumental). I then recruited concepts from Bernstein (1999) and Maton (2009) to explore forms of knowledge followed by a discussion of kinds of knowledge based on Krathwohl (2002). Finally I explored the concepts of reflection in and on action developed by Schon (1991).

[30] The number of trainers to be observed was recommended by an external reader of the proposal. Note that in fact I did more than 108 hours of observation because some additional sessions were necessary to enable trainers to "acclimatise" to my presence. The 108 hours therefore refer to the last six sessions observed for each trainer with each of their clients.

[31] This coding framework was developed at the proposal stage of this research and was approved by the external reader of the proposal.

Informed by these concepts, I delineated three foci to enable me to move from descriptions of more overt practices to more in-depth analysis in order to ascertain whether there are more subtle differences in their practices. These are:

(1) the predominance of authoritative, motivational and instrumental exchanges in personal trainer-client interactions (George, 2008) used in manifest practice;

(2) the instrumental exchanges identified in the personal trainer-client interaction in terms of forms and types of knowledge; and

(3) the forms, types and quality of knowledge in the personal trainers' accounts of their work as they reflect in and on their work.

The coding framework set up a four layered matrix to enable description of manifest practical competence and then to classify it in terms of forms and kinds of knowledge and the three types of competence that constitute applied competence. (The coding framework can be folded out – see tab). Therefore the coding framework was aimed at enabling the researcher to: a) differentiate between different kinds of exchanges used in client-trainer interaction; b) to classify the kinds of knowledge expressed in the substantive content of exchanges in which trainers imparted knowledge to clients, or in their accounts of what they were doing and/or why to clients or to the researcher (during or after sessions); c) to classify the forms of knowledge entailed in these aforementioned exchanges; and d) to characterise them in terms of reflexive, foundational and practical competence.

In the matrix in Appendix G, the top layer of the matrix differentiates applied competence into practical, foundational and reflexive competence as stated by SAQA. Please note competence can only be inferred from the data collected.

The next layer down differentiates between context dependent and context independent competences. It was reasoned that practical competence as per the definition "the ability to perform a set of tasks and actions in authentic contexts" (SAQA**,** 2001, p.11) must be classified as context dependent as an authentic context was stipulated. It was further reasoned that there is always some foundational competence that underpins accounts of "what we are doing and why" (SAQA**,** 2001, p.11). However, it is important to note that *some* foundational competence is overtly manifest or expressed in workplace practices, but some of it is below the surface of what is observable and hence must be inferred on the basis of accounts in and

of practice (and to some extent on the basis of some knowledge of personal training[32]). Therefore, foundational knowledge is classified as *context dependent* if such knowledge is communicated to clients through a restricted code (i.e. using particularistic or abbreviated communications which do not transcend the "here and now" of practice and/or do not transcend self-referential accounts of experience or "knowledge in the body"). Exchanges were coded as context independent foundational competence if knowledge communicated in the exchanges was communicated in an elaborated code (i.e. involved rationalisation offering more general principles which transcended the particular event and/or "the here and now").

Reflexive competence entails "demonstrated ability to integrate understanding by adapting to changed circumstances and providing an explanation for these adaptations" (SAQA**,** 2001, p.11). Reflexive competence presupposes an ability to lift the language out of the communicative contexts and "view it as an object of analysis" (Wertsch & Minick, 1990, p.74) and thereby impose an "as if" frame or "virtual reality" (Schon, 1991) on the "here and now" which enables reasoned rather than trial and error context dependent transformations of practice, thus reflexive competence is conceptualised as context independent.

The aforementioned sections of the coding framework informed all decisions about how to code information collected through observations in sessions and in semi-structured interviews and conversations with trainers and initially recorded in field notes. Ultimately actual coding was completed in the bottom half of the coding framework. This section of the framework differentiates all exchanges (which occur in manifest practice) into the three types of exchanges, i.e. motivational, authoritative and instrumental exchanges (what counted as each of the exchanges will be explained in the next section). Since instrumental exchanges "contain knowledge that is imparted to the client" (George, 2008) the *form* of knowledge imparted to clients was classified as either context dependent or context independent. All instrumental exchanges were then further analysed according to domains of personal trainer practice. The use of the term "domain" is borrowed from Schon's (1991) analysis of reflective conversations in the context of design[33].

[32] Since there is an inner logic of practice which is situated and based on knowledge (deeper experiential or principled) to infer knowledge or the significance of it one must have some background knowledge otherwise research is reduced to a kind of behaviourist atomism.

[33] Schon (1991) identified twelve clusters of elements of the language of designing and called them design domains. The design domains contained "the names of elements, features, relations and actions" (Schon, 1991, p.95) together with the norms used to evaluate problems, consequences and implications. Schon (1991) was then able to track the process of design in his observations by noting how the participants drew "on a repertoire of design domains to fulfill a variety of constructive, descriptive and normative functions" (Schon, 1991, p.97).

After consulting the exit outcomes of the Diploma in Exercise Science and considering George's (2008) standard tasks of personal training, I identified and clustered the basic knowledge entailed in and used to solve problems in personal training. The latter knowledge was then linked with the cognitive processes that could possibly be used[34], so as to acknowledge the two dimensional structure contained within Krathwohl's *Revised Taxonomy of Educational Objectives (2002)* and to get to the kinds of knowledge used in the standard tasks of personal training. This two-dimensional structure will hereafter be considered as a whole and be referred to as "domains of personal trainer practice". The domains of personal trainer practice are contained in Table 1 below and will be further explained in the next section on the coding criteria.

Table 1: Classification of instrumental exchanges into domains of personal trainer practice (basic knowledge content + cognitive process)

DOMAIN	1	2	3	4	5	6	7	8
Subject Knowledge	Name	Use	Safety	Experience/ Feel	Technique	Intensity	Programme	Organisation
Cognitive process	Remember	Understand/ Apply	Apply	Apply	Apply/ Evaluate	Apply	Analyse/ Create	Create

3.4.2 Coding criteria

Scott & Morrison (2007) describe the coding challenge as "the ability to demonstrate rigour and transparency in data recording" (p.33). In order to code field notes collected into cells in the bottom half of the coding framework, the researcher had to be very clear about the coding rules for each category and sub-category described in the coding framework. In the overview of the framework above I have already explained what counts as different categories in the framework. Appendix H summarises the coding rules for each cell of the grid and Appendix I offers more extended explanations and examples.

[34] It could be argued that the subject knowledge could be linked to all cognitive processes (combination of Krathwohl, 2002 and Schon, 1991 and 1987). The choice of the cognitive process was made on the basis of how the subject knowledge is used 'usually' in personal training.

After coding all exchanges the quantity of instances in each category and subcategory was captured on a spreadsheet.

a) Number of each type (authoritative, motivational and instrumental) of exchange for each personal trainer;

b) Number of domains of personal trainer practice specific instrumental exchanges for each personal trainer; and

c) Number of context dependent instrumental exchanges given to each client and the researcher for each personal trainer.

These numbers were then converted into percentages by dividing the quantity of exchanges in each category by the total number of exchanges and multiplying by 100. These percentages were further analysed statistically using the statistical package Moonstats© and the Pearson product moment correlation to see if there were significant correlations[35] between the kinds of exchanges and the qualification pathways trainers have come through.

Quantitative data is useful in differentiating between significant correlations, but the aim of this study was to capture a richer appreciation of the knowledge work of personal trainers and thus the quantitative data will be supplemented by descriptions, which illustrate or illuminate the significance of moves, discover implications and follow the changing stances (Schon, 1987, p.58). A deeper analysis of the descriptions also allowed similarities and differences in accounts of reflection-in-action to be identified. During the observation period and also on the basis of conversations with trainers and the final interviews (Appendix F), incidences of reflection in and on action were also noted so that the "if…then" and "what ifs" (Schon, 1987, pp.62-63) which the personal trainer engaged in, could be incorporated in analyses for how personal trainers account for what they do.

3.4.3 Selecting textured descriptions

Once all sessions were completed, the quantitative data was used to identify examples of instances of practice. These examples allowed textured description and discussion of findings

[35] "A Pearson product-moment correlation shows the strength of the relationship between two continuous variables. It is suitable for use if it can be assumed that the variables are approximately normally distributed. The r value indicates the strength of the correlation. An r of -1 is a perfect negative correlation, an r of 1 is a perfect positive correlation, and an r of 0 means there is no correlation. The p value indicates if the correlation is statistically significant ($p < 0.005$). Given a large enough sample size (n), even a very weak correlation can be statistically significant, and given a small enough sample size even a very strong correlation may not be statistically significant'"(Moonstats© specification).

for each trainer in order to make comparisons within and across learning pathways (informal, formal training and formal education) and experience. Comparison and pattern categories of the nine personal trainers then enabled a description which documents the roles and relationships of knowledge in the work of personal trainers.

3.5 Limitations of methodology

As noted earlier, the personal trainer sample was selected on the basis of personal networks due to the personal nature of the interaction between the personal trainer and the client as well as the skepticism with which "outsiders" are frequently perceived in the gym environment. Most trainers initially perceived the researcher as having the intention of making a judgment on their abilities as a personal trainer. After about two sessions the personal trainers seemed "to relax" and "the normality of the sessions was regained". This meant that frequently the researcher needed to observe more than six sessions[36]. The presence of the researcher is acknowledged as having an effect on the client-trainer interaction with some clients commenting that the "care given and preparation for their sessions had improved" with the researcher present.

The detail and texture of the information collected was limited to what the researcher was able to record in field notes as no video or audio recordings were used so as to protect the privacy of the clients.

As noted earlier, the researcher developed the coding framework and grid at the proposal stage of the research. Thus contextualised practices were subjected to the re-contextualising principles of the conceptual framework.

The coding framework had to be developed on the basis of definitions and models and concepts in the conceptual framework. It therefore could not be validated against another. With the privilege of hindsight it is clear that the coding instrument is very complex and that the framework could have been simplified by leaving out the section of the framework which attempts to capture domains of personal training coupled with the categories drawn from Krathwohl's (2002) work. Again, with the privilege of hindsight this was the least generative part of the grid and made coding unwieldy.

Perhaps this concern with kinds of knowledge could have been addressed with the inclusion of an instrument or test to enable the researcher to access more principled knowledge.

[36] The last six sessions were included in the quantitative count.

However, the problem was how to do this without prejudicing trainers who had not had any formal access to academic or vocational education discourses. The FIKA© tool may have been generative in this respect, however, all attempts made to obtain the FIKA© tool for use in this study were unsuccessful.

Again, with the privilege of hindsight, instead of doing a quantitative analysis it would probably have been better to use the more relational coding continuum which is used in empirical work informed by Bernstein's (1999) theories. This is because it would have enabled me to capture the form of knowledge communicated in instrumental exchanges in relational terms as more or less context dependent and/or context independent.

CHAPTER 4

MANIFEST PRACTICE

4.1 Introduction

When one stands in the gym observing a personal trainer at work, it may at first glance seem to be a simple process of the personal trainer giving routinised instructions and the client following them. The process is, however, less mechanistic when the expressions of enjoyment, awkwardness, discomfort and challenge that characterise social interactions are noticed. If one moves closer and listens more carefully to the dialogue – the interaction – it then becomes apparent that there is more going on than meets the eye.

Tall and athletic, dressed in a pair of blue tracksuit pants, Comrades Marathon T-shirt and training shoes, the 65 year old Andrew struts up and down on the grass outside the small, independent gym. His client, a young man of 24 years of age, has his arms resting in two support braces which are attached to a bar above him. Suspended from the bar with his arms supporting his body weight, he pulls himself upwards and flexes his legs at the hip joint, bringing them parallel to the ground. The sweat trickles down the side of his face and down his neck. He groans as he relaxes his legs and brings them perpendicular to the ground. Andrew, the personal trainer, stops walking and stands below the client, Ben. He carefully watches the client's efforts, while tapping his foot against a nearby drum. He smiles up at the client, visibly pleased at the exertion he is witnessing. Apparently enjoying himself Andrew antagonises the client a little, by saying: "You can't argue, this is the best hour of your day". Without hesitation Ben fires back the response: "You know my feelings for you". Ben grimaces and lifts his legs for the tenth time. Not able to lift his legs anymore Ben slumps down, placing his feet on the green drum below and stands resting with his arms still loosely hanging in the support braces. Andrew is quick off the mark and immediately shouts: "You stopped". Andrew then demands, in no uncertain terms, that Ben will have to start the set from the beginning. Ben merely shakes his head in mock dismay and lifts his body again to complete the required twenty hanging leg raises. Andrew, however, has apparently realised that Ben is exhausted and changing his tone of voice Andrew gently encourages Ben to complete the last five repetitions. Ben, absolutely exhausted, clenches his teeth, lifts his legs and sighs "You know how much I dig you". Responding to Ben's comments Andrew begins what he calls "the challenging game" by changing to a sterner tone and requesting that Ben pull harder than before. On completion of the hanging leg raises, Andrew quickly

congratulates Ben and immediately turns to walk through the nearby door into the small gym. Andrew wastes no time and walks towards the next piece of equipment which is part of today's workout. Ben, dragging his legs and wiping his brow, follows Andrew. Andrew pulls the rowing machine away from the wall and inserts a wooden plank. This wooden plank prevents the rowing machine from moving backwards and Ben's head coming close to the window ledge above. Andrew's actions are deliberate and practiced as he moves the rowing machine efficiently and slips the plank into position. As soon as Ben is within three meters of the rowing machine, Andrew, with his arms crossed, indicates towards the rowing machine with a nod of his head and gives the instruction: "5 minutes on the rower". Ben sits on the sliding seat, places his feet in position on the foot plates and begins adjusting the straps around each foot. Andrew reminds him to strap his feet in firmly, explaining to Ben that this will help to prevent shin splints. Ben nods, have got his breath back, and indicates that he is now ready to row. Ben begins propelling himself backward and forward using his arms and legs. His eyes are firmly focused ahead of him. Andrew stands with his foot resting on the front of the machine, watching Ben's technique and rhythm. Andrew then leans forward to observe the monitor that indicates work (watts) and time. After processing the meaning of the numbers on the monitor's screen, Andrew instructs Ben to use a faster stroke for one minute. Andrew now moves closer, standing parallel to the machine so that he can comfortably observe the monitor and his client. (One cannot however wonder whether Andrew's movement closer to the client is to observe or "intimidate"). Ben begins pulling faster as he feels his efforts or observes the changing numbers on the monitor in front of him. Noticing that Ben is moving faster but not pulling harder, Andrew explains to Ben that he is listening for the sound of the rowing machine, the "whrr" as the chain pulls on the cog. Still not achieving what Andrew requires of his client, he directs the movement backward and forward using his finger. Ben continues rowing as he was before, but Andrew is persistent. He insists again and again that Ben follow his instruction. Andrew uses words such as "wait, stop, pull and hard" to explain what he wants. Andrew bends down to the same level as Ben, moving closer and closer as he instructs. These movements, words and gestures continue until Andrew is satisfied with what Ben has achieved. He then abruptly ends the five minutes with the word "great" and moves back towards the gym door. Ben stumbles up from the rowing machine physically exhausted, but smilingly tells Andrew that the session was "as good as a milkshake". Andrew laughs and responds that he enjoyed the session just as much. Ben moves towards the door as he wipes his forehead, reaches to retrieve his car keys from the

security box, and exits the gym with a wave. (Description developed from field notes on session 1 between Andrew and Ben C1).

This interactional space between personal trainer and client is characterised by its own language and rules in that it pulls the client from his everyday reality to a reality which is created only within the interactional space. This interactional space contains within it undignified movements or poses, grunting or self-talk, excessive sweating and a unique relationship between client and personal trainer which can be maintained for many years.

In the literature review I established that there are different views - social and hybrid explanation, i.e. knowledgeable, service work - of how this space is created and of the grounds of trainers' work. In this study I have set out to investigate what form, type and quality of knowledge pertains to what kind of practice, i.e. apprenticed, trained and educated as identifiable in the activity, gestures and utterances or knowing in action. Therefore, although there is also a "social" view of the work of personal trainers, which focuses on sociability, body image and emotional labour, these are not the object of analysis here.

4.2 Scope of Chapter 4

A total of 9 trainers and 18 clients (2 clients per trainer) were included in the study. At the outset of the presentation of findings I need to explain the naming conventions I have adopted to enable the reader to easily identify which of the three pathways a trainer has come through, and also to enable the reader to track each of the trainers and clients they are working with. Adrian, Andrew and Arthur are apprenticed personal trainers who have had between 15 and 36 years experience and have attended short courses. Teresa, Tony and Trevor are trained personal trainers who have had between 2 and 16 years experience and have completed a Diploma in Exercise Science. Emily, Eric and Ethan are educated personal trainers who have had between 5 and 28 years experience and have a minimum of a degree qualification.

A total of 18 clients (2 clients per trainer) were included in this study. Brief details of each client are to be found in Appendix D. Hereinafter clients will be referred to as C (Client), a number (1 or 2) and gender (male or female) e.g. C1F.

All exchanges in a session were noted verbatim in my field notes. After each session the exchanges were categorised using the coding matrix discussed in Chapter 3 (See Appendix H for summary of coding rules). The total number of exchanges per trainer per client varied

between 117 and 636 exchanges. Percentages for each category were then calculated, e.g. number of motivational exchanges/total exchanges x 100 and Pearson moment correlations were conducted using the statistical programme Moonstats© to identify any significant correlations between exchanges and learning pathway. Qualitative data was also identified to support correlations and describe the work of personal trainers.

In this chapter I focus on trainers' work in context by focusing on the overt (i.e. manifest practices) of each trainer and on the basis of this should be in a position to make some preliminary claims about manifest practical competence. In order to do this, I first focus on the prevalence of authoritative, motivational and instrumental exchanges. I then focus specifically on the instrumental exchanges in relation to domains of practice. This is the first level of analysis of instrumental exchanges and in the next chapter I will develop a more in-depth analysis.

4.3 The types and prevalence of exchanges

As previously mentioned, George proposes that the interactional space between trainer and client is constituted through three types of exchanges, namely motivational, authoritative and instrumental, and these may entail *both gestures and utterances*. In this study I drew on George's (2008) definitions of the three types of exchanges, but modified them to enable a stronger focus on knowledge. My approach will be both qualitative and quantitative in order to describe the work of personal trainers and to begin to capture the differences and similarities between apprenticed, trained and educated personal trainers.

Before proceeding I wish to emphasise two important points. Firstly, where I make claims about trainers' motives, intentions, reasons and/or understanding of clients and/or needs the claims are premised on trainers' accounts of their practice in conversations after sessions or in the final interview. Secondly, as with other knowledgeable practices, there are some features of a practice or its qualities which *cannot* be discerned by those who have no experience and or principled knowledge of the practice, so I will at times adopt an authorial voice to give a principled explanation of some exercises or I will offer footnotes to explain technical terms or the discussion of the significance or implications of exercises. This is necessary if readers that have no knowledge of the field are to follow some of the logic or qualities of practices being described.

4.3.1 Motivational exchanges

George (2008) defines motivational exchanges as times when clients seek "encouraging, attentive and highly personalized training" (p.118) and/or personal trainers provide "personalized connections" (p.119) for their clients. In this study I follow her criteria for this category. Andrew, in his interaction or relationship with Ben (C1M), understands his very competitive nature and by using exchanges that are encouraging, attentive and highly personalised together with motivational methods, he is able to enact the standard tasks of personal training. (Field notes: Conversation with Andrew after Session 1).

Encouraging

Andrew completed the session with Ben C1M with the word "great" thus giving a statement of verbal encouragement. Other words such as: "good job, that's it, well done, very good, nice, lovely, beautiful, fantastic, awesome", etc. were also recorded, however, personal trainers extended their service from extrinsic motivation to more attentive treatment and highly personalised interactions.

Attentive

Gestures of service or demonstrations of attentive treatment were performed with the purpose of making the client feel more comfortable and cared for. The kinds of and the extent to which these gestures were used by individual trainers are shown in Table 2.

Table 2: Identified gestures of service or demonstrations of attentive treatment in all observed personal trainers

	Adrian	Andrew	Arthur	Teresa	Tony	Trevor	Emily	Eric	Ethan
Fetching a client a glass of cold water		√		√	√	√	√		√
Passing a sweat towel or placing the towel in position on the bench			√			√			√
Temperature adjustments – putting on a fan or air conditioner				√		√	√		
Fetching or handing weights to clients	√		√			√	√	√	√
Helping clients into or out of equipment		√		√		√		√	
Exercising with the client		√				√			

This attentiveness was not only demonstrated through gestures or body language. Personal trainers' listening skills enabled them to remember and repeat stories that had been told by the client in previous sessions or experienced together during past sessions. For example Emily easily intermingled the exercise instructions with "chat about stuff" (Emily). She later commented that the job has a lot to do with experience[37] and having the skills just to talk about "stuff". The nature of the "stuff" included a variety of topics, some more personal (family, friends) and others more general (places to eat, weather).

The use of nicknames such as "Yster" (Arthur, C2M), "Poppie" (Andrew, C2F), "Gogo"; (Emily, C1F) and "Skattebol" (Eric, C1F), although based on the client's goal or a shared experience, further extended the '"chatting" to a deeper level, a level of emotional attachment or familiarity[38].

Forming an emotional attachment through talking, listening and observing, seemed inseparable to the process of training the clients. More experienced personal trainers (Adrian,

[37] Account of practice after practice – context independent exchange.

[38] The use of Yster or Iron referred to the strength or hardness of the muscle that C2M was trying to achieve. Poppie (little doll) referred to the new tennis outfits that C2F was dressed in. Gogo (granny) referred to the perception that C1F had of her age and Skattebol (term of endearment) to the long term relationship that Eric has had with C1F and her family.

Andrew, Arthur, Trevor, Emily and Eric) stated in interviews that the client just needed to walk through the gym door[39], whereas less experienced personal trainers (Teresa, Tony and Ethan) used the warm-up part of the programme to obtain both verbal and non-verbal feedback from the client, to inform the performance of the standard tasks of personal training.

Highly personalised

On the basis of conversations with the trainers I established that Arthur knew that C1M tended to twist his foot inwards when he executed leg curls[40] and Adrian watched C1M carefully when he performed upper back exercises because he overcompensated with the right side of his body. Emily knew which exercises C1F liked and disliked, Trevor knew that when C2M got a certain expression on his face it indicated that he had had enough and Eric knew that C1F needed constant attention otherwise she became frustrated.

All personal trainers used their understanding of each client to determine the intensity of the session; judge the flow of the session using conversation; maintain a relaxed atmosphere; guide the joke telling appropriate to the client; and know when to push and when to allow the client to relax or take it easy.

Information about clients also gives personal trainers insight into which motivational methods to use in sessions. Some clients are motivated by the presence of other clients in the sessions, whereas others like to compete against themselves or normative values.

Fitness testing

"Fitness testing is an optimal motivational tool that many trainers use to excite their clients about improvements in their fitness over time" (Brooks, 1998, p. 98), i.e. the clients compete against themselves or the normative values for athletes or general population clients. An example of this would be to measure the distance run in twelve minutes and then compare this distance or its conversion to VO_2 max, to the normative values of a specific population. The result of the test would then form the baseline for the next assessment performed approximately six to eight weeks later. Only five of nine personal trainers used fitness testing or assessment protocols and each provided different reasoning for their use.

Andrew explained to me that he used the results purely as motivation in that he explained that the results did not necessarily inform his programme design, but the tests were done because

[39] Several of the trainers noted that a client's body language informed them of the "state" of the client.
[40] Leg curls or "machine prone hamstring flex is a single joint motion exercise designed to target the hamstrings" (Aaberg, 1999, p.140)

the client C1M "liked to see numbers" (Andrew). Andrew therefore included fitness testing when motivation levels were declining. Trevor used assessment protocols every two months with clients although he explained that "the majority of clients are mostly motivated by physical visual results and their increased ability to perform an exercise[41]". The visual observations were used to pick up imperfections in body formation and muscle, i.e. more qualitative.

Tony used quantitative results both for motivation and for tracking progress. In each session he checked intensity using a heart rate monitor and recorded the calories burnt after each session. He explained that he does a full assessment[42] every eight weeks. Tony then used this information[43] to modify the programme design, i.e. he designed more intense combinations of exercises when he did not see a heart rate increase or response and also changed exercises to meet the adjusted goals of the client.

Emily explained that she used assessment protocols in the intake assessment to inform her programme design at the outset and had no motivational implications. She updated her initial assessment information at the beginning of or during each session by asking medical or health related questions or by making observations on the ability of a client to perform an exercise.

Ethan explained that he did not see any value in completing standard assessment protocols for clients who were not training for sports specific reasons, but instead preferred to set challenges for his clients.

From motivation to challenge

Motivating strategies can also be more "preconceived", i.e. when exercise programmes are specifically designed by personal trainers to challenge a client. Ethan introduced each of his programmes with statistics which included by whom and in what record time the workout was completed. In this way he gave the programme "status", i.e. it was perceived as challenging because a top athlete had completed it. In an exercise session with C2F, Ethan pushed C2F through the difficult part of the workout by continuing to count while her body

[41] It could perhaps be argued that this type of testing is context dependent as the form of the body and ability to do the exercise only has relevance to the context of gym training.
[42] This included blood pressure, heart rate, weight, fat percentage, cardiorespiratory endurance, muscular strength and endurance and flexibility.
[43] Tony and Emily indicated that the assessment protocols had implications for a greater whole, i.e. the programme and the comparison were made against normative data or previous data thus indicating a more context independent or elaborated code.

progressively failed to respond correctly, thus executing half push-ups. Ethan deliberately ignored C2F's comments but instead focused on organising the client by "counting her down" and pushing the client to the end. He explained after the session that he needed to keep the client engaged in the activity and if he had responded to her comments, could have caused her to stop. Counting was seen as a useful strategy to keep the client "going". Ethan understood his client's tendency to resist exertion beyond her comfort levels and thus set a task which he knew would be challenging but achievable, and thereby encouraged the development of intrinsic motivation[44].

In the example above, Ethan sacrificed technique (half push-ups) for the completion of the workout. Interestingly, Ethan stated in his final interview that he generally tries to emphasise motivation and intensity as long as it never compromises technique. However, he explained that in this case he chose to give the client an opportunity to achieve "completion of a workout" over "perfect technique". This suggests reflective flexibility.

Under other circumstances faltering of technique was not allowed. Eric apparently noticed that his client (C1F) was not performing the biceps curl through the full range of motion and reminded the client to move her arm "all the way". C1F responded that her arm was hurting and she couldn't perform the biceps curl through the full range of motion. Eric replied confidently that "there was no such thing as can't but it was more about the how"[45], and requested that she complete one more set. Eric pointed out to her that he understood that she was getting tired, but encouraged her to work through the fatigue. In this way C1F apparently learnt to focus on what needed to be done, conquered the body fatigue and achieved her goal. Eric explained after the session that if she had stopped, the lactic acid[46] would have been absorbed and the burn would soon have subsided, leaving C1F with a feeling that she could have completed the set fully if she had just persisted.

It is important to note that Ethan and Eric made decisions about the goals that would be achieved by their clients on the basis of observations in sessions, but it also seems (according to Kravitz's (2010) definition) that they provided clients with opportunities for what Kravitz

[44] After the workout was completed C2F remarked that she finds it difficult to push herself and this workout had helped her to prove to herself that she is able to take on something that she previously perceived as physically impossible.

[45] Eric points to her head at this stage to emphasise that the focus must come from her head, not just from the body technique.

[46] Lactate (often referred to as lactic acid) is formed when pyruvate is catalysed during Glycolysis (breakdown of carbohydrate to re-synthesise Adenosine Triphosphate or energy). During muscular fatigue, there are high tissue concentrations which cause metabolic acidosis and thus inhibit muscle contraction (Baechle & Earle, 2008). This is a context independent explanation in that it entails general principles. I will return to these explanations in the next section.

(2010) calls mastery learning[47]. This may be in line with Kravitz's (2010) claim that mastery learning enhances self efficacy[48] and increased self-esteem and consequently clients believe that they can "achieve more momentous outcomes" and at the same time "obtain a deeper understanding of exercise knowledge" (Kravitz, 2010, p.89). Whether Ethan and Eric's clients did have a deeper understanding of exercise knowledge and increased self esteem would need to be explored.

Accounting for motivation

"Repeat patronage" (p.118) as reported by George (2008) was also identified in this study. In discussions of their practice all of the trainers acknowledged the importance of motivational exchanges or the service approach and this was affirmed by the identification of and an equal[49] prevalence of motivational exchanges in all personal training practice – See Table 3 below.

Table 3: Average motivational exchanges (in percentage) for apprenticed, trained and educated personal trainers

	Apprenticed	Trained	Educated
Motivation	24	23	21

All personal trainers in their explanations of motivation (sometimes referred to as people skills) both during and after the observation period did explain that some client personality types[50] require more praise than others, but the purpose of the external praise statements is always to build self-esteem and self-efficacy. This seems to be borne out by differences in the prevalence of motivational exchanges per the two clients being instructed by the same personal trainer – See Table 4.

[47] Instructional method that presumes that all people can learn if they are provided with the appropriate learning conditions.
[48] Belief that one is capable of performing in a certain manner to attain certain goals.
[49] A Pearson product moment correlation for learning pathway and motivation indicated that these two factors are not statistically significantly correlated ($r = -0.17$, $p = 0.504$) i.e. learning pathway has no effect on the number of motivational exchanges used.
[50] External locus of control is defined as factors outside them determine their life and behaviour.

Table 4: Percentage of motivational exchanges used by personal trainers for each client

	Adrian A1	**Andrew A2**	**Arthur A3**	**Teresa T1**	**Tony T2**	**Trevor T3**	**Emily E1**	**Eric E2**	**Ethan E3**
C1	19	35	23	17	21	21	23	17	24
C2	12	29	25	8	34	34	18	16	27

4.3.2 Authority asserting exchanges

In George's work the second type of exchange were authoritative exchanges. George defined these as exchanges in which personal trainers explicitly invoke their experience as trainers to emphasise how experienced they are, and/or highlight their expert status or certification, and/or use their tone, gestures and/or body positioning to establish or assert their authority over clients. Note that George defined authoritative exchanges as those in which they invoke their professional status or knowledge, however, I am working with a different definition of this category[51] and therefore called this category authority asserting exchanges. I have modified this category for two reasons. Firstly, because I have included apprenticed trainers in this study it is important to open this category so as not to exclude other ways in which trainers assert their authority and secondly, my main emphasis is on knowledge and therefore I have a different category. The reader should note that this category is really focused on how trainers exert their power or authority over the client. It is not focusing on exchanges in which trainers impart knowledge or information and thereby establish their authority, i.e. exchanges in which they impart information about what they do, how to do it or why it should be or is done in that manner. Such exchanges have been categorised as instrumental exchanges (which I will introduce later). It will also later be seen that I will focus on accounts trainers give of the ground of authority during sessions or in conversations about practice.

Authority asserting exchanges accounted for between 7% and 27% of all exchanges (shown in Table 5 below) in the practice of educated, trained and apprenticed trainers.

[51] It is however important to acknowledge that knowledge often underpins the actions which personal trainers engage in, i.e. arranging a piece of equipment for a client requires both an authority asserting exchange and the knowledge of the piece of equipment to execute the standard tasks of personal training.

Table 5: Average authority asserting exchanges (in percentage) for apprenticed, trained and educated personal trainers

	Apprenticed	Trained	Educated
Authority Asserting Exchanges	27	7	8

Experience and certification

One way in which trainers assert their authority over the client is invoking how experienced or certified or physically competent they are. Andrew, Arthur, Tony, Trevor and Ethan made reference to their own physical ability with specific reference to the weights that they were able to lift or the challenging[52] workouts they were able to complete, whereas Teresa and Eric both made reference to their past achievements as national athletes. Andrew also asserted his physical authority by placing photographs of his achievements in his office for clients to see and made reference to these achievements when he told C1M that he had "moved into another league. You can push my bike to the start of the triathlon now" after C1M had completed a challenging session.

This study corroborated with George's (2008) warning that trainers often downplayed the importance of appearance, but most acknowledged that a fit body was the primary and clearest way to convey their professional expertise and to promote their skills, in that the total of this kind of promotion of their expertise was low.[53] This study therefore identified that authority asserting exchanges can also be identified in other ways besides the promotion of their expertise via experience, training or education.

Purposeful, insistent authority asserting exchanges

Purposeful, insistent authority asserting exchanges were identified in the way all personal trainers counted as clients did a set of exercise repetitions. This failure would frequently result in the trainer insisting on extra repetitions or sets being done by the client and/or the tone of voice used by the personal trainers tended to shift to a more clipped, insistent and louder expression of demand to enforce compliance. What was interesting was that none of the clients opposed the personal trainers' decisions to issue additional repetitions, but instead the clients laughed, used explicit language, shook their heads or told the personal trainer how

[52] Workouts which are of high intensity or contain complex or advanced exercises.
[53] The highest number of exchanges of this kind of expertise promotion was 22 exchanges (Andrew) but in relation to the total number of authority asserting exchanges (104) used by Andrew throughout the observation period of this study, the prevalence was low (8% of total exchanges).

much they hated the personal trainer. This love-hate relationship was observed in all trainer-client relationships except for Emily's client C2F, who had difficulty exercising due to the limitations that her rheumatoid arthritis imposed.

Gestures and body movements

Assertions of authority could further be identified in the gestures and body movements of all the personal trainers. Pointing to equipment, tapping pieces of equipment with their foot or hand, nodding towards, standing watching, setting up equipment "deliberately" or walking closer were the ways in which clients were forcefully encouraged to continue or start an exercise.

Client's role in activating or eliciting certain responses

Due to the relational nature of personal trainers' practice, the client's role in activating or eliciting authority asserting responses is again reflected in the variations of the prevalence of authority asserting exchanges between clients trained by the same trainer – See Table 6.

Table 6: Percentage of authority asserting exchanges used by personal trainers for each client

	Adrian A1	**Andrew A2**	**Arthur A3**	**Teresa T1**	**Tony T2**	**Trevor T3**	**Emily E1**	**Eric E2**	**Ethan E3**
C1	34	35	36	6	5	8	10	9	8
C2	27	8	23	6	8	8	4	7	10

Notwithstanding that trainers may perceive that different clients require more or less authority asserting exchanges to ensure compliance, authority asserting exchanges were found to be statistically significantly correlated at a 1% level ($r = -0.71$, $p = 0.001$) to learning pathway, therefore indicating that apprenticed personal trainers use more exchanges to assert their authority[54].

I will examine how this authority manifests itself in apprenticed personal trainer practice by examining a number of examples below:

[54] George (2008) established in her study that authoritative consultations were offered by personal trainers who had specialised (had higher qualifications) and thus maintained a more detached concern by way of aligning themselves with the medical professions. These results at first glance may seem to contradict George's (2008) study. My modification of George's (2008) definition (to exclude "status") was in order to pursue my aim of establishing whether without this "certified status" apprenticed personal trainers used other means (statements, gestures and body movements) to assert themselves.

Arthur used 36% of his exchanges to assert authority with C1F who was studying personal training. She questioned the programme Arthur designed for her on a regular basis during the sessions as well as his "lack of attentive service" and therefore Arthur reverted to his experience to justify his decisions. Arthur explained after a particularly hostile session[55] that he preferred training male clients as they were content with the routine of training, whereas female clients tended to want variety. (Field notes: Conversation with Arthur after session 4 with C1F).

Andrew used comments like "are you negotiating with me?" when C1M questioned an exercise or the intensity thereof, holding firmly to his belief[56] that in the gym, he is the authority and the client does not need to know why an exercise or programme is chosen. This was further indicated in his higher use of authority asserting exchanges for C1M at 35% versus 8% for C2F. Andrew also used a greater percentage of motivational exchanges (35%) with C1M, the client that needed to be "pushed". (Field Notes: Conversation with Andrew after session 2 with C1M), however it must be noted that C1 was a male[57].

Adrian's authority was much less verbal, but instead he used gestures, facial expressions and body movements to enforce compliance with both C1M and C2F. His work of setting up equipment, spotting and movements around the gym space were deliberate. His purpose "to train clients" was clear, and thus his questions to clients were always orientated towards whether sets or repetitions were complete and gestures and/or facial expressions which conveyed insistence that a set be completed.

Authority asserting and motivational exchanges both have a strong relational focus in manifest practice and in many ways these exchanges create "the atmosphere" in which the standard tasks are performed. In the next section on instrumental exchanges the examination of imparting knowledge will allow deeper insight into how the assessment, development of the programme, instruction of the client and modification of exercises is performed.

4.3.3 Instrumental exchanges

As briefly mentioned above, instrumental exchanges are those in which trainers impart knowledge to the client, i.e. information about what they do, how to do it or why it should be

[55] The session following a bodybuilding competition in which C1F came third.
[56] Stated in the final interview.
[57] How gender affected the way personal trainers dealt with clients was not examined in this study, however, it is an aspect that needs to be kept in mind.

or is in that manner, etc. This was the most predominant exchange identified[58] in and of the practices of trained and educated personal trainer practice, whereas apprenticed personal trainers reflected significantly[59] lower numbers of instrumental exchanges despite more years of experience.

Table 7: Average instrumental exchanges (in percentage) for apprenticed, trained and educated personal trainers

	Apprenticed	Trained	Educated
Total instrumental	49	71	71
Explicit instrumental	41	70	68
Gestures /modelling	8	1	3

It is interesting to note that Apprenticed trainers used gestures and modeling to impart knowledge (i.e. embodied and tacit) to the client[60] and perhaps it is worth considering that much more of their knowledge may have been made visible if it was not for the methodology used in this study.

Before examining these *explicit* exchanges in depth it is important to acknowledge (see Table 8) that again there were differences between trainers within the same category, i.e. 60% (Ethan, C2F) and 77% (Emily, C2F) and variations between the two clients instructed by the same trainer were also noted. (Andrew C1M 26% and C2F 62%) thus allowing the acknowledgement that this work is relational.

[58] Exchanges to be further discussed under this category always included explicit instructions, however, it must be noted that knowledge was imparted through gesture and through modelling. This indicates that the percentage of instrumental or knowledge imparting exchanges would have been higher if these were included. The focus of this study is therefore on that which they actually explained as the knowledge underpinning gestures and modelling is "assumed".

[59] Explicit Instrumental exchanges and learning pathway are found to be statistically significant at the 1% level ($r = 0.64$, $p = 0.008$) i.e. personal trainers who have had informal pathways of learning use significantly less instrumental exchanges than those whose learning pathway was formal.

[60] Qualification and Gestures/Modelling are statistically significantly correlated at the 1% level ($r=-0.69$; $p=0.001$) i.e. gestures and modelling are more commonly associated with apprenticed personal trainers.

Table 8: Percentage of *explicit* instrumental exchanges used by personal trainers for each client

	Adrian A1	Andrew A2	Arthur A3	Teresa T1	Tony T2	Trevor T3	Emily E1	Eric E2	Ethan E3
C1	37	26	39	73	73	64	66	68	62
C2	34	62	48	85	70	55	77	74	60

An examination of these variations by returning to the trainer's accounts of the client's needs and goals and to the accounts[61] given by personal trainers, indicate that the more non-routinised the responses to the client's complications were perceived to be by the personal trainer, i.e. the personal trainer felt challenged[62], the higher the instrumental exchanges. As the three interactional exchanges of motivational, authoritative and instrumental exchanges have been noted by George (2008) to dynamically play a role in sessions, it can be postulated that if the personal trainer felt that motivational and authoritative exchanges were necessary to enforce compliance[63] then a reduction in instrumental exchanges could consequently ensure the meeting of the goal of getting the standard tasks of personal training done. Consequently there may also be other reasons for the variations in the exchange prevalence in each session.

I have pointed to the prevalence of the instrumental exchanges for each trainer. However, although the table 8 above indicates that the practice of personal training is knowledgeable it does not tell us enough about the quality of knowledge imparted. In order to develop a deeper analysis of knowledge communicated in these exchanges by different categories of trainers' knowledge, I now turn to an examination of the substantive content of these exchanges in more detail by differentiating the instrumental exchanges into those which communicated context dependent knowledge and those which transmitted more context independent knowledge.

[61] The accounts given by the personal trainers are strictly context independent, but due to the more extensive definition used in this study, these accounts will be examined at a deeper level in the next chapter.
[62] In terms of his knowledge base, Andrew explained that when he was dealing with the more "unusual", he gathered extra information on tennis specificity by referring to books about tennis training.
[63] It is interesting that he used the words "enforcing compliance" as it further supports his authoritative stance.

4.4 Context dependent instrumental exchanges[64]

Before proceeding, it is important to note that context dependent instrumental *exchanges* are those in which communications are particularistic in that they refer to objects, actions and events directly in the context of action and do not offer knowledge which is more universalistic and are therefore more generalisable across time and space. Context-independent exchanges on the other hand are rationalised and explanations involve generalisations which extend beyond the particular occasion or event in which they are transmitted. It was pointed out in the previous chapter that some foundational competence is context dependent and some is context independent. In the development of the coding matrix clear criteria were offered for determining which exchanges would fall under which of these two subcategories. In this chapter I focus on the context dependent exchanges as these play an important role in the personal trainers' practical competence in an authentic context. For this reason I will examine context in this chapter (which focuses on manifest or practice) and therefore suspend the discussion of both context independent accounts and foundational competence and accounts of applied competence to Chapter 5.

The context dependent instrumental exchanges were defined as those exchanges characterised by a restricted code. In other words, the meanings communicated were particularistic to the activities or events under discussion and did not offer principles which were more extensive in time and space. Although I will postpone the discussion on the source and quality of knowledge, I now discuss some aspects of knowledge and the domains of practice introduced in the previous chapter.

A statistical analysis of the predominance of each domain of personal trainer practice with respect to the categories of apprenticed, trained and educated revealed that the intensity domain of personal trainer practice was the only domain to be statically significantly correlated at the 5% level ($r = 0.58$, $p = 0.018$) with the learning pathway.

[64] In this study exchanges discussed exclude all gestures and modelling which was not accompanied by explicit instruction, i.e. what and how to do. This does not mean that gestures and modelling are not instrumental exchanges, nor that they are not useful in getting the standard task done.

Table 9: Average percentages of domains of personal trainer practice specific instrumental exchanges used by each personal trainer category

Domains of personal trainer practice	Apprenticed	Trained	Educated
Name	3	6	5
Use	1	1	2
Safety	4	2	1
Experience/feel	6	3	4
Technique	23	25	27
Intensity	16	26	27
Programme	16	12	16
Organisation	31	25	21

However, further examination of Table 9 revealed that four domains of personal trainer practice, namely intensity, technique, programme and organisation, exhibited higher prevalence in the manifest practice of all personal trainers. I would therefore like to extend my descriptions to include how these identified domains of personal trainer practice were used in the standard tasks of personal training, i.e. the instruction of the client and modification of exercises within practice.

4.4.1 Intensity

Intensity was defined as repetitions, sets, minutes or numbers of the exercise recommended within the instrumental exchange. All personal trainers used counting of repetitions, time allocations to inform clients how much longer they needed to hold or execute the exercise for and adjusting pace of repetitions using phrases like "slower, not too fast, watch my pace, give it a bit of extra pace", etc. Only Tony, a trained personal trainer, used a heart rate monitor to check the heart rate response of clients to the assigned exercises and used the calories burned after each session to judge intensities of the entire workout. All trainers made the final decision on intensity, i.e. they determined the repetitions, sets and pace, except Emily (with C1F) and Arthur (with C1M) who allowed clients to decide on the intensity at which they wanted to work, i.e. the number of repetitions to be completed ("If you get to 15, try and go on to 20" – Emily) and the weights to be used ("Which weight? 9 or 11 kg?" – Arthur).

Intensity is expressed in variations of the following phrase: "20, 20, 2" which means 20 repetitions of the first exercise, 20 repetitions of the second exercise with two sets of each. It can also be expressed as 2 x 20 or two sets of twenty when the same exercise is performed

twice. Eric used hand signals, i.e. numbers were signed instead of spoken. This intensity phrase “20, 20, 2” is combined or preempted with the name of the exercise, a demonstration of the exercise, a description of the exercise, or the pointing or showing of a piece of equipment. This means that intensity is often combined in these exchanges, either using the terminology and language particular to the gym environment, e.g. biceps curl, etc., or a technique description and or demonstration.

4.4.2 Technique

Technique was defined as when the personal trainer evaluates technique by instructing, correcting or assisting a client with exercise performance either by using explanations, modeling or a combination of both. Whether the personal trainer’s experience affected the way technique was instructed was considered, but no significant correlation was found. In this study, no information on the client’s knowledge or experience of exercise technique was collected and thus it was impossible to determine how this may affect the instructing approach adopted by the personal trainer.

All personal trainers did at times support their verbal instructions with demonstrations or vise versa, to give instruction to clients and thus adequate instruction both verbally and non-verbally is part of the standard tasks of personal training. At the most manifest level it was noted that gestures and/or modeling alone was identified as a significant way in which apprenticed trainers imparted knowledge. As no explanation was given, but an assumption is made, that knowledge underlies the gesture or modeling (e.g. when a trainer hands a client a certain weight he is basing his choice of weight on an understanding of the intensity required) I am going to focus my discussion on the explicit, context dependent instructions given to clients.

When the exchanges were considered over the six sessions, the explanations and demonstration given were reduced and gradually the name of the exercise and the intensity required, replaced the technique exchange. This differentiation noted in the observations may be due to the gradual development of exercise language by personal trainers (and clients), their individual abilities and the confidence required for their verbal expression. The following subtle differences are thus noted.

Subtle differences

The exercise technique instruction can be divided into two aspects: firstly, instructing the exercise itself and secondly, correcting the exercise. The first two extracts are taken from two separate occasions in which the same client (C2F) completes squats[65] as part of her workout.

The first exchange with regard to squats was used in session 2:

"Stand like this" as Andrew demonstrates the squat with his hands resting on his knees.

Client (C2) bends her legs, but is unable to copy the position Andrew is demonstrating. She laughs.

"Come C2 stand sexy" encourages Andrew.

Client laughs again and attempts again to get her bottom down and back.

"C2, can't stand sexy" laughs Andrew as he stands up and walks away laughing.

"Let's play our normal game" says Andrew as he goes to fetch a ball and thus changes the exercise.

The second exchange occurred in session 4:

C2 completes a set of squats and says "My knees get sore from the squats".

"I think a lot of your aches and pains are growing pains", responds Andrew.

The apprenticed personal trainer, Andrew, decided in the first exchange that the client was unable to execute the squat after modeling the correct position and using everyday language to explain the position i.e. "Stand sexy". The apprenticed personal trainer then changed the squat from a body weight squat with flat feet (session 1) to a body weight squat (session 4) with elevated heels, but this adaptation did not enable the client to perform the squat comfortably (soreness in knee as a result of misalignment) but instead explained the knee soreness (misalignment) as growing pains (everyday language) to the client.

An educated personal trainer, Eric had the identical issue with a client and it was explored in the following way:

[65] A squat is described as "a multiple-joint exercise designed to target the hip and upper leg muscles" (Aaberg, 1999, p.122).

"My knees get sore when we do these squats?" says C2.

"Where is the pain?" asks Eric.

"What do you mean?" queries C2.

"Is the pain in the inside or outside of your knee?" asks Eric.

"In the inside" responds C2.

"If you get a pain in the inside, then we know that you need to point your toes out because you are putting pressure on your ligaments in the inside, due to misalignment[66]" explains Eric.

Eric turns around and fetches a large ball from the other side of the gym. (Eric modifies body weight squat to ball squat).

"Sixty squats, bum back, feet forward a little bit, drop nicely, look up, top of pelvis, twist there" instructs Eric.

"I am not doing it properly" states C2.

"Straight up and down. Watch the side of me. (Eric executes the squat). Now straight up and down. Push through your heels, push up and down. Bum into the wall. It is all about position[67], bum back. Push it there (points to wall). Don't make a scene, I want it there (points to the wall again)" instructs Eric.

"Boom, boom, boom" as Eric demonstrates the movement again.

"I know what I will do. Hang on a second" as Eric goes and fetches a band which he straps around her waist.

"Now you can't come forward" says Eric.

"Try it again. We will get this action correct before you go today. No such thing as doesn't work. Give me 5".

[66] And [67] These are both context independent exchanges, i.e. general principles are used to describe the technique to the client.

The educated personal trainer, Eric, took the information about the "pain in the knee" further by asking questions in order to obtain a more comprehensive picture before instructing the technique again. He modified the exercise to a ball squat which has the benefit of guiding the correct movement down and up, and then further modified the exercise by restraining the client's body and preventing the incorrect movement of the body forward. What is interesting about this observation is that the ball squat is the most simple on the continuum of squat execution and when it proved inadequate to instructing the movement, Eric took it a step forward by using a more inventive strategy.

Playing an educational role was common in educated personal trainers and thus explanations highlighted body positioning, e.g. "Keep the hand positioning narrow for the middle of the back when rowing" (Eric) and demonstrations of exercises, e.g. Ethan used a stick to mimic the movements at different positions to explain to the client how the bench press targeted different aspects of the chest and shoulder depending on how the movement was executed and were often used especially when an exercise was introduced.

When I questioned[68] Andrew with regard to the inability of the client to perform the squat technique correctly he commented that "his experience of instructing cues for these exercises, contained in textbooks, was limited although he knew how to perform them himself". He said he could feel when his technique was incorrect and could see when a client was performing the technique incorrectly. This suggests that he was not always able to codify this knowledge and thus guide the client to execute the movement correctly.

However, apprenticed personal trainers may give explicit explanations as demonstrated by Adrian below:

C1 starts with the one arm rows and Adrian stands back observing from about 3 meters.

"Shoulders back" corrects Adrian.

"I always correct them if they round their shoulders, because that indicates to me that they are not using their back, but instead using their arm" explains Adrian to the researcher during a session as he works with the client.

The apprenticed personal trainer, Adrian, explained that he pays strong attention to changes in body posture (cues) which indicate that the exercise is not being done correctly and completed his explanation with the words "try it, you will feel it". This explanation is not

[68] Field Notes: Conversation after session

incorrect as it correlates with the explanation found in exercise technique texts[69], however, the explanation has a contextual focus, i.e. situational knowledge - thus the language used has a restricted code.

It is, however, clear that the ability of apprenticed personal trainers to give instruction is often limited to their own experience whereas the educated personal trainer draws on more general technique principles in order to give instruction, but what does the trained personal trainer do? Textbook instructions which contain exercise cues combined with intensity monitoring are used by trained personal trainers as revealed by Trevor below.

Trevor hands weights to C2.

"Legs together, shoulders back[70]" instructs Trevor.

"I know it feels light, go a bit slower" advises Trevor.

"11, 12 thank you" counts Trevor.

"Nice and slow" instructs Trevor.

"Stretch muscle, concentrate on getting chest out[71]" as Trevor demonstrates the chest press.

4.4.3 Programme

Designing exercise programmes for individuals is described by Brooks (1998) as "both an art and a science" (p.95). The scientific part involves the structuring and selecting of exercises that enhance progress towards and achievement of the client's exercise needs and or goals, but also offer a "smorgasbord of options" (Brookes, 1996, p.95) that meet the client's changing range of needs. The development of the programme occurs either before or during the exercise session and its purpose or logic and how it will unfold is communicated to the client as a whole or in parts.

[69] Exploration of the principles and techniques of resistance training in texts (principled knowledge) refer to the retraction of the shoulders as part of the ready posture which requires clients to "pull the shoulders back slightly and down, lift the sternum slightly out and up and pull the chin slightly back and down, creating while maintaining the natural arch in the lumbar and cervical regions of the spine" (Aaberg, 1999, p. 38). The purpose of this ready position is stated as keeping the spine in its strongest position and reducing the spine's risk of injury while strengthening both postural and target muscles.

[70] and [60] These phrases are common textbook exercise instructions.

Written programme

Tony and Trevor both referred to prepared written programmes (programme cards on clipboard) at certain sessions. In addition, Trevor made notes of the completed sets, repetitions and weights on his programme card throughout the session so that (as he explained afterwards) he was able to track progress and make ongoing adjustments (Field notes after session 2). Ethan did not have a written programme, but instead explained to the researcher that he obtained "crossfit" workouts from an internet source and from workouts they had used during practical sessions at university. Andrew and Teresa explained that setting out their equipment before the client arrived was like writing the programme "in equipment" versus on paper or a programme card (Field notes after sessions). None of the other personal trainers had a "set out" or written programme, but instead referred to a series of exercises which they used to create a programme for their clients.

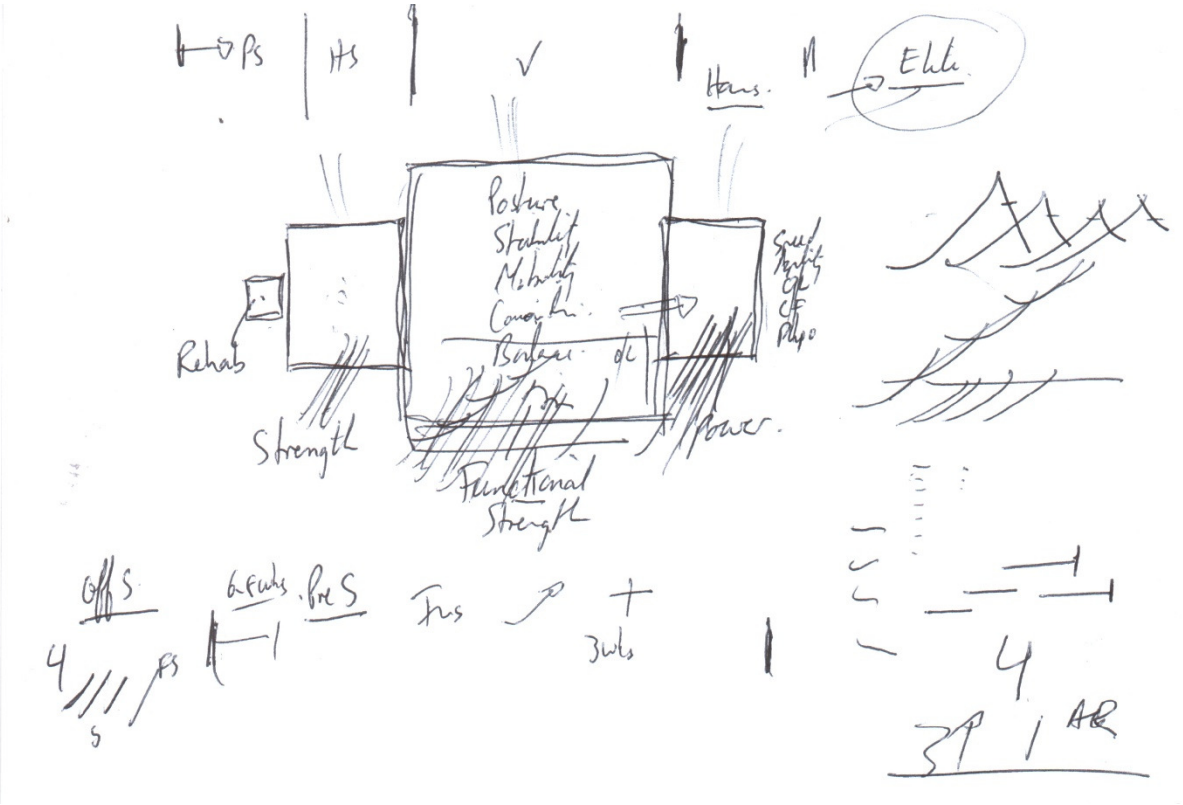
Series of exercises

The series of exercises was explained to the researcher as a compartmentalising approach to the body or splits such as chest, shoulders and triceps; legs and biceps, back and deltoids (Adrian and Arthur); or upper body, lower body and trunk exercises (Emily and Eric). Due to the large number of exercises that targeted the same muscles or body parts, these personal trainers further explained that they were able to make choices as they went along by firstly gathering information on the frequency of the sessions, i.e. two sessions may result in the body being split into upper body and lower body and secondly selecting exercises from "the list" depending on the condition of the client's body, the response from the client in the session and the previous experience of the client.

Discussions after sessions with Emily and Eric revealed a deeper understanding of the body compartmentalisation framework in that they explained their sequencing principles, i.e. they needed to firstly include an exercise for large muscle groups such as hamstrings, quadriceps, back, stomach, shoulders and chest in order to work the entire body and then they would focus on small muscle groups such as biceps and triceps.

"Cycling" was another way in which programmes were determined, but instead of focusing on the exercises selected or the way they were sequenced, cycling focused on the intensity of the exercise. Arthur explained cycling as a "process of taking the client through a series of harder and easier training sessions depending on the time before the competition and the current diet (nutrition) cycle of the client" (Field notes after session 4). Eric instead provided

a sketch (see below) and explanation that referred to the scientific principles of periodisation[72] in which the sessions are divided into a hypertrophy or endurance phase, basic strength phase, power and unloading[73] phases which are rotated throughout weeks of training (See diagram below which accompanied explanation after session).



Both the compartmentalisation and cycling speaks to the logic behind the design of the programme, but the programme "inner logics" were rarely discussed with the clients. They were instead communicated as a whole or in bite size pieces as they unfolded.

Whole

Andrew, Teresa and Tony set out all the equipment before their clients arrived. The clients then had a general idea of what they may be doing in the session based on their memory of what equipment had been used and how it had been used in previous sessions. In some of the sessions Andrew and Teresa explained[74] all the exercises to the client, contained in a type of circuit design (semi-circle, circle or line), before commencing with the session. In this way the designed, whole programme was made "visible" to the clients at the beginning of the

[72] "The planned distribution or variation in training means and methods on a periodic or cyclic basis" (Baechle & Earle, 2008, p.476).
[73] Training usually consists of low-volume, non sport-specific resistance training with light loads as a form of active rest (Baechle & Earle, 2008, p.513).
[74] Explained in name and technique, i.e. what they were to do not in terms of purpose or logic, i.e. why they were doing what they were doing.

sessions, but whether the logic of what the clients were doing and how it related to their goals was evident to clients is unknown.

Bite-size

All the other personal trainers' sessions supplied the programme information to the client in "bite size pieces" in instrumental exchanges by firstly referring to the elements[75] of the programme, e.g. "Let's warm up the body by walking on the treadmill" (Emily) and "We are going to stretch now" (Teresa). Secondly, reference was made to the FITT[76] principle, e.g. "Listen, the plan[77] is 30 lighter, 15 heavy and then we do three of them" (Arthur) and thirdly, an explanation of when it would be done followed by the exercise name was given, e.g. "Then we are going to sprint 20 metres, with a flying start" (Andrew). In this way the programme was unfolded, but again its inner logic or purpose was not explained in these context dependent exchanges with the client.

4.4.4 Organisation

Once the programme is created or is in the process of being created, the personal trainer must manage the space and client by organising equipment and making sure that the client is in the correct position or area of the gym at the correct time. All personal trainers organised their clients by ensuring sufficient rest between exercises, preparing the correct equipment or making sure it was available and "placing" the client in the area where the next exercise would be executed. This was done verbally, e.g. "Going to start that side" (Arthur); "Put the weight down" (Tony) and non-verbally, e.g. Eric led the client by the arm to the next piece of equipment and Adrian nodded at the client in order to tell him that he needed to start.

In my explanations above I have dealt with each domain of personal training practice separately, however, the standard tasks of personal training are manifest through integrated performances.

4.4.5 Integrated performances

Eric walked together with C1F towards the Roman chair (used for abdominal exercises). He placed his hand on the Roman chair and stated the following "30 forward, 40 sideways, 40 sideways". In the action described above, he *organised* the client by moving the client to the

[75] By elements I mean both parts of the progamme such as warm-up, flexibility, muscle strength, muscle endurance, cardio-respiratory endurance and cool down or relaxation, were also included in other exchanges.
[76] Namely the consideration of frequency, intensity, time and type when developing a programme.
[77] Interesting to know why he used the word plan instead of programme.

appropriate piece of equipment; identifying the equipment; explaining the *technique* required to perform the exercise and stating the *intensity* of the exercise. He thus moved (body movement), placed his hand on (gesture) and explained (words) using both verbal and non-verbal exchanges. There are, however, a number of aspects that were not "spoken", but instead a common understanding or gym knowledge existed between the client and personal trainer. The client knew that the Roman chair is used for sit-ups and she understood that she needed to do a combination of forward and oblique sit-ups to target the stomach muscles. The client affirmed her understanding by nodding, climbing into the machine and beginning the assigned exercise. This assigned exercise was also placed in the context of other exercises which made up her training programme or session. The personal trainer's choice of exercise also targeted the stomach muscles at the level of the *rectus abdominis* in the forward movement and the internal and external obliques in the sideways or oblique movement, therefore indicating his understanding of how the stomach muscles were constituted.

This integrated performance therefore suggests a presence of a conceptual knowledge that links the factual knowledge of the domains together. If one shows the integrated performance diagrammatically, taking into account the prevalence with which each domain of personal training practice was found in instrumental exchanges in manifest practice, then it can be noted that the language used to do the standard task of personal trainer draws attention to organisation, intensity and technique, whereas programme seems to play an intermediary role and underpinned by name, use, safety and experience.

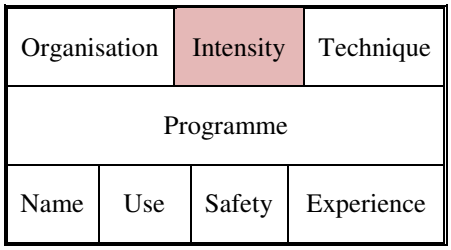


Figure 1: Integrated performance framework for educated and trained personal trainers

This "pattern" is not the same for apprenticed personal trainers as their focus is firstly on the organisation of the client, then on technique which is informed by programme and intensity, but also underpinned by name, use, safety and experience domains of personal trainer practice.

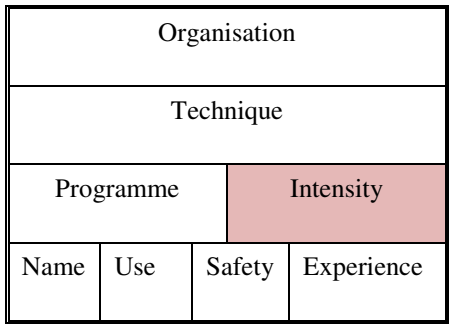


Figure 2: Integrated performance framework for apprenticed personal trainers

This suggests that despite the perceived similarities in manifest practice, there are subtle differences (which require an insider or knowledgeable gaze to discern and to infer qualitative differences) in terms of how the domains of personal trainer are structured together, which suggests differences at a conceptual level. At this point it must be noted that on the basis of observations of the six sessions, it was clear that all of the clients developed and made progress (albeit at different rates) and also that there were no significant injuries. This suggests that all trainers are practically competent.

4.5 Conclusion

This chapter has focused on the trainers' manifest practice. It explored the predominance of the different types of exchanges and the ways in which the different domains of personal training are manifested in their activities. On the basis of this it is possible to draw the following preliminary conclusions. Manifest practice includes a mixture of motivational, authoritative and instrumental exchanges which facilitate the performance of the standard tasks of personal training. Motivational exchanges are used with similar predominance by all personal trainers with a tendency towards more "pre-conceived" motivational methods in educated personal trainers and authority asserting exchanges, although used by all personal trainers, identify the apprenticed personal trainers as more authority asserting. Instrumental exchanges have higher prevalence in trained and educated personal trainers versus apprenticed trainers with programme, organisation, technique and intensity domains of personal trainer practice being predominantly recruited. It is also important to note that the apprenticed personal trainers communicated knowledge more through gestures and modeling than did trained and educated personal trainers. Through these above mentioned relational and knowledge based exchanges, all personal trainers make observable their "knowing in

action"[78] (Schon, 1987, p.26) and demonstrate the ability to perform a set of tasks and actions in authentic contexts and as mentioned above, all clients made progress and were free of injury, thus it is possible on the basis of what is manifest or overtly observable in practice to declare all personal trainers *practically* competent however there still questions about applied competence.

[78] Schon (1987) classifies the sorts of know-how revealed in intelligent action as knowing in action. The example he uses is "publically observable, physical performances" (p.25).

CHAPTER 5

KNOWLEDGE BASED PRACTICE

5.1 Introduction

In the findings discussed thus far, I have examined overt manifest practice. Apprenticed personal trainers were found to use quantitatively more authority asserting exchanges than the other categories (the difference was statistically significant) however, the manner or style in which trainers asserted their authority was similar across all categories of trainers. Though there were a similar number of motivational exchanges across the three categories of trainers, some subtle differences were identified, namely encouraging, attentive, highly personalised training shifted to mastery learning in educated personal trainers. Turning to instrumental exchanges, a first level analysis differentiated more strongly between informal and formal pathways of learning with respect to the use of gestures and modeling as well as explicit instrumental exchanges, but this focus on what is "overt" only covers the "tip of the iceberg" of "applied competence". In order to go deeper it is necessary to explore the form and content of instrumental exchanges between client and trainer and secondly, to follow Schon (1991) to explore trainers' response to moments which apparently present challenges to trainers (i.e. those which provoked reflections in and/or on action). The reader should note that this level of analysis requires the analyst to have some form of "insider" knowledge ("knowledgably skilled experiential" or theoretical) because at times it will be necessary to make some comments about trainers' competence (i.e. whether their techniques/explanations, etc. are fundamentally sound).

As mentioned in Chapter 3, Wieder (1975) proposes that the accounts participants in a practice give to each other in the course of their activities and/or in discussion about them tell the code of "what counts" in that practice. I therefore now turn to an analysis of the trainers' accounts of what they are doing and why (in sessions to the client or to me, or in conversations with me after sessions). By "accounts" I mean ongoing narratives or explanations in the course of practice which share information about the activities or actions being enacted or offer comments or explanations on events (activities, actions and/or utterances) afterwards. These accounts may be more or less elaborated, more or less restricted, have stronger or lesser semantic gravity, and may be more or less particularistic or generalising. On the basis of these analyses it should be possible to draw some inferences

about the trainers' underlying foundational or reflexive competence (*to the extent that this is possible without formally testing trainers' principled knowledge)* and thus develop some characteristics of knowledge based practices.

5.2 Accounts of practice in practice

An analysis of the *form* and *content* of trainers' accounts of practice in practice showed clear distinctions between informal and formal pathways of learning as Table 10 indicates in the distribution of the accounts given to the clients and to the researcher in the context of practice[79]. It can be noted that the accounts (r= - 0.74, p= 0,001) given to the researcher were significantly higher for the apprenticed personal trainer, whereas this was reversed and accounts were given more predominately to clients (r = -o.74, p = 0.001) by trained and educated personal trainers.

Table 10: Average percentages of accounts of practice given to clients and researchers in practice by each personal trainer category

	Apprenticed	Trained	Educated
Accounts given to researcher	80	16	29
Accounts given to clients	20	85	71

A further correlation analysis between accounts (both researcher and client) and instrumental exchanges indicated that there was a statistically significant relationship between these factors at a 5% level. The following conclusions can therefore be made:

1. Low accounts to the client and low instrumental exchanges correlated with high accounts to the researcher by apprenticed personal trainers.

2. High accounts to the client and high instrumental exchanges correlated with low accounts to the researcher by trained and educated personal trainers.

5.2.1 Accounts to clients

Apprenticed personal trainers stated in final interviews that they did not give information to their clients as they felt that the client did "not need to know, but instead it is a process that

[79] It must be noted that accounts elicited by the researcher to further understand their practice were not counted, but instead recorded in field notes. These percentages only reflect spontaneous, un-elicited accounts.

they will slowly learn"[80] (Arthur). This correlates with the quantitative results and with the belief held by apprenticed personal trainers that the role of a client is to "sit and receive" (Kravitz, 2010, p.88) and the role of the personal trainer is to "stand and deliver" (Kravitz, 2010, p.88).

Apprenticed personal trainers did, however, give an average of 20% of spontaneous accounts of practice to the client in practice. The extract that follows will draw out the characteristics of these accounts.

Sign tokens

Apprenticed personal trainers used the following two phrases in their practice: "the lunge will give you the bottom for jeans"[81] (Andrew) and "when my back got stronger, it didn't get so sore"[82] (Arthur) and although correct, are strongly tied to the context. These are particularistic and focus on sign tokens of practice. Other more scientific terminology was, however, used by Arthur in the following explanations: "Allow the machine to come down low so that it works into the *gluteus* muscle" and "*supination*[83] of the hands will help you to isolate the *deltoids*" therefore suggesting that apprenticed personal trainers are familiar with scientific terminology which may possibly have been obtained in short courses or from other sources of knowledge.

Feel and experience

The explanations by apprenticed personal trainers frequently made reference to how an exercise or the response to exercise should "feel", e.g. "I prefer this grip because the other grip makes me *feel* misaligned" (Andrew) together with the personal trainers' past experience, e.g. "It is better to do the leg press knock kneed as it protects the groin. I pushed too heavy one day and it just popped out like a tennis ball" (Andrew). The first extract has a more restricted code as the context is needed to provide part of the meaning of the communication, whereas the second explanation is more, but not fully elaborated as it does not *explain why* doing the leg press protects the groin. The apprenticed personal trainer reflects on his previous experience, e.g. "I have given you a certain repetition range, but I

[80] Example of a reflection-on-action obtained from the final interview.
[81] The underlying theoretical knowledge states that the lunge works into the gluteus muscle (bottom) and therefore causes hypertrophy (increase in muscle size) which builds a rounded bottom.
[82] The strengthening of the back and stomach muscles stabilise the back, therefore reducing pain.
[83] The position of the hands when the palms are facing up and knuckles down and also known as underhand grip (Baechle & Earle, 2008, p.326).

know you can push more" (Arthur) and observations, e.g. "I have added weights because it looked light" (Arthur) of the client and so his *experience* is the grounds for his injunction.

Apprenticed accounts of practice in practice can therefore be summarised as exchanges which are particularistic and at times elaborated (not fully), focused on sign tokens and the grounds of decision are personal experience. These exchanges are thus quite atomistic and therefore the client is not given access to the logic behind the decision.

Trained personal trainers have completed a two year diploma in which they covered human anatomy and physiology, nutrition, health screening, testing protocols, exercise prescription and training knowledge for special populations including sports specific clients, and therefore it can be assumed that they have "acquired" a formalised underpinning knowledge.

Elaborated code

Trained personal trainers do use a more elaborated code in that they use more universal understandings such as heart rate monitoring (procedure) to understand the response of the client to exercise (Tony and Trevor) and link more context specific situations like the fainting of a client to concepts or the principles of glucose metabolism and blood pressure control when giving accounts to clients in practice. The use of these principles and procedures illustrates a broader understanding of the body as a system and the relations between parts and wholes.

When trained personal trainers used the word "feel" it was predominately included when referring to muscle, i.e. "feel deep in the muscle". I explored why this phrase may be particular to trained personal trainers. All explained that in their training they had insufficient exposure to practical training and had subsequently realised in the context of practice that this was an important element of instructing clients, i.e. explaining how it should feel in the body.

Generalisations

"If… then" statements such as: "If you sit then you de-activate the abdominals" (Teresa); and "Using heavier weights would result in a lower number of repetitions" (Tony) indicated that trained personal trainers were engaging in theoretical reasoning. This reasoning was further apparent when they explained programme adaptations by identifying the "problem" and then giving a replacement, e.g. "If your knees are sore, then try walking with high knees" (Teresa)

or placed the exercise on the difficulty or progression[84] continuum, e.g. "This exercise prepares you for floor push-ups" (Teresa) or "The intermediate to this is the wall push up" (Tony). Teresa's and Tony's explanations also place the exercise in the context of the programme as a whole.

Trained personal trainers therefore accounted for their practice in practice by offering some explicit explanation of the logic behind instructions of how to do or not to do exercise using underpinning factual, conceptual and procedural knowledge, "if…then" statements and some everyday language.

Educated personal trainers cover the same subject knowledge formally, but in more depth and over a longer period of time (a minimum of three years for this sample). Educated personal trainers usually have a wider base of knowledge which is not just exercise science specific. Their curriculum may have included psychology, business management, etc. in addition to exercise science and may have a deeper base of other subjects such as general biology, physics, chemistry, etc. Two of the personal trainers, Emily and Eric, had honours degrees (Human movement science and Sports Psychology) and Ethan was in the process of completing an honours degree in exercise science.

Depth of knowledge

The accounts included more detailed explanations of what they were doing and why in the course of their practices with clients, together with how exercises should have worked (Emily and Eric). Clients were encouraged to use heart rate monitoring to monitor their own intensity (Eric) and the Valsalva manoevre[85] safely to exert greater force (Ethan). Reference was also made to deeper physiological concepts using technical terms such as the myotatic reflex and how it is used to generate power (Ethan); the difference between slow twitch and fast twitch muscle fibres (Ethan); the time taken for lactic acid to be neutralised (Eric and Ethan) and the effect training will have on the control and stability of movements (Eric and Ethan). These explanations suggested increased depth of factual, conceptual and procedural knowledge, but also indicated that all these personal trainers were performing a more educational role.

[84] Changes in resistance and training intensity by raising the number of weekly training sessions, adding more drills or exercises to each session, changing the type or difficulty of drills or exercises or increasing the training stimulus in order to produce high levels of performance of athletes or meet the goals of clients.

[85] The method of holding your breath - the glottis is closed, thus keeping air from escaping the lungs and the muscles of the abdomen and rib cage contract, creating rigid compartments of liquid in the lower torso and air in the upper torso (Baechle & Earle, 2008, p. 85) – thus increasing the rigidity of the torso and making it easier to support heavier loads.

Educated personal trainers spoke about the "feel" by linking it with an associated area of the body or muscle, e.g. "You should not feel it in the coccyx[86]" (Emily) and "Feel the difference between momentum and movement" (Eric). These explanations assisted the client in perceiving finer distinctions. Observations of clients during sessions were communicated by trainers, e.g. "We do not yet have a one-to-one ratio for back to abdominals because you managed the back exercises better than the abdominal exercises. We need to work on the abdominals" (Ethan). In this way they linked the practical experience of how the exercise was experienced by the client with the theoretical principles which explain the "feeling" or experience, but also used generalisations or "if…then" explanations to justify decisions and explain the logic of the programme, e.g. "When I give you a two kilogram weight to hold while doing sit ups, it increases the resistance and therefore the intensity" (Emily) and "If tired, then we will do floor work" (Emily).

The components of educated personal trainer practice therefore incorporated deeper and broader underpinning knowledge, "if…then" statements and the linking of practical and theoretical knowledge.

5.2.2 Accounts of practice to researcher in practice

As mentioned in the introduction to this section, apprenticed personal trainers had higher percentages of un-elicited, spontaneous accounts given to the researcher during sessions than trained or educated personal trainers. This is an interesting move by apprenticed personal trainers as their focus is usually on communicating about sign tokens when working with clients and an orientation that has "little need for the explication of sense relations i.e. cognitive or descriptive meaning in the conduct of everyday communication" (Wertsch & Minick, 1990, p.76) i.e. they don't need explanations, they need to do exercises. The presence of the researcher seemed to have prompted the apprenticed personal trainer to perhaps give accounts in and of practice which they would usually not have done as all apprenticed personal trainers acknowledged that they did not give much information to their clients. Clients in turn all commented that the personal trainers gave more explanations with the researcher present. These accounts enabled me firstly to gain a deeper understanding into the apprenticed learning pathway and secondly to evaluate the quality of knowledge used in these accounts.

[86] The 3 to 5 coccygeal vertebrae of the vertebral column (spinal column), which forms the vestigial internal tail extending downward from the pelvis (Baechle & Earle, 2008, p.67).

Experience and segmental acquisition of knowledge

All apprenticed personal trainers requested that the researcher attend more of their sessions to "see how they do" this or that, i.e. to experience new ways of doing things and to feel what it is like to be trained by them thereby proving through actual experience that an "effect" was felt.

Arthur had a particularly interesting way of describing how he worked with clients. He described the exercise sessions as a cycle that a client goes through each year (or couple of months) and as the client experiences this cycle through exercise, so the client becomes more "knowledgeable". He suggested that the client is unable to learn everything at once and thus must experience the same aspect first at a superficial level and then at progressively deeper levels until he or she understands all the subtleties.

C1F often had joint sessions with a prospective bodybuilder[87] who was not competing in 2010, but Arthur insisted that her programme be structured as if she was going to compete and described her as being in the teaching phase. The description given by the apprenticed personal trainer indicated a segmental acquisition of knowledge to promote the meeting of immediate goals and the development of isolated competencies via modeling.

Knower versus knowledge code

If knowledge is obtained through modelling rather than through systematised hierarchical bodies of knowledge, then following Maton, apprenticed trainers are likely to ground the claims to the legitimacy of their knowledge in the possession of attitudes, aptitudes and dispositions. In other words, in what Maton (2009) calls a "knower code".

In the first observation session Arthur drew the researcher's attention to an exercise that C1F would be doing for the *gluteus maximus*, using the back extension machine. He explained the exercise in the following way:

"You can do glutes on this machine too. We will show you. I learnt this exercise from a woman bodybuilder. She had a great bum so I knew the exercise worked. That's how you know it is a good exercise - you get results" (Arthur).

[87] A bodybuilder is described as a person who strengthens and enlarges their muscles through exercise such as weightlifting.

Seeing the results is of great importance and apprenticed personal trainers are often very critical of people who advocate exercise, but do not have the body to prove it[88]. Arthur legitimated the argument by reference to the physiques of those who use it, i.e. a particularistic explanation that explains how the body parts work together in the exercise to produce results. Professional sportsmen and sportswomen are also included as models or exemplars to justify or explain the value of an exercise or technique. Andrew used the observations of a professional tennis player to justify his choice of warm-up exercises for his client C2F. Apprenticed personal trainers did, however, make reference to other experts such as dieticians, physiotherapists and biokineticists as indicated in the extract below:

"See, the heels are lifted. I picked that up from a biokineticist. She gave a whole scientific explanation for this, but all I know is that it protects the Achilles tendon and forces the client to come down straight, therefore protecting the back. The biokineticist gave me a list of things that I am already doing here, but didn't really have scientific explanations for" (Andrew).

Andrew repeats the "scientific explanation" given by a biokineticist to support the adaptation he has made to the squat, but he qualifies his acceptance of her scientific explanations with his own experience or "gut feel", i.e. "I am already doing them here" (Andrew). The accounts of why certain things were done were generally prefixed by "this expert told me" or "I learnt this from (name of expert)" but also focused on the "know why", i.e. it protects the Achilles tendon. This means that most of the knowledge accepted by apprenticed personal trainers is the "knowledge essential for getting anything done" (Barnett, 2006, p.146) and thus explanations remain less elaborated and have greater semantic gravity than educated personal trainers.

Quality of knowledge

The knowledge for getting things done or situational knowledge is accumulated through experience and having observed them at work and thus experiencing how they approached the training, coupled with their accounts of what they were doing and why (either in the course of the session, or after sessions in conversation with me) I was progressively (segmental approach) able to understand their work better and through questioning was able

[88] A concern was, however, expressed by apprenticed personal trainers that "personal trainers today", no longer need to train hard to obtain the "perfect physique" but instead can use a variety of anabolic steroids (synthetic derivatives of testosterone) without experiencing training itself. By experiencing exercise itself, they specified that they meant what works and what doesn't. Their criteria for "fitness" is therefore that one experiences and does the hard work of training.

to establish some assumptions (i.e. their knowledge of how and why exercises should be done, or done in the manner they required) underpinning their practices.

Gamble (2009) explains that "craft has a tacit principled knowledge base which is acquired through making" (p.23). If personal trainers also develop a tacit principled knowledge base through the action of personal training then they may have "knowledge in the body" or at their "finger tips". This knowledge which is internalised and integrated, and enables them to work systematically to create a coherent pathway for clients to develop the desired levels of fitness, means that there may be an indirect (tacit) link to the disciplinary knowledge found in training and education. This seems to be a possible explanation as knowledge and experience do function together to some extent.

However, as suggested above, personal trainers may not believe it is necessary to codify their knowledge for the client, and/or they may not have developed systematic ways of representing their knowledge discursively and hence of bringing principles into relation to create types or generalisations which take the client beyond knowledge of the particulars of each activity or the particular programme they are working on. In other words, they may have knowledge which they either do not or cannot make explicit (Gamble, 2006). With this in mind, my discussion below only pertains to the knowledge made explicit by apprenticed personal trainers during and after observations.

Kitchener (1972) draws a generative distinction between cookbook knowledge and disciplinary knowledge. Cookbook knowledge is described as "a kind of know how contained in empirical rules of thumb" or gut understanding, "without the benefit of theoretical justification" (Kitchener, 1972, p.89) whereas disciplinary knowledge enables discrimination between everyday and scientific concepts as well as the ability to construct scientific stories using evidence accepted by the community of practice (Mortimer & Scott, 2003). In the following two examples I will examine the differences with respect to the two types of knowledge.

Grip width[89] when doing a lat pull down[90] can vary depending on the purpose of the exercise. Adrian explained to the researcher that he usually uses a wider grip with men because they tend to have *tighter pectoral muscles* (chest). This apprenticed personal trainer had apparently concluded from his experience with clients that men have tighter chest muscles

[89] Space between hands when holding a barbell.
[90] A lat pull down is described as "a two-joint motion exercise designed to target the *lattissimus dorsi* muscles" (Aaberg, 1999, p.176).

than women and it is therefore easier for them to do the exercise using a wide grip and hence used it as a "rule of thumb". He focused on one dimension of men's anatomy and offered a restricted explanation based on what he observed – an explanation with high semantic gravity.

I subsequently explored this question with an educated personal trainer, Eric, when I observed him telling his male client to widen his grip. Eric explained that a wider grip isolated the back muscles and disengaged the assistance of the arm (bicep) muscles, i.e. it does not seem to be related to the tightness of chest muscles. He went on to explain that a narrower grip allowed a client to use the bicep muscle as well as the back (*lattissimus dorsi*) to pull the bar down in a lat pull down exercise and thus a narrower grip was often used when training female clients. In his account of how he determined grip he rationalised his decision to ensure clients used different grip width by bringing anatomical differences between men and women (breadth of shoulders), and knowledge of the relations between muscle groups into a systematised set of relationships which coordinated parts into a principled whole. This explanation is more elaborated and characterised by low semantic gravity and higher semantic density.

Andrew conducted a speed, power workout with C2F and completed each session with some resistance training which targets the major muscles of the body. Andrew's explanation for the incorporation of resistance training was to keep the body conditioned. I probed further for reasons for the specific resistance training exercises chosen, e.g. leg extension[91] exercise. He explained that it was to promote muscle definition. This is a valid explanation as it does indeed promote muscle definition and is instrumental in that it focuses on the end result, but does not offer insight into parameters which have informed the choice of exercise for a client that has sports specific goals. After observing the sessions with sports specific clients (judo and horse riding) I asked Eric about the choice of exercises for sports specific clients[92]. Eric explained that multi-joint exercises such as squats and lunges were more functional as they prevented imbalance between the quadriceps and hamstrings and facilitated the movements required in the sport, i.e. that muscle definition did not seem to be a goal for these sports specific clients. This suggests a more informed, conscious and principled orientation to choice of exercise.

[91] Leg extension or "machine quad extension is a single-joint motion exercise designed to target the quadriceps" (Aaberg, 1999, p.142).
[92] I had noticed that he did not use the leg extension exercise or other muscle definition exercises with his judo and a horse rider client.

In both the accounts above given to the researcher it is clear that the apprenticed personal trainer is working with "rule of thumb" and situational reasoning, whereas Eric offers theoretical or rational explanations.

Apprenticed and trained personal trainers rely "heavily on networking with peers, communities of practice and local opinion leaders" (Hare *et al*, cited in Stacey, Hopkin, Adamo, Shorr & Prudhomme, 2010, p.8) and "mass media, including the internet" (p.8). This seems to result in horizontal discourses which are "experience near" or grounded in experience. The latter poses difficulties with regard to the credibility and quality of the information located and used when giving accounts. The use of these sources may also to some extent account for the usage of a mixture of everyday and scientific knowledge in all or some of their explanations.

Conversely, educated personal trainers were positioned in communities of practice which extended beyond the experience of the gym floor community to disciplinary communities, i.e. they referred to current research and frequently accounted for their practice in relation to this research. All three referred to current research on programming, rehabilitation and injury, etc. and used this in their programme design.

Ethan referred to the research findings on the use of "crossfit" training techniques and its current results in the general population group versus the burn-out often seen when used with athletes. He had considered the advantages of this approach to training in terms of building strength and increasing fitness levels at a faster rate together with the promotion of motivation, building confidence and self-esteem. Eric drew on the periodisation principles of training when compiling programmes for his clients and even illustrated his "theory" of training using a sketch to explain how he tried to adapt the phases of periodisation in his work with his clients. He explained that he is also oriented towards functional conditioning versus "crossfit"[93] for athletes that promote overall body strength and fatigue resistance. Emily, in her work with clients who suffered from joint problems, was predominantly concerned with promoting rehabilitation and reducing further aggravation of the joint structures by collaborating with other medical specialists and drawing on her understanding of these conditions. She said she continually revisited her "disease knowledge" and used information about its current manifestation or symptoms before adapting the programme to meet the client's daily needs.

[93] Aware of current debates in programming for sports specific clients.

This tendency amongst the educated trainers to refer to research findings or principled knowledge of exercises or exercise regimes is in line with a recent finding that "fitness trainers with higher levels of education are more likely to use scholarly sources of evidence compared with those with lower levels of education" (Hare *et al*, cited in Stacey *et al.*, 2010, p.8).

Thus, in the accounts of practice given by personal trainers, there was a progression from everyday explanations to more scientific, research based explanations across the different categories of personal trainers. Secondly, there were differences in the semantic gravity of the situational and disciplinary knowledge characteristic of the different learning pathways that also promote differential kinds of situational or theoretical reasoning. These conclusions are represented on the following continuum:



Figure 3: Continuum of explanations used by personal trainers

According to Maton (2009) an emphasis on the possession of explicit procedures, skills and procedures as a basis of legitimate insight - as seen in the educated personal trainer's focus on research - indicates an underlying knowledge code. The identification of this continuum of explanations and the shift to Maton's knowledge code by educated personal trainers has further implications. When research is used in practice to inform practice it is identified as research in action or reflection-in-action, i.e. "he or she becomes a researcher in practice" (Schon, 1991, p.68) and therefore the next section explores some of the reflections in action identified in the practice of personal trainers.

5.2.3 Reflection-in-action

Following Schon (cited in Wainwright *et al*, 2010), reflection-in-action requires the three elements of: "engagement in intellectual processes, exploration of problems or experiences and a subsequent changed perspective or new insight (learning)" (p.76).

To explore trainers' reflection-in-action I tried to focus on moments in a session in which the trainer apparently encountered non-routinised tasks or client specific problems and endeavoured to explore the problem by asking questions and to make adaptations to the programme if deemed necessary. In the following section I present two sets of extracts. The first set focuses on two trainers' responses to their clients' comments that they were feeling faint. The second set focuses on the trainers' responses to clients reporting pain as they attempted squats. The focus on trainers' responses to what present as similar problems, facilitates comparison across categories. The first two extracts on the next page focus on a non-routinised task that involves dealing with a client feeling faint in a session. The first extract is from Andrew's session 2 with C1M and the second is taken from Eric's session 5 with C1F.

Extract 1:

"*Dizzy?" – Andrew asks as he sits on bench across from C1.*

C1 sips water as he sits on the couch at the entrance to the gym.

"Think I will sit in the shade there". C1 stands up, takes the bottle of water and goes outside to sit under the tree.

Andrew fetches the blood pressure kit from his office and goes outside to where the client is sitting.

C1 lies on his back and Andrew takes his blood pressure.

"What should it be?", C1 asks.

"*It varies dependent on the workout. The heart rate and blood pressure should be different than when rested. After rest it should move back to normal. 122 /53 is your reading", says Andrew.*

"Feeling sick", says C1.

"Not used to pushing so hard? Physically you are fine", Andrew concludes.

"*My legs have no blood", says C1*

"You must move C1, so that there is no pooling of blood", advises Andrew.

"I feel faint.... dizzy... like I am going to pass out. I felt like this last time I did this", says C1.

Extract 2:

"*Dizzy?" Eric asks.*

"Lie on the mat for two minutes. Go to the Maldives. It is because you are tense today and you haven't eaten", says Eric

C1 lies on her back for a few minutes.

"How are you feeling?" asks Eric.

"Better", replies C1.

In the first extract, Andrew apparently worked with the assumption that fainting was associated with blood pressure and therefore took the client's blood pressure, however, on obtaining a result he was apparently unable to interpret it quantitatively and to respond in a qualitatively appropriate manner. (As with other sections where I make judgments of quality I am using an informed "gaze" to make this judgment. Since normal blood pressure is classified as 120/80, a value of 122/53 indicates low blood pressure). On the basis of the reading of 122/53 Andrew asked the client to keep moving (low blood pressure not identified) to prevent pooling of blood, but by standing up the client was restricting the blood from returning to the brain and heart and thus maintaining the "faintness" (the correct procedure is to allow the client to lie down with his feet up).

C1M continued to explain how he was feeling – dizzy and sick – whilst still standing. This information could also have prompted Andrew to ask whether he had eaten or not, as low glucose levels can also cause fainting. Andrew, however, did not probe for any information which may have lead him to the cause, but instead took blood pressure readings for a second time. After this procedure he stopped the session and allowed the client to lie on his back and recover. It is interesting to consider why Andrew took so long to identify a low blood pressure response associated with a high intensity exercise session in hot conditions with a client who had not eaten and was unable to interpret the quantitative and qualitative information given to him during the session. The client had also reminded the trainer that he had experienced this before, but this past experience with this particular client did not seem to inform his response in this session.

Eric seemed to have noticed some physical symptoms in his client, checked his observation by asking if she was dizzy and then acted to relieve the "faintness" by asking the client to lie on the mat for two minutes. He later asked the client if she had eaten properly and commented to the researcher that this happens on a regular basis and is always due to insufficient food during the day. A similar incident with a trained personal trainer (Teresa) also elicited quick identification and action to the hypoglycemic response (low glucose) to exercise early one morning with a client who frequently came to training without having eaten breakfast.

In training, personal trainers are taught that there are two causes of fainting, namely low blood pressure or low glucose levels. Some personal trainers responded to this situation with a trained response. They knew what to do, but didn't understand why, whereas others

responded like Eric, who knew how this part or procedure related to the whole functioning of the body.

In the next comparison I return to the examples of teaching the squat by both apprenticed and educated personal trainers.

Extract 1:

"Stand like this" as Andrew demonstrates the squat with his hands resting on his knees.

Client (C2) bends her legs, but is unable to copy the position Andrew is demonstrating. She laughs.

"Come C2, stand sexy" encourages Andrew.

Client laughs again and once more attempts to get her bottom down and back.

"C2 can't stand sexy", laughs Andrew as he stands up and walks away laughing.

"Let's play our normal game", says Andrew as he goes to fetch a ball and thus changes the exercise.

Extract 2:

Eric turns around and fetches a large ball from the other side of the gym. (Eric modifies body weight squat to ball squat).

"60 squats bum back, feet forward a little bit, drop nicely, look up, top of pelvis, twist there", instructs Eric.

"I am not doing it properly", states C2.

"Straight up and down. Watch the side of me. (Eric executes the squat). Now straight up and down. Push through your heels, push up and down. Bum into the wall. It is all about position, bum back. Push it there (points to wall). Don't make a scene, I want it there (points to the wall again)", instructs Eric.

"Boom, boom, boom", as Eric demonstrates the movement again.

"I know what I will do. Hang on a second". Eric goes and fetches a band which he straps around her waist.

"Now you can't come forward", says Eric.

"Try it again. We will get this action correct before you go today. No such thing as doesn't work. Give me 5".

In the previous chapter I highlighted the restricted code of the language used by Andrew and the elaborated code of language used by Eric, but in this chapter I would like to focus on the problem solving approach adopted by Eric. Eric began by asking questions to establish the cause of the pain when doing squats. He used the information conveyed by the client and his own understanding of injury, the movement of the leg and the continuum of squat exercises

to adapt the exercise and took opportunities when C2F demonstrated difficulty with technique to facilitate client learning by flexibly modifying instructing strategies, cues and demonstrations to support C1F at all stages of her learning. He experimented with an improvised solution using a band to constrain the client's posture so as to allow effective execution of the squat and was thus responsive to the client's learning needs. His reflection-on-action was manifested in his adaptation of the exercise beyond the progression continuum of a ball squat. This open receptiveness exhibited by the educated personal trainers in all sessions allowed further comments and questions from clients as they experienced exercise and applied it to their sport specific and daily activities. This illustrates the weaker semantic gravity of the knowledge structures of educated personal trainers and the allowance that the elaborated codes have for the incorporation and flexible use of more general principles or procedures.

Andrew admitted to not having sufficient book knowledge (explicit knowledge) to give the client more cues (explicit instructions) about how to correct the squat. Instead of experimenting with ways to solve the inability of his client to perform the squat correctly, he organised the client by suggesting that they throw the tennis ball to one another. This drill forced her to change direction and move up and down (squat) so although he didn't experiment, he did make a substitution.

In a session with C2F, Andrew combined jumping over hurdles with a resistance cord, in order to advance the exercise, i.e. to add additional resistance. C2F was unable to perform this exercise without being pulled back by the cord. Andrew then recommended that he absorb the pull of the cord, thinking that the resistance was too great for the client, but this experimentation did not solve the problem so he again suggested the tennis drill[94]. He did not, however, eliminate this exercise from his list of exercises, but instead suggested the same exercise to a more experienced client. This client was able to perform the exercise by adjusting her jumping technique. Andrew noted what the client had done to solve the problem and went on to use this information to explain the exercise to C2F in a later session. Andrew therefore deepened his understanding of the exercise at the level of "how" by observing a more "expert" client.

Looking to identify the principled knowledge, I discussed this noted observation with the apprenticed personal trainer who commented that the more experienced client had invented a

[94] The previous substitution with the tennis ball drill made sense as the same movement (squat) was being executed, but the second substitution seemed to indicate that substitutions were not made with the logic of the programme in mind.

clever technique[95]. In our discussions about the solution to the problem I described the similarities between plyometric[96] training principles (muscle spindle[97]) and the elastic cord mechanism, i.e. the why of the technique. The apprenticed personal trainer responded that "he knew her (experienced client) technique was correct" and that the plyometric training explanation that I had used merely gave the scientific explanation for what he already knew. This suggests that Andrew was probably not systemically reflecting on the problem and possible solutions, but instead drew on "generalisations from practice and trial and error experimentation" (Kitchener, 1972, p.89).

When examining the problem solving strategies used by the apprenticed and educated trainers in relation to key constituents of the reflection process, namely the ability to ask appropriate questions, the ability and confidence to experiment and the ability to interpret the answers to the questions and results of experimentation using underpinning knowledge, the following can be noted in Table 11:

Table 11: Parts of the reflection process used by apprenticed and educated personal trainers

Parts of reflection process	Ability to ask appropriate questions	Ability and confidence to experiment	Ability to interpret from the experimentation	Underpinning knowledge
Educated	√	√	√	√
Apprenticed		√ trial and error		

These extracts, although only from Andrew and Eric, point to some notable differences in the two trainers' responses to situations which call for problem specific responses. These kinds of problem solving characteristics were evidenced and consistent with Eric and Andrew in all the other apprenticed and educated trainers (except Ethan). At this stage it is impossible, with such small numbers of trainers and with the low numbers of problem solving occurrences (in practice) identified in this study, to generalise these variations as differences between the educated and the apprenticed trainers.

[95] Note the emphasis on how.
[96] Plyometric exercise or training refers to "those activities that enable a muscle to reach maximal force in the shortest possible time" (Baechle & Earle, 2008, p.414).
[97] During plyometric exercises, the muscle spindles found in the body of the muscle, are stimulated by the rapid stretch and cause a reflexive muscle action or power jump (Baechle & Earle, 2008, p. 415).

Ethan, Teresa, Trevor and Tony only used the underpinning knowledge component of reflection (in action) in practice, i.e. instrumental exchange, although they frequently used other components of reflection (on action) before or after the session by experimenting on themselves or with peers. This indicates that trained and less experienced educated personal trainers' engagement in experimentation and questioning before or after sessions may give them an opportunity to understand their practice through reflection-on-action without the "chance of surprise or question" in sessions (reflection-in-action). This indicates that reflection-in-action may also require the confidence to allow questions and experiments as Trevor, the most experienced trained personal trainer, asked more questions in sessions than his less experienced trained counterparts. These questions were, however, more about the how and did not encourage further client exploration of the why. Despite the practicing of reflection (on action) before or after sessions, trained personal trainers even when experienced (Trevor), do not seem to use all components of reflection (in action) during practice and the results of their experiments and questions were not always applied to their practice. These findings require further investigation into reflection[98] together with the contextual and other factors that may limit reflection.

5.3 Knowledge based practice

Although the sample size of three trainers per category is too small to make claims about the knowledgeable practice of all trainers, I would like to draw on the information, comparisons and examples presented in this chapter to make inferences about the applied, manifest competence and underlying knowledge identified.

The informal learning pathway resulted in apprenticed personal trainer practice that was more motivational and authoritative and less instrumental. The knowledge imparted was more contextual (often embedded in gestures and modeling) and more experientially informed than conceptual. This knowledge has a restricted code and is characteristic of cookbook knowledge based on the knower code. The strong semantic gravity of this kind of knowledge resulted in reasoning that was situational and problem solving that was approached with trial and error. These apprenticed personal trainers can thus be characterised as "hands on practitioners".

The knowledgeable practice of trained personal trainers is predominantly instrumental. The imparting of knowledge to both clients and the researcher is through a mixture of situational

[98] "The distinction between reflection in and on action has been the subject of some debate" (Eraut, 1994 and Usher *et al* 1997, cited in Smith, 2001).

knowledge with a restricted code and disciplinary knowledge with an elaborated code. Despite the strong semantic gravity of some situational knowledge, the possession of disciplinary knowledge of elaborated code allowed the trained personal trainer to engage in theoretical reasoning with both clients and the researcher. Nevertheless, they had a tendency to legitimate their knowledge through a knower code, although occasionally they did ground their authority in their possession of specialized knowledge. Situations in which problem solving was necessary usually elicited trained responses, and these trained personal trainers seemed to constrain any opportunities for reflection-in-action, for instance questioning and/or experimentation by making sure their practice was meticulously planned and executed.

Educated knowledgeable practice is distinguished by reference to deeper, broader underpinning disciplinary knowledge of elaborated code. Thus, knowledge enabled theoretical reasoning that brought questioning, experimentation and underpinning knowledge together to creatively and rationally reflect on and solve problems. Educated personal trainers thus demonstrate explicit reflective competence.

5.4 Conclusion

The previous chapter focused on manifest practice. This chapter focuses on the form and substantive content of instrumental exchanges to try to get to competences that lie beneath the surface. On the basis of the findings presented in Chapter 4 and the current one it is possible to argue that the manifest practice of apprenticed, trained and educated personal trainers *included in this study* appear to be very similar on the surface and hence all are practically competent (see Chapter 4) however, there are important differences in the quality of their practices and the manner in which they ground and legitimate their practices (Chapter 5) which point to substantive differences in their foundational and reflexive competence. Trained and educated personal trainers demonstrated strong evidence of sound foundational competence, whereas apprenticed personal trainers exhibited some evidence of foundational competence in aspects of their practice, but it is predominantly situational and tacit.

In the case of reflexive competence, the apprenticed personal trainers replaced reflection with trial and error, whereas trained personal trainers seemingly constrained reflection in practice and thus educated personal trainers were the only trainers to be declared reflexively competent.

It is important to re-iterate that this sample is too small to enable the generalisation of these findings, but instead point to facets of knowledge in practice that could be more systematically investigated with a much larger sample of trainers.

CHAPTER 6

IMPLICATIONS OF FINDINGS

6.1 Introduction

The tip of the iceberg or the manifest practice of personal trainers was the starting point of this investigation into competence. Manifest practice or the knowing in action was described using relational (motivational and authoritative) and knowledge based exchanges, whereafter the underlying knowledge was explored using the accounts in and of practice so as to both develop a description of knowledgeable practice, as well as to differentiate between the knowledgeable practice of different learning pathways. With the findings described in the previous two chapters in mind, this final chapter will firstly examine the limitations, and then secondly posit some possible contributions, but mostly further questions, in the contexts of personal training and the training and education landscape.

6.2 Limitations of this study

The methodology of this study required the development of a coding framework and final interview that allowed differentiations between the exchanges and accounts recorded in the observations to be made. As the coding framework and final interview was developed for this study, from available definitions and used for the first time, a number of issues were identified with the privilege of hindsight. Firstly, the domains of personal trainer practice, contained in the coding framework, needed to be identified *by* personal trainers instead of being aligned to the Diploma in Exercise Science outcomes (the aim of this qualification is to prepare for the standard tasks of personal training) as despite the attempt to obtain a clearer identification of the principled knowledge (particular to the learning pathways) in the ongoing activities of practice, it may have discriminated against apprenticed personal trainers, whereas the aim was to describe how the *learning pathway* structured the gaze of various personal trainers. Further to this these domains of personal trainer practice need to be placed on a continuum, e.g. when a personal trainer describes an exercise technique, the language used may be of the restricted code, based on the objects and body parts tied to the context; or an elaborated code, based on a more technical description that would be able to be understood without the context in which it was used. This means that although the "same domain" of personal trainer practice is used, the weakness or strength of the semantic gravity determines its situated or universalistic character as indicated in figure 4 on the next page.

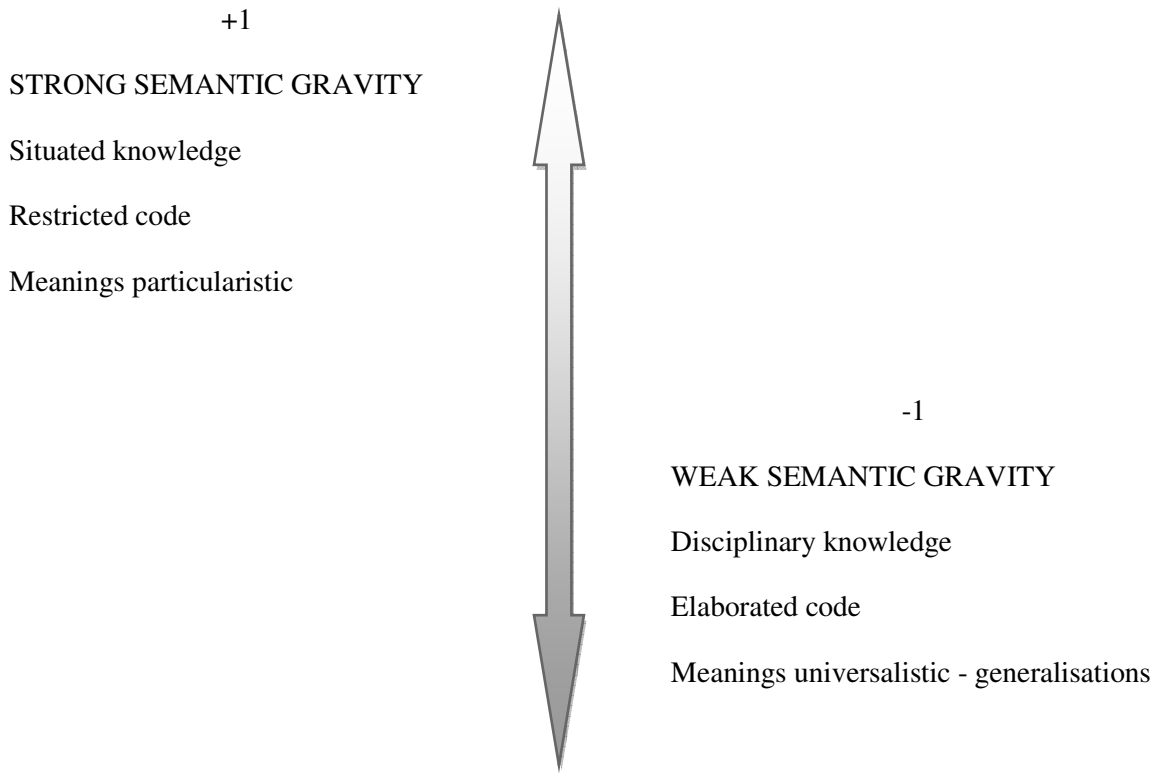


Figure 4: Continuum of "same domain" of personal trainer practice

The coding framework did not allow for the full appreciation of the conceptual links between domains of personal trainer practice and further to this, the questions used in the final interview did not delve deep enough into both the conceptual and the metacognitive knowledge used by personal trainers from different learning pathways. This means that the *gaze* imposed by personal trainers could have been obtained with more finely developed coding frameworks and interviews.

In reflecting on the footnotes, it is clear that the researcher's strong physiological gaze impacted the study's findings and in hindsight it would have been more generative to ask personal trainers from different pathways, to observe practice and identify the characteristics of each practice.

Together with the limitations of the methodology and the small sample size, this study is unable to make strong claims on the basis of its findings, so I would instead like to discuss the contributions that this study makes with regard to personal training and then to use these contributions to pose questions with regards current training and education.

6.3 Personal training

There has been very little research done on personal training in general, and specifically on the knowledge base underlying the practice of personal training. This study - due to the small

sample size - cannot claim that these findings are representative of all trainers or even make statements on the applied competence of trainers from the three different qualification pathways, but instead it may allow us to move beyond folklore to some evidence of the qualitative differences between the three types of personal trainers, especially with respect to the manner in which they instruct and inform clients. This instruction and informing of clients can, however, be placed on a continuum from highly personalised, embodied, context dependent exchanges to more explicit, reasoned accounts of what they are doing and why, both in their accounts in practice and in their reflections on practice. Further to this, the manner in which they ground their authority and reflect on non-routinised events in context seems to differ.

When one returns to the debate between the contextual and conceptual, it is clear that personal training as hybrid service work will always be intertwined with its social functions of motivation and authority, whilst instrumental exchanges are used to promote the fitness and development of their clients' needs. When one places the contextual and conceptual on a continuum from a more highly personalised service premised on personal experience or felt efficacy of exercises and their own prowess to an emphasis on knowledge and explanation, it seems that we again return to Bernstein's arguments regarding horizontal and vertical discourses.

The horizontal segmental acquisition (apprenticed) is manifest in a horizontal segmental transmission that is context bound and gives particularistic information to the client that in a sense maintains the personal trainer's authority and does not enable the client to understand the logic of exercise and its implications of different ways of performing exercise beyond that it works and what it works on. Further to this, there is an indication that these apprenticed personal trainers do not always respond appropriately to the non-routine. In comparison the vertical discourse is manifest in the vertical hierarchical transmissions that are more context independent and give generalisations that allow the client to understand not only the inner logic of the exercise programme, but also makes links to a more overarching understanding of how the body functions and responds to exercise. Using this understanding to deal with the non-routine further discriminated between the formal pathway of learning in that reflection was more characteristic of educated trainer practice than of trained trainer practice.

It is interesting to note that trainers who had come through informal pathways grounded their authority, i.e. legitimated their claims and instructions in a knower code. Trained trainers

tended to offer “mixed” grounds of authority, i.e. knower and knowledge code in and the educated personal trainer have grounds of legitimation in a knowledge code.

Due to the intended placement of all non-formal and formal learning pathways on the NQF, it is important to see how these contributions may posit questions of the current training and education landscape, i.e. SAQA, NQF, applied competence, vocational qualifications and REPSSA.

6.4 SAQA, NQF and applied competence

SAQA (2001) stipulates in its overarching concept of applied competence that being able “to do” is not enough, but instead calls for “an understanding of what we are doing and why we are doing it” and the “demonstrated ability to integrate our performances with our understanding so that we are able to adapt to changed circumstances and explain the reason behind these adaptations” (p.11). This definition of applied competence therefore stipulates that manifest practice should be underpinned by both principled and procedural knowledge that has enough depth to inform knowledge based practice and higher cognitive skills must be developed together with the development of increased levels of personal trainer autonomy. So in many ways the overarching concept of applied competence calls for the development of reflective practitioners, not only as a result of education, but of training and perhaps apprenticeship. The level descriptors (SAQA, 2012) have recently provided guidelines for perhaps examining the articulation of qualifications across the different learning pathways, but whether this is so and will allow for comparison of current knowledgeable practices as well, still needs to be researched.

The question of whether applied competence or level descriptors are useful in comparisons of formal and non-formal learning pathways, as described by Bernstein (1999), also needs careful consideration. Apprenticeships or horizontal discourses characteristically produce ideas and skills which are tied to the context. This context dependency or situational knowledge of restricted code has such strong semantic gravity that it restrains reasoning to practical reasoning and problem solving to methods of trial and error. The argument is therefore that although some of the contextualised utterances may be explicit (i.e. they do sometimes explain what they are doing and don’t just do), they are nevertheless more particularistic than other explicit utterances by trained and educated personal trainers which are more general or universalistic and therefore capable of introducing possible or other

worlds. Personal trainers therefore produce forms of knowledge particular to vertical or horizontal discourses, but which of these is needed in the world of work?

Preparing people for the world of work in the context of the NQF requires the integration of context dependent forms of knowledge with forms of context independent knowledge particular to the vertical discourse. This movement to the vertical learning pathways or recontextualisation is designed to generate a communication system that has an elaborated code and thus gives personal trainers access to the more universalistic ideas and skills used in theoretical reasoning and problem solving via reflection. This does not mean that the service work dimension (services are attuned to the needs of clients), emotional work (trainers pander to the needs of clients) and hands-on learning contained in situational knowledge is ignored, but instead vocational qualifications should be designed to integrate both situational knowledge and disciplinary knowledge or the facing of both ways (Gamble, 2009).

6.5 Vocational qualifications

A vocational qualification seems to point to a knowledgeable practice that looks to experiences, connects with feelings, attends to theories in use and builds new understandings to inform actions in the situation that is unfolding (Smith, 2001) or Schon's notion of reflection-in-action (cited in Smith, 2001).

The knowledge based practice of the educated personal trainer demonstrated reflection-in-action or "thinking on our feet" (Schon, cited in Smith, 2001) but what was it that differentiated their practice from trained personal trainers? A number of differentiating factors were identified within their knowledgeable practice, namely the depth and breadth of underpinning knowledge; the ability to ask questions and experiment in practice; the ability to link both parts (procedural knowledge) and wholes (principled knowledge); and the use of current research to inform their practice. These differentiating factors were not observed in trained personal trainers, indicating that perhaps these may be the factors that need careful consideration.

Correspondingly, the "cognitive" process of reflection when spiraling through stages of appreciation, action and re-appreciation, require underpinning knowledge, the ability to examine and use research critically, the ability to link parts and wholes and the ability to ask questions, therefore pointing to the same differentiating factors. This cognitive process of reflection or imposing of a virtual world or gaze on the situation, both during practice and

when thinking about practice, is partly attributed to the training and education and thus the consideration of the recontextualisation principles of curriculum design and pedagogy.

According to Barnett's (2006) model of vocational qualifications, two types of recontextualisation are incorporated into the process of curriculum design.

The first is the reclassificatory recontextualisation which re-organises the disciplinary knowledge for vocational qualifications. This study seems to indicate that the disciplinary knowledge for vocational qualifications allowed trained personal trainers to instruct and inform clients, but whether it had sufficient depth to enable reflection requires further research.

The second is the pedagogic reclassification which examines how the disciplinary knowledge for vocational qualifications is "imparted" and how the situational knowledge is integrated (i.e. the vocational pedagogy stands at the junction that enables the looking of both ways in vocational qualifications). This aspect was not investigated in this study but research done by Gamble on the learning pathways of education and apprenticeship indicates that the learning pathway (curriculum) of educated personal trainers inducts learners "into formal principled knowledge as its prime purpose in order to prepare students for progression to higher order reasoning" (Gamble, 2006, pp.93-94) and apprenticed personal trainers develop a tacit principled knowledge base in the process of doing the standard tasks of personal training (Gamble, 2009, p.23). Gamble (2004) also links vocational pedagogy, i.e. how experiential hours are implemented, to the ability of learners to grasp or not grasp the general rules that help "to distinguish between different kinds of information" (p.100) and to the danger that the tacit knowledge needed for practice can be destroyed if practical knowledge is separated from theoretical knowledge.

When approaching hybrid service work from the curriculum (Gamble) and the practice (this study) it seems that further research into the depth and quality of knowledge required for the process of reflection and for work is required together with a more systematic analysis of how vocational pedagogy affects the acquisition of applied competence. Further to this, the investigation into the "subject knowledge and pedagogical knowledge" (DHET, 2012) required for "tutors who can be emulated" is critical. This means that institutions need to revisit what is required of personal trainers in the workplace, and respond with curriculum, pedagogy and subsequently qualifications which have the purpose of preparing hybrid service workers.

6.6 REPSSA

There will "always be tension between the responsiveness and formalization of education provision" (DHET, 2012) but this tension can be an opportunity to examine the service and knowledge demands of work (REPSSA) and current qualifications. South Africa's fitness industry is at a turning point with the establishment of REPSSA and the new fitness board legislation, which advocates for the competence of personal trainers. REPSSA has set the competency benchmark at a level 5 qualification of the Certificate in Fitness or Exercise Science. This benchmark poses a challenge for apprenticed personal trainers and thus for REPPSA and the training institutions who have been called on to assist apprenticed personal trainers in their progression to a level at which they will be able to register as a personal trainer.

This study indicated that apprenticed personal trainers demonstrated "job competence" (Barnett, 2006, p.145) or practical competence due to their predominant use of cookbook knowledge and the segmental tacit links to disciplinary knowledge which made finding evidence for foundational competence difficult. Their practical reasoning, together with the restriction of questions in practice, trial and error experimentation and use of situated knowledge of restricted code meant that no evidence for reflexive competence could be found either. What is apparent, is that the nature of the learning pathway does not promote either explicit foundational or reflexive competence, but instead constrains the practice to the context, i.e. the hands-on practice of getting the job done. Barnett's (2006) stipulation that "base-level activities in many workplaces largely involve situated knowledge" (p.149) means that currently apprenticed personal trainers could possibly be registered by REPPSA as gym instructors[99]. There are however two limitations to this recommendation.

Firstly, gym instructors (Level 4 qualification[100]), despite being a base-level activity, will still encounter non-routinised tasks, as personal training by virtue of its nature is unpredictable. There is thus no way of preventing encounters with non-routinised tasks, but instead the skills of engaging with these encounters through reflection need to be developed at all levels of training and education so as to avoid risk to clients, but also to contribute to general life skills and autonomy in the workplace.

[99] The gym instructors conduct base-level activities in that they are required only to supervise exercise programmes - not design programmes.
[100] It is interesting that this qualification, despite being developed, is not seen to be "in demand" by industry.

Secondly, this study was unable to identify the tacit principled knowledge base which underlies apprentices' practice. The gaze of the coding framework was predominantly vertical[101] (i.e. outcomes of the Diploma in Exercise Science and Krathwohl's (2001) taxonomy) although the "calling for an account" (researcher's presence) did assist in obtaining some clarifications on the type and kind of knowledge used by apprenticed personal trainers. Further research into the tacit principled knowledge base is imperative for the understanding of apprenticed trainer practice and the development of a process and/or opportunities for progression and mobility within the training, education and career paths.

6.7 Conclusion

By returning to the workplace practices, rather than to the outcome statements, this study builds a deeper appreciation of what identifying applied competence in the workplace entails, together with its implications for institutions offering NQF aligned vocational qualifications both for their curriculum design and pedagogy and for the registration of personal trainers by REPSSA. Applied competence in many ways reiterates that practitioners involved in hybrid service work must be able to embrace the inherent complexity of their work not with purely rational approaches, but instead must apply knowledge and experience to each unique circumstance (Schon, cited in Carvalho & Dong, 2009, p.484) and thus hybrid service work requires reflective practitioners who "build the bridge between the science and the client at work" (Brooks, 1998, p.11) and therefore "think on their feet".

[101] The aim of the study was not to include the tacit knowledge.

REFERENCE LIST

Aaberg, E. (1999). *Resistance training instruction: Advanced principles and techniques for fitness professionals*. USA: Human Kinetics.

Adlam, D.S. (1977). Code on context. In Bernstein, B. (Ed). *Primary Socialization, Language and Education.* London: Routledge & Kegan Paul. pp. 38-43.

Baechle, T.R. & Earle, R.W. (2008). *Essentials of strength training and conditioning.* USA: Human Kinetics.

Barnett, M. (2006).Vocational knowledge and vocational pedagogy. In Young, M. & Gamble, J. (Eds). *Knowledge, Curriculum and Qualifications for South African Further Education.* Cape Town: HSRC Press. pp. 143-157.

Bernstein, B. (1999). Vertical and horizontal discourse: An essay. *British Journal of Sociology of Education, 20*(2), pp. 157 - 173.

Brooks, D.S. (1998). *Program design for personal trainers: Bridging theory into application*. USA: Human Kinetics.

Brown , A. & Dowling, P. (1998). *Doing research/reading research: A mode of interrogation for education*. London: Falmer Press.

Carvalho, L. & Dong, A. (2009). Legitimating design: a sociology of knowledge account of the field. *Design Studies*. 30, pp. 483-502.

Clancey, W.J. (2005). Observations of work practices in natural settings. *Cambridge Handbook on Expertise and Expert Performance*. New York: Cambridge University Press, pp. 127-145.

Cook-Gumperz, J. (1973). Social control and socialization. In Bernstein, B. (Ed). *Primary Socialization, Language and Education.* London: Routledge & Kegan Paul. pp. 134-139.

De Jong, T. & Ferguson-Hessler, M.G.M. (1996). Types and qualities of knowledge. *Educational Psychologist, 31 (2), pp. 105-113*.

Department of Higher Education and Training. (2012). *Green Paper for Post-school Education and Training*. Pretoria: South Africa.

Dowling, P. (1998). *The sociology of mathematics education: Mathematical myth / pedagogical texts*. London: The Falmer Press.

Draper, C.A., Grobler, L., Kilian, G.A., Micklesfield, L.K., Lambert, E.V. & Noakes, T.D. (2006). An inventory of the South African fitness industry. *South African Journal of Sports Medicine, 18*(3), pp. 93 - 102.

Fitness Regulations [Website]. (2001). Retrieved June 22, 2011 from http://www.pilatesinfo.co.za/index.php?pg=fitness-regulation-news

Gamble, J. (2004). *Tacit knowledge in pedagogy: A sociological analysis*. (Unpublished thesis). University of Cape Town, South Africa.

Gamble, J. (2006). Theory and practice in the vocational curriculum. In M. Young and J. Gamble. (Eds) *Knowledge, curriculum and qualifications for South African further education*. Cape Town: HSRC Press. pp. 87-103.

Gamble, J. (2009). *The relation between knowledge and practice in curriculum and assessment.* Concept Paper: Umalusi.

Geertz, C. (1973**).** Thick description**:** Toward an interpretive theory of culture. In *The interpretation of cultures: Selected essays*. New-York: Basic Books, pp. 3-30.

George, M. (2008). Interactions in expert service work: Demonstrating professionalism in personal training. *Journal of Contemporary Ethnography, 37*(1), pp. 108 - 131.

Gilbert,W. & Trudel, P. (1999). Framing the construction of coaching knowledge in experiential learning theory. *Sociology of Sport online, 1999.*

Hammersley, M. (1990). *Classroom ethnography*. Bristol: Open University Press.

Human Sciences Research Council. (1995). *Ways of seeing the National Qualifications Framework*. Pretoria, SA: HSRC.

Kitchener, R.F. (1972). B.F Skinner: The butcher, the baker, the behavior-shaper. *PSA: Proceedings of the Biennial Meeting of the Philosophy of Science Association,* 1972, pp. 87-98.

Kraak, A. (1999). Competing education and training policy discourses: A systematic versus unit standards framework. *In Jansen, J. & Christie, P. (1999). Changing curriculum: Studies on outcomes-based education in South Africa.* Cape Town, SA: Juta & Co, Ltd.

Krathwohl, D.R. (2002). A Revision of Bloom's taxonomy: An overview. *Theory into Practice, 41(4). pp. 212-218.*

Kravitz, L. (2010). Highly effective personal training: An evidence-based review of teaching strategies. *Strength and Conditioning Journal, 32 (3), pp. 87-89.*

Lalanne, J. *Jack Lalanne* [Website]. (2001). Retrieved June 22, 2011, from http://www.jacklalanne.com/jacks-adventures/

Lave, J. & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York: Cambridge University Press.

LeCompte, M.D. & Preissle, J. (1993). *Ethnography and qualitative design in educational research*. UK: Academic Press Limited.

Lloyd, C. (2008). Recruiting for fitness: Qualifications and the challenges of an employer-led system. *Journal of Education and Work, 21*(3), pp.175 - 195.

Maguire, J.S. (2001). Fit and flexible: The fitness industry, personal trainers and emotional service labor. *Sociology of Sport Journal, 18, pp. 379 -402.*

Malek, M.H., Nalbone, D.P., Berger, D.E. & Coburn, J.W. (2002). Importance of health science education for personal fitness trainers. *Journal of Strength and Conditioning Research, 16(1), pp.19-24.*

Maton, K. (2009). Cumulative and segmented learning: Exploring the role of curriculum structures in knowledge-building. *British Journal of Sociology of Education, 30*(1), 43 - 57.

Melton, D.I., Katula, J.A & Mustian, K.M. (2008). The current state of personal training: An industry perspective of personal trainers in a small Southeast community. *Journal of Strength and Conditioning Research, 22(3), pp.883-889.*

Mortimer, E.F. & Scott, P.H. (2003). *Meaning making in secondary science classrooms.* Maidenhead: Open University Press. Chapter 3.

Personal training courses and qualifications in South Africa [Website]. (2011). Retrieved June 22, 2011. http://satrader.com/personal-training/personal-training-courses/personal-training-courses-south-africa/

Rose, M. (2004). *The mind at work: Valuing the intelligence of the American worker*. United States of America: Viking.

Rupp, J.C., Campbell, K., Thompson, W.R. & Terbizan, D. (1999). Professional preparation of personal trainers. *Journal of Physical Education, Recreation and Dance, 70(1), pp.54–56.*

Sassatelli, R. (1999). Interaction order and beyond: A field analysis of body culture within fitness gyms. *Body and Society 5(2-3), pp. 227-248.*

Schon, D.A. (1987). *Educating the reflective practitioner.* Oxford: Jossey Bass Publishers.

Schon, D.A. (1991). *The reflective practitioner: How professionals think in action*. Arena: Ashgate Publishing Limited.

Scott, D. (2008). *Critical essays on major curriculum theorists*. Vancouver, Canada: Routledge.

Scott, D. & Morrison, M. (2007). *Key ideas in educational research*. London: Continuum International Publishing Group.

Scribner, S. (1986). Thinking in action: some characteristics of practical thought. In

Smith, M.K. '*Donald Schön: learning, reflection and change', the encyclopedia of informal education* [Website]. (2001). Retrieved March 02, 2012, from http://www.infed.org/thinkers/et-schon.htm.

South African Qualifications Authority. (1995). *National Qualifications Act 58.* Pretoria, South Africa: SAQA.

South African Qualifications Authority. (2000). *The National Qualifications Framework and Curriculum Development*. Pretoria, South Africa: SAQA.

South African Qualifications Authority. (2001). Assessment and the NQF. In *Criteria and guidelines for assessment of NQF registered standards and Qualifications*. Pretoria, South Africa: SAQA.

South African Qualifications Authority. (2012). *Level Descriptors for the South African National Qualifications framework.* Pretoria, South Africa: SAQA.

Sports and Recreation South Africa. *Fitness Industry of South Africa Regulations, 2011*. [Website]. (2011). Retrieved June 22, 2011, from www.info.gov.za/view/DownloadFileAction?id=98329.

Stacey, D., Hopkins, M., Adamo, K.B., Shorr, R & Prudhomme, D. (2010). Knowledge translation to fitness trainers: A systematic review. *Implementation Science, 5(28), pp.1-9.*

Sternberg, R.J. & Wagner, R.K. (Eds). *Practical intelligence: Nature and origins of competence in the everyday world.* New York, NY: Cambridge University Press.

Viallon, R., Camy, J. & Collins, M. F. (2003). The European integration of a new occupation, the training and education strategies of national professional organizations: The case of the fitness sector in France and the United Kingdom. *Managing Leisure, 8*, pp. 85 -96.

Wainwright, S.F., Shepard, K.F., Harman, L.B. & Stephens, J. (2010). Novice and experienced physical therapist clinicians: A comparison of how reflection is used to inform the clinical decision making process. *Physical Therapy,* 90 (1), pp. 75-88.

Walter, S. & Isaacs, S. (2009). *NQ frameworks: Insights from South Africa*. South Africa: SAQA.

Wertsch, J.V. & Minick, N. (1990). Negotiating sense in the zone of proximal development. In M. Schwebel, C. Maher & N. Fagley (Eds). *Promoting cognitive growth over the lifespan*. Hillsdale NJ: Lawrence Ekbaum.

Wieder, D.L. (1975). Telling the code. In R. Turner (Ed). *Ethnomethodology: Selected readings.* Harmondsworth: Penguin Education. Pp144-172.

APPENDICES

APPENDIX A

EXIT OUTCOMES FOR DIPLOMA IN EXERCISE SCIENCE (ID NUMBER: 36194)

	Domain of personal trainer practice
The learner must be able to explain the basic principles involved in injury free training and **demonstrate competence** in delivering and managing sport programmes for the athlete.	Use Organisation
In addition to having a thorough knowledge of the structure and function of the body systems, learners must demonstrate an understanding of the physiological responses and adaptations of the different systems of the body to various types of training.	Use Intensity Programme
The learner must demonstrate knowledge and understanding of nutritional principles, provide basic nutritional advice to clients, and be able to advise clients of nutritional requirements.	Use
The learner must exhibit an understanding of the biomechanics of different types of training and the physiological adaptations related to each.	Use Technique Experience
The learner must demonstrate the ability to plan, develop, deliver, manage and assess a physical conditioning programme to achieve identified goals.	Name Safety Technique Intensity Programme Organisation
The learner must demonstrate the ability to manage, deliver and assess programmes for clients with special needs, working with a range of clients including antenatal and postnatal women, older adults, and clients with impairments and disabilities.	Name Safety Technique Intensity Programme Organisation
The learner must demonstrate the ability to establish and maintain relationships, which support the training process.	Organisation
The learner must be able to discuss the links between physical activity and psychological well-being and stress as well as demonstrate an understanding of the physiological factors which influence exercise adherence and athletic performance.	Use Organisation
The learner must **show competence** in the organisation and administration of the strength and conditioning facility and demonstrate knowledge of legal issues and insurance requirements pertaining to activities within this field of the industry.	Organisation Safety
The learner must be able to demonstrate knowledge of the principles of test selection and administration, plan for the implementation of tests accepted as current practice for the relevant activity and conduct a battery of tests which are meaningful, appropriate and relevant to the needs/goals of the client. The learner must demonstrate the ability to use the test results as a basis for setting goals.	Programme Organisation Name Use
The learner must **understand** and describe the role of the fitness practitioner in injury rehabilitation and reconditioning of injured athletes as well as operate within a referral system, which includes other specialists.	Safety Name Use Organisation

APPENDIX B

PARTICPANT CONSENT FORM

Dear Participant,

I am currently completing a Masters in Education at the University of the Witwatersrand. My research is aimed at understanding the work of Personal Trainers and thus I would like to invite you to take part in this study: Thinking on their feet: The Role of Knowledge in the work of Personal Training.

In order to do this I have chosen to use the methodology of observation and interview. This would involve observing you as a Personal Trainer working with two clients over a period of six weeks. The clients would need to give their consent to this observation as well as to the sharing of their assessment and screening information obtained in an observed evaluation session.

As the Personal Trainer, you would need to be willing to be observed, interviewed and provide information about the prior experience that has shaped your work or knowledge. A curriculum vitae will also be requested so as to obtain demographic information such as age, sex, years of experience, prior employment, qualification and participation in other types of training.

All this information will be regarded as confidential and the details of yourself and your clients will be coded so as to protect your identities. No specific data that will identify you or your clients will be used. All data will be kept in a secure, locked safe at the researcher's home. On completion of the study, all these documents will be shredded and disposed of.

The information will be used in the completion of a research document and for possible publications in research journals. Copies of the document will be given to the participants before completion of the study.

If you are willing to participate in this study and have sufficient information with regards the processes, please complete the attached consent form. If you require further information, please contact me on 083 994 9558.

Please note that participation is voluntary and refusal to participate or discontinue participation at any time will be without penalty.

Yours sincerely,

Amanda Watermeyer

Dear Client,

I am currently completing a Masters in Education at the University of the Witwatersrand. My research is aimed at understanding the work of Personal Trainers and titled: Thinking on their feet: The Role of Knowledge in the work of Personal Training.

In order to do this I have chosen to use the methodology of observation and interview. This would involve observing a Personal Trainer working with two clients over a period of six weeks. The clients would need to give their consent to this observation as well as to the sharing of their assessment and screening information obtained in an observed evaluation session. The client will not be judged or assessed in any way as the purpose of the study is only to see how the Personal Trainer works with the client.

The Personal Trainer will be observed, interviewed and provide information about the prior experience that has shaped his/her work or knowledge.

All this information will be regarded as confidential and the details of yourself, the client, will be coded so as to protect your identity. No specific data that will identify you will be used. All data will be kept in a secure, locked safe at the researcher's home. On completion of the study, all these documents will be shredded and disposed of.

The information will be used in the completion of a research document and for possible publications in research journals. Copies of the document will be given to the participants before completion of the study.

If you are willing to participate in this study and have sufficient information with regards the processes, please complete the consent form supplied to you by the Personal Trainer. If you require further information, please contact me on 083 994 9558.

Please note that participation is voluntary and refusal to participate or discontinue participation at any time will be without penalty.

Yours sincerely,

Amanda Watermeyer

APPENDIX C

CLIENT CONSENT FORM (Protocol number: 2010 ECE 94C)

PERSONAL TRAINER:

I _____, am confident that I understand the requirements of the study and am willing to participate.

I have obtained the consent of the two clients that will be involved in the observations, to divulge their assessment and screening information.

I understand that my participation is voluntary and that I may discontinue participation at any time without penalty.

_____

SIGNATURE OF PERSONAL TRAINER

CLIENT 1:

I _____, am willing to participate in this study and am willing to divulge my assessment and screening information.

I understand that my participation is voluntary and that I may discontinue participation at any time without penalty.

_____

SIGNATURE OF CLIENT

GYM OWNER

I _____, have received the information provided on the study that _____ (Personal Trainer) will be participating in and give consent for this observation to be completed on my premises.

_____

SIGNATURE OF GYM OWNER

PERSONAL TRAINER: (Protocol number: 2010 ECE 94C)

I _____, am confident that I understand the requirements of the study and am willing to participate.

I have obtained the consent of the two clients that will be involved in the observations, to divulge their assessment and screening information.

I understand that my participation is voluntary and that I may discontinue participation at any time without penalty.

_____

SIGNATURE OF PERSONAL TRAINER

CLIENT 2:

I _____, am willing to participate in this study and am willing to divulge my assessment and screening information.

I understand that my participation is voluntary and that I may discontinue participation at any time without penalty.

_____

SIGNATURE OF CLIENT

GYM OWNER

I _____, have received the information provided on the study that _____ (Personal Trainer) will be participating in and give consent for this observation to be completed on my premises.

_____

SIGNATURE OF GYM OWNER

APPENDIX D

DETAILS OF PERSONAL TRAINERS AND CLIENTS

Details of Educated personal trainers and the clients involved in the sessions observed							
CODE	**PSEUDONYM**	**Gender**	**Years of Experience**	**Client 1 (C1)**	**Complication**	**Client 2 (C2)**	**Complication**
E1	Emily	Female	13	Female	Hip replacement	Female	Rheumatoid Arthritis
E2	Eric	Male	28	Female	Horse Rider	Female	Judo Torn ankle
E3	Ethan	Male	5	Male	Muscle atrophy and weakness	Female	Weight loss
Details of Apprenticed personal trainers and the clients involved in the sessions observed							
CODE	**PSEUDONYM**	**Gender**	**Years of Experience**	**Client 1 (C1)**	**Complication**	**Client 2 (C2)**	**Complication**
A1	Adrian	Male	15	Male	Rotator cuff injury	Female	Slipped disc in lower back
A2	Andrew	Male	36	Male	Hypertension Hyper cholesterolemia	Female	Semi-professional Tennis player
A3	Arthur	Male	18	Female	Semi-professional body builder Deltoid	Male	Rugby player Back problem
Details of Trained personal trainers and the clients involved in the sessions observed							
CODE	**PSEUDONYM**	**Gender**	**Years of Experience**	**Client 1 (C1)**	**Complication**	**Client 2 (C2)**	**Complication**
T1	Teresa	Female	3	Female	Pregnant	Female	Kick boxer
T2	Tony	Male	2	Male	Weight loss	Female	Cyclist
T3	Trevor	Male	16	Male	Recovering from hip replacement Back operation	Male	Bodybuilder

APPENDIX E

Wits School of Education

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STUDENT NUMBER: 9110528K

Protocol number: 2010ECE94**C**

18 November 2010

Mrs. Amanda Watermeyer
93 10th Street
PARKHURST
2193

Dear Mrs. Watermeyer

Application for Ethics Clearance: Master of Education

I have a pleasure in advising you that the Ethics Committee in Education of the Faculty of Humanities, acting on behalf of the Senate has agreed to approve your application for ethics clearance submitted for your proposal entitled:

Thinking on their feet: A study of applied competence in personal training

The Protocol Number above should be submitted to the Graduate Studies in Education Committee upon submission of your final research report.

Yours sincerely

M Mabeta

Matsie Mabeta
Wits School of Education

Cc Supervisor: Ms. L Slonimsky (via email)

APPENDIX F

FINAL INTERVIEW

1. How do you design a programme for a particular client?
2. How do you decide what exercises to choose or include in the programme?
3. How do you know when to change the frequency, intensity, type or duration of the programme?
4. How do you know when to modify or change an exercise?
5. How do you "help" a client to do an exercise correctly?
6. What elements do you focus on when "busy" with clients? (technique, intensity, client organisation)
7. How much information do you give to your clients about what you are doing?
8. Where have you learnt about Personal Training?
9. Is there anything else you think I should know about how you do your work as a Personal Trainer?

APPENDIX G

CODING FRAMEWORK

INFERRED APPLIED COMPETENCE - 'OVERARCHING TERM FOR FOUNDATIONAL, PRACTICAL AND REFLECTIVE COMPETENCE'		
REFLEXIVE	FOUNDATIONAL	PRACTICAL
'the demonstrated ability to integrate our performances with our understanding so that we are able to 1. adapt to changed circumstances and 2. explain the reason behind these adaptations'	'an understanding of 1. what we are doing and 2. why we are doing it'	'ability to perform a set of tasks and actions in authentic contexts'
In this case reflection in action (surprises) and reflection on action (accounts afterwards) = ROA (in sessions) + RIA (after session or in interview)	In this case accounts given to client and to researcher.	In this case perform the three service interactions within the client- PT interaction

Context independent					Context dependent							
			Instrumental I			Motivational M			Authoritative Au			
Domains of personal trainer practice			Context independent		Context dependent	Seeking encouragement	Attentive listening	Highly personalized interaction	Draws on expertise	Controlled serious tone	Gestures	Body Movements
Cognitive		Knowledge	CI_R	CI_C	CD	M1	M2	M3	Au1	Au2	Au3	Au4
Remember	1	Name										
Understand / Apply	2	Use										
Apply	3	Safety										
Apply	4	Experience or felt										
Apply / Evaluate	5	Tech nique: Lang										
		Tech nique: Actio n										
		Tech nique: L + a										
Apply	6	Intensity / number										
Analyze / create	7	Programme										
Create	8	Organisation										

APPENDIX H

CODING RULES

EXCHANGE	DESCRIPTION	EXAMPLE	CODING
REFLEXIVE COMPETENCE			
Reflection in Action	Conducting experiments to discover what consequences and implications can be made to follow from it	Using a ball against the wall to instruct the client in the downward squat movement.	RIA
Reflection on action	Discussed adaptations and explained their reasons after sessions or in the final interview.	Personal Trainer discusses how he could have solved a problem in the session by doing something differently and or applying his knowledge i.e. I should have known he had not eaten, he has done this before.	ROA
FOUNDATIONAL COMPETENCE			
Accounts given to researcher	Application and description of principled or procedural knowledge when instructing a client.	Personal Trainer explains the reason for the choice of an exercise during the session with the client to the researcher.	CI_R
Accounts given to client		Personal Trainer explains how the muscle contracts during the session with the client to the client.	CI_C
PRACTICAL COMPETENCE	Ability to perform a set of tasks and actions in authentic contexts.		
Motivational exchanges	Seek encouraging, attentive and highly personalized training.	Praise or encouragement is given by the Personal Trainer	M1
		Attentive listening is observed in forms of gestures or acknowledgement of listening statements	M2
		Highly personalized interactions such as utterances or gestures which contribute to formation or maintenance of relationship	M3
Authoritative Exchanges	Personal Trainers use their experience and highlighting of certification, tone, gestures and body positioning to establish authority and control over their clients.	Personal trainer draws on his or her expertise in the form of experience, education or training and physical abilities.	Au1
		Personal trainer indicates a controlled serious tone which informs the client that personal trainer has the authority in the session.	Au2
		Personal Trainer identifies gestures that assert his authority.	A3
		Personal Trainer uses body positioning which asserts authority or intimidates client to perform the exercise.	Au4
Instrumental Exchanges	Knowledge is imparted to the client.	Account is of restricted code and strongly tied to the context	CD
	Personal Trainer Domains		
	Name	The subject knowledge of exercise, body parts and equipment	PP1

		names was linked to the cognitive process of remember as naming involved retrieving relevant knowledge (scientific names of exercises or muscles) from long term memory.	
	Use	Use was linked with understand as this involved determining the meaning of instructional messages by linking an exercise with understandings of range of motion of joints or origins and insertions of muscles.	r2
	Safety	The personal trainer warns the client to maintain control over the machine by keeping her hands on the safety handles. The subject knowledge applied ensures the safety of the client.	CD3
	Experience or feel	The personal trainer explains to the client as she pulls the bar towards her stomach that the focus should be on the back muscles and not the forearms while completing a rowing motion. This exchange applies the knowledge of where the exercise should be felt or experienced.	CD4
	Technique	Personal trainer applying the knowledge of the technique in order to choose and instruct the exercise.	CD5
	Intensity	This exchange applies the understanding of intensity by using terminology such as repetitions, sets, minutes or numbers of the exercise which are appropriate to the needs of the client. Personal trainers may also count repetitions or give information about how many minutes of the exercise is required or remaining time to completion of the exercise or workout.	CD6
	Programme	Programme was linked with the cognitive process of analyze i.e. the design of a programme involves breaking material into constituent parts (individual exercises) and detecting how the parts relate to one another and the overall structure (workout programme) and create i.e. elements to be put together (space, programme, personality of client etc.) to form a novel coherent whole or involve making an original product.	CD7
	Organisation	Organisation involves the cognitive process of create as this domain needs elements to be put together (space, programme, personality of client etc.) to form a novel coherent whole or involve making an original product. It is important that it is original not a “routine” which is used for each client regardless of their needs and goals.	CD8

APPENDIX I

EXTENDED EXPLANATIONS AND EXAMPLES

Reflective competence according to its SAQA definition has two basic requirements. Firstly, the personal trainer must adapt to a changed circumstance and secondly, he or she must be able to explain the *reasons* behind the adaptations. Adaptations are defined as changes made to exercises or programmes in the session. Throughout the *observation period all* instances of a personal trainer "conducting experiments to discover what consequences and implications can be made to follow from it" (Schon, 1991, p.131) were noted (as reflections in action) in the field notes. Such experiments may be identified in his or her movements, e.g. using a ball against the wall to instruct a client in the downward squat movement when the client failed to do a free, standing squat[102] and or utterances, e.g. asking a number of questions to gain additional information about a situation before drawing a conclusion. However, this was only coded on the grid (and was coded as context independent) if the trainer was able to articulate the reasoning or logic behind the adaptation either in the ongoing flow of practice (i.e. in action) or afterwards in discussion with the researcher (i.e. during the trainers reflection on action). In other words if at no point the trainer articulated their chain of reasoning, it was ignored.

Foundational competence requires the personal trainer to explain what he or she is doing and why he or she is doing it (SAQA**,** 2001, p.11). As pointed out before, it can be either context dependent or context independent. It is differentiated from reflexive competence in so far as it involves the application and description of principled or procedural knowledge when instructing a client, however, there is *no sign of adaptation nor explanations of adaptation*. The grid distinguishes between accounts spontaneously[103] given to the researcher (CI_R) in the ongoing flow of practice or to the client (CI_C). Both these accounts are classified as context independent at layer 2 as the personal trainer is transforming the actual external practice to an abstract description (Bernstein, 1999). Accounts given to the client can also be classified as an instrumental exchange at layer 3 as the exchange contains knowledge that is imparted to the client (George, 2008).

[102] Context independent knowledge of elaborated code, i.e. knowledge of squat exercise continuum to instruct the client is used in this reflection in action.
[103] I.e. not elicited by the researcher in the session.

Practical competence is defined "as the ability to perform a set of task and actions in authentic contexts" (SAQA**,** 2001, p.11). Since all utterances and actions in the ongoing flow of sessions reflect some form of practical competence, all of these were recorded in field notes. These were subsequently subdivided into George's (2008) service interactions namely: motivational, authoritative and instrumental. Exchanges of restricted code (tied to the context) that are used to instruct the client are firstly classified as context dependent at layer 2 and then according to the definitions below at layer 3.

Motivational exchanges

George (2008) defines motivational exchanges and those which are oriented to encouraging the client or which communicate to the client (through tones or gestures) or when the trainer is offering "attentive and highly personalized training" (p.119). All motivational exchanges were coded as context independent. Note: there were some exchanges which met the above criteria, but if they were accompanied by explicit modeling or explanations they were coded as instrumental exchanges.

On the coding grid motivational exchanges were differentiated into the following three sub-categories:

M1 when praise or encouragement was given by the personal trainer, e.g. "Well done, we've done everything" – Personal trainer states as he brings the session to an end.

M2 – the trainer's gestures suggest attentive listening or the trainer picks up on a client's account of personal events or feelings, e.g. the client describes what a terrible day she has had and the trainer nods, or offers sympathetic comments.

M3 - highly personalised interactions such as utterances or gestures which contribute to the formation or maintenance of a relationship are observed, e.g. personal trainer places a clean towel on the bench before the client lies on it to perform an exercise.

Authoritative exchanges[104]

Authoritative consultations were differentiated as exchanges in which "professional status is used to establish authority and control over their clients in service interactions" (George, 2008, p.121). Personal trainers that offer authoritative consultations make a claim that they

[104] These are all context dependent.

are "not interested in pampering clients or providing them with overly deferential service" (George, 2008, p.120) and this is enforced by "highlighting their certification" (p.120) or "using a controlled, serious way of displaying emotion to elicit a client's compliance" (p.121). I would like to modify George's (2008) definition of authoritative to exclude "status" as my aim is to establish whether without this "certified status" apprenticed personal trainers used other means (statements, gestures and body movements) to assert themselves. I have thus added experience to George's (2008) "highlighting of certification" (p.120) and have divided the "controlled, serious way" into tone, gestures and body positioning. The modified definition states that authoritative exchanges are when personal trainers use their experience and highlighting of certification, tone, gestures and body positioning to establish authority and control over their clients in service interactions and thus the following categories are defined below:

Au1 - the personal trainer asserts his or her expertise in the form of experience, education or training and physical abilities, e.g. "I will show you" – Personal trainer says as he demonstrates his expert ability to complete a complex exercise.

Au2 - informs the client through tone or utterance that the personal trainer has the authority in the session, e.g. "I want to see power" – Personal trainer insistently states as the client pulls on the rowing machine.

Au3 - gestures that assert his authority, e.g. "That's your way of saying you are" – says the client as the personal trainer bends over to adjust the weight to a higher level and points to the machine.

Au4 - body positioning which asserts authority or "intimidates" the client to perform the exercise, e.g. the client moves to the bench to perform a barbell chest press[105]. The personal trainer stands on one side watching the client's movements carefully and then moves around to the other side of the bench moving closer to the client.

Instrumental exchanges

All these instrumental exchanges, i.e. exchanges in which knowledge is imparted to the client, were coded as either context independent (CI_c) or context dependent (CD). The stipulation for a context independent instrumental exchange was that this must be an account given by a personal trainer that explicitly draws on principled knowledge and thus de-

[105] A Barbell Chest Press is a two-joint motion designed to target primarily the chest muscles (Aaberg, 1999, p.154)

contextualises the actual external practice. The condition for the context dependent exchange was that this exchange was situated within the manifest practice, i.e. the exchange if removed from the context would be rendered meaningless.

Domains of personal trainer practice

The instrumental exchanges, either context independent or context dependent, were then coded using domains of personal trainer practice. An explanation of how the domains of personal trainer practice were categorised is given below.

NAMES

The subject knowledge of exercise, body parts and equipment names was linked to the cognitive process of remember as naming involved retrieving relevant knowledge (scientific names of exercises or muscles) from long term memory. The personal trainer uses the name of a particular exercise. In this case no demonstration is given, but instead the specific terminology and language particular to the context is used by the personal trainer, e.g. "Bridge" – personal trainer. This exchange would be classified as an instrumental exchange of type 1.

USE

Use was linked with understand as this involved determining the meaning of instructional messages by linking an exercise with understandings of range of motion of joints or origins and insertions of muscles[106]. The personal trainer explains how stretching out will help to activate the core (abdominal and back muscles) and in this way links the exercise with its use or underpinning knowledge of the body, e.g. "Stretch your arm out, don't be too cramped. This is good for the core" – personal trainer. This exchange would be classified as an instrumental exchange of type 2.

[106] "To cause movement or generate force against external objects, both ends of each skeletal muscle must be attached to bone by connective tissue…. The muscle's origin is its proximal (toward centre of body) attachment and its insertion is its distal attachment" (Baechle & Earle, 2008, p.67).

SAFETY, EXPERIENCE OR FEEL, TECHNIQUE AND INTENSITY

Safety, experience or feel, technique and intensity linked with apply as this involved carrying out or using a given procedure in a certain situation. In all four personal trainer domains there is a strong procedural component which is based on underpinning knowledge of exercise science and/or experience. The personal trainer warns the client to maintain control over the machine by keeping her hands on the safety handles, e.g.1. "Hands on controls or we will have a snapped leg as well as a sore back" – personal trainer. The subject knowledge applied ensures the safety of the client and is thus classified as an instrumental exchange of type 3.

The personal trainer explains to the client as she pulls the bar towards her stomach that the focus should be on the back muscles and not the forearms while completing a rowing motion. e.g.2. "Feel it in your back, not your shoulder or forearms" – personal trainer. This exchange applies the knowledge of where the exercise should be felt or experienced and is classified as an instrumental exchange of type 4.

A demonstration is used in this case as there are many varieties of bicep curls and in this session the personal trainer demonstrates a hammer curl which requires the client to do a biceps curl in the fundamental position[107] e.g.3. "Do a bicep curl" – personal trainer instructs as he demonstrates the type of bicep curl he wants performed. This is an example of the personal trainer applying the knowledge of the technique in order to choose and instruct the exercise. If the client failed to do the bicep correctly by using the shoulder to raise the weight, the personal trainer may ask the client to hold the shoulder still and use only the flexion of the elbow joint. This would then be correction. If the client continued to move the shoulder the personal trainer may hold the shoulder still by pressing his hand down on the shoulder and moving the arm at the elbow joint with the other hand. This would illustrate assistance and therefore technique may also include evaluation as teaching technique involves the making of judgments on criteria and standards that are set to determine the accuracy of the technique, i.e. placement of feet or height of a machine, etc. All instrumental exchanges that include technique are classified as 5.

[107] The individual stands erect, feet slightly apart and parallel, arms hanging easily at the sides, palms facing the body. This position is usually used to analyse movements of all the body segments, except those of the forearm.

Domain 5 (Technique) was then further subdivided into:

a- use of language or talk to instruct or teach the client, e.g. “Go to chest”– personal trainer explains the movement using body parts and thus orientating the client without demonstrating the movement;

b- use of bodily movements or gestures to instruct, e.g. personal trainer demonstrates what he wants done on the bicycle by climbing onto the bicycle and showing the client the technique, pace or movement;

c- use of language and body simultaneously, e.g. “tap, tap change legs. 6, 7, 8, 9, 10” – personal trainer as he moves his legs backward and forward in a running motion touching his toes on the half ball placed slightly in front of him.

The next exchange applies the understanding of intensity by using terminology such as repetitions, sets, minutes or numbers of the exercise which are appropriate to the needs of the client. Personal trainers may also count repetitions or give information about how many minutes of the exercise is required or remaining time to completion of the exercise or workout, e.g.4. “10.10” – personal trainer explains that he wants two sets of 10 repetitions of a particular exercise. All these instrumental exchanges were coded as type 6.

PROGRAMME

Programme was linked with the cognitive process of analyse, i.e. the design of a programme involves breaking material into constituent parts (individual exercises) and detecting how the parts relate to one another and the overall structure (workout programme) and create, i.e. elements to be put together (space, programme, personality of client, etc.) to form a novel coherent whole or involve making an original product.

The personal trainer gives information about what they have done and what will follow or they will do and thus the sequencing of the exercise is described e.g.7. “We did biceps, now we will do triceps – personal trainer. The personal trainer may also tell the client that they will be doing two exercises for biceps in a session so as to isolate the biceps muscle. This would be a description of progression. In both instances the client is given information about how the programme is structured as the instrumental exchange is classified as type 7.

ORGANISATION

Organisation involves the cognitive process of create as this domain needs elements to be put together (space, programme, personality of client, etc.) to form a novel coherent whole or involve making an original product. It is important that it is original - not a "routine" which is used for each client regardless of their needs and goals.

This exchange creates the space in which the client is able to do the exercise by providing an exchange (both language and gesture) that tells the client what to do and has the equipment accessible for use e.g.1. "Grab your weights" instructs the personal trainer as he nods at the client and the client picks up the weights that have been placed in front of him.

This next exchange provides the client with information about what the personal trainer is doing, i.e. how he is organising himself, e.g.2. "I am just going inside to fetch you the correct weights" – personal trainer.

Both these exchanges are classified as an instrumental exchange of type 8.

These four layers namely: practical, foundational and reflexive competence; context dependent and context independent; George's (2008) service interactions[108] and personal trainer domains were integrated to form the coding framework shown in Appendix G. Each exchange recorded during the observations was coded to reduce the qualitative data to the quantitative data, i.e. quantity of exchanges recorded in lower part of coding framework to allow comparison between trainers from different learning pathways.

[108] The service interactions are classified as authoritative, motivational and instrumental exchanges.